Motivation and self-regulated learning strategies accounting students adopt in a blended learning environment

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A thesis submitted for the degree of Doctor of Philosophy at

Monash University in 2020

Monash Business School

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Abstract

Currently, many university students are learning in the autonomous and self-directed blended learning environment where engagement with online learning resources is expected. In this context, the purpose of this research is to gain an understanding of what motivates students to engage with the formative learning resources provided through a learning management system, what self-regulated learning strategies they adopt, and whether these strategies change as they progress through their degree. Understanding students' motivation and the strategies that they adopt and adapt as they progress with their studies offers potential insights about refining the learning resources provided to better enrich their learning experiences. Further, the findings may provide insightful information to the professional accounting bodies regarding their continuing professional development activities.

This bounded case study of undergraduate accounting students at one Australian university is informed by analysis of results from a survey concerning Motivated Strategies for Learning, learning analytics data, and qualitative interviews with first, second and third year students enrolled in five core accounting units required for entry as associate members of the professional accounting bodies. In contrast to prior studies undertaken in traditional and online environments, findings show *rehearsal, elaboration, metacognitive self-regulation, goal setting* as important self-regulated learning strategies for students in a blended learning environment. Investigation shows students are intrinsically and extrinsically motivated to engage with the learning resources in order to enhance their understanding. Specifically, this motivation evolves as students progress in their studies, with third year students being more intrinsically motivated and exhibiting greater *intrinsic goal orientations* than their first and second year counterparts. Third year students are similarly more adept at utilising *rehearsal* and *elaboration* strategies concurrently. The other apparent difference is that first and third year students were more cognisant of the importance of lifelong learning than their second year counterparts.

Insights that inform understanding of students' motivation and strategies for learning in an autonomous and self-directed environment, such as blended learning, and challenge them to reflect upon their learning needs, is a timely issue given the change to delivery of tertiary course materials in the COVID-19 environment. In this regard, all data collection for the study was conducted prior to COVID-19, such that findings are not confounded by this change in circumstance. However, the sharp and complete transition to online delivery of materials that is necessitated by COVID-19 will continue to be of significant importance to students until it and its restrictions disappear.

Collectively, the findings provide understanding and awareness that is useful in shaping the development and refinement of future learning resources that affect both university students and more broadly the accounting profession in terms of what members may access and engage with as they continue on their lifelong learning journey.

Declaration

This thesis is an original work of my research and contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

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Acknowledgements

The process of earning a doctorate and writing a dissertation, whilst rewarding, is certainly long and arduous, and one that is not done singlehandedly. To that end I would like to convey my deepest appreciation to my supervisors, Professor Carla Wilkin and Dr. Matthew Butler for their mentoring, guidance, expertise, support, encouragement and time commitment along the entire PhD journey. Their continued support and guidance have resulted in a rewarding, exciting and enjoyable experience.

I am also very grateful to my colleagues at Monash University, in particular, Associate Professors Ralph Kober and Nick McGuigan, and Professor Robyn Moroney for their insightful suggestions and contributions provided during milestone presentations, i.e., confirmation, mid-candidature review and pre-submission. In addition, I would like to thank other academic staff and fellow PhD students at Monash University for their suggestions and support.

I am extremely grateful to Anna Stamatelatos, Daisy Seng, Michaela Rankin, Christina Wong-Lim, Paul Thambar and Rutti Loh for their continued words of encouragement and support during my studies.

My deepest gratitude to my husband Lou for his continued support, patience, understanding and sacrifices made during this journey – I could not have achieved this without you. To my children, Luke and Alicia, and my extended family thank you for your continued love and encouragement.

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List of abbreviations

ATAR ……………… Australian Tertiary Admission Rank

CA ………………….. Chartered Accountant

CAANZ …………… Chartered Accountants Australia and New Zealand

CE/CEs ………………. Chief Examiner(s)

CFA ……………….. Confirmatory factor analysis

CoL ……………………. Conceptions of Learning

CPA ……………………. Certified Practising Accountant

CPA Australia ……. Certified Practising Accountants Australia

CPD ……………………. Continuing Professional Development

Go8 ……………………. Group of Eight

IES ……………………. International Education Standards

IFAC …………………. International Federation of Accountants

IM …………………….. Interviewee main

LLL ……………………. Lifelong learning

LMS …………………… Learning management system

MCQs ………………… Multiple choice questions

MSLQ ………………… Motivated Strategies for Learning Questionnaire

OSLQ ………………… Online Self-regulated Learning Questionnaire

P2P …………………… Peer-to-peer

PAF …………………… Principal axis factoring

PCA …………………… Principal components analysis

PPT …………………… PowerPoint

Q&A ………………….. Questions and answers

QR ……………………. Questionnaire respondent

RQ/RQs ……………… Research question(s)

S1 ……………………… Semester 1

S2 ……………………… Semester 2

SoLAR ……………….. Society for Learning Analytics Research

SR ……………………… Self-regulation

SRL …………………… Self-regulated learning

VCE …………………… Victorian Certificate of Education

VLE …………………… Virtual learning environment

WSSRQ ……………… Web Supported Self-regulation Questionnaire

1: Introduction

1.1 Overview

This research seeks to gain an understanding of what motivates students to engage with the various learning resources provided to them in a blended learning environment, and the self-regulated learning (SRL) strategies they adopt as they approach learning in this environment. Further, it seeks to determine whether students' motivation and strategies change as they progress through their degree.

The aim of this chapter is to provide a general introduction to the thesis. In doing so, the chapter provides an overview of the university context in which this study is undertaken and states the issues seeking to be addressed. It positions the importance of the study in light of lifelong learning, a key requirement for accountants who are obliged to continue to update their skills and knowledge through engagement with the learning resources provided to them by professional accounting bodies and other such providers. The chapter then outlines the motivation and aim of the study. Next, it elucidates the research questions, followed by a summary of the contributions and findings. The chapter concludes with a summary of the overall structure of the thesis.

1.2 Context

For the current generation of university students, the learning environment commonly involves a blend of face-to-face interactions and technologically mediated (i.e., web-based or online) approaches. According to researchers from the Sloan Consortium, a course is said to encompass blended learning if it blends face-to-face and online delivery, with 30 to 70 percent of content delivered online (Allen, Seaman and Garrett, 2007). At the time of data collection for this study, a common understanding of blended learning included the provision of learning materials made available through a learning management system (LMS) combined with face-to-face instruction (i.e., lectures and tutorials). At one extreme the online component could have consisted of synchronous online activities such as live lecture streams, whilst the other extreme is the provision of learning materials provided on the LMS for asynchronous use. This latter approach is consistent with the definition of blended learning utilised in this study, which was conducted pre-COVID-19 wherein academics were increasingly encouraged to deliver learning resources (such as lecture slides, tutorial questions and solutions, YouTube videos, quizzes

amongst others) through a LMS. However, it is acknowledged that as a result of COVID-19 and technological advancements over the course of the study, the notion of blended learning has evolved to include more interactive online activity.

The focus in this study is on formative learning resources, which are resources made available to students through the LMS to support their learning process. The issue, which requires further investigation, is when formative learning resources are provided, are students motivated to engage with them and, if so, what learning strategies do they apply when they engage with these resources?

Linked to this, formative assessment has been defined as activities undertaken by students in order to assess themselves such that it provides "information [which can be]…used as feedback to modify teaching and learning activities" (Black and Wiliam, 2010, p.82). Thus, formative resources encompass a range of resources, such as lecture slides, tutorial questions and solutions and quizzes (see Table 1.1 below) that are aimed at providing students with resources to improve and learn more effectively. In doing so these resources (and thus as a form of assessment) seek to provide students with an understanding of where they are in relation to a learning goal, and how they might deal with their strengths and weaknesses in order to improve their understanding and subsequent performance (Black and Wiliam, 2010). They are not factored in to a student's final grade.

In contrast, summative assessments use data to formally assess how much a student knows or has retained at completion of a learning sequence (AERA, APS and NCME, 2014) / at a point in time (Gardner, 2010). Thus, the distinction between them relates to the way in which the assessment results are used (Dixson and Worrell, 2016); and the timing of the assessment (Harlen and James, 1997). Summative resources for assessments are almost always graded and typically deployed less frequently, often (but not solely) at the end of a semester.

Table 1.1 below provides an overview of the formative and summative learning resources reviewed in this study, with the summative resources discarded from the analysis.

Formative resources that support assessment	Summative resources that support assessment
Lecture slides; tutorial solutions; tutorial questions; MCQs or quizzes; discussion board; online lecture recordings; YouTube videos; past exam questions and solutions; revision and or/practice questions; solutions to revision and/or practice questions; Unit guide; links to PDFs of journal articles; cases studies.	MCQs with marks attached; discussion board posts with marks attached; tutorial solutions with participation assessed; mid-semester tests; exams; oral presentations that are assessed.

Table 1.1: Listing of formative versus summative learning resources pertinent to this study

Higher education is typically characterised by autonomy in terms of learning goals, organization and time management. It is an environment that provides many opportunities and a strong necessity for students to self-regulate their own learning (Peverly, Brobst, Graham and Shaw, 2003). SRL "describes the ways in which individuals regulate their own cognitive processes within an educational setting" (Puustinen and Pulkkinen, 2001, p.269). It encompasses regulating affective, cognitive and behavioural processes in order to be able to learn in a successful way (Sitzmann and Ely, 2011; Winne, 2011; Boekaerts and Niemivirta, 2000; Pintrich, 2000; Zimmerman, 2000). Given the environment students find themselves in, it is important for educators to have a clear understanding of the metacognitive learning strategies and motivation students undertake whilst engaging with the learning resources that are provided to them. Regardless of discipline, understanding this is important as it impacts the form of the learning resources provided and provides input into design of the curriculum.

Both at university and beyond (i.e., whilst employed in the workforce), it is important for students to be self-regulated learners. Given ongoing changes in business, and more specifically the accounting profession, accounting graduates need to continue to be independent lifelong learners in their role as an accountant i.e., determine what needs to be learnt and how to learn it. As such, for accountants, lifelong learning is an important attribute. It has been characterised as continuous learning throughout a career (Bligh, 1982) and embraces learning in a variety of formal, informal, planned and opportunistic settings (Candy, Crebert and O'Leary, 1994). SRL is fundamental to lifelong learning (Zimmerman, 1986), and "an essential requirement for individuals, particularly with regard to maintaining the capacity for employment" (Cassidy, 2011, p. 989). Throughout their careers, accounting graduates are required to continually update their accounting knowledge and skills through completion of a professional program and ongoing continuing professional development (CPD). This can be undertaken through a variety of means such as attendance at seminars, professional training programs, independent reading and/or via online learning tools such as podcasts and webinars. Given this, understanding students' motivation to engage with the learning resources provided to them whilst at university provides insight into how students learn, which in turn provides appreciation of how they may continue to interact with such resources whilst undertaking CPD when employed as an accountant.

1.3   Motivation for the study

The motivation underpinning this study is two-fold. Firstly, it concerns a desire to improve understanding as to why students are motivated to engage with the learning resources provided to them in a blended learning environment. If academics are aware of what motivates students to use particular resources, then it may shape the form of the learning resources provided and in turn more broadly inform the curriculum design.

Secondly, in response to requests by Cassidy (2011), Virtanen and Nevgi (2010) and VanderStoep, Pintrich and Fagerlin (1996), there is desire to further understanding about the SRL strategies students adopt when engaging with the learning resources provided in a blended learning environment at university. Herein students are required to regulate their own learning, as the learning environment is less directed and controlled. Furthermore, external support, such as support and encouragement from parents and academics, is limited (Vermunt and Verloop, 1999). In a blended learning environment this can be considered even more pertinent as students are provided with a number of learning resources, often with little direction from academic staff on when and how to engage with these. This is certainly true in an online learning environment, which requires considerable self-motivation and self-regulation (Dabbagh and Kitsantas, 2005). In this study the desire is to determine whether this requirement for considerable self-motivation and self-regulation also holds true in a blended learning environment. Given that a blended learning environment affords students choice in terms of the resources they access and how they use these resources, this study seeks to explore whether this provides opportunities for students to apply and or develop SRL strategies differently.

Prior studies examine whether students' level of motivation and cognition varies across disciplines, such as mathematics, statistics, IT, english, social studies, humanities and the natural sciences and behavioural sciences (i.e., Hood, 2013; Endedijk, Vermunt, Meijer and Brekelmans, 2013; Kesici, Balegu and Deniz, 2011; Virtanen and Nevgi, 2010; Bergin, Reilly and Traynor, 2005; Wolters and Pintrich, 1998; and VanderStoep et al., 1996), and in different environments, such as team learning (i.e., Opdecam, Everaert, Van Keer and Buysschaert, 2014). The latter study, conducted in the discipline of accounting, shows that students in the team learning cohort were more intrinsically motivated, had different learning strategies in areas such as control of their learning beliefs, help-seeking and peer support, and performed better than their lecture-based learning counterparts. Another study within the accounting discipline includes Becker (2013), who sought to identify the SRL strategies students adopt and their impact on academic performance and level of satisfaction. Similarly, Everaert, Opdecam

and Maussen (2017) sought to identify whether there was a relationship between motivational constructs, such as intrinsic and extrinsic motivation, deep versus surface learning approaches, and academic performance. In contrast, in the context of a blended learning environment, this study explores accounting students' motivation and cognition but does not look at its impact on academic performance. Further, and more importantly, it seeks to determine whether the SRL strategies accounting students adopt, change as they progress through their degree. This is particularly important given that accounting graduates are required to continue to engage with learning resources as they undertake CPD and commit to lifelong learning.

Additionally, the intent is to corroborate this understanding with information on what resources students actually engage with, which will be achieved via analysis of learning analytics data. This knowledge could potentially be useful to students if data (such as, what resources are being utilised and when they are being utilised) can be captured and disseminated back to them as it may have a direct impact on their future study habits. From an academic viewpoint, within the focus discipline of accounting, it offers the potential to provide evidence as to what and how students use learning resources in a blended learning environment, which can be used to further develop learning resources or encourage the addition of different resources.

1.4   Aim of the study

The aim of this research is to gain an understanding of what motivates accounting students to engage with the various learning resources provided to them in a blended learning environment, and what learning strategies they adopt in this environment. A further aim is to determine whether students' motivation and SRL strategies change as they progress through their degree. Whilst there is a growing body of empirical research concerned with investigation of blended learning, studies that review blended learning in different disciplines and educational contexts are limited (Arbaugh, Bangert and Cleveland-Innes, 2010; Smith, Passmore and Faught, 2009). Moreover, given such research often addresses content issues generically, without paying particular attention to the disciplinary effects that generate unique characteristics, this warrants investigation (Pektas and Gurel, 2014). Thus, the focus in this study is upon the blended learning environment as it relates to the accounting discipline.

Here, the aim is timely, given the study's focus on student engagement with online learning resources, an issue of timely significance due to COVID-19. In this regard, all data collection (questionnaire and interviews) for the study were conducted prior to COVID-19, such that

findings are not confounded by this change in circumstance. However, the sharp and complete transition to online delivery of materials that was necessitated by COVID-19 will continue to be of significant importance to students until it and its restrictions disappear.

1.5   Research questions

The aforementioned aims are explored through investigation of three research questions, namely:

> **RQ1:**   What, when and how often do accounting students engage with the different learning resources provided to them in a blended learning environment?
>
> **RQ2:**   How do motivational beliefs and self-regulated learning strategies impact how and why accounting students engage with the learning resources provided to them in a blended learning environment?
>
> **RQ3:**   As undergraduate accounting students progress through their degree, how do their motivational beliefs and self-regulated learning strategies change in a blended learning environment?

Whilst contextualised here, RQ1-3 are discussed in further detail in Sections 2.3 and 2.4.

To facilitate appreciation of students' motivation for engaging with resources in a blended learning environment, it is important to firstly ascertain what learning resources they actually engage with (RQ1). Herein, learning analytics data is used to capture information related to student usage of the learning resources delivered to them through a LMS. Learning analytics, as referred to by the Society for Learning Analytics Research (SoLAR), is defined as the measurement, collection, analysis and reporting of data about learners and their contexts for the purpose of understanding and optimising learning and the environments in which it occurs. It emerged as a field of research in the early 2010s and concerns analysis of big sets of data trails from student use of online technologies. Such analysis provides insight into the learning resources students draw on to assist with their learning and achievement of their goals (Siemens, Dawson and Lynch, 2013). Results inform and provide input for both student and academic action, which can support and enhance the student learning experience (Buckingham Shum and Ferguson, 2011). It has also been used to identify students 'at-risk' so that intervention strategies can be employed e.g., email contact early in the semester with non-engaged students (Wolff, Zdrahal, Nikolav and Pantucek, 2013). Similarly, prior studies have examined association or correlations of student usage with academic performance (Gasevic, Dawson,

Rogers and Gasevic, 2016; Andergassen, Modritscher and Neumann, 2014; Modritscher, Andergassen and Neumann, 2013; Lust, Elen and Clarebout, 2013).

Recent studies in this field have used a combination of learning analytics data, SRL measures and academic performance (Pardo, Han and Ellis, 2017) to examine whether the combination of detailed data traces and learning strategies offers a deeper understanding and explanation of why some students achieve higher levels of academic performance. In contrast, Gasevic, Jovanovic, Pardo and Dawson (2017) examine the association between student approaches to learning and academic performance with learning analytics data. Whilst this study does not attempt to combine use of learning analytics and SRL strategies directly or student approaches to learning and academic performance, it gathers learning analytics data to gain an understanding of what, when and how often students across five core accounting units (see Section 4.3 for further details) engage with the learning resources provided to them. Herein, variables such as: lecture slides viewed; tutorial solutions viewed; discussion forum posts accessed; and YouTube videos viewed, amongst other resources, are analysed. This analysis is supplemented with quantitative and qualitative information about student motivation and the SRL strategies they adopt whilst engaging with the learning resources provided to them in the LMS. It does this through analysis of results from application of a modified version of a SRL questionnaire and responses gleaned through one-on-one interviews with students.

Further, whilst current studies are limited to a single semester time horizon (Andergassen, Neumann and Modritscher, 2013; Dawson, McWilliam and Tan, 2008; and Phillips, 2006), this study extends knowledge by collecting similar data from accounting students enrolled in five core accounting units (one first, two second and two third year units) spanning three years of an undergraduate degree. Data is collected in the same units over two consecutive semesters.

Given the paucity of research concerned with learning analytics in the discipline of accounting, it is proposed that this research will contribute to knowledge by acquiring an understanding of how students use the learning resources available to them in a blended learning environment to enhance their learning and understanding. More specifically, the study will investigate:

RQ1: What, when and how often do accounting students engage with the different learning resources provided to them in a blended learning environment?

Answering this question will assist in understanding which online learning resources students engage with, and which they engage with more. For example, YouTube videos versus lecture slides.

Whilst it is important to analyse learners' activities in a blended learning environment, it is also important to develop an understanding of students' motivation and what SRL strategies they adopt whilst accessing these learning resources in their learning environment. As such, it is proposed to corroborate the learning analytics data with data about student motivation and the SRL strategies they adopt whilst engaging with the learning resources as part of their academic studies (RQ2 and RQ3). Here, the underlying theoretical framework concerns SRL with a social cognitive theoretical perspective, where behaviour can be explained in terms of a three-way dynamic reciprocal model in which personal, environmental and behavioural factors continually interact (Bandura, 1986, 1977). SRL has been defined by Singer and Bashir (1999) as "a set of behaviours that are used flexibly to guide, monitor, and direct the success of one's own performance" and "to manage and direct interactions within the learning environment in order to ensure success" (p.265). In investigating this, to supplement and extend understanding acquired from analysis of the learning analytics data, Pintrich's (2000)[1] SRL model is used. The rationale for selecting Pintrich's (2000) model is that it integrates motivational constructs with goal orientations and cognitive elements in SRL, thereby meeting the stated aim of this study (see Section 2.4.2 for further details regarding Pintrich's (2000) model).

Pintrich's (2000) model, when used to assess student motivation and SRL, takes an inclusive perspective to student learning that includes not only cognitive factors, but also motivational, affective and social contextual factors. Self-regulated learners engage in cognitive strategies to gain a deeper level of understanding, and metacognitive strategies including planning, monitoring and regulating learning to support learning and achieve better academic performance. In addition to these cognitive and metacognitive strategies, SRL encompasses motivational factors such as *intrinsic goal orientation, self-efficacy* and *task value*[2]. Herein prior research looking at disciplinary differences regarding personal attributes (knowledge, motivational beliefs and cognitive strategies) shows that the greatest differences in motivation and cognitive strategies has occurred in students enrolled in natural science courses. Thus, it has been suggested that in humanities courses, models and methods of SRL need to be adjusted to better represent the nature of learning and instruction (VanderStoep et al., 1996).

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[1] See Section 2.4.2, Table 2.1. The Pintrich (2000) model has appeared in the following two publications: Pintrich, P.R. (2000). The role of goal orientation in self-regulated learning. In *Handbook of self-regulation,* ed. Boekaerts, M., Pintrich, P.R. and Zeidner, M., 451-502. San Diego: Academic Press; and
Pintrich, P. R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review,* 16 (4), 385 – 407. For ease, the model will be referenced at 2000.
[2] Throughout the thesis, the SRL scales pertaining to the questionnaire are italicised.

Much of the research concerning SRL involves various demographic, motivational and SRL strategies and student academic success (Torenbeek, Jansen and Suhre, 2013; Wang, Shannon and Ross, 2013; Ning and Downing, 2012; Puzziferro 2008; Yukselturk and Bulut, 2007; Nota, Soresi and Zimmerman, 2004; Bergin et al., 2005; and VanderStoep et al., 1996). In terms of motivation and academic success, and SRL strategies and academic success, these studies report mixed results. This study does not consider the relationship between motivation, SRL strategies and academic success, but rather it probes what SRL strategies accounting students apply when engaging with the learning resources provided to them in a blended learning environment.

Prior studies in the accounting discipline use an intervention study (Becker, 2013), SRL in a team learning environment (Opdecam et al., 2014), and focus on motivational constructs, as well as approaches to learning and academic success (Everaert et.al., 2017). Given the focus in this research on the accounting discipline within a blended learning environment, this leads to:

RQ2: How do motivational beliefs and self-regulated learning strategies impact how and why accounting students engage with the learning resources provided to them in a blended learning environment?

Through answering RQ2, this study will contribute insight into whether "SRL strategy use is context dependent and [whether] … the unique features of a learning environment (i.e., blended) may influence whether or not a learner enacts SRL strategies" (Whipp and Chiarelli, 2004, p.19). Further, as SRL is an important element for lifelong learning, which is of utmost importance to accounting graduates, it is important to know whether students' motivation to engage with the learning resources changes; and more importantly, whether their learning strategy behaviours change as students progress through their degree.

A number of longitudinal studies where SRL strategies have been monitored have shown that some SRL strategies change whilst others do not (Muis and Duffy, 2013; Endedijk et al., 2013; and Whipp and Chiarelli, 2004). Whilst this study is not considered a longitudinal study, it does seek to discover, over two consecutive semesters, whether students spanning first, second and third year amend their SRL behaviours as they engage with the learning resources provided to them. Studies by Wang et al. (2013) and Samruayruen, Enriquez, Natakuatoong and Samruayruen (2013) investigate prior experience with online learning environments and how this affects students SRL strategies and find that prior experience leads to higher motivation and higher aspects of self-regulation. This study focuses on whether these results translate to accounting students as they progress through their degree within a blended learning

environment. In other words, are there differences in motivation and SRL strategies students use when engaging with the learning resources noted in years 2 and 3 compared to first and second year respectively? This leads to:

RQ3: As undergraduate accounting students progress through their degree, how do their motivational beliefs and self-regulated learning strategies change in a blended learning environment?

The next section summarises the key findings as they relate to the three research questions followed by a summary of the contributions made by the study.

1.6   Findings

1.6.1   Research Question 1

Findings reveal that across all three year levels undergraduate students engage (to varying degrees) with a variety of resources to facilitate their study. These resources include: lecture slides, tutorial questions and solutions, practice/revision questions and solutions, YouTube videos, readings, online quizzes, and the discussion board, which are all accessible through the LMS. Across all five foci accounting units, the most heavily accessed learning resources were: the lecture slides, tutorial questions and solutions; the discussion board; and to a lesser extent the unit guide and journal articles/readings. On average, students accessed the learning resources two-to-three times a week, with extensive usage noted in the final weeks of the semester and the SWOT Vac period i.e., in the lead up to examinations. In this latter period, students also heavily accessed past exam questions and solutions. Unsurprisingly, given the current generation of students, they also utilise other resources provided outside of the LMS, such as content discovered through Google searches.

1.6.2   Research Question 2

Accounting students are intrinsically and extrinsically motivated to engage with the learning resources and do so to enhance their understanding. Results show that the most important SRL strategies students adopt whilst engaging with the learning resources provided to them in a blended learning environment are *rehearsal, elaboration, metacognitive self-regulation* and *goal setting*. Students engage and re-engage with resources such as tutorial questions and solutions, and online quizzes, to assist them in remembering content and in making connections between what they already know and new knowledge. Further, they engage with, for example, lecture slides to gain new knowledge. Finally, they engage with various

learning resources to ensure that the knowledge gained fits together. In addition, students plan, monitor and regulate their learning. They also set goals and monitor and reflect on their understanding to ensure concepts are clearly understood. Herein, students actively utilise the unit guide to assist in their goal setting process.

1.6.3   Research Question 3

As students progress through their degree, differences appear in the level of their understanding, which suggests that as time passes, they adopt a deeper approach to learning. Further, third year students are more adept at utilising *rehearsal* and *elaboration* than their first and second year counterparts. Students in first and third year are more cognisant of the importance of lifelong learning. Evidence from the student interviews suggests that overwhelmingly, over time their motivation increases (whilst for some the motivation to engage remained the same). Their reasons include: increased level of difficulty in content from one year to the next; a need to remain up-to-date; and a difference in the use of particular resources with respect to the accounting domain (i.e., management versus financial). This was particularly noticeable in terms of the use of the discussion board and case studies.

1.7   Contributions

This research contributes to knowledge through:

- *Gaining deeper understanding about the motivations and SRL strategies accounting students apply when engaging with learning resources provided in a blended learning environment, and enriched insight as to how these change over time.*

Accounting students are intrinsically and extrinsically motivated to engage with learning resources. Across all three year levels students are motivated to engage with learning resources to enhance their understanding. Indeed, second and third year students acknowledge that as the level of difficulty increases, studying accounting becomes more challenging and stimulating, which requires them to draw on prior knowledge to consolidate their understanding. Consequently, they're adept at being able to reflect on their current level of understanding, which in turn directs and guides them in relation to the learning resources that they engage with.

Broadbent and Poon (2015) reported lesser academic outcomes associated with *organization, rehearsal* and *elaboration*, and higher ones from *time management, effort regulation, critical thinking* and *metacognitive strategies*. In contrast, results from this study show that the learning strategies students adopted include new aspects (*goal setting* and

metacognitive self-regulation), and to a lesser extent *critical thinking*, together with those that were previously seen as being less significant (*rehearsal* and *elaboration*).

In addition, in contrast to Hood (2013) who found that students who placed a greater reliance on *rehearsal* were more likely to engage with online lectures, this study finds that accounting students also employ *elaboration* techniques when engaging with online learning resources consisting of lecture slides, tutorial solutions and online quizzes. Indeed, through engagement with a variety of learning resources students use *rehearsal* and *elaboration* strategies concurrently. In addition, all students, in particular second and third year students commence revising prior content earlier in their semester of study, through re-engaging with learning resources and making linkages between topics, which facilitates them in moving to the higher-order *elaboration* strategy.

Metacognitive self-regulation is a common strategy utilised across all three year levels, but more prominent in third year students, and when combined with findings regarding intrinsic motivation, extends findings from an early study in mathematics, english and social science students (i.e., Wolters and Pintrich, 1998) to accounting students.

Prior longitudinal studies and studies looking at prior experience find that students over time in web-based and online environments adapt planning, *organization*, *help-seeking* and reflection strategies, and utilise *task value, time management, metacognition* and *critical thinking* more effectively (Whipp and Chiarelli, 2004; Wang et al., 2013). In contrast, this study shows that this varies with student experience as third year students are more adept at utilising *rehearsal* and *elaboration* than their first and second year counterparts, and that they are more *intrinsically goal oriented* and able to *set goals* and *reflect* on their own learning. As such, these findings extend Samruayruen et al.'s (2013) finding that students with higher levels of *self-efficacy* are more adept at engaging in these cognitive strategies of *rehearsal* and *elaboration.*

- *Providing information to academics regarding the learning resources students are more inclined to engage with and why, which should assist them in constructing the learning process i.e., what learning resources they should provide to students through the LMS.*

As aforementioned, through engaging with the learning resources provided to them, students are exhibiting *rehearsal* and *elaboration* strategies and developing, as they progress through their degree, higher-order cognitive skills. Given this result, academics are encouraged to continue to provide learning resources that allow students to firstly grasp new concepts (e.g., lecture slides, readings) together with those that assist them in revising, practising and connecting concepts (e.g., tutorial questions and solutions and past exam questions and

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solutions). Given the impact of artificial intelligence, big data and globalisation on the future of accounting, which requires graduates to be equipped with critical and strategic thinking skills, consideration needs to be given to providing other learning resources that foster the development of higher-order cognitive skills such as *elaboration* and *critical thinking*.

Students in later years appreciate learning resources that make linkages to real life case scenarios. As such, academics should continue to provide learning resources, such as readings, to facilitate this. Additionally, academics are encouraged to set up unit discussion boards on a topic-by-topic basis as students are more likely to engage with this resource more effectively.

- *Contribute to the accounting profession by providing insight into what and how future members may access and engage with learning resources as they continue on their lifelong learning journey.*

This study ascertains the SRL strategies students adopt in their undergraduate studies when engaging with the learning resources provided to them through the LMS. Whilst it shows that they rely heavily on lecture slides, tutorial solutions and past exam questions and solutions, they also engage with quizzes, YouTube videos, journal articles and additional readings. Knowing this offers reassurance to accounting professional bodies that their members will continue to engage with various forms of learning resources to meet their learning needs and required professional development.

Further, through engagement with the unit guide, across all year levels students are able to take control of their learning, and prepare and carry out the steps required to effectively plan their learning. This is a positive finding, given the accounting profession requires accounting graduates to develop independent learning skills and self-manage their understanding of what needs to be learnt and how to learn it. Having these skills enables accounting graduates to effectively engage in lifelong learning, as once they enter the workforce, they can take stock of the knowledge and skills they currently possess and use this in determining new learning opportunities.

1.8   Structure of the thesis

The remainder of this thesis is structured as follows (see Figure 1.1 for a pictorial overview).
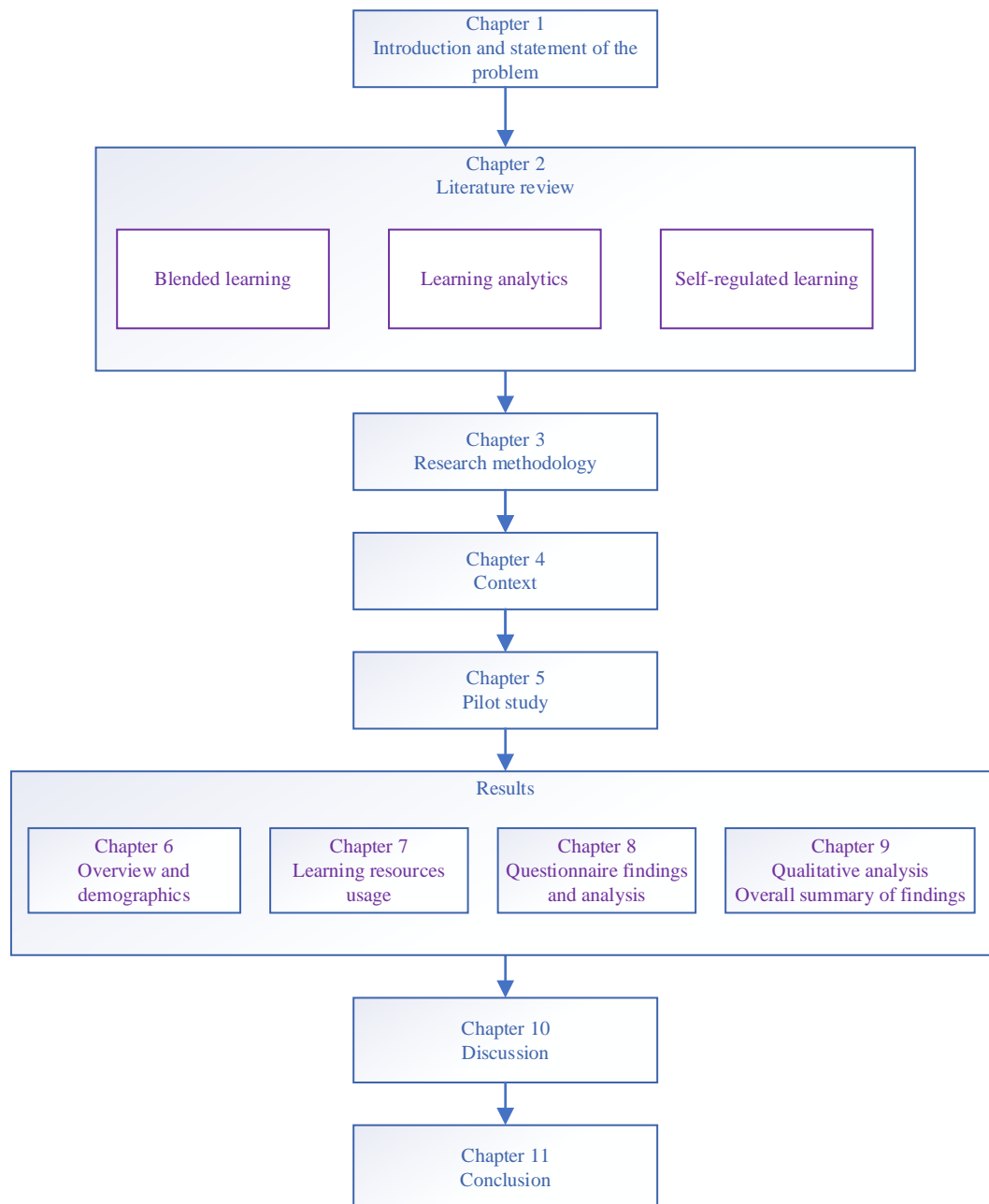
Figure 1.1: Overview of the structure of the thesis

Chapter 1 sets the scene. It presents the purpose of the research and positions the study against the backdrop of blended learning, which is ubiquitous in the higher education sector. In achieving this, the chapter commenced with discussion regarding the importance of lifelong learning to aspiring accounting graduates. Further, it presented the importance of students being self-regulated learners, which is not only important whilst they are studying at university, but

also when they enter the profession. Additionally, the chapter outlined the motivation, aim, findings and contributions of the study.

Chapter 2 presents a review of the literature related to each of the three areas of interest, namely blended learning, learning analytics and SRL. Drawing on social cognitive theory, a definition of SRL is provided and justification for use of the Pintrich (2000) model provided. Further, discussion regarding the importance of SRL is presented, given it is an essential requirement for lifelong learning and is critical to the accounting profession.

Chapter 3 outlines and provides justification for the methodologies adopted in this research. After outlining the study's ontological and epistemological positions, details are presented regarding the data collection methods and sample selection pursued in answering each research question. Next, the methods used to qualitatively and statistically analyse the data are summarised, and justification detailed.

Chapter 4 presents a brief overview of the context, including characteristics of the foci university from which the participants were drawn and a brief synopsis of the five foci accounting units, including an overview of the learning resources made available by the Chief Examiner (CE) of each unit.

Chapter 5 details justification for and results from the pilot study. Specifically, the chapter reports results from analysis of the psychometric parameters of the questionnaire and initial findings pertinent to the open-ended statements/questions, together with insights from the student interviews. The chapter concludes with a summary of the subsequent actions taken with respect to the questionnaire and interview protocols utilised in the main study.

This study adopts a mixed methods approach involving a combination of quantitative (use of a questionnaire and learning analytics data) and qualitative methods (use of interviews and responses to open-ended statements/questions contained on the questionnaire). Consequently, results from the main study are presented across four chapters. Specifically, Chapter 6 presents descriptive data about the participants and details information regarding administration of the questionnaire and student interviews.

To address RQ1 concerning what, when and how often accounting students engage with the different learning resources provided to them in a blended learning environment, Chapter 7 presents findings from analysis of the learning analytics data and student interviews. Specifically, it reports insights on the learning resources students engaged with, when they engaged with them, and how often they engaged with these resources.

Chapter 8 details findings from the questionnaire addressing RQ2 concerning how motivational beliefs and SRL strategies impact how and why students engage, and RQ3 whether

students change their strategies as they progress through their degree. Specifically, it presents the Cronbach's alpha for the questionnaire scales, evidence relating to the non-normal distribution of the data, and results from the non-parametric tests. Finally, results from principal components analysis of the questionnaire's statements are reported. In addition, a confirmatory factor analysis (CFA) was undertaken to verify the factor structure.

Chapter 9 presents themes derived from responses to the open-ended statements/questions contained in the questionnaire, followed by detailed analysis and identification of themes that emerged from the student interviews. The chapter concludes with a summary of the findings identified from the three data sources i.e., the questionnaire, student interviews and learning analytics.

Chapter 10 presents discussion of the findings regarding accounting students' motivation to engage with the learning resources provided to them in a blended learning environment and summarises both the theoretical contributions made to the SRL literature and to practice.

Chapter 11 concludes the study, outlining the overall contributions to theory and practice, details some limitations of the study and provides suggestions regarding future research opportunities.

2: Literature review

2.1 Introduction

As outlined in Chapter 1, this study seeks to determine what motivates undergraduate accounting students to engage with learning resources provided to them in a blended learning environment. Further, it investigates the SRL strategies students adopt when engaging with these learning resources, and whether their motivation and SRL strategies change as they progress through their degree. Given this focus on blended learning, the chapter commences (see Section 2.2) with an overview of research that has looked at this learning environment. Next, Section 2.3 summarises research about learning analytics, which is an important data source for understanding what, when and how often accounting students engage with the learning resources provided to them in this context. This leads to the foundational question, Research Question 1, concerning what students are actually accessing, when and how often. Then, drawing on the perspective of social cognitive theory, Section 2.4 presents a definition of SRL, together with discussion of two models that examine SRL, those by Pintrich (2000) and Zimmerman (2000). After justifying adoption of the Pintrich (2000) model, and considering the importance of SRL, which is an essential requirement for lifelong learning that is critical to the accounting profession, evidence relating to student usage of SRL strategies in various educational environments (i.e., face-to-face, online and web-based) is reviewed. Embedded in this discussion is the presentation of Research Questions 2 and 3. Finally, Section 2.5 provides a summary of the chapter.

2.2 Blended learning: What is it and what has prior research looked at?

The current generation of university students encompasses those mainly born after 1998. These students, and those individuals born between 1980 and 1994 with the latter known as digital natives (Prensky, 2001), have been exposed to technology all of their lives. Given this exposure, when coupled with developments in computer-assisted learning that have occurred in the same timeframe, what has emerged in university education is the integration of traditional learning experiences, such as face-to-face, with technologically enhanced learning experiences (Bluic, Goodyear and Ellis, 2007). This combination is often referred to as blended learning.

Blended learning has been defined in a number of ways. For example, Oliver and Trigwell (2005) define it as:

1. *"the integrated combination of traditional learning with web based online approaches"; 2. "the combination of media and tools employed in an e-learning environment"; and 3. "the combination of a number of pedagogic approaches, irrespective of learning technology use" (p.17).*

Akin to Oliver and Trigwell (2005), in this study blended learning is defined as the combination of traditional face-to-face interactions and the use of technologically mediated (i.e., web-based or online) approaches. Herein many learning resources (i.e., face-to-face lectures, online lecture recordings, face-to-face tutorials, podcasts, videos, lecture slide presentations, discussion boards) are available for students to access as they engage in the learning process. The use of multiple delivery media is designed to complement each other and promote learning and application-learnt behaviour (Singh, 2003), with the split between learning content in these environments varying across universities. For example, results from a survey of academics in Germany suggests that face-to-face is the dominant approach, with e-learning (online instruction) representing at most 30 per cent (Steffens and Reiss, 2010). This is at the lower end of the 30 to 79% of content delivered online that accords with how researchers from the Sloan Consortium define a course encompassing blended learning (Allen et al., 2007).

Factors found to influence content delivered in a blended learning environment include a university's education strategy, course instructional goals, student characteristics and instructor experience and teaching style (Dziuban, Moskal and Hartman, 2005). Similarly, factors shown to encourage integration of information and communication technologies into the student learning experience include: the flexibility that integration brings to students with work and family commitments; skills students develop through collaboration and cooperation via, for example, the use of discussion boards; and immediate access to an increasing amount of knowledge (Ginns and Ellis, 2007). As espoused in 'The University's'[3] last two strategic plans, the university is committed to a blended learning environment. It defines blended learning as the best of face-to-face and online which aligns with Oliver and Trigwell's (2005) definition adopted in this study. 'The University' acknowledges that some learning activities will always be done face-to-face, while other learning activities are best done online. With respect to this study, the mix of content delivered online in the foci units falls within the range suggested by the Sloan Consortium, namely 30 to 79 percent, but that the composition varies across units.

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[3] 'The University' will be used to refer to the university from which the student sample is drawn. Further information on the university is provided in Section 4.2.1.

Prior research into blended learning has investigated: (1) student perceptions and satisfaction with the environment (Wong, Tatnall and Burgess, 2014; Gavira and Omoteso, 2013; Osgerby, 2013; Jones and Chen, 2008; Wells, De Lange and Fieger, 2008; So and Brush, 2008; Ginns and Ellis, 2007; Love and Fry, 2006); and (2) reviewed the impact of blended learning on performance in examinations (McCarthy, Kusaila and Grasso, 2019; Lento, 2018; Perez-Marin and Pascual-Nieto, 2012; Lopez-Perez, Perez-Lopez and Rodriguez-Ariza, 2011; Du, 2011; Perera and Richardson, 2010: Keller, Hassell, Webber and Johnson, 2009). Herein differing opinions regarding satisfaction and perceptions of blended learning, and the mixed results in terms of performance, are not surprising given that we do not have an understanding of students' underlying motivations for why they engage with the learning resources provided to them. Specifically, we do not know whether their motivation to engage reflects the nature of the learning resources provided, nor whether their motivation to engage with these resources changes over time. This is the focus of this study.

Studies concerning student perceptions and satisfaction in a blended learning environment have shown mixed results. For example, students perceive the environment positively, as it allows them to access material at any time (Osgerby, 2013). Further, they feel better informed and assert that better feedback is provided (Jones and Chen, 2008). However, research has shown that providing many materials in such an environment adds to anxiety (Osgerby, 2013); and does not motivate students to either attend face-to-face classes or use the online learning materials (Love and Fry, 2006).

Whilst beyond the scope of this study, prior findings regarding the effect of a blended learning environment on performance in examinations remain unclear. Despite positive associations (Perez-Marin and Pascual-Nieto, 2012; Lopez-Perez et al., 2011; Perera and Richardson, 2010), evidence does not show improvement in examination performance nor a significant difference between a blended learning environment and a traditional learning environment with respect to examination performance (Du, 2011; Keller et al., 2009).

In the context of accounting and blended learning, studies have sought to understand the benefits of a blended learning environment. Dowling, Godfrey and Gyles (2003) provide evidence that using electronic delivery media can achieve the benefits of small classes when teaching large student numbers as use of multimedia tools allows class time to be used for constructivist learning activities, which leads to better student outcomes. More recently, Gavira and Omoteso (2013) compared the perceptions of final year undergraduate accounting students from Spain and England regarding the use of a virtual learning environment (VLE), finding that

students from both countries found the VLE useful in supporting their study as it enhanced students' relationships with their teachers, and improved their academic performance.

Wells et al. (2008) evaluated the pedagogical effectiveness and accounting students' perceptions regarding the use of Blackboard (an LMS) in a second year accounting unit at a New Zealand university, finding that the most popular applications included the content area (35% of hits), followed by the discussion board (28% of hits) and announcements (14% of hits). In contrast, this study provides more granular information regarding what, when and how often accounting students access learning resources in five core units. Further, Wells et al. (2008) surveyed students to garner thoughts on the overall usefulness of Blackboard and specific resources including lecture notes, discussion forums, online formative self-tests, announcements and 'other tools' including web links and availability of email contact, finding that whilst students embrace the LMS (previously referred to as a VLE), they preferred to use the resources solely as information sources. Moreover, whilst the availability of lecture notes, announcements and other tools affect students' overall perception of the LMS the most, they appear to be reluctant to actively participate in two-way online activities afforded through the use of the discussion board. Although student perceptions of a LMS are important, this study extends Wells et al.'s. (2008) research, as it identifies what motivates students to engage with the learning resources made available to them through a LMS (including the five individual resources identified in Wells et al.'s. (2008) study), as well as the learning strategies they apply when engaging with these learning resources. Herein, through analysing student responses to a modified version of Pintrich, Smith, Garcia and McKeachie's (1991) Motivated Strategies for Learning Questionnaire (MSLQ)[4], corroborated with interview findings, it is hoped that in-depth understanding will be obtained about the motivational and SRL strategies students adopt.

In the context of the value underpinning the provision of summative and formative resources, Massoudi, Koh, Hancock and Fung (2017) investigated the effectiveness of providing a suite of online multiple choice questions (i.e., WileyPLUS MCQs) in a first year introductory accounting course taught at an Australian university. Results reveal that on average students who voluntarily use MCQs in formative ways achieve higher scores in examinations than those who do not. However, the authors noted that a high proportion of students did not engage with the formative MCQs. This shows the importance of providing motivation to entice engagement with resources such as online MCQs.

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[4] See Section 3.6.1 for discussion of the changes made to the MSLQ for this study.

Moreover, a study by Hood (2013), which examined students' intentions to access face-to-face or online options for lectures and tutorials (offered in both synchronous and asynchronous format) in a second year undergraduate psychology statistics course, showed that higher work commitments, greater reliance on *rehearsal*, higher self-regulation, and higher levels of *critical thinking* are the most important predictors of intentions to use online lectures. Further, amongst students accessing asynchronous (archived) online tutorials, lesser ability and higher extrinsic motivation were found as factors. Whilst Hood's (2013) study contributes to understanding how students make choices between lectures and tutorials provided either face-to-face or online, this will be extended here by: (1) examining all formative learning resources available in a blended learning environment; (2) investigating students' motivation and SRL strategies over an extended period of time; (3) corroborating understanding derived from learning analytics, which provides unbiased usage data, with outcomes from the motivational and SRL strategies students adopt whilst engaging in a blended learning environment; and (4) providing, through the use of interviews, in-depth understanding about the motivational and attitudinal factors perceived by students.

Thus, before proceeding to a discussion of the research questions, given the intended use of learning analytics to corroborate with the motivational and SRL strategies adopted by students, the next section provides an overview of research concerning learning analytics.

2.3   Learning analytics: What are students accessing, when and how often?

Learning analytics, which emerged as a field in the early 2010s, describes the process of capturing student interactions with online activities. Herein analysis of data trails from student use of online technologies provides insight into what learning resources students are referring to and enables academics and university administrators to better understand what is happening in the student learning process – an outcome, which can lead to the introduction of interventions in order to optimise student learning (Siemens et al., 2013; Brown, 2011). Such "digital footprints can be collected and analysed to … provide more proactive assessment of student learning and engagement" (Lockyer, Heathcote and Dawson, 2013, p.1441), and as a means of "deciphering trends and patterns from educational big data" (Johnson et al., 2013, p.5).

Earlier studies explored the predictive power of success with student learning using dashboards or predictive algorithms to identify at-risk students, which create opportunities to use pedagogical interventions and/or proactive feedback to address student retention (Baker

and Siemens, 2014; Jayaprakash et al., 2014; Ali, Hatala, Gasevic and Jovanovic, 2012; Macfadyen and Dawson, 2010). Further, they examine the association or correlation of student usage with academic performance (Gasevic et al., 2016; Andergassen et al., 2014; Modritscher et al., 2013; Lust et al., 2013), finding that the more active students are in accessing learning materials prior to the examination, the better they perform. These studies focus on investigation of the operations performed and the use of trace data as proxy measures for learning, such as a count of logs or access to discrete resources and time spent online.

A more recent avenue of research concerns combining the use of trace data and self-reported learning measures. For example, Pardo, Ellis and Calvo (2015) explore how the conclusions derived from digital traces and self-reported qualitative data relate, concluding that the combined approach may lead to changes in learning designs. Building on this, Pardo et al. (2017) use a combination of motivational and SRL indicators drawn from a subset of the MSLQ scales, namely *self-efficacy, intrinsic value, test anxiety* and *self-regulation,* and digital trace data, to predict academic performance of 145 students enrolled in a first year blended learning engineering unit at an Australian university. Results show students in the "high self-regulated and high achieving" cluster had significantly higher ratings on *self-efficacy, intrinsic value,* positive self-regulated strategy use and performed significantly better in the course than those in the "low self-regulated and low achieving" cluster. Further, significant differences were found in relation to student usage of dashboard views, multiple choice questions and solving exercise sequences, with the students in the "high self-regulated and high achieving" cluster interacting more heavily with these resources. In contrast to Pardo et al. (2017), this study does not look at academic performance. The rationale for not pursuing engagement with learning resources and academic performance is the interest in determining the underlying motivation and learning strategies adopted with respect to formative learning resources irrespective of their impact on performance. However, it does utilise a modified form of MSLQ, making specific reference to learning resources, which ensures students have the learning resources top of mind when answering the questionnaire. Moreover, this will be supplemented with interview data to ascertain insights into the SRL strategies that accounting students adopt in a blended learning environment.

Lust et al. (2013) posit that the use of learning tools can be considered a SRL process, as when students choose particular resources, their choice is based on individual learning goals. In their study, they identified four disparate groups of students, namely: no-users; intensive active learners; selective users; and intensive superficial users. Likewise, Gasevic et al. (2017) examined, through the use of digital trace data, the association between student approaches to

learning and academic performance in an engineering course offered in a flipped classroom environment. Results reveal that learning strategies extracted from trace data can be interpreted in terms of deep and surface approaches to learning. The significant links detected with the self-reported measures reveal small effect sizes for the deep approach to learning and the deep learning scale. However, there was no observed significance linking the surface approach to learning and surface strategy, nor any significance linking motivation scales to approaches to learning.

As seen from the studies detailed above, this field of research has moved from utilising learning analytics data to predict academic performance in isolation, to combining trace data with learning theories, such as student approaches to learning, SRL, and academic success. As noted by Azevedo, Taub and Mudrick (2018), future research should concentrate on translating the data obtained from learning analytics in a way that assists students in further developing SRL strategies whilst learning.

Although this study does not attempt to combine the use of learning analytics and SRL strategies students adopt and their impact on academic performance, it gathers learning analytics data to gain an understanding of what, when and how often students across the five foci units engage with the learning resources provided to them. This understanding will be enhanced through the addition of qualitative information about student motivation and the SRL strategies adopted whilst students engage with the learning resources. In doing so, the research corroborates findings from learning analytics, with findings from student interviews, and the student survey, to gain an understanding of self-regulatory behaviour. These aspects are noted by Knight, Buckingham Shum and Littleton (2013) as requiring further exploration.

Appendix A provides a summary of research regarding learning analytics pertinent to this study, with the following discussion expanding on this material.

2.3.1 What are students actually doing?

In the context of a blended learning environment or a purely online environment, many studies identify what and when students use the learning resources available to them. For example, Andergassen et al. (2013) examine the usage of learning resources in a LMS in a blended learning environment, comparing 264,837 log files over a period of 4 distinct weeks in 2012 – namely a: holiday week; week before a mid-term exam; mid-term exam week; and week after the mid-term exam (considered to be a 'usual' semester week). Unsurprisingly Andergassen et al. (2013) found that the intensity of LMS usage and certain learning activities were highly dependent on the particular week. Further they found that overall student sessions

in the LMS in the exam week were almost 12 times the overall sessions in the holiday week. Moreover, and somewhat intuitively, the authors concluded that the number of occurrences of learning activities is very volatile in learning periods before and during the exam week.

Lust et al. (2013) investigated the usage of digital tools, offered in a blended learning environment, by first year undergraduate educational science students. Tools consisted of a course outline, web lectures, web links, practice quizzes and exercises, and a discussion board. Usage was monitored, via logged data, over a period of 18 weeks, focussing on average tool use frequency and duration. These researchers investigated whether the level of access and the choice of tools changed across two learning phases, and whether this impacted overall performance. The two learning phases were the first 10 weeks (i.e., considered to be the novice phase as students were introduced to new information) and the next 6 weeks where students were expected to elaborate on the introductory concepts through reflection and application, for example, in completing an assignment. Results revealed that most tools were rarely used, with frequency being below 1, and duration below 200 seconds. The course outline and web lectures were accessed more frequently than quizzes, web links, planning and support tools, and the discussion board. Further, these were accessed mostly in Phase 1, where these tools allowed students to add to their knowledge base. Even though usage in Phase 2 was very low, students utilised most of the tools, specifically web links and quizzes, as these induced higher-order strategies such as *elaboration,* reflection and application. In contrast, this study provides further information on what, when and how often accounting students engage with the variety of learning resources made available to them in five foci units across two semesters, with this split into four time periods, namely Weeks 1-4; 5-8; 9-12; and SWOT Vac[5] and the exam period. Further, this data will be corroborated with the learning strategies students apply when engaging with the learning resources.

Earlier studies by Dawson et al. (2008), Wells et al. (2008)[6] and Phillips (2006) concentrate on what learning resources students actually utilise in a LMS, identifying that students mainly access the LMS home page, content pages, and discussion forums. Like Andergassen et al. (2013), Dawson et al. (2008) found that the peak periods for access to discussion forums were just prior to assignment submission and the examination. Overwhelmingly students used discussion forums to read information posted by the lecturer or expert in the field (Phillips,

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[5] SWOT Vac is the period (usually of one week duration) between semester end and commencement of the examination period.

[6] The data captured was not referred to as learning analytics data. However, the study still identified what students actually engaged with in a LMS.

2006). Interestingly, Dawson et al. (2008) found that whilst both high and low performing students spent similar amounts of time in online sessions, lower performing students accessed fewer online sessions. This may be attributable to a lack of confidence in the content or it could be linked to lower motivation. Whilst beyond the scope of this study, this aspect requires further research in a purely online environment.

Phillips et al.'s (2011) pilot study of 109 third year sociology of education students garnered some exploratory data concerning how students engage with Lectopia (online recordings of lectures). Supplemented with qualitative interview data, Phillips et al.'s (2011) study confirms prior research, as students refer to the online lectures prior to submission of assessments and examination (Dawson et al., 2008; Andergassen et al., 2013).

With the exception of Dawson et al. (2008) and Phillips (2006), all of the aforementioned studies gather student data on usage of various learning resources in a blended learning environment in a single unit in a LMS over the course of a semester. This study extends this research by gathering learning analytics data about similar variables such as: lectures viewed; tutorial solutions viewed; discussion forum viewed; YouTube videos viewed; readings accessed; among others, but in a linked set of units in the discipline of accounting. This leads to the first research question:

RQ1: What, when and how often do accounting students engage with the different learning resources provided to them in a blended learning environment?

2.3.2 How does this link to student motivation?

Prior studies used an incremental intervention and analysed learning analytics data to examine the impact of student achievement and ways to motivate students (Dawson, Macfadyen and Lockyer, 2009; Fritz, 2011). Results revealed that a significant correlation exists between a student's achievement orientation (Dweck, 2000) and patterns of behaviour in discussion forums i.e., students with a strong learning orientation were more inclined to use the discussion forum (Dawson et al., 2009). In an intervention study, Fritz (2011) used learning analytics to focus on the sense of community and achievement and introduced an additional tool, "Check my activity", that attempted to motivate underperforming students to change their study behaviour by allowing them to compare their own activity on the LMS against an anonymous summary of prior student activity. Analysis reveals that students who used the LMS an average of 39% or less earned a fail final grade. Fritz (2011) inferred that if students could use the tool regularly and could see that stronger students tended to be more active on the LMS, this might motivate students to look more critically at their study habits and engender some change in their

engagement with these learning resources. He acknowledged that the evidence provided was not significant enough to suggest that students were motivated to change their behaviour, and that additional research was required that links interventions to motivational theories, self-efficacy or SRL. Whilst the current research does not focus on interventions designed to improve students' motivation, it seeks to supplement learning analytics data on student usage of learning resources with behavioural aspects of motivation and SRL. Development of the research questions regarding student motivations and SRL behaviours is elaborated in Section 2.4.5.

2.3.3   Summary

As identified above, research regarding learning analytics can be classified into three main areas: empirical evidence, through analysis of data collected from the LMS of what students are actually doing in an online or blended environment; correlation or association between student usage and student examination performance (an aspect which this research will not examine); and thirdly research into behavioural aspects and impact on academic performance. This study combines learning analytics data with aspects of SRL and student motivation, but does not consider their relationship to academic success. This approach ensures that an understanding of what motivates accounting students to engage with the learning resources provided to them, and more importantly what strategies they apply when engaging with these resources, is not confounded with their academic achievement. As such, ethics clearance linking students' usage of resources, the strategies they apply and any association with academic success, were not sought. Many of the studies noted view certain aspects of what is offered in a blended learning environment on a LMS, for example, quizzes, recordings of lectures, and discussion posts viewed or added over a semester length period. This research reviews student engagement and usage of the learning resources available to them in a LMS over a longer time frame. In this sense, the focus is not only on what students engage with in a blended learning environment, but also whether this changes as students progress through their degree. Moreover, in accord with the main research aim, knowledge will be extended by combining learning analytics data with aspects of SRL and student motivation.

2.4   Self-regulated learning

Having reviewed the literature on learning analytics, which aids in understanding what, when and how often accounting students engage with the learning resources provided to them

in a blended learning environment, this section focuses on the literature concerning SRL. Specifically, drawing on social cognitive theory, the section commences with a definition of SRL. Then, given the existence of a number of SRL models or frameworks, two models, namely Pintrich (2000) and Zimmerman (2000), are explained and compared, together with the rationale provided for selecting Pintrich's (2000) model. Next, the importance of SRL, as an essential requirement for lifelong learning, and the associated importance of lifelong learning to the accounting profession, are considered. Finally, a summary is provided of empirical studies that have looked at SRL strategies, which provides the basis for this research.

2.4.1 SRL: What does SRL mean and what are the basic assumptions?

Self-regulation, defined as a systematic process of human behaviour, involves setting personal goals and steering behaviour in order to achieve established goals (Zeidner, Boekaerts and Pintrich, 2000). It is viewed as an overarching construct, which encompasses SRL (Zeidner et al., 2000). As an intermediate construct, SRL "describes the ways in which individuals regulate their own cognitive processes within an educational setting" (Puustinen and Pulkkinen, 2001, p.269). Herein the focus is on regulating affective, cognitive and behavioural processes in order to be able to learn in a successful way (Boekaerts and Niemivirta, 2000; Pintrich, 2000; Sitzmann and Ely, 2011; Winne, 2011; Zimmerman, 2000). Whilst the definition of SRL has shifted "during the past decades" (Endedijk et al., 2013, p.2), most contemporary definitions include aspects of metacognitive knowledge (that is, learning orientations of students, preferences for certain learning and regulation strategies, and motivations for learning), and regulation of learning.

In essence, SRL refers to an active and constructive process in which an individual is cognitively, motivationally, and behaviourally engaged in his/her own learning (Zimmerman, 2001, 2002). The process entails the learner exercising control over his or her thinking, effect, and behaviour as knowledge and skills are acquired (Zimmerman, 1986). Self-regulated learners personally initiate and direct their own efforts to acquire knowledge and skills. They use specific learning strategies, such as organizing and transforming information (i.e., *elaboration*), and use rote learning aids, such as *rehearsal*, to achieve academic goals. Further, in the context of higher education, students must know their academic goals and self-efficacy i.e., their own ability level. Regulation of learning is considered to be dynamic, requiring a learner to be proactive about their learning behaviour in order to reach their learning goals (Zimmerman, 2002).

From the perspective of social cognitive theory, SRL assumes a triadic reciprocal causality among personal, environmental and behavioural determinants (Bandura, 1986, 1977). That is, under SRL, personal processes are assumed to be influenced by environmental and behavioural events in reciprocal fashion. Here personal processes refer to a student's perceptions of efficacy, with self-efficacy being a key variable affecting SRL (Bandura, 1986; Schunk, 1986; Zimmerman, 1986; Rosenthal and Bandura, 1978). The environmental stimuli refers to encouragement from academics, and/or the student arranging a quiet study area or asking for assistance when required. Specifically, in the context of this study, the environment refers to the student's ability to regulate their behaviours in terms of when and how they engage with the learning resources provided to them in a blended learning environment given it is less directed. Stated another way, it involves students asking themselves "Does this learning resource work for me on this topic?" The behavioural influences encompass self-observation, self-judgment, and self-reaction (Bandura, 1986). Students need to be able to self-observe, which is related to their ability to know their goals and make progress towards them. In terms of self-evaluation, it is important for students to set specific, proximal and challenging goals and evaluate themselves against these, taking care not to set unattainable goals (Bandura, 1982; Locke, Shaw, Saari and Latham, 1981). Having an understanding of students' ability to self-observe, self-evaluate and set goals in terms of their skills and knowledge whilst at university, may provide insights about strategies when graduates are expected to continue to up-skill given the changing work environment and thus engage with CPD and commit to lifelong learning. Given in the higher education sector a blended learning environment is less directed and less controlled, it is important that students are able to apply these behavioural influences to appreciate what learning resources are going to be useful to them, to effectively evaluate their level of knowledge and skill, and know when to engage with the learning resources. In achieving this, students' SRL involves three features, namely "their use of SRL strategies, their responsiveness to self-oriented feedback about their learning effectiveness and their interdependent motivational processes" (Zimmerman, 1990, p.6).

According to Pintrich (2000), four general assumptions underpin SRL. Firstly, learners are viewed as active participants in the learning process. In other words, students construct their own meanings, goals and strategies from the information available in their own minds or externally. Secondly, self-regulated learners undertake their learning in a purposeful manner. That is, they can monitor, control and regulate aspects of their own cognition, motivation and behaviour, as well as some features of their environment such as their study environment and the time available for study. Thirdly, students are able to regulate their learning, but there are

learning environment variables and student characteristics that impact SRL capabilities where students can combine different goals and strategies in different ways in different contexts. Finally, most SRL models assume that SRL benefits learning outcomes.

2.4.2 An overview of the Pintrich (2000) and Zimmerman (2000) models

It is acknowledged that many models of SRL exist, including Boekaerts and Niemivirta (2000), Pintrich (2000), Winne and Hadwin (1998), and Zimmerman (2000). Whilst these models are still widely used (Panadero, 2017), this study focuses on the two models inspired by social cognitive theory (Puustinen and Pulkkinen, 2001), i.e., Pintrich (2000) and Zimmerman (2000). Table 2.1 below compares and contrasts the phases and areas of self-regulation apparent in these models.

The Pintrich (2000) model consists of four phases, namely planning, monitoring, controlling and reflecting. Within each phase students regulate the SRL components of cognition, motivation/affect, behaviour, and context (which are represented in the four columns). These represent the different areas of regulation that an individual learner can attempt to monitor, control, and regulate. The cognitive column (see Table 2.1, Column 2) depicts the different cognitive strategies students may use to learn and perform a task, as well as the metacognitive strategies used to control and regulate cognition. The motivation and affect column (see Table 2.1, Column 3) concerns the various motivational beliefs held by students in relation to the task. For example, are they interested in and do they value performing the task at hand? The behaviour column (see Table 2.1, Column 4) reflects the effort expended by students in performing the task. The context column (Table 2.1, see Column 5), represents the external environment. In this model, it is assumed that the student will attempt to monitor and control the environment in which learning takes place. For example, with reference to Table 2.1, during the forethought phase, students regulate their motivation/affect by goal orientation adoption, efficacy judgments, perception of task difficulty, task value activation and interest activation.

Zimmerman (2000) combines the monitoring and control phases of Pintrich's (2000) model into a single phase, termed performance/volitional control. In each phase of Zimmerman's (2000) model, a self-regulated learner combines cognitive strategies with key motivational beliefs, which can be influenced by social and environmental factors. For example, in the forethought phase, the self-regulated learner combines strategic goal setting, planning and task analysis with self-efficacy and self-motivation beliefs to set realistic goals.

Pintrich's (2000) phases and areas for self-regulated learning					Zimmerman's (2000) phase structure and subprocesses of self-regulation		
Areas of regulation					**Cyclical self-regulatory phases**		
Phases and relevant scales	**Cognition**	**Motivation/Affect**	**Behaviour**	**Context**			
Phase 1 Forethought, planning and activation	• Target goal setting • Prior content knowledge activation • Metacognitive knowledge activation	• Goal orientation adoption • Efficacy judgements • Perceptions of task difficulty • Task value activation • Interest activation	• Time and effort planning • Planning for self-observations of behaviour	• Perceptions of task • Perception of context	*Phase 1* Forethought	Task analysis • Goal setting • Strategic planning	Self-motivation beliefs • Self-efficacy • Outcome expectations • Intrinsic interest/value • Goal orientation
Phase 2 Monitoring	• Metacognitive awareness and monitoring of cognition	• Awareness and monitoring of motivation and affect	• Awareness and monitoring of effort, time use, and need for help • Self-observation of behaviour	• Monitoring changing task and context conditions	*Phase 2* Performance/ volitional control	Self-control • Self-instruction • Imagery • Attention focusing • Task strategies	Self-observation • Self-recording • Self-experimentation
Phase 3 Control	• Selection and adaption of cognitive strategies for learning, and thinking	• Selection and adaptation of strategies for managing, moti-vation, and affect	• Increase/decrease effort • Persist, give up • Help-seeking behaviour	• Change or renegotiate task • Change or leave context			
Phase 4 Reaction and reflection	• Cognitive judgments • Attributions	• Affective reactions • Attributions	• Choice behaviour	• Evaluation of task • Evaluation of context	*Phase 3* Self-reflection	Self-judgment • Self-evaluation • Causal attribution	Self-reaction • Self-satisfaction/affect • Adaptive-defensive
Relevant MSLQ scales	• Rehearsal • Elaboration • Organization • Critical thinking • Metacognition	• Intrinsic Goals • Extrinsic Goals • Task Value • Control Beliefs • Self-Efficacy • Test Anxiety	• Effort Regulation • Help-seeking • Time/Study Environment	• Peer Learning • Time/Study Environment			

Table 2.1: Comparison of the Pintrich (2000) and Zimmerman's (2000) models

Source: Pintrich, P.R. (2000). The role of goal orientation in self-regulated learning. In *Handbook of self-regulation,* ed. Boekaerts, M., Pintrich, P.R., and Zeidner, M., 451-502. San Diego: Academic Press.
Pintrich, P. R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review,* 16 (4), 385 – 407.
Zimmerman, B.J. (2000) Attaining self-regulation: a social cognitive perspective. In Boekaerts, M., Pintrich, P.R. and Zeidner, M. (eds), *Handbook of self-regulation,* 13-39. San Diego, CA: Academic Press.

2.4.3 A comparison of the Pintrich and Zimmerman models

As evident in Table 2.1, the two models use similar terms such as goal setting, planning, self-observation and evaluation within each phase. Indeed, Puustinen and Pulkkinen's (2001) review of the various SRL models found that the Pintrich (2000) and Zimmerman (2000) models were similar in several key aspects. Firstly, Zimmerman's (2000) model reflects Bandura's (1986) social cognitive theory, whilst Pintrich's (2000) model is similarly derived from a social cognitive perspective. This perspective conceptualises self-regulation as a multiphasic process in which self-generated thoughts, affects and actions are planned and cyclically changed and adapted as needed in order to achieve personal goals. Likewise, both models consider SRL as being cyclical in nature, although Pintrich (2000) notes that the four phases of planning, monitoring, controlling and reflecting are a time-ordered sequence of learning, which can be dynamically adapted according to need. Thirdly, both models define SRL as being a goal-oriented process with goals being set, monitored, reflected upon and amended as the student becomes more adept or the environment requires change. Fourthly, both models require students to monitor, regulate, and control their own learning, as influenced by cognitive, motivational, social and emotive factors. Finally, both models comprise similar phases, although Pintrich's (2000) model comprises four phases whereas Zimmerman's (2000) model has three. Despite this, each has a preliminary phase (encompassing forethought, planning, analysis and motivation), a performance or task completion phase (encompassing monitoring, control and self-observation), and a final phase being the appraisal phase (allowing reaction and reflection).

Pintrich's (2000) model is characterised by one overarching theme, the integration of motivation/affect as one area of SRL. This reflects most self-regulatory learning theories which seek to explain students' personal initiative in gaining knowledge and skill. In so doing, they incorporate motivational aspects of the learning process, a crucial aspect of teaching and learning. In fact, some argue that learning and motivation are so interdependent that it is impossible to understand learning without understanding motivation (Pintrich, Marx and Boyle, 1993). Psychologists define motivation as the psychological processes "involved in the direction, vigor, and persistence of behaviour" (Bergin, Ford and Hess, 1993, p. 437). Therefore, motivation to learn can be defined as the psychological processes that directs and sustains students' behaviour toward learning. This relates to students' intrinsic interest in the task and their goal orientation. Such intrinsic motivation pertains to activities done "for their own sake," (Ryan and Deci, 2020, p.2) or for their inherent interest and enjoyment (Deci and

Ryan, 2000). Having intrinsic interest in a task allows students to persist with the task even when there are no external rewards for achievement (Pintrich and Schunk, 2002). For example, an intrinsically motivated student studies a topic diligently because he/she finds it interesting or persists at solving a challenging problem because of curiosity about the answer. Therefore, challenge, control and curiosity are characteristics that are likely to sustain intrinsically motivated students in their engagement with learning.

As this study is concerned with what motivates students to engage with learning resources provided to them in a blended learning environment, it is important to compare and contrast the accepted definition of intrinsic motivation and the *intrinsic goal orientation* construct used in this study. *Intrinsic goal orientation* is:

> Goal orientation refers to the student's perception of the reasons why she is engaging in a learning task. On the MSLQ, goal orientation refers to student's general goals or orientation to the course as a whole. Intrinsic goal orientation concerns the degree to which the student perceives herself to be participating in a task for reasons such as challenge, curiosity, mastery. Having an intrinsic goal orientation towards an academic task indicates that the student's participation in the task is an end to itself, rather than participation being a means to an end (Pintrich et al., 1991, p.9.)

When reviewing these two definitions, commonalities can be found relating to: (1) the terms used, such as challenge and curiosity; and (2) students engaging in learning activities for their own sake or as an end to itself. However, an important difference is that an intrinsically motivated student engages in an activity due to interest and enjoyment whereas *intrinsic goal orientation* focuses on the student's idea of why they are participating in the task i.e., what is their goal for participating in a learning activity. For example, they are engaging with the learning resource as they believe it will assist them to gain understanding which they can apply in their work i.e., their interest relates to assisting them in achieving a further goal.

In analysing the data, in this study discussions drawn from the MSLQ will use the *intrinsic goal orientation* term as it was identified and used in the MSLQ. Further, where appropriate, this term will be utilised in the qualitative discussion related to findings from the student interviews. However, where responses in the student interviews more closely align to the definition of intrinsic motivation, the term intrinsic motivation will be used.

Some regard intrinsic and extrinsic motivation as acting simultaneously (Pintrich and Schunk, 2002). For example, intrinsic motivation is evident when, due to interest, students may be motivated to learn more about a topic. Equally, they may be extrinsically motivated when learning that topic to engage with a learning resource as it assists them in studying for an upcoming exam and thus achieving a good grade. Extrinsic motivation concerns behaviours driven by externally imposed rewards and punishments and is a motivation typically

experienced as controlled and non-autonomous (Deci and Ryan, 2000). The focus in this study, however, is not concerned with reporting an association of motivation and learning strategies students engage in when utilising the learning resources provided to them in a blended learning environment and their impact on performance. Therefore, the *extrinsic goal orientation* construct from the MSLQ was not utilised in this study. However, it is noted that students may be extrinsically motivated to engage with the learning resources provided.

A further difference between the two models concerns self-efficacy. Zimmerman's (2000) model focuses on students' perceptions of self-efficacy as the ultimate source of motivation. Self-efficacy refers to the learner's belief about his or her ability to perform a given task and their personal aspect that accounts for why the student sets a goal or engages in seeking to complete the task (Bandura, 1997). In contrast, Pintrich's (2000) model places emphasis on motivation, but not from a self-efficacy perspective. Whilst the study at hand focuses on student motivation, its focus is not on the motivational impact of a student's belief in whether or not he/she can complete a task in a blended learning environment, as acceptance of enrolment in a university course signifies that the student can complete the tasks required. In this study, the key difference between the two theories concerns the importance of the role of goal orientation and motivational and cognitive elements, which as noted in Pintrich's (2000) model influences students' learning. In contrast, Zimmerman's (2000) model emphasises strategy and self-efficacy. Moreover, the Pintrich (2000) model integrates motivational constructs in SRL. As this study concerns investigation of what motivates accounting university students to engage with the various learning resources offered to them in a blended learning environment, Pintrich's (2000) model of SRL is considered the best fit. Furthermore, drawing on Pintrich's (2000) questionnaire that assesses motivational and cognitive elements that influence students' learning, this study will adapt and use this tool to explore learning in a blended learning environment (see Section 3.6.1). For these reasons, Pintrich's (2000) SRL model forms the underlying theoretical basis for this study.

Prior to summarising the empirical studies concerning SRL, the next section briefly discusses the importance of SRL, lifelong learning and approaches to learning with respect to this study.

2.4.4 Self-regulated learning, lifelong learning and approaches to learning

The future of accounting, like other facets of society, has been transformed by technology, with new graduates in accounting expected to possess well developed professional skills on entry into the profession and required to continue to build on their professional knowledge

whilst in the profession (O'Connell et al., 2015). Advancement of professional knowledge, often referred to as technical knowledge or technical accounting tasks (see, for example, Guthrie, Evans and Burritt, 2014; Hancock et al., 2009), is achieved through CPD and the commitment to engage in lifelong learning. Defined in IES 7 *Continuing Professional Development* (2020), lifelong learning is "the on-going pursuit of technical competence; professional skills; and professional values, ethics, and attitudes. Lifelong learning is critical if professional accountants are to meet public interest expectations" (IES 7, A6). It was previously defined in the precursor to the current IES 7 as "all learning and development activity, both formal and informal, [which is] undertaken with the aim of enhancing knowledge, skills, values, ethics and attitudes from personal, civic, social, and employment-related perspectives" (IES 7; 2014, A4). The focus in the re-issued IES 7 is on the expectation that professional accountants develop and maintain professional competence as they adapt to rapidly changing environments due to changes in processes, technology and standard and regulatory requirements through lifelong learning. Whilst IES 7 is outside the scope of university education, it informs professional development delivered by professional bodies[7].

The accounting profession has long called for the development of lifelong learning skills to commence at university so that graduates who enter the workforce continue to use independent learning skills in decision making, problem solving and self-management in determining what needs to be learned and how to learn it (e.g., Albrecht and Sack, 2000; AICPA 1998, 2000; Perspectives 1989; AAA 1986). For accountants, lifelong learning activities can be undertaken face-to-face or online through professional bodies such as CPA Australia and the Chartered Accountants Australia and New Zealand (CAANZ) amongst others. SRL requires self-determined and active efforts to initiate activities to meet learning goals, perform these effectively, monitor one's progress and adapt (if necessary) one's effort in order to gain knowledge and skills. Therefore, SRL is considered to be fundamental to lifelong learning (Smith, 2001). Thus, it is important that the university sector fosters the development of a belief in, and commitment to, lifelong learning (Bath and Smith, 2009). This is becoming increasingly important given the changing environment that graduates will enter due to changes in technology (e.g., cybersecurity, big data) and globalisation. Consequently, this study

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[7] The International Education Standards (IES) applicable to the university sector include: IES 2 Initial Professional Development – Technical Competence (2021); IES 3 Initial Professional Development – Professional Skills (2021); IES 4 Initial Professional Development – Professional Values, Ethics and Attitudes (2021); and IES 6 Initial Professional Development – Assessment of Professional Competence (2015).

incorporates statements from the *Propensity for Lifelong Learning* (Bath and Smith, 2009) instrument pertaining to lifelong learning beliefs and attitudes (see Section 3.6.1).

Whilst SRL is fundamental to lifelong learning, "there is also growing pressure on accounting degree programmes to develop higher-level cognitive and behavioural skills" (Abhayawansa, Bowden and Pillay, 2017, p.213), with this pressure coming from higher education quality agencies such as Australia's Tertiary Education Quality Standards Agency, professional accounting bodies and the International Accounting Education Standards Board (Abhayawansa et al., 2017). Development of these skills requires students to have an intrinsic curiosity to learn, engage in critical discussion and be able to link ideas to known concepts and principles – abilities that link directly to motivational and SRL strategies such as *critical thinking* and *elaboration.* Higher-order Conceptions of Learning (CoL) refer to students' beliefs about what constitutes learning (Saljo, 1979; Marton, Dall'Alba and Beaty, 1993), which "underpin such learning motives, strategies and approaches" (Abhayawansa et al., 2017, p.214). In particular, higher-order CoL 4 (abstraction of meaning), CoL 5 (an interpretive process aimed at understanding reality), and CoL 6 (changing as a person), represent learning as an active process, where learners construct their own meaning to understand the world around them, relate ideas to other experiences and do so in a critical manner, thereby engaging in a deep approach to learning.

Whilst not a main aim of this study, there is interest in gaining an understanding of whether students engage in a deep versus surface approach whilst engaging with the learning resources. The deep approach to learning is associated with students' intentions to understand and appropriately engage in meaningful learning and use strategies to create such meaning. In adopting this approach students seek broad understanding about the subject area, to integrate information with prior knowledge, and use a critical and analytical approach to relate it to other ideas and experiences (Booth, Luckett and Mladinovic, 1999; Prosser and Trigwell, 1999; Beattie, Collins and McInnes, 1997; Sharma, 1997; Gow, Kember and Cooper, 1994; Biggs and Moore, 1993; Eley, 1992; Ramsden, 1992; Biggs, 1987; Watkins and Hattie, 1985). A deep approach to learning is more likely to result in better retention and transfer of knowledge (Ramsden, 1992) and may lead to better quality learning outcomes, such as a good understanding of disciplinary knowledge and critical thinking skills (Booth et al., 1999). This is likely to result when students perceive high relevance (Fransson, 1977), when educators provide high levels of interest, support, and enthusiasm (Ramsden, 1979), and when students have the opportunity to manage their own learning i.e., self-regulate (Ramsden and Entwistle, 1981). A blended learning environment, which is less directed and controlled (Vermunt and

Verloop, 1999), requiring students to self-regulate their learning, may be conducive to a deep approach to learning. In contrast, a surface approach to learning is characterised by an intention to only acquire sufficient knowledge to complete the task or pass the subject. Herein the student relies on rote learning and memorisation rather than seeking further connections, meaning, or the implications of what is learned (Booth et al., 1999; Prosser and Trigwell, 1999; Sharma, 1997; Gow et al., 1994; Biggs and Moore, 1993; Eley, 1992; Ramsden, 1992; Biggs, 1987). Where the focus is on accumulating facts, students are likely to adopt a surface approach (Eizenberg, 1988) and similarly when assessment methods reward reproducing information (Dart and Clarke, 1991). A surface approach is akin to: CoL 1, an increase in knowledge; CoL 2, memorising information for future recall; and CoL 3, acquisition of facts, procedures that can be retained and/or utilised in practice.

Prior studies have shown that accounting students adopt a lesser deep approach to learning and a higher surface approach than students in other disciplines such as chemistry, biochemistry, english literature, arts and education (Booth et al., 1999; Eley, 1992). Gow et al. (1994) report that accounting students' use of a deep approach to learning declined from first year to second year, but then increased to the end of third year. However, the use of a deep approach at the end of third year was still below that in first-year. In Australia, Jackling (2005) interviewed 12 second-year undergraduate accounting students to understand their approaches to learning, finding that favourable perceptions of the learning context tended to be associated with deep and achieving approaches to learning. Interestingly, many students reported surface strategies as being important in learning accounting, reflecting their perceptions of the learning tasks. In an intervention study requiring students to work on three group activities designed to promote adoption of a deep approach to learning, Hall, Ramsey and Raven (2004) found that students significantly increased their use of deep strategies, but did not significantly reduce their use of surface strategies. Other accounting educators, such as Birkett and Mladenovic (2002), suggest that lower-level strategies such as rote learning, memorisation and paraphrasing are needed as pre-requisites for higher levels of understanding and deeper approaches to learning. Thus, "approaches to learning are therefore malleable, dynamic and sensitive to the learning context" (Duff, 2004, p.412), and change due to different contexts and experiences (Struyven, Dochy, Janssens and Gielen, 2006). Indeed, the same student may use both deep and surface approaches on different occasions or even simultaneously (Entwistle, Tait and McCune, 2000; Kember, 1996). Similarly, research shows that self-regulation relates to the deep approach to learning, whereas lack of regulation is linked to the surface approach (Heikkila, Niemivirta, Nieminen and Lonka, 2011; Heikkila and Lonka, 2006). Students'

experiences of the teaching-learning environment relate to their approaches to learning (Ramsden, 1997), and whilst not a main aim of this study, a student's CoL, and whether they engage in a deep versus surface approach, is of interest given the focus on a blended learning environment.

Further, as a blended learning environment is less directed and controlled (Vermunt and Verloop, 1999), it is important that accounting educators have an appreciation of the SRL strategies that students apply in this environment as it may impact how learning resources are provided to students. Moreover, this understanding will benefit the accounting profession who provide learning to graduates through CPD, which facilitates them meeting the requirements of IES 7, as increasingly this is being provided in an online or e-learning format. As noted by Vovides, Sanchez-Alonso, Mitropoulou and Nickmans (2007) "e-learning can have potential added learning benefits and can improve students' and educators' self-regulation skills, in particular their metacognitive skills" (p.64). Strong metacognitive skills help students to plan, monitor, and evaluate their learning process, and thus allow self-reflection and self-management. Indeed, self-management is an accounting learning standard (previously known as a threshold learning outcome) that is expected to be achieved by accounting graduates at both the undergraduate and Masters level (Hancock, Freeman and Associates, 2010). Self-management involves students taking control of their learning, and refers to the ability of the learner to prepare, carry out the learning steps, manage themselves to complete tasks, provide self-feedback and judgement while maintaining motivation (McLoughlin and Lee, 2010). Thus, self-management is akin to SRL. Assuming that if learners are able to take charge of their learning, they will be able to continue to learn once they leave the university environment, these self-management skills incorporate the autonomy required in professional life. This study seeks to investigate whether the use of learning strategies and motivation for learning increases in learning environments with SRL opportunities such as a blended learning environment. In doing so, the study seeks to provide the accounting profession with information about motivation and SRL strategies that students adopt, which they may continue to exhibit as professionals undertaking CPD.

The next section summarises empirical studies of SRL and outlines the research questions pertaining to motivation and SRL for this study.

2.4.5   Research looking at self-regulated learning

Research on self-regulation of academic learning and performance emerged more than two decades ago (Zimmerman, 2008), with research concentrated in the areas of education,

psychology, health sciences, and nursing. Appendix B provides an overview of various studies in the higher education sector, highlighting the SRL strategies empirically tested, the model adopted in the study and the method used, including whether self-reporting questionnaires or interviews were used. As evident in Appendix B, research has used many different strategies and used either the Pintrich (2000) or Zimmerman (2000) models. The following section provides an overview of research pertinent to SRL.

2.4.5.1 *Prior research in SRL and academic success*

As summarised in Appendix B, studies such as Torenbeek et al. (2013), Ning and Downing (2012), Puzziferro (2008), Yukselturk and Bulut (2007), Nota et al. (2004), Bergin et al. (2005), Wang et al. (2013) and VanderStoep et al. (1996) have reviewed various demographic, motivational and SRL strategies together with student academic success. These studies report mixed results in terms of motivation and academic success, and different SRL strategies adopted leading to academic success. For example, Puzziferro (2008) found that *self-efficacy* was not correlated with student performance whilst VanderStoep et al. (1996) found students with high *efficacy* and *task value* did well in their introductory biology, psychology and humanities subjects. *Time and study environment, effort regulation, organizing* and *self-regulation* variables were significantly related to performance (Puzziferro, 2008; Yukselturk and Bulut, 2007; Bergin et al., 2005 and Nota et al., 2004). Wang et al. (2013) found that students who used more effective learning strategies showed increased levels of motivation which led to increased satisfaction with courses and better performance. Conversely, Torenbeek et al. (2013) found that motivation and self-discipline were not strong predictors on academic achievement, whilst Ning and Downing (2012) found that both motivation and self-regulation moderated the effects of learning experience on academic performance.

In terms of studies specifically concerned with online higher education, Broadbent and Poon (2015) reviewed twelve SRL studies published between 2004 and 2014, examining SRL strategies and academic achievement. Across these studies, *time management, metacognition, effort regulation* and *critical thinking* were found to be positively correlated with academic outcomes, whilst *rehearsal, elaboration* and *organization* had the least empirical support.

The above studies show a mixed set of results in terms of motivation and academic success, and varied SRL strategies and academic success. In contrast, rather than considering motivation and SRL strategies and their relationship to academic success, this study endeavours to discover whether motivation and SRL strategies are used in a similar way and whether the SRL strategies are further developed within a blended learning academic environment.

2.4.5.2 Prior research in SRL and accounting

While the research previously described has focussed on other disciplines, three studies conducted in accounting were by Becker (2013), Opdecam et al. (2014) and Everaert et al. (2017). Becker (2013) used a quasi-experimental design where a treatment group of 123 first year introductory accounting students received SRL interventions developed by the instructor based on the Zimmerman model. Class time for the treatment group was allocated between SRL interventions including instruction focusing on the process of learning and content instruction. Whilst results on assessments did not differ between the treatment and control groups initially, the treatment group outperformed the control group with higher scores in the final examination. Regression results revealed students' acquisition of technical knowledge was not compromised when class time was spent on SRL interventions. Whilst the treatment group did outperform the control group on the exam, immediate benefits for other assessments throughout the course were not noted.

In a quasi-experimental study investigating first year undergraduate accounting students' preference for team learning and its effectiveness compared to lecture-based learning, Opdecam et al. (2014) administered the MSLQ to 156 students where the students were split between lecture-based (i.e., face-to-face) and team learning. Results revealed that students with a preference for team learning had lower ability levels, were more intrinsically motivated, had less *control of their learning beliefs*, were more *help-seeking*, and were more willing to share their knowledge with their peers.

Everaert et al. (2017) utilised the *intrinsic* and *extrinsic goal orientation* motivation scales of the MSLQ to determine whether either had an impact on deep learning for first year undergraduate accounting students. This was based on Lucas (2001) who posited that motivation can affect the strategy a student adopts in learning. Arguably, students who enrol in a chosen course because they have a desire to learn and are therefore intrinsically motivated, will perhaps display a deep approach to learn and become involved in the subject matter and hence achieve academically (De Lange and Mavondo, 2004). Thus, Everaert et al. (2017) suggest that high intrinsic and extrinsic motivation have a significant positive influence on deep learning which led to higher academic performance.

This study differs from previous accounting studies as it probes what SRL strategies accounting students utilise through engagement with learning resources provided to them in a blended learning environment across the three year levels in an undergraduate degree. Focusing on blended learning as the context, of relevance is Dabbagh and Kitsantas's (2005) study of 65

college students in three different computer courses using WebCT that examined which tools support self-regulatory strategies. The tools available were split between: collaborative and communication tools; content creation and delivery tools; and, administrative tools and assessment tools. They used the Pintrich (2000) model in conjunction with the Web Supported Self-Regulation Questionnaire (WSSRQ). Results show that content creation and delivery tools supported *goal setting, help-seeking, self-evaluation* and *task* strategies; collaborative and communication tools supported *goal setting, time planning and management*, and *help-seeking*; administrative tools supported *self-monitoring, self-evaluation, time planning and management*, and *help-seeking*; whilst assessment tools supported *task* strategies, *self-monitoring,* and *self-evaluation* (Dabbagh and Kitsantas, 2005). This current study will extend their research by applying these concepts to the accounting discipline across a number of accounting units, by supplementing the data gathered with learning analytics and gaining additional qualitative insights through student interviews. Using the Pintrich (2000) model, this approach is used to determine whether accounting students apply similar or other aspects of SRL. This leads to the next research question:

RQ2: How do motivational beliefs and self-regulated learning strategies impact how and why accounting students engage with the learning resources provided to them in a blended learning environment?

Answers to RQ2 should determine whether "SRL strategy use is context dependent and that the unique features of a learning environment (for example online compared to blended) may influence whether or not a learner enacts SRL strategies" (Whipp and Chiarelli, 2004, p.19). Further, as SRL is an important element for the lifelong learning required of our graduates and often provided in an online environment, it is important to know whether students are motivated differently to engage with learning resources as they progress through their degree and in the lead up to entering their chosen profession; and more importantly, whether their learning strategy behaviours change as students progress through their degree.

There are a number of longitudinal studies where SRL strategies have been monitored and investigated on a number of occasions in the one semester. For example, Muis and Duffy (2013) administered the MSLQ (consisting of the *self-efficacy* scale, and three learning strategy scales: *rehearsal, elaboration* and *critical thinking*) five times across a semester to a group of 31 students (intervention group) who were undertaking a social studies statistics class. The students were from various disciplines, with one student from the accounting discipline. The lecturer modelled the specific learning strategies when completing statistics problems. The level of *self-efficacy, critical thinking* and *elaboration* strategies significantly increased

midway through the semester for the intervention group, whilst the control group maintained a consistent level of strategy use and *self-efficacy*. There was no change over the semester for the use of *rehearsal*.

Further, Whipp and Chiarelli (2004) used a case study approach to investigate how six graduate students used and adapted SRL strategies to complete tasks in a web-based technology course over the course of a semester. Content analysis of their interview data revealed that all students used traditional SRL strategies, but students also adapted *planning, organization, environmental structuring, help-seeking, monitoring, record keeping,* and *self-reflection strategies* in ways that were unique to the web-based learning environment. For example, they contacted peers to reduce loneliness and used student postings as model posts. Whipp and Chiarelli's (2004) study suggested that many online learners, especially those new to this environment, begin with uncertainties regarding their ability (i.e., *self-efficacy*) to manage the technical, organizational and social challenges in the web-based environment, but their confidence grew with early successes.

Endedijk's et al. (2013) longitudinal study of post graduate education students who learn in parallel at university and in practice over a year showed that student teachers changed their regulation of learning over time, that is, as student teachers gained more on the job experience they were less motivated to use their regulation skills to direct their learning.

The studies reported students SRL changes within the one semester or over a year due to interventions (see Muis and Duffy, 2013), or due to students gaining experiences outside the university environment (see Endedijk et al., 2013). What is interesting is whether students change their motivation and SRL strategies as they progress through their degree, which is the aim of this study. Knowing this may provide insight regarding whether inferences can be drawn about SRL strategy behaviours that future accountants may adopt when engaging in lifelong learning activities.

Of the studies which are not longitudinal but consider prior experiences, Wang et al. (2013) and Samruayruen et al. (2013) examined learners' demographics and prior experience with online learning environments and how they affected students' SRL strategies. Wang et al. (2013) found that students with previous online learning experiences usually exhibited more effective learning strategies (such as *task value, time management, metacognition,* and *critical thinking)* when undertaking an online course. By using more effective learning strategies, students had higher levels of motivation, which then led to higher levels of course satisfaction and higher levels of technology *self-efficacy*. In addition, Samruayruen et al. (2013) found that students with better internet experience reported a significantly higher level of *self-efficacy* and

cognitive strategy, and that the internet and hybrid course experiences were significant predictors of self-regulation.

Given the findings in Wang et al. (2013) and Samruayruen et al. (2013) that prior experience in the online environment led to increased motivation and increased self-regulation, it would be interesting to determine whether this translates to accounting students as they progress through their degree. This current research will examine the SRL strategies adopted over time i.e., over two consecutive semesters. Of particular interest is whether the prior experience attained in first year in a blended learning environment leads to higher motivation and self-regulation in second year and then through to third year resulting in greater engagement with learning resources provided. Answering this will further knowledge and understanding about whether self-regulatory strategies and motivational aspects of SRL change as students progress through their undergraduate degree. This will inform educators and may impact the form and type of learning resources delivered across the three year levels. This leads to the third research question:

RQ3: As undergraduate accounting students progress through their degree, how do their motivational beliefs and self-regulated learning strategies change in a blended learning environment?

Gaining understanding of self-regulatory strategies that our students undertake and develop whilst completing their degree will also provide an insight into how these students may be developing skills to meet the requirements of our professional accounting bodies regarding commitment to lifelong learning.

2.4.6 Summary

Research on SRL emerged in the 1980s and is used to help understand what successful learners do. Studies in various disciplines in various learning environments (i.e., fact-to-face, flipped, online and blended) have examined certain motivational and SRL strategies. Most studies examining SRL and its relationship with academic success report mixed results. Those studies related to accounting have focused on team learning, intervention studies, *intrinsic* and *extrinsic goal orientations* and academic success. The current study will seek to determine whether students' motivation and self-regulatory strategies (see Section 3.6.1 for discussion on the motivational and SRL scales utilised in this study) differ in a blended learning environment given this environment is less directed and controlled. It will also endeavour to determine whether students' motivation and self-regulatory behaviours change over time i.e., as students progress through their degree. Further, given the importance of lifelong learning to the

accounting profession, this study will seek to gain some understanding of accounting students' beliefs and attitudes to lifelong learning.

2.5   Summary

This chapter summarises existing research in a blended learning environment. It then presents a review of the learning analytics literature pertinent to RQ1, provides a definition of SRL, and posits SRL within social cognitive theory. Reasons for the selection of the use of the Pintrich (2000) model as opposed to the Zimmerman (2000) model are then presented. Prior to summarising the body of evidence relating to SRL strategies in various educational environments from which RQs 2 and 3 are developed, the link between SRL and lifelong learning and the importance of lifelong learning to the accounting profession is elaborated upon.

Having positioned this study in the existing body of research, Chapter 3 outlines its ontological, epistemological and methodological positions, together with the procedures followed in developing the questionnaire and interview protocols. The chapter also provides an overview of the data collected, an outline of the sample selection pursued to answer each research question, and a summary of the methods used to analyse the data.

3: Research method

3.1   Introduction

The previous chapter summarised existing research in three main areas pertinent to this study: blended learning; learning analytics; and SRL. The chapter also presented the three research questions pertinent to this study as they arose from a review of the existing literature. Further, Chapter 2 defined SRL, positioning it within social cognitive theory, and given the significance of lifelong learning to the accounting profession, discussed the importance of SRL to lifelong learning. This chapter aims to describe the research design and research sample used to explore answers to the research questions. Accordingly, Section 3.2 provides a brief description of the ontological and epistemological positions of the study, with the research methodology described in Section 3.3. Section 3.4 presents a description of the participants and sample, with the unit of analysis described in Section 3.5. In Section 3.6, details regarding the data collection methods are reported, with approval of ethics elaborated on in Section 3.7. The chapter concludes, in Section 3.8, with a description of the data analysis.

3.2   Ontological and epistemological positions of the study

Ontology relates to the form and nature of reality (Guba and Lincoln, 1994), and is the basis for developing an epistemology, which defines the nature of the relationship between the researcher and what is known, what counts as knowledge, and on what basis the researcher can make knowledge claims (Grant and Giddings, 2002; Guba and Lincoln, 1994). One's view on an ontology entails a particular epistemology, and in turn the resultant methodology (Grant and Giddings, 2002). Therefore, understanding the ontological and epistemological positions is important, as this forms the theoretical perspectives of the research and impacts the chosen research methodology. Whilst there are many theoretical perspectives in social science research, the two main theoretical perspectives are positivism and constructivism (Lincoln, Lynham and Guba, 2011; Guba and Lincoln, 1994; Crotty, 1998)[8].

The ontological position of positivism is one of naïve realism, which assumes an objective external reality (Guba and Lincoln, 1994) where scientific knowledge gained through research can be "positively verifiable" (Delanty, 2005, p.10) through empirical investigation (Delanty,

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[8] Other theoretical perspectives include, but are not limited to: post-positivism, feminism, postmodernism, and critical theory/inquiry (Crotty, 1998).

2005). Herein the aim of inquiry is explanation and prediction (Lincoln et al., 2011). In contrast, constructivism entails an ontology where realities are relativist and where these realities, both local and specific, are constructed and co-constructed by the researcher in tandem with participants (Lincoln et al., 2011). The aim of inquiry here is one of understanding and reconstruction, with understanding achieved through interpreting subject perceptions (Lincoln et al., 2011).

The epistemology underpinning positivism is objectivist (Crotty, 1998). As Guba and Lincoln (1994) note, the researcher is able to study the object without either influencing it or being influenced by it, where the researcher and the 'object' being investigated are independent entities. In contrast, according to Crotty (1998) and Guba and Lincoln (1994), the epistemology underpinning constructivism (an interpretative approach) is subjectivist, involving co-created findings where individual constructions are gained and refined through interaction between and among the researcher and respondents. Thus, they are a creation of this interaction process (Lincoln et al., 2011).

In this study, a constructivist (or interpretative) approach is adopted as:

(1) Under this paradigm, realities are relativist, where multiple realities exist and are dependent on the individual (Guba, 1996). Reality, as we know it, is constructed intersubjectively through meaning and understanding developed socially and experientially (Guba and Lincoln, 1994), with knowledge constructed through lived experiences and through interactions with other members of society. Consequently, reality is considered to be subjectively created, co-created and objectified through human interaction (Chua, 1986), with the researcher participating in the research process to co-create a reality that produces knowledge reflective of reality. In the context of this study, this means producing knowledge through interpreting responses to questions posed in the semi-structured interviews with students regarding their motivation and the SRL strategies they adopt when engaging with the learning resources provided to them in a blended learning environment. Therefore, through interpretation of these responses, a deeper level of reality and understanding of the underlying meaning can be attained whilst not trying to explain the causal connections (McAuley, 2004).

(2) A constructivist epistemology is transactional i.e., individual constructions can be gained and refined through interaction between and among the researcher and participants. In this study, this is achieved through one-on-one semi-structured interviews that are subsequently analysed and interpreted, with descriptions, insights,

and explanations generated from which interpretations and meanings are derived (Delanty, 2005). In this study, transcripts are initially viewed and interpreted from the point of view of an individual student, after which they are pooled to derive key themes in relation to SRL strategies.

Having described the ontological and epistemological standpoints of the study, the next section discusses the research methodology adopted to achieve the research aims and objectives.

3.3 Methodology

Given the underlying paradigm of inquiry in this study involves a constructivist approach, the methodology adopted involves a hermeneutic and dialectic approach, where individual constructions are elicited and refined through interpretation, then compared and contrasted dialectically through rational discussion (Guba, 1990, 1996). Interpretive approaches rely heavily on naturalistic methods, such as interviewing and observation, and analysis of texts (Angen, 2000). Use of methods such as interviews with students and Chief Examiners (CEs), and student responses to the open-ended statements/questions on a questionnaire, ensure dialogue between the researcher and participants in collaboratively constructing meaningful reality. Irrespective of the theoretical perspectives, it is possible to use both qualitative and quantitative methods (Crotty, 1998), which is the case in this study where a combination of a questionnaire, learning analytics data and interviews with students and CEs was deployed.

Case study research, along with experiments, surveys, histories, and archival analyses such as economic or statistical modelling, is one of several forms of social science research (Yin, 2014). Following this approach, the researcher explores, over time, a real-life contemporary bounded case through detailed, in-depth data collection involving multiple sources of information (Creswell, 2013). Thus, use of a case study aligns with the study's stated aim, namely to explain the motivational and learning strategies students adopt and pursue in studying units in accounting in a blended learning environment. Here, selection: (1) allows for the foci real-world contemporary phenomenon to be studied through exploration of 'how' and 'why' questions (i.e., RQ2 and RQ3); (2) aligns with actuality that the researcher has little or no control over behavioural events (Yin, 2014); and (3) is based on the premise that multiple realities and meanings can exist, which are co-created by the researcher interpreting participant responses.

Further, adoption of the case study approach allows deeper understanding about the actors (students), and their interactions, sentiments and behaviours (Woodside and Wilson, 2003) that

occur and develop through engagement with the learning resources provided in a blended learning environment. Thus, it is the preferred approach as it allows examination of a contemporary event i.e., motivation and use of learning resources in a blended learning environment, without the relevant behaviours of engagement being manipulated (Yin, 2014). Whilst a disadvantage of this approach is its inability to generalise to other populations, it enables generalisations of theoretical propositions, such as those underpinning motivation and SRL, which is applicable to this research (Yin, 2014; Walsham, 2006).

Moreover, a strength of the case study approach is its ability to deal with a variety of evidence (Yin, 2014). Herein, use of a combination of quantitative and qualitative methods allows a rich and strong array of complementary data to be collected (Creswell, 2013). Quantitative methods include use of a questionnaire and learning analytics data; qualitative methods include interviews with students and CEs and student responses to open-ended statements/questions on the questionnaire. Interviews and the open-ended comments allow the researcher to access student opinions and interpretations as to how and why they engage with the learning resources provided. In line with the ontological and epistemological positions of this research, the role of the researcher is to assess student interpretation of both the motivation and SRL strategies adopted within a blended learning environment and to derive themes from these interpretations (Walsham, 1995). In doing so, as an outside observer it is possible to appraise student interpretations through assessment of their conceptual views i.e., "constructions of other people's constructions of what they and their compatriots are up to" (Geertz, 1973, p.9 as quoted in Walsham, 2006).

Further, it allows the researcher to "close in on real-life situations and test views directly in relation to phenomena as they unfold in practice" (Flyvbjerg, 2013, p.187). As such it provides a more holistic understanding about how and why accounting students are motivated to engage with the learning resources provided to them in a blended learning environment, and the SRL strategies students adopt as they engage with the learning resources provided. In turn the knowledge acquired can be used to enhance future offerings.

The case study is bounded to undergraduate accounting students studying at 'The University', an Australian university and a member of the Group of Eight (Go8) universities[9]. The rationale for selecting this context is: (1) accessibility, as the researcher is employed in the Department of Accounting at 'The University', enabling access to the desired group of

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[9] Section 4.2.1 provides the characteristics of 'The University'.

students[10]; and (2) a commitment by 'The University' to provide an enriching experience for students through provision of a high-quality campus experience that is supported by rich digital learning materials[11]. Thus, the blended learning approach allows the phenomenon to be studied in a real-life setting/natural environment. Whilst it is acknowledged that bounding the case to accounting and to one university is a major limitation, conversely it provides an "opportunity for intensive study" and an "opportunity to learn" from the participating students (Stake, 2005, p. 451). Further, as both the focus and claimed contribution lie within the realm of accounting education, an opportunity arises to ascertain in-depth understanding about students' motivation and their use of SRL strategies within the real-life phenomenon of blended learning. The reported study is considered a single instrumental bounded case study (Stake, 1995) as it focuses on an issue, namely students' motivation and the SRL strategies they adopt in a blended learning environment.

In summary, adoption of the explanatory case study approach is relevant for the following reasons. Firstly, the researcher is interested in understanding how and why students self-regulate whilst studying accounting units as part of their degree in a blended learning environment. That is, how and why do students regulate their learning whilst engaging with the formative learning resources provided to them to learn certain concepts and content? Secondly, this research furthers understanding about student engagement in the context of a blended learning environment, which offers the potential to provide information to academics that can be used to improve educational offerings. Thirdly, whilst the student cohort is limited to students studying accounting units at 'The University', the data collection phase spans two consecutive semesters. This contributes to the paucity of studies over a length of time in both the accounting education literature and the SRL literature. Whilst one study (VanderStoep et al., 1996) involved administration of the MSLQ at two data points, this took place within one semester and across disciplines outside accounting. More recently Brown, Danvers and Doran (2016) examined, over two semesters, how use of guided reading questions in an intermediate accounting course offered as part of an accounting major and non-accounting majors affects students' perceptions of their motivation, reading comprehension, effort, and understanding of material. In contrast, this study gathers data from five different accounting units within one time period (i.e., as a snapshot) over two consecutive semesters (see Section 3.4 for further explanation). Use of such a single case, in one academic field (accounting) and one university

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[10] The researcher did not have control over how or why students engage with the learning resources as they were not involved in teaching of any of the units, thereby eliminating the potential for bias.
[11] As stated in the Strategic Plan of 'The University', 2015.

('The University') with many data points, creates depth (Creswell, 2013) that enables the advancement of theoretical concepts related to motivation and SRL.

3.4   Participants

Participants in this study comprise two groups: (1) students studying accounting units as part of the Bachelor of Business or Bachelor of Business (Accounting) at one campus of 'The University'; and (2) CEs (i.e., the academic in charge) of the unit. Students were enrolled in one or more of the following five foci accounting units: ACF1100 (ACF1121) *Introduction to Financial Accounting;* ACF2100 (ACF2491) *Financial Accounting;* ACF2200 (ACF2391) *Introduction to Management Accounting;* ACF3100 (ACF3491) *Advanced Financial Accounting;* and ACF3200 (ACF3431)[12] *Management Accounting* – see Section 4.3 for a brief synopsis of each unit.

To validate the questionnaire and student interview protocol, a pilot study was conducted in Semester 2, 2015 (see Section 5.2). Data related to the main study was collected in Semesters 1 and 2, 2016. As reflected by the unit codes, the units span first year (ACF1100), second year (ACF2100 and ACF2200), and third year (ACF3100 and ACF3200). The rationale for this is that RQ3 focuses on whether accounting students' motivation and self-regulatory strategies change over time, which is best answered by capturing data across the three years of an undergraduate student's degree. In this study, data was collected at two points in time, namely Semesters 1 and 2, 2016. This approach provides richness and allows analysis across student cohorts. Further, given the recommended study pattern for students enrolled in ACF1100 in Semester 1, 2016 is to enrol in ACF2100 in Semester 2, 2016, and for students enrolled in ACF2200 in Semester 1, 2016 to enrol in ACF3200 in Semester 2, 2016, this approach provides data points for the same set of students as they progress through their degree. The underpinning assumption in this is that students follow the suggested course progression map (see Section 4.2.2, Figure 4.1) provided to them at the point of enrolment. Note, all five units are required to attain an accounting major and subsequently gain entry as an associate member of accounting professional bodies such as CPA Australia or CAANZ. Further, as this research involves capturing data across two consecutive semesters, it is possible to follow students as they progress through their major, with the issue of self-selection bias removed as all units are required units in the accounting major.

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[12] The unit codes changed effective Semester 1, 2016. Thus, the code in the bracket is the equivalent unit code when the pilot study was undertaken in Semester 2, 2015.

Figure 3.1 below displays the data sources collected over the course of Semester 1 and Semester 2, 2016, cross-referenced to the research questions.

Figure 3.1: Data sources collected each semester
*Data associated with answering RQ3 was captured across two full semesters i.e., Semesters 1 and 2, 2016

3.5   Unit of analysis

The unit of analysis is a set of students studying accounting units in a blended learning environment wherein the researcher is interested in determining how and why accounting students are motivated to engage with the learning resources provided to them, what SRL strategies they apply, and whether these change over time.

3.6   Data collection methods

A feature of case studies is that usually a wide array of data points or evidence is gathered through a variety of methods, which allows for the development of converging lines of inquiry and data triangulation (Yin, 2014; Creswell, 2013). In this study, data from a self-reported questionnaire will be compared and contrasted with data collected through interviews, and together they will be compared and contrasted with learning analytics data to identify non-converging lines of inquiry. Herein, as aforementioned, questionnaires and interviews are used to capture why students are motivated to engage with certain learning resources provided to them within the foci units, together with insights into the SRL strategies they adopt whilst completing their degree, and whether these strategies change over time. Through reviewing the learning analytics data, it is possible to ascertain what students are actually doing, which provides more in-depth insight and understanding as to whether what motivates them to engage

with the learning resources matches with what they are actually doing. In all five units, the questionnaire was administered during the semester, whilst the interviews were conducted towards the end of the semester. As such, there is a wide variety of data analysed, with data points coming from first year, second year and third year of Semesters 1 and 2, 2016.

3.6.1 Questionnaire

Survey research is a form of research that seeks information from a large number of people (Somekh and Lewin, 2005), providing "snapshots of practices, situations or views at a particular point in time, undertaken using questionnaires, from which inferences can be made" (Galliers, 1992, p.153). In this study, use of a questionnaire was considered an appropriate data collection method for the following reasons. Firstly, as this study involves a cross-sectional design, it allows for the collection of quantitative data on at least two variables at a point in time and from a number of students (Bryman 2016; Somekh and Lewin, 2005). These data are then used to look for patterns of association or relationships between variables either in the group as a whole or, in this study, in subgroups i.e., different year levels (Bryman, 2016; Somekh and Lewin, 2005). Secondly, as this study is conducted over two consecutive semesters, survey research allows the questionnaire to be administered on multiple occasions in the five foci units (Bryman, 2016; Somekh and Lewin, 2005).

The questionnaire administered to students is based on Pintrich et al.'s (1991) *Motivated Strategies for Learning Questionnaire* (MSLQ)*,* but with some modifications to suit both *a blended learning environment* (see Samruayruen et al., 2013, which utilised Pintrich and De Groot's (1990) version of the MSLQ), and *an online environment* (see Barnard et al.'s 2009 *Online Self-regulated Learning Questionnaire* or OSLQ). The MSLQ is designed to assess university students' motivational orientations and their use of different learning strategies in a university course (Pintrich et al., 1991). Further, it addresses the impact of student perceptions of their teaching and learning environments and accordingly how they may adapt their learning strategies (Entwistle and McCune, 2004).

In developing the questionnaire used in this study, items from the MSLQ (Pintrich et al., 1991), which comprises 81 statements across 15 MSLQ scales were matched on the basis of wording and intent, against items contained in Samruayruen et al.'s (2013) instrument, which comprises 44 statements, and items in the OSLQ utilised by Barnard et al. (2009) that comprises 24 statements (see Appendix C). Statements that were unable to be matched were included under the relevant SRL scale and reviewed in light of the three research questions. If deemed to be in line with the aim and purpose of the study, the statement was retained, although

in some instances the statement was slightly amended to better suit the study. All other statements not meeting the study's aim and purpose were discarded. This process of cross-matching and amendments yielded an initial questionnaire comprising 35 statements related to motivational and SRL strategies (see Appendix D).

Given the requirement, in the accounting profession, for on-going CPD, accounting students need to continue to add to their knowledge whilst they are in the workforce. As such, lifelong learning is critically important. In this regard, akin to Bath and Smith (2009)[13], a number of statements pertaining to student perceptions of lifelong learning were included in the administered questionnaire. After considering the relevance of each statement to this study, and taking into consideration the overall length of the questionnaire, eight statements (as noted in Appendix E) were adopted from the *Propensity for Lifelong Learning* (Bath and Smith, 2009), which cover five characteristics identified in the literature as being important for lifelong learning (e.g., Knapper and Cropley, 2000; Candy et al., 1994). The eight statements used in this study pertain to two lifelong learning scales: lifelong learning beliefs (5 statements) and lifelong learning attitudes (3 statements). This addition increased the total number of statements from 35 to 43 (see Appendix D).

Next, the questionnaire and draft student interview protocol (refer Section 3.6.2) were refined using a two-step process. Firstly, they were distributed to colleagues in the Department of Accounting identified as having an interest in accounting education research or who possessed experience in survey development (see Appendix F for a tabulated record of their feedback, together with corresponding responses and subsequent refinements made to the questionnaire[14]). As evident from Appendix F, the feedback related to minor changes in wording, the addition of statements used to capture deep versus surface learning, and refinement of the questions used to capture student demographic data. Further, the single open-ended question was split into two, and an additional three open-ended statements/questions were included to allow students who elected not to be interviewed to share their thoughts and ideas regarding the motivation and learning strategies they employ whilst engaging with the learning resources provided to them.

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[13] They used the questionnaire to examine and predict a student's propensity to engage in lifelong learning. In addition, the instrument incorporated statements from the Characteristics of Lifelong Learning in the Profession (Livneh, 1988). Using Principal Component Analysis, Bath and Smith (2009) reported statements that had loadings above 0.30 – see Appendix E for the 28 statements.

[14] Feedback on the interview protocol was provided by colleagues at the pre-submission seminar. No changes were suggested.

Secondly, the revised questionnaire was pilot tested (see Sections 5.4 and 5.5) with students enrolled in the 5 foci accounting units in Semester 2, 2015. Results from the psychometric testing led to further refinements being made to the questionnaire (see Table 3.1 below for an overview of the refinements made as a result of the pilot study).

Questionnaire	Statements	Summary of the Changes
Initial design provided to colleagues	43 statements + questions (see Appendix D): • 35 statements address motivation and learning strategy; • 8 statements address lifelong learning; • 1 open-ended question; and • Demographic questions concerning age, gender, residency, employment status, number of hours employed, and study hours per unit.	Statements were split between motivation and SRL pertaining to the accounting unit from those pertaining to the accounting major (specific to addressing RQ3); and lifelong learning. Each split provided students with a pointer (e.g., *"The following eight statements relate to your opinions on lifelong learning"*), which ensured they thought about each section according to the prefacing statement. 3 statements were added (refer Appendix G): – Statement 3 – originally specific to the accounting major; now included in relation to the specific accounting unit. – Statement 14 – references surface learning. – Statement 23 – references deep learning. Further, minor changes were made to the wording of some statements. Pre-pilot study: one open-ended question relating to RQ3. This was subsequently split into two to differentiate between 'motivation' and 'learning strategy'. Further, an additional three open-ended statements/questions were included regarding motivation to learn; preferred approach to learning; and learning strategies that students apply. Minor amendments were made to the demographic questions i.e., including age bands (18-20; 21-22 etc.)

Questionnaire	Statements	Summary of the Changes
Impacts of the pilot study conducted in Semester 2, 2015	46 statements + questions (see Appendix G): • 38 statements address motivation and learning strategy; • 8 statements address lifelong learning; • 5 open-ended statements/questions; and • Demographic questions concerning age, gender, residency, employment status, number of hours employed, and study hours per unit. Appendix H provides a breakdown of the questionnaire noting the question number categorised under each of the respective scales: motivation, SRL and lifelong learning.	Psychometric analysis of the pilot study data resulted in 8 statements being removed due to their item-total correlation being below 0.4. These included the removal of seven statements from the motivation and SRL scales as follows: – 1 from *Rehearsal*; – 2 from *Metacognitive self-regulation*; – 1 from *Time and study environment*; – 2 from *Effort regulation*; – 1 from *Goal setting*; and, One (1) from the lifelong learning scale, namely: – Lifelong learning attitudes (see Section 5.5.1 for further discussion on this). Table 5.7 provides a breakdown of the questionnaire, noting the number of statements categorised under each scale. Appendix J provides an explanation of each scale and the relevant questionnaire statement per scale.
Instrument used in the main study	38 statements + questions (see Appendix I): • 31 statements address motivation and learning strategy • 7 statements address lifelong learning; • 5 open-ended statements/questions; and • Demographic questions concerning age, gender, residency, employment status, number of hours employed, and study hours per unit.	

Table 3.1: Overview of the refinements made to the questionnaire

In both the pilot study and the main study, the questionnaire was administered online using Qualtrics through the LMS to students enrolled in the five accounting units. Technology was used, as opposed to a mail out, as the students involved in this study have been exposed to technology all of their lives, meaning that their expectation would have been to complete the questionnaire online. Further, it was hoped that the response rate would be positively impacted given the assumption that students regularly access the LMS and, therefore, would see the prompt requesting them to complete the questionnaire. Additionally, given the questionnaire was administered on more than one occasion, it allowed for efficiencies in data entry, and elimination of paper and postage costs (Dillman, 2007).

Next, one-on-one semi-structured interviews were conducted with participants from two stakeholder groups: (1) students; and (2) CEs (academics). This approach to interviewing ensures that the interview is somewhat standardised, so differences between interviewees are minimised, such that interviewee responses can be aggregated (Bryman, 2016). Given this

study's aims, semi-structured interviews were deemed appropriate as they allow in-depth information to be collected on student's thoughts and opinions as to how and why they engage with the learning resources provided to them in a blended learning environment. Moreover, the use of interviews allows "for meaningful reflections to be interpreted", often resulting in "digging up of nuggets of meaningful data or construction of stories" (Kvale, 1996, p.11), which in this study is important as it assists in developing the derived themes regarding student motivation and SRL strategies applied. The use of interviews also assists in increasing the response rate for the study (Dillman, 2007), particularly in relation to capturing thoughts and opinions from students who elected not to complete the open-ended statements/questions available on the questionnaire. Similarly, they allow insights to be collected from CEs regarding their thoughts on the type and integration of the formative learning resources provided and information on how actively they may promote them.

3.6.2 Interviews with students

At the conclusion of each semester of study, students were invited to be interviewed to elicit thoughts on their motivation behind engaging with the learning resources provided to them, and discussion of the SRL strategies adopted whilst engaging with these. Further, second and third year students were probed to talk about the motivation and SRL strategies they adopted in prior accounting units (RQ3)[15]. Each interview lasted, on average, approximately 10 minutes. Table 3.2 below details the interview questions used in the main study, together with the rationale for including the question and linkage to either theory or methodology.

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[15] In the pilot study, six questions were posed to students. The sixth question, in relation to RQ3, was: "*Reflecting back on your prior accounting units, do you think your level of motivation and engagement with the learning resources has changed?*". In the main study, this was broken down into two questions: one regarding motivation and the other regarding engagement, as it was thought that splitting the question provided a better opportunity for student answers to contribute to understanding of whether these change over time.

Questions	Focus/rationale	Relation with theory and methodology
1. Which learning resources did you engage with in ACFxxx?	Focus on understanding which learning resources students engage with.	Insights into the learning resources students are engaging with. As students discuss this, they may elaborate on why they use them i.e., for cognitive reasons such as increasing their understanding through the use of *rehearsal* and *elaboration* strategies. This sets the scene in ensuring they respond to subsequent questions in light of the resources they engage with.
2. How frequently do you engage with the learning resources in this unit?	Gain an understanding/insight into *how* students use the resources. Gain an understanding of how often students engage with the resources. Do students have a structured approach; access on an 'as needs' basis; or do they access resources on an ad hoc basis? Gauge an understanding of which resources students continually refer back to.	Provides some qualitative ideas of how often students utilise the learning resources, which will be cross-referenced to the learning analytics data. The answer here may reveal whether students utilise particular resources more than once – exhibiting SRL behaviours such as monitoring and reflection wherein students who are aware that their understanding may be lacking may re-engage to further their cognition. Consequently, students may exhibit *rehearsal* and *elaboration* strategies and may set goals regarding frequency and timing of engagement with resources and thus routinely engage with them.
3. Why did you choose to or what motivated you to engage with these resources?	Insight into *why* students engage with the learning resources. Students might have different reasons for engaging with different resources.	Links directly to motivation/affect areas of regulation. For example, were students motivated to engage because they were intrinsically or extrinsically motivated or was it due to engaging with the learning resources because they had *task value* and served a particular purpose?
4. What do you like about the learning resources you engage with?	Students may be more inclined to engage with the learning resources if they like them. This question is to gauge whether 'like' impacts students wish to engage with the resources. Conversely, if the learning resources are cumbersome it might detract students from engaging with them.	This question is a re-phrasing of Question 3, so that it is a back-door way to gain an understanding of *why* students are motivated to engage with the resources. Links to motivation/affect areas of regulation – see comment above (question 3).
5. What makes you want to engage with the learning resources?	Another way to ask what motivates students to engage with the resources and a way to inquire as to *why* they engage.	Links to cognition attributes of SRL such as *rehearsal, elaboration* and *metacognition* – to gain an in-depth understanding of what motivates students to engage. Links to motivational constructs such as - *intrinsic goal orientation; self-efficacy; control of learning beliefs* and *task value*.
6. Reflecting back on your prior accounting units, do you think that your level of motivation to engage with the learning resources has changed? Explain.	Gain an understanding of if, and why students' motivation to engage with the learning resources changes from year 1 to year 3.	Links to RQ3 i.e., whether, as students progress through their degree, their motivation to engage with the learning resources changes from one year to the next. If there is change, what is that change? Why does their motivation with the resources differ or not differ in the subsequent year in their degree?
7. Reflecting back on your prior accounting units, do you think your engagement with the learning resources has changed? Explain.	Gain an understanding of how students' learning strategies may change in terms of engaging with the learning resources from year 1 to year 3.	Links to RQ3 i.e., whether, as students progress through their degree, their SRL strategies change in relation to engaging with the learning resources. If there is change, what is that change? How does their engagement with the resources differ or not differ in the subsequent year in their degree?

Table 3.2: Interview protocol - students

As can be seen from Table 3.2 above, the interview questions were designed to elicit students' motivation to engage with the learning resources provided to them and provide some

insight into the learning strategies they applied whilst engaging with the learning resources. The first five questions were asked of all students that were interviewed. The final two questions were asked of second and third year students only. Whilst this requires students to reflect back on their prior studies, which may impact on the responses provided, it enabled understanding about whether students changed their level of motivation, and whether their SRL strategies changed over time.

The interviews were audiotaped, transcribed and reviewed. Key themes pertaining to motivation and the SRL strategies adopted were identified and analysed. Analysis undertaken on the interview data associated with the pilot study is reported in Section 5.6, whilst analysis of the interviews associated with the main study is reported in Sections 7.3 (pertaining to the first 2 questions) and 9.4 (in relation to the remaining questions).

3.6.3   Interviews with the CEs

Given that the nature of the learning resources provided within each of the five foci accounting units may differ, and furthermore that enthusiasm and encouragement provided by the CE may impact student motivation to engage with these resources (Concannon, Flynn and Campbell, 2005), in each unit the CE was interviewed (See Table 3.3 below for a copy of the interview protocol). The purpose of the interview was to familiarise the researcher with how the learning resources provided in each unit tie in to why students may access the learning resources.

Question	Justification for the question
1. Could you please provide an overview of the learning resources you make available to your students in ACFxxx?	Links to RQ1. Gain awareness of the learning resources available. This enables the researcher to gain an understanding of the types of learning resources interviewees and questionnaire respondents may refer to.
2. What inspires you to put learning resources on your unit's LMS [16] site?	Gauge an understanding of how important providing learning resources is to the CE as this may impact the form and number of resources provided.
3. Which of the learning resources are formative? Which of the learning resources are summative?	Impacts the analysis of student usage. The focus in this study is in relation to formative learning resources.
4. Do you provide the learning resources to students at the start of the semester or periodically (e.g., weekly)?	Impacts RQ1 as usage will be dependent on when the learning resource was made available to students.
5. Do you prompt the students at the start of the semester to utilise the resources available?	Links to RQs 1 and 2. Knowing whether CEs prompt students at the start of semester may impact the analysis as students may be more motivated to engage if the CE imparts the view that they are important. Similarly, this may impact the usage of resources.

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[16] Moodle is the LMS site utilised at 'The University'.

Question	Justification for the question
6. Do you prompt the students to use the learning resources periodically throughout the semester?	Links to RQs 1 and 2. Similar to the justification for question 5. If students are continually reminded to utilise the resources they may be more inclined to do so. Constant prompting may impart a level of importance to the learning resources therefore providing further impetus to engage.
7. Why do you think students are motivated to engage with the learning resources provided on your unit's LMS site?	Knowing this may assist in understanding what motivates CEs to load learning resources onto the LMS, and more importantly, the form learning resources may take.

Table 3.3: Interview protocol - CEs

During the interview, the CE provided a tour of the unit on the LMS, which served the following purposes:

(1) Provided a context for each unit, so that when the student interviews were being conducted, the researcher was aware of the types of learning resources available that semester;

(2) Delivered an appreciation of when the learning resources were made available to students i.e., whether they were provided at the commencement of the semester or periodically uploaded during the course of the semester, which could impact student usage;

(3) Provided an understanding of which learning resources were formative as opposed to summative. This facilitated focus in the student interviews on formative learning resources; and

(4) Conveyed an appreciation of how active the CE was in promoting the learning resources, as this may impact both student motivation to engage with the learning resources (Concannon et al., 2005), and how they engage, which impacts the ensuing analysis. For example, if a CE continually promotes resources through face-to-face lectures, via email or LMS announcements, this may provide greater impetus for students to engage with the learning resource.

3.6.4 Learning analytics data

The IT division of 'The University' provided a copy of the learning analytics data associated with each of the five foci units. Akin to Andergassen et al. (2013), variables collected include: resources viewed; number of times these were viewed; and, when they were viewed, with the data used to corroborate student recollection from the interviews of the learning resources used (RQ1).

Whilst learning analytics data was requested for students studying at one of 'The University's' campuses, given each unit is jointly taught at two campuses (as part of the Bachelor of Business and Bachelor of Business (Accounting) at Campus A and at Campus B (as part of the Bachelor of Commerce), with each unit sharing the LMS site, the data provided pertained to students at both campuses[17]. With no way to remove the footprints of Campus B students, other than on a line-by-line basis, it is acknowledged that retention of their data is a limitation. However, given that the teaching team, learning materials, and LMS site are the same, and moreover the assessments are equivalent, there is no reason to believe that access varies substantially across the two campuses. Further, the required accounting knowledge from both degrees are the same, leading to the same professional designations.

3.7   Ethics

Prior to collecting data, ethics approval was sought from the relevant department at 'The University'. As noted by Yin (2014), the need to protect human subjects requires the researcher to conduct data collection with "special care and sensitivity" (p.78). In this study, this involves acquiring informed consent from students who chose to participate. With respect to the questionnaire, issues regarding consent were articulated in an accompanying Explanatory statement (see Appendix L), with students able to complete all or none of the questionnaire. Concerning the interviews, participants (students and CEs) were given an Explanatory statement prior to commencement of the interview (see Appendices K and N) and were asked to sign a written consent form (see Appendix L and M respectively).

Not only did students complete the questionnaire anonymously, but the privacy and confidentiality of participants was protected through the use of pre-assigned codes. Herein, responses to completed questionnaires were assigned a sequential number commencing from 1 in each unit, while interviewees were assigned a code commencing with I for interviewee and a sequential number depicting the number of the interview. To differentiate between interviewees in the pilot and the main study, the letter P and M respectively was used such that student number 14 for the main study was coded IM14. Questionnaire respondents (QR) to the open-ended statements/questions were also differentiated between the two studies in the same way through the use of QRM14 signifying the 14th questionnaire respondent in the main study.

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[17] Sharing of the LMS across two campuses was not known nor envisaged when the research project was being scoped.

Ethics approval was sought for the learning analytics data which was provided for analysis in aggregate form only[18].

Throughout the study the data was locked away, with access limited to the researcher and supervisors. Moreover, most data is stored electronically in computer files only accessible via a secure password.

3.8   Data analysis

3.8.1   Questionnaire sampling

As participation in the study is voluntary, it is vulnerable to sampling bias (MacLennan, Kyrpi, Langley and Room, 2012), specifically self-selection bias and non-response bias. Given the study is limited to students studying at 'The University', purposeful sampling is used to inform understanding of student motivation and SRL strategies adopted when engaging with the learning resources provided to them in a blended learning environment. Further, a criterion sampling strategy was adopted (Creswell, 2013). As a type of purposeful sampling, wherein all cases meet some form of pre-conceived idea (Creswell, 2013), in this study this was achieved as students were enrolled in a Bachelor of Business or Bachelor of Business (Accounting) degree and majoring in accounting. Students enrolled in these degrees comprise a mixture of international and local students and a mix of gender. Some students have studied accounting in high school (which is not a prerequisite) and enter directly with varying ATAR[19] scores; others enter via a pathway arrangement, having studied first year elsewhere. Regardless, all students participating in the study were exposed to blended learning throughout the five aforementioned units meaning that they were in a position to provide insights into their motivation and the SRL strategies adopted whilst studying accounting.

Non-response bias, which occurs when "a significant number of people in the survey sample do not respond to the questionnaire and have different characteristics from those who do respond" (Dillman, 2007, p.10), was limited by offering a prize draw designed to entice participation. The prize draw comprised a $100 gift voucher awarded to two randomly selected students who submitted a completed questionnaire in each of the five foci units. The prize draw

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[18] Students who completed the questionnaire completed a check box providing consent for the researcher to access their learning analytics data, however, ethics approval was provided to access all students enrolled in the five foci accounting units as long as the data was analysed in aggregate form.

[19] The ATAR is the primary criterion for domestic student entry into undergraduate courses in Australian public universities.

was conducted across both Semesters 1 and 2, 2016. Further, an independent-samples t-test was conducted to compare the questionnaire responses of early and late respondents.

3.8.2   Analysis of the questionnaire data

As the number of responses where students completed all aspects of the questionnaire except for the open-ended statements/questions in each unit ranged from 7 to 58 (see Section 6.3, Table 6.2, Column headed number 4), the data was reviewed using a Levene's test of equality of variance to see whether it could be pooled, with results suggesting this was permissible.

Table 3.1 above outlines the changes made to the original MSLQ questionnaire to suit a blended learning environment, including the addition of statements related to lifelong learning. Given these changes, psychometric testing was undertaken to measure the reliability of the instrument. Commonly, the reliability of an instrument is assessed through investigation of internal consistency (Nunnally, 1978). The most commonly used index of internal consistency is Cronbach's (1951) coefficient alpha (Straub, Boudreau and Gefen, 2004; Nunnally, 1978). This has been used in this study, however, it is acknowledged that a drawback with the Cronbach coefficient alpha is that its value is dependent on both the average correlation among items and the number of items included in the instrument.

The questionnaire was designed to ensure maximum comparability of responses across participants, who were requested to respond to each statement on a 7 point Likert-scale. Given the Likert-scale used in the questionnaire is not an interval scale, no conclusions were drawn about the interval between each scale option (Moser and Kalton, 1979). Z-tests and Shapiro-Wilk tests were undertaken to test the data for normality, with results showing that the data is not normally distributed. Consequently, consideration was given to data transformation, which was not undertaken. Thus, the data was subjected to non-parametric techniques, in particular Mann-Whitney and Kruskal-Wallis. Further, statements contained in the questionnaire were subjected to Principal Components Analysis (PCA) in order to summarise the patterns of correlations amongst the statements and to reduce the number of variables.

Responses to the first three open-ended statements/questions (see Appendix I) were analysed using NVivo, with findings probed, in the context of accounting, to ascertain what motivates students to learn, the way students prefer to learn and the learning strategies they applied. For each statement/question, a word cloud image was created (see Section 9.2). The images highlighted the words students used in their responses with the most commonly used

words depicted in larger font. This enabled identification of the major themes which were used to inform qualitative analysis of responses to the more direct interview questions.

The following statement/question relating to RQ3, *Reflecting back on prior semesters, can you describe whether your level of engagement with the learning resources changed?* was analysed in conjunction with the similar interview question. Responses to the following statement/question pertaining to motivation: *Reflecting back on prior semesters, can you describe whether your motivation to study has changed?* was not analysed as this question was considered to be too broad given its use of the term "motivation to study" rather than an inferred motivation to engage with the learning resources provided.

3.8.3   Analysis of responses from the student interviews

To gain an understanding of the main research issues, the interviews were transcribed and analysed. Next, a preliminary read through of the transcribed interview data was carried out, followed by a re-read of the transcripts in their entirety in order to better understand the issues or themes highlighted by students (Yin, 2014; Creswell, 2013). Given that identifying and naming themes that emerge from the data is the responsibility of the researcher (Walsham, 2006), the researcher analysed the data referring to the theoretical propositions based on SRL, in particular the MSLQ scales. Based on this, major themes were manually identified (see Section 9.4), with these themes and patterns subsequently discussed in light of the extant literature, supported by the inclusion of relevant interview extracts.

3.8.4   Analysis of responses from the CE interviews

Each of the CE interviews was transcribed and when viewed in totality, enabled an understanding of the type of learning resources available per year level to be ascertained. Further, analysis permitted differences across units that may have impacted findings from the student interviews to be noted, as well as gaining an appreciation in terms of the learning resources provided and how they were provided i.e., progressively or at the commencement of the semester and whether CEs continually prompted students regarding the learning resources. This was particularly relevant in cases where the CE continually prompted usage of the learning resources, as it may have impacted student motivation to engage with them. Finally, ascertaining an understanding of the learning resources available (i.e., formative as opposed to summative) assists in interpretation of the learning analytics data, including timing regarding the availability of these (see Section 7.4).

3.8.5 Analysis of the learning analytics data

After screening the learning analytics data to remove data related to: (1) the CE and tutors; (2) assessments; and (3) Campus B; Microsoft Excel was used to determine the number of unique hits; average interactions per student; as well as the minimum, maximum, and standard deviations in hits per unit per semester. These results are reported for each of the following four time periods:

- First 4 weeks of semester (including Orientation week);
- Mid 4 weeks (i.e., Weeks 5 – 8);
- Final 4 weeks (i.e., Weeks 9 – 12); and
- SWOT Vac and exam period.

Delineation of the data into these time periods arose as the size and number of line items per unit was extremely large, which required the IT department to distribute the data to the researcher in the abovementioned four time periods. Notwithstanding this, a noteworthy consequence is the ability to analyse the data at a more granular level, resulting in more in-depth analysis.

The number of unique hits per learning resource was determined in totality and according to the aforementioned time periods. Given that, for the purposes of this study, a learning resource is any resource that a student uses as part of the learning process, items relating to administrative data (i.e., notification of assignment submission reminders) were removed. Similarly, line items relating to students viewing the home page or items specifically related to Campus B students only (for example, Lecture 12 Campus B) were removed. In each unit, comparisons across semesters were made, with general trends observed and reported, including in relation to whether, as undergraduate accounting student progress through their degree, their engagement with the learning resources changed (RQ3).

The two sources of data (i.e., student interview responses and learning analytics data) were reviewed concurrently to assist in answering RQ1. In particular, the learning analytics data was used to corroborate recollection of student usage of learning resources obtained through the interviews. In terms of RQs 2 and 3, questionnaire responses and interview data was initially analysed separately, and then analysed simultaneously, to identify key themes in relation to student motivation and SRL strategies students used when engaging with the learning resources. Further, reviewing responses from the two data sources simultaneously allowed for divergent themes to be identified.

3.9   Summary

After outlining the ontological, epistemological and methodological positions of the study, the procedures undertaken to develop the questionnaire and interview protocols are described, and an overview of the data collected, provided. Next, the sample selection pursued in answering each of the research questions related to the motivation and SRL strategies students adopt when they engage with the learning resources provided to them in a blended learning environment are outlined, and the methods used in statistically and qualitatively analysing the data are discussed, and their rationale justified.

Chapter 4 outlines the context for this study providing a brief overview of the characteristics of 'The University'. It then provides a brief synopsis of the five foci accounting units, including an overview of the learning resources made available by the CE in each unit.

4: Context

4.1 Introduction

As noted in Chapter 3, this study uses a case study approach to explore, over time, a real-life contemporary bounded case through detailed, in-depth data collection involving multiple sources of information (Creswell, 2013). In exploring the motivational and learning strategies accounting students adopt when engaging with the learning resources provided to them in a blended learning environment, three data sources were used – learning analytics, survey and interview data.

The aim of this chapter is to outline the context for the study, which involves students enrolled in the Bachelor of Business or Bachelor of Business (Accounting) degrees at a Go8 Australian university, deidentified as 'The University'. Specifically, this study is bounded to students studying accounting units as part of these degrees, which are offered at one of the university's four campuses.

The chapter commences with a brief overview of the characteristics of 'The University'. It then provides a brief synopsis of each of the foci accounting units, including an overview of the learning resources made available by the CE in each unit. Information about the learning resources was derived from a walk-through of the unit's site on the LMS, in conjunction with a face-to-face interview with the CE wherein they outlined: resources that were summative as opposed to formative; when the learning resources were made available; and whether they prompted students in relation to the learning resources provided.

4.2 Case setting

4.2.1 University characteristics

This study involves a case study where what is studied is bounded by time and place (Yin, 2014; Creswell, 2013; Denzin and Lincoln, 2005). Specifically, the bounded system is confined to students studying a Bachelor of Business or Bachelor of Business (Accounting) at 'The University' in 2016. 'The University' is one of Australia's leading universities, with a ranking among the world's top 100 universities. It is one of two universities in Melbourne that is part of the Go8, which represent Australia's leading research-intensive universities. It is a multi-campus university, with the degrees of interest in this study taught at one of the main campuses in Australia.

4.2.2 Student participants

Students in this study were drawn from the Bachelor of Business or Bachelor of Business (Accounting) degrees. Typically, entry into the degrees is gained by completing the final year of high school, wherein students are required to achieve a minimum ATAR of 75[20] and successfully complete english and maths. Students are not required to complete accounting at high school.

On commencing, students are provided with a course progression map, which provides advice on the sequencing of units and guidance on how to plan semester-based unit enrolments. For the purposes of this study, a course of study is a single course leading to a higher education award, i.e., a degree, whilst a unit is a semester length subject taught within the course. Figure 4.1 outlines the recommended course progression for students completing the Bachelor of Business (Accounting). The Bachelor of Business is a generalist degree where students electing to complete a major in accounting would be required to complete the same 5 core accounting units (identified in yellow in Figure 4.1). Course requirements for the Bachelor of Business (Accounting) include:

- Students must complete a total of 24 units, of which a maximum of 10 units are to be completed at first-year-level and a minimum of six units at third-year-level, of which four units must be from the Bachelor of Business degree family.
- Students must complete the following six compulsory common core units:
  - ACF1000 Principles of accounting and finance.
  - BTF1010 Commercial law.
  - ECF1100 Microeconomics.
  - ETX1100 Business statistics.
  - MGF1010 Introduction to management.
  - MKF1120 Marketing theory and practice.
- To be awarded a Bachelor of Business with a major in accounting, students must complete the following six units, together with four units from a range of units covering accounting, IT, law and economics (not shown):
  - ACF1000 Principles of accounting and finance (as noted above, a common core unit).
  - ACF1100 Introduction to financial accounting.

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[20] This is the lowest ATAR for which an offer was made in 2020. In general, ATARs do not move substantially from one year to the next.

- ACF2100 Financial accounting.

- ACF2200 Introduction to management accounting.

- ACF3100 Advanced financial accounting.

- ACF3200 Management accounting.

Year 1				
Semester 1	Core (compulsory) ACF1100 Principles of accounting and finance	Core (Compulsory) BTF1010 Commercial law	Core (Compulsory) ETX1100 Business statistics	Core (Compulsory) ECF1100 Microeconomics
Semester 2	Major (Compulsory) ACF1100 Introduction to financial accounting	Core (Compulsory) MGF1010 Introduction to management	Core (Compulsory) MKF1120 Marketing theory and practice	Elective 1 Student choice
Year 2				
Semester 1	Major (Compulsory) ACF2200 Introduction to management accounting	Major (Choice 1) One of the accounting units available	Elective from faculty	Elective 2 Student choice
Semester 2	Major (Compulsory) ACF2100 Financial accounting	Major (Choice 2) One of the accounting units available	Elective 3 Student choice	Elective 4 Student choice
Year 3				
Semester 1	Major (Compulsory) ACF3200 Management accounting	Major (Choice 3) One of the accounting units available	Elective 5 Student choice	Elective 6 Student choice
Semester 2	Major (Compulsory) ACF3100 Advanced financial accounting	Major (Choice 4) One of the accounting units available	Elective 7 Student choice	Elective 84 Student choice

Figure 4.1: Recommended course progression for students enrolled in the Bachelor of Business (Accounting) (Commencing 2015). Source: Monash University

Participants in this study were enrolled in one or more of the following units: ACF1100, ACF2100, ACF2200, ACF3100 and ACF3200. Being the units required by those seeking associate membership with one of the two main Australian accrediting professional accounting bodies, these units were chosen as they signal students interest in pursuing a career in accounting. It is important to understand student motivation and the SRL strategies they undertake at university, as this is likely to impact their approach to CPD post university, which is integral to lifelong learning, as continuous learning is required to maintain professional accreditation as an accountant.

4.3 Overview of the five core foci accounting units required for professional accreditation

A brief synopsis and overview of the learning resources available in the five core foci accounting units is provided below. Each unit is taught using either two one-hour lectures (ACF1100), or a 2 hour lecture (ACF2200 and ACF3200), or a 90 minutes lecture (ACF2100 and ACF3100) per week, with a tutorial on the topic in the following week. Each week the lectures cover new concepts and topics, with students required to complete and discuss assigned questions on the previous week's lectures in the following week's tutorial. Tutorials in first year (ACF1100) and the financial accounting units (ACF2100 and ACF3100) are 90 minutes in duration, while in the second (ACF2200) and third year (ACF3200) management accounting units they are 1 hour in duration. In each unit, assessment is weighted at 50% internal (comprising a combination of mid-semester tests, online quizzes, presentations, group and/or individual assignments) and 50% final summative examination.

4.3.1 ACF1100 Introduction to financial accounting

ACF1100 provides students with an introduction to financial accounting guided by the Conceptual Framework and accounting standards. Emphasis is placed on accounting processes, practices and policies concerned with the preparation of financial statements for service and retail entities. The unit requires students to integrate theoretical and technical knowledge learned to exercise judgement when exploring accounting issues. Key concepts relate to: students' ability to identify and analyse measurement systems and their relationship with the Conceptual Framework; understanding application of double-entry and accrual accounting principles; applying definition and recognition criteria to assets, liabilities, income and expenses as specified in the Conceptual Framework; and applying principles from selected accounting standards to the preparation of financial statements ('The University' Handbook).

4.3.1.1 *Learning resources available in ACF1100*

The LMS is used extensively in ACF1100, with the CE (from first semester) advising that he was motivated to provide as many learning resources as possible where they offered the potential for students to perform better. Resources include: lecture slides (provided in PowerPoint format (PPT)[21], loaded two weeks in advance of each lecture); weekly tutorial solutions (provided each Friday evening); a reading guide; course outline i.e., unit guide;

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[21] In all foci accounting units, lecture slides are uploaded in PPT format on to the LMS. Further in all units, lecture recordings (where discussed) relate to lectures being recorded live.

practice questions and solutions (loaded at the end of each week); past exam questions and solutions (provided from Week 9); YouTube videos (where appropriate); and an external tool MyAccountingLab. This external tool allows students to access a textbook, in addition to the prescribed textbook, from which multiple choice questions (MCQs) are drawn. Students use the tool as a study plan to review chapters and complete assigned MCQs, which are chosen by the CE from a databank. If students do not complete the assigned MCQs correctly, they are directed to specific sections of the textbook to further their understanding before being provided with additional MCQs. Students can only move to the next chapter once they have successfully completed MCQs from the previous chapter. Whilst it covers all assigned topics, as a formative resource, the CE believes that the content is more effective in the first 8 weeks of the semester, noting he felt students engaged with the resource as it was fun and easy to use.

Each week, the CE informs students through a group email sent via the LMS, when and where material is loaded on to the LMS. This ensures that they do not need to trawl through the LMS to find it. His email sought to encourage students to engage with the learning resources provided to them. Interestingly, the discussion board was only available in Semester 2, 2016 as the CE felt that student consultation with the teaching staff was a better resource for students encountering difficulties. Indeed, he noted that once the discussion board was made available, whilst it was heavily used, attendance at consultation dropped significantly. Whilst the CE acknowledged that the discussion board was a valuable resource and thus planned to continue to offer it, he preferred that students attended consultation, as the workload involved in monitoring the discussion board was substantial.

4.3.2 ACF2100 Financial accounting

ACF2100 examines financial accounting issues associated with the operation of corporate structures. Topics include financial reporting requirements, financing company operations, business combinations, the nature of corporate groups, the preparation of consolidated financial statements and financial statement analysis. On completing the unit, students should be able to: explain the regulation of companies and understand the content presented in statutory company financial reports provided to external users; critically examine current issues and disclosure requirements in financial reporting; apply accounting standards and the Conceptual Framework in the preparation and presentation of financial reports for consolidated entities; and demonstrate sufficient accounting knowledge in areas such as company operations, taxation, accounting for property, plant and equipment, acquisitions, group structures and financial statement analysis ('The University' Handbook).

4.3.2.1 *Learning resources available in ACF2100*

ACF2100 is quite a technical unit. Thus, the CE provides numerous resources designed to allow students to continue practicing in order to master the concepts required. Accompanying each lecture is a lecture handout that students are required to bring to class, with this completed during the lecture. For example, the lecture handout on tax effect accounting illustrates the future income tax benefit and tax liability. Each week lecture slides are posted on the LMS. Further, at the end of the week, solutions to the lecture handouts are posted. Additional learning resources include: readings and links to relevant accounting standards; practice questions and solutions; and past exam questions and solutions.

Additionally, each week presentation questions and tutorial solutions are provided. Here, in each tutorial, a group of students is required to complete an assigned presentation question, which they must present to fellow students. Whilst a summative exercise for the students presenting, the questions and solutions are provided to all students as a learning resource, which they are expected to review. These questions and solutions form an additional resource to the tutorial questions students are expected to complete prior to the tutorial, with the solutions provided at the end of each week.

The unit includes a mid-semester test. To facilitate preparation for this, students are provided with sample mid-semester tests and solutions, which are in addition to past exam questions and solutions.

Students are prompted continuously regarding the learning resources available and are advised that as it is a very technical unit, it is difficult to cram during the SWOT Vac period. Thus, they are continually encouraged to work progressively each week.

Based on a lack of usage in prior semesters, there was no discussion board available in this unit in either Semester 1 or 2, 2016.

4.3.3 ACF2200 Introduction to management accounting

ACF2200 focuses on the types of cost information that can be produced to assist managers and other employees within organizations in planning and control, and decision-making. Topics include: costs and cost behaviour, product costing, cost allocation techniques, cost-volume-profit analysis, and the use of cost information for management decisions. Students learn how to classify costs dependent on the context and purpose of related decisions; analyse cost behaviour and estimate costs; design, use and evaluate costing systems; and finally, analyse and use cost information to make relevant decisions ('The University' Handbook).

4.3.3.1 *Learning resources available in ACF2200*

Typical resources, such as lecture slides (uploaded two weeks in advance of the lecture), tutorial questions and solutions (with solutions uploaded at the end of each week) and readings, which consist of newspaper articles, journal articles, practitioner articles, and YouTube videos (provided at the start of semester) are provided via the LMS. Additionally, students have access to practice questions and solutions[22], which are not reviewed in either the lecture or tutorial, but are uploaded at the start of the semester allowing students to access them at any time to enhance their understanding. All of these resources are uploaded within a structure wherein the LMS site is separated into weekly sections, which is a typical structure across all five foci accounting units. Additionally, in this unit the discussion board is attached to each week and on a topic-by-topic basis, rather than being provided as a single resource in the LMS. Further, in each weekly section, this unit includes a checklist reminding or encouraging students about what they should have engaged with for that particular week or topic. The CE believes that the checklist is one way to signify to students the importance of particular learning resources and thus motivate them to engage with them.

Whilst the readings are uploaded at the commencement of the semester, the CE integrates the article or reading into each lecture, highlighting the relevance of the article to an abstract concept, and suggests to students that when reviewing the lecture, they read the article. The article provides an illustration of a real-life company example, which the CE believes appeals to the younger generation e.g., Apple. This allows the CE to connect examples from real-life to the concept being taught.

Whilst past exam questions and solutions are provided on the LMS, students initially attempt many these of questions in tutorials, where twenty minutes of each tutorial is reserved for students to work in groups to complete past exam questions.

Students complete 3 multiple choice quizzes – two for assessment purposes, with the third an "Academic Integrity Quiz" designed to assist them in understanding the nuances of preparing a research assignment. Whilst not part of the unit's summative assessment, this quiz serves as a learning tool that students must successfully complete in order to move on to the summative quizzes and enable them to successfully complete the research assignment.

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[22] In Semester 1, 2016, these were loaded as a separate resource. However, in Semester 2, the practice questions were added to the tutorial questions, but were clearly identified as additional practice questions, with the solutions presented in a single document on the LMS.

4.3.4 ACF3100 Advanced financial accounting

ACF3100 explores issues that build on the knowledge and skills gained in the earlier financial accounting units i.e., ACF1100 and ACF2100. A range of theories, including agency, stakeholder and legitimacy theories, are used to assess accounting decisions, reporting practices and regulation. The unit also focuses on a number of contemporary accounting issues, including: measurement; integrated reporting; and accounting for specific transactions such as intangible assets; financial instruments; and foreign currency transactions ('The University' Handbook).

4.3.4.1 Learning resources available in ACF3100

Similar to prior accounting units, in ACF3100 lecture slides and tutorial solutions are provided on a weekly basis. Revision questions, comprising past exam questions and additional practice questions, sorted by topic, are uploaded on the LMS at the start of semester, with students informed and shown where to access these during the lecture in Week 1. Students are encouraged to continuously revise topics and complete the revision questions throughout the semester. At the commencement of the semester, solutions to the computational revision questions are provided, whilst solutions to the theoretical questions are not provided as the CE expects students to develop understanding through their own research, and more importantly sought to discourage students from memorising suggested solutions.

Additional readings, comprising refereed journal articles and practitioner articles, are provided through a link via the library system. Available at the start of semester, these readings are linked to the corresponding week. Students are provided with a worksheet titled "Guided reading worksheet for academic articles", which is walked-through in the first tutorial. When reading the refereed journal articles, students are encouraged to complete the worksheet, which asks them to comment, in their own words, on the purpose of the research, the method adopted, applicable research questions or hypotheses, and findings.

Similar to ACF2200, students complete past exam questions in tutorials, with solutions provided towards the end of the semester to assist them with their revision prior to the exam. A discussion board is available in the unit as a single learning resource, with a number of short (10 minute) YouTube videos on specific topics provided on the LMS.

As noted above, resources are placed either on the LMS at the start of semester or periodically on a weekly basis. In contrast to other units, aside from being shown in a tutorial and Lecture 1 where to access the "Guided reading worksheet for academic articles", students are not regularly prompted regarding the learning resources available to them. The CE felt that

students should be aware that the LMS is the "information hub" and that they should regularly, at least twice a week, engage with the LMS.

4.3.5 ACF3200 Management accounting

ACF3200 focuses on the provision and use of management accounting information for management planning and control in organizations. Technical and behavioural issues related to budgeting, variance analysis, performance measurement, and value chain management, are considered. On completion of the unit, students should be able to: understand management accounting techniques that managers utilise in order to measure and enhance organizational performance; be able to analyse and make recommendations regarding the design of management accounting systems; and critically evaluate management accounting systems and appreciate the behavioural implications of such systems ('The University' Handbook).

4.3.5.1 Learning resources available in ACF3200

As in prior units, typical resources include lecture slides and tutorial solutions, which are loaded onto the LMS on a weekly basis. Similar to ACF2200, a discussion board is set up for each week's topic. Additionally, the CE has developed and posted (within the weekly discussion board section) frequently asked questions. Students are directed to post all queries relating to content in the discussion board with contact via email limited to concerns of a personal nature. Resources provided in this unit that do not appear in the prior units, include case studies, reflective notes, videos created by the CE where he felt that the content may not have been adequately presented in the lecture, and content relating to producing group case reports and presentations. As with prior units, past exam questions and solutions are also provided through the LMS.

Learning resources in this unit are loaded on to the LMS progressively i.e., they are released on a weekly basis. The CE believed providing all learning resources at the commencement of the semester was not particularly helpful and could add to student anxiety (Osgerby, 2013), particularly for students who are not as confident in the area of management accounting.

Further this CE, in accordance with the CE of the other third year core accounting unit (i.e., ACF3100), believes that students need not be prompted about the learning resources made available to them. His view is that by third year, students should be inculcated into the expectations and requirements of undertaking university study, and therefore appreciate that engaging with content delivered via the LMS is expected of them. As such, prompts were only

provided to students in lectures or via an email (through a News Forum post)[23] if the information was of an unusual (e.g., information about an external event such as a professional body seminar) or of an important nature (e.g., information regarding an assessment task).

4.3.6   Summary

When reviewing the content for the five foci accounting units, it is evident that knowledge attainment is scaffolded across each year level. For example, the second year core accounting units build on the knowledge gained in ACF1100. Whilst similar resources are available across each of the units (discussed further in the next section), there are some notable differences between the management and financial accounting units. For example, in the financial accounting units, more emphasis is placed on accounting standards and procedural aspects requiring, for example, the use of lecture handouts to ensure topics such as consolidations and tax effect accounting, amongst others, can be grasped. This is somewhat different to the management accounting units where the focus shifts to the workings of organizations and therefore an increased reliance on the use of real-life case studies. The next section highlights the similarities and differences in the learning resources provided across the five accounting units.

4.4   Similarities and differences in learning resources provided across the five foci units

Common resources made available in the five core foci accounting units include:
- Lecture slides;
- Tutorial questions and solutions;
- Past exam questions and solutions; and
- Additional readings.

Whilst accessibility to the resources varies, most of the lecture slides and tutorial solutions were made available weekly; with past exam questions and solutions made available towards the end of semester. Whilst the use of additional readings varied across the units, these are either available from the start of semester or provided progressively throughout, with these being additions to the lectures (including being fully integrated into the lecture slides i.e., ACF2200) and class activities undertaken in the tutorials. Two units included YouTube videos as an additional resource, with some resources available only in a particular unit given their

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[23] This refers to notifications sent to all students directly from the LMS.

relevance i.e., the "Guided reading worksheet for academic articles" (ACF3100); case studies (ACF3200); lecture handout solutions (ACF2100); an MCQ quiz on academic integrity (ACF2200); and use of an external tool MyAccountingLab (ACF1100).

A major difference concerns the discussion board. Where made available, the respective CEs had varying views as to the usefulness of this resource, with the CE in ACF2100 finding it not overly utilised in prior semesters. Thus, as it was not considered useful for students, it was not provided in 2016. Conversely, whilst the CE of ACF1100 could see the benefit for students, he felt that it meant students shied away from face-to-face consultation and was an excessive burden for the moderator. Further, as reported above, the structure of the discussion board in the management accounting units (i.e., ACF2200 and ACF3200) was very different to the financial accounting units (i.e., ACF1100 and ACF3100). In the management accounting units, a discussion board is set within each week on the LMS, allowing students to hone in on discussions on particular topic areas. Indeed, FAQs were developed for students in ACF3200 to assist in ensuring prior questions and answers were reviewed before posting new questions.

In general, CEs provide learning resources through the LMS, as they seek to provide resources that assist students in achieving success in a unit, whether that be passing the unit or in gaining an understanding of the content and concepts required to become a professional accountant. CEs believe that the LMS is an "information hub" (CE, ACF3100), a "one-stop shop" (CE, ACF3200); a place where students can access information to make up for actual class time (ACF1100); the provision of learning resources connecting the abstract to real life (ACF2200 and ACF3100); and the impetus to foster and encourage students to engage with learning resources that enhance their learning.

Across the first and second year units, the CEs remind and prompt students to access the learning resources. This is particularly so in the first year unit, which is important given that the majority would be encountering a LMS for the first time. The CEs of the third year units do not prompt students as they feel they should be more cognisant of the importance of the learning resources given they are in the final year of their university study. Having an understanding of how resources are made available and the encouragement from CEs is important as it may impact the level of student motivation to engage with the learning resources. Further, understanding the similarities and differences across the five foci accounting units is imperative as it impacts analysis of the results, in particular those related to student usage, and how they may engage with the learning resources.

4.5 Summary

This chapter has provided an overview of the learning resources made available to students in the five core foci accounting units pertinent to the study. After providing an overview of the university characteristics from which participants are drawn, a synopsis of each unit is presented. Then, through one-on-one interviews with each of the CEs and a walk-through of the unit's site on the LMS, the chapter then details understanding garnered regarding the summative and formative learning resources available, and prompts given to students regarding these resources.

Chapter 5 details results from the pilot study conducted in Semester 2, 2015, including results from the psychometric analysis of the questionnaire and initial analysis pertinent to the open-ended statements/questions and student interview responses. It concludes with statements regarding subsequent actions taken with respect to the questionnaire and interview protocols used in the main study.

5: Pilot study

5.1   Introduction

Chapter 4 detailed the context for this study, which includes an overview of the five foci units and learning resources available in each. The aim of this chapter is to report outcomes from the pilot study, including results from psychometric analysis of the questionnaire and pertinent findings from student responses to the open-ended statements/questions and interview questions. Further, the chapter reports on refinements made to the questionnaire and interview protocols as a result of the pilot study, which were subsequently used in the main study.

In reporting on this, the chapter is organised as follows: Section 5.2 provides justification for the pilot study. Section 5.3 then details participant numbers, while a brief recap of the composition of the questionnaire is provided in Section 5.4. Section 5.5 reports results from analysis of the psychometric parameters of the questionnaire, together with some preliminary findings pertinent to the open-ended statements/questions. Section 5.6 then reports findings from analysis of responses to the student interviews, while Section 5.7 reports findings from the analysis of the interviews undertaken with the CE of each of the foci units. Next, Section 5.8 summarises the steps undertaken in collecting and analysing the learning analytics data, while Section 5.9 discusses subsequent actions taken with respect to the questionnaire and interview protocols.

5.2   Justification for the pilot study

In Semester 2, 2015, a pilot study was undertaken with students enrolled in the same five foci units involved in the main study. The pilot study was conducted for a number of reasons. Firstly, it was used to validate the questionnaire i.e., to identify whether there were any problems or ambiguity with statements contained in the questionnaire. Secondly, it was used to identify issues with the implementation procedure and data collection emanating from the questionnaire (Dillman, Smyth and Christian, 2009) i.e., that students could easily access and respond to the questionnaire through the LMS. Thirdly, it enabled testing to ensure that the questionnaire was statistically valid and reliable given that it was developed by selecting statements that closely aligned to the study's research questions from three main sources: (1) Pintrich et al.'s (1991) *Motivated Strategies for Learning Questionnaire* (MSLQ); (2) Barnard et al.'s 2009 *Online Self-regulated Learning Questionnaire* (OSLQ); and (3) statements from

the *Propensity for Lifelong Learning* (Bath and Smith, 2009). Finally, the pilot study was used to test the interview protocols to ensure that the questions posed were able to be easily understood and thus answered by both students and CEs, and moreover that the questions asked generated relevant information useful in answering the research questions.

5.3 Participants

As shown in Table 5.1 below, in total 132 students from across the five foci units accessed the questionnaire, with 61 students completing the sections containing the MSLQ, OSLQ and lifelong learning (LLL) statements. In total, 1,867 students were enrolled in these five units, of which 3.3 percent participated in the study. Whilst 23 students nominated to be interviewed, only 10 students actually took part in a one-to-one interview. However, given that the main purpose of administering the questionnaire and undertaking the interviews was to validate and fine tune them for use in the main study, the data collected was deemed sufficient to meet this purpose. Results from the pilot study are detailed in Sections 5.5 and 5.6.

Semester 2, 2015	Commenced answering the questionnaire	Completed the statements pertaining to MSLQ, OSLQ and LLL on the questionnaire	Completed the open-ended statements - questionnaire	Agreed to be interviewed	Interviewed	Total student enrolments	Response rate for those who completed the MSLQ, OSLQ and LLL statements on the questionnaire
First year	49	23	10	7	4	492	4.7%
Second year	56	27	11	10	3	823	3.3%
Third year	27	11	5	6	3	552	2%
Total	**132**	**61**	**26**	**23**	**10 [a]**	**1867**	**3.3%**

Table 5.1: Student participation in the pilot study
[a] *One student who was interviewed was enrolled in one second year and one third year unit concurrently.*

Of the 132 students who accessed the questionnaire, 54 did not provide responses to any of the statements, whilst 17 completed parts of sections containing the MSLQ, OSLQ and LLL statements (e.g., the first 9 statements; the first 17 statements etc.). Of the 61 remaining students who fully completed the MSLQ, OSLQ and LLL statements, 23 were in first year, 27 in second year, and 11 in third year. It is thought that for the students who simply accessed the questionnaire, they may have been curious to see what was involved and when confronted with the first 8 statements, decided against participating further in the study. Given that 17 students

failed to complete the questionnaire, and given results of the psychometric testing (see Section 5.5 below), consideration was given to shortening it in the main study in order to boost the number of completed questionnaires. Moreover, the lower than expected response rate may have been attributable to the timing of the release of the questionnaire, which was close to the end of semester – a peak time with respect to submission of assignments, and preparation for forthcoming examinations. Based on this, three changes were made in the main study to improve the overall response rate:

(1) the questionnaire was shortened, albeit slightly (see Section 5.5 below);

(2) it was administered earlier (i.e., Week 5 as opposed to Week 9); and

(3) prizes were offered to incentivise participation (see Section 3.8.1).

5.4   Pilot study of the questionnaire

As outlined in Section 3.8.2, the questionnaire comprises Likert-scale statements drawn from existing instruments, open-ended statements/questions that probe students study behaviours, and statements seeking demographic information (see Appendix G). As a precursor to the questionnaire, a plain language explanatory statement was embedded in the questionnaire via a link (see Appendix K). The Likert-scale statements are based on:

- Pintrich et al.'s (1991) *Motivated Strategies for Learning Questionnaire* (MSLQ), but with some modifications to suit *a blended learning environment* (see Samruayruen et al., 2013, which utilised Pintrich and De Groot's (1990) version of the MSLQ);

- Barnard et al.'s (2009) *Online Self-regulated Learning Questionnaire* (OSLQ), which suits an *online environment*; and

- statements from the *Propensity for Lifelong Learning* (Bath and Smith, 2009). These statements were included given the importance of lifelong learning to accounting graduates.

In total, the questionnaire comprises 38 statements relating to motivation and SRL, and 8 statements concerning lifelong learning. Further, 5 open-ended statements/questions were included to allow students who did not elect to be interviewed to share their thoughts and ideas regarding the motivation and learning strategies they employed whilst engaging with the learning resources provided to them. At the end of the questionnaire, students were able to record their interest in participating in a one-to-one interview by providing a contact email address.

Table 5.2 (see below) depicts the timeline adopted in administering the questionnaire and

conducting the interviews. As shown, a YouTube video was created to explain and promote the study. This was made available to students early in the semester via each foci unit's site in the LMS. The CE of each unit informed students about the YouTube video via an announcement on the LMS, which encouraged students to review the video prior to commencement of the semester. To enhance the response rate and encourage students to participate in the interviews, the researcher attended lectures in Weeks 1 and 10. The rationale for attending in Week 1 was to introduce the study and to pre-empt release of the questionnaire (i.e., they were informed of the YouTube video and provided with a copy of the plain language statement[24] (see Appendix K); whilst attendance in Week 10 served as a reminder, as students were encouraged to access the questionnaire and nominate to participate in an interview.

In Week 9 of Semester 2, 2015, the questionnaire was administered, via Qualtrics, to all students enrolled in the five foci units. It was thought that by this stage of the semester students had had adequate time to engage with the various learning resources available in the unit. Through a carefully worded announcement, a link to the questionnaire was distributed via each unit's site in the LMS, with clear instructions as to how to access the questionnaire. This announcement, which each student received as an automated email, was made by the CE thereby ensuring it was not perceived as spam (Dillman et al., 2009). As evident, each contact with students, whether via an announcement or physical attendance at a lecture, was made in order to meet a specific goal (Dillman et al., 2009).

Activity	Start Date	End Date
YouTube video created	24 June 2015	24 June 2015
YouTube Link to an overview of the study provided to the CEs	14 July 2015	14 July 2015
Announcement and YouTube video posted on the respective LMS site	14 July 2015	20 November 2015
Attendance at lectures to introduce the study and pre-empt the data collection methods	27 July 2015	31 July 2015
Link to the questionnaire and email reminder sent to CEs for posting on the LMS	18 September 2015	18 September 2015
Attendance at lectures to advise that the questionnaire link was available	21 September 2015	20 November 2015
CE interviews held including walk-through of the LMS site	25 September 2015	16 October 2015
Reminder 1 - attendance at lectures - to prompt students to participate in the study	5 October 2015	15 October 2015
Email sent to students who indicated interest in participating in a one-to-one interview	19 October 2015	19 October 2015
Student interviews held	21 October 2015	26 October 2015
Reminder 2 - announcement posted on the LMS that the questionnaire was open to the end of semester	15 October 2015	20 November 2015

Table 5.2: Deployment of the questionnaire and conduct of the interviews involved in the pilot study

Each week, progress was systematically monitored in order to review the number of

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[24] Whilst in the lecture, two of the CEs demonstrated the link to the YouTube video.

students who had accessed the questionnaire, whether they had completed all aspects of it, and whether they had nominated to participate in an interview. This approach allowed close monitoring of the data (Dillman et al., 2009) to ensure, for example, that students were easily able to provide responses to the open-ended statements/questions (i.e., with no space restrictions); and that data entered was being captured, even if the student exited the questionnaire prior to completing all sections. Further, given the low response rate, it prompted additional reminders (see reminders 1 and 2 in Table 5.2 above) to encourage participation.

Prior to saving responses, an individual identification number was added to each submitted questionnaire. Further, as a back-up, the data was saved in Excel. To assist with version control, files containing the responses were assigned a composite name comprising the respective unit and date the file was downloaded. This process was repeated until the end of the semester where final student responses were tallied and an updated file created.

Importantly, by reviewing responses on a weekly basis, students expressing interest in being interviewed could be quickly identified and contacted prior to commencement of the examination period. This reiterated to students the importance of the interview and that their participation was valued. It also ensured that a mutually convenient time for the interview could be arranged prior to commencement of the examinations, which ensured responses were not biased by a student sitting an examination i.e., a student stating that they wished they had been more motivated to engage with the learning resources given what they had encountered in the examination. Further, it also ensured that the interviews were conducted prior to students completing their studies for the year, meaning that the content was still top of mind.

5.5   Analysis of the reliability of the questionnaire

Table 5.3 below provides a brief description of each scale, together with the corresponding statements utilised in this study. In total the questionnaire comprised: 11 MSLQ scales (Pintrich et al., 1991); two OSLQ scales (Barnard et al., 2009); and two scales related to lifelong learning (Bath and Smith, 2009), with all but three scales possessing the required minimum of 3 statements per scale necessary to undertake item analysis. Given modifications were made to Pintrich et al.'s (1991) MSLQ questionnaire (see Section 3.6.1), psychometric analysis was undertaken on the items to examine reliability and to aid in refinement of the questionnaire for use in the main study. Table 5.4 below reports the item-total correlations and descriptive statistics for each statement, whilst for completeness, Appendix O provides detailed information about frequencies, inter-item correlation matrices and item-total statistics per scale.

Scales (Total = 15)	No. of statements	Questionnaire statement (Total = 46)	Brief Description
Motivation scales – MSLQ (Pintrich et al., 1991)			
Intrinsic goal orientation	4	1. In ACFxxxx, I prefer learning material that arouses my curiosity, even if the content is difficult to learn. 2. I often choose learning resources I will learn something from even if they require more effort. 3. I find it satisfying to try and understand the content in this unit as thoroughly as possible. 4. I find it satisfying to try and understand the content in my accounting major as thoroughly as possible.	Goal orientation refers to the student's perception of the reasons why he/she is engaging with a learning task. Intrinsic goal orientation concerns the degree to which the student perceives himself/herself to be participating in a task for reasons such as challenge, curiosity, mastery. Having intrinsic goal orientation towards an academic task indicates that the student's participation in the task is an end all to itself, rather than participation being a means to an end (Pintrich et al., 1991, 9).
Task value	3	5. I think the learning resources in ACFxxxx are useful for me to learn. 6. Understanding the content in ACFxxxx is very important to me. 7. I think I will be able to use what I learn in ACFxxxx in other accounting units or in my professional role as an accountant	Task value refers to a student's evaluation of how interesting, how important, and how useful the task is "what do I think of this task?" (Pintrich et al., 1991, 11).
Control of learning beliefs	4	8. If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in ACFxxxx. 9. If I don't understand the content in ACFxxxx, it is because I did not use the learning resources provided. 10. If I try hard enough, then I will understand the ACFxxxx content. 11. If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in my accounting major.	Control of learning refers to students' beliefs that their efforts to learn will result in positive outcomes. It concerns the belief that outcomes are contingent on one's own effort. If students believe that their efforts to study make a difference in their learning, they should be more likely to study more strategically and effectively (Pintrich et al., 1991, 12).
Self-efficacy for learning and performance	3	12. I'm certain I can understand the most difficult content presented in the learning resources provided for this ACFxxxx unit. 13. I'm confident I can understand the concepts taught in ACFxxxx through engagement with the learning resources provided. 14. I'm confident I can understand the concepts taught in my accounting major through engagement with the learning resources provided.	Self-efficacy includes judgements about one's ability to accomplish a task as well as one's confidence in one's skills to perform the task (Pintrich et al., 1991, 13).
Learning Strategy scales – MSLQ (Pintrich et al., 1991)			
Rehearsal	3	15. When studying for this ACFxxxx unit, I re-use the learning resources provided over and over again. 16. I memorise key words and important terms to remind me of important concepts in this unit. 17. When studying, I re-use the learning resources to help me remember material.	Basic rehearsal strategies involve reciting or naming items from a list to be learned. These strategies are best used for simple tasks and activation of information in working memory rather than the acquisition of new information in long-term memory (Pintrich et al., 1991, 19).

Scales (Total = 15)	No. of statements	Questionnaire statement (Total = 46)	Brief Description
Elaboration	3	18. When engaging with the learning resources for ACFxxxx, I try to relate the content to what I already know. 19. When I am studying for ACFxxxx, I try to make connections between the learning resources so that everything fits together. 20. I try to relate ideas in this unit to those in other accounting units wherever possible.	Elaboration strategies help students store information into long-term memory by building internal connections between items to be learned (Pintrich et al., 1991, 20).
Critical thinking	1	21. I use the learning resources provided as a starting point and try to develop my own ideas from that.	Critical thinking refers to the degree to which students report applying previous knowledge to new situations in order to solve problems, reach decisions, or make critical evaluations with respect to standards of excellence (Pintrich et al., 1991, 22).
Metacognitive self-regulation	6	22. When I become confused about the content taught in this unit, I try to locate alternative learning resources. 23. When studying, I think of other things and don't really focus on what is contained in the learning resources. 24. Before I begin studying I think about the learning resources that I will need to engage with in order to learn. 25. When I study for ACFxxxx, I set goals for myself in order to direct my activities and engage with the learning resources provided. 26. I try to think through ideas and concepts when engaging with the learning resources. 27. I prepare questions before posting them on the discussion board.	Metacognition refers to the awareness, knowledge, and control of cognition. There are three general processes that make up metacognitive self-regulatory activities: planning, monitoring, and regulating (Pintrich et al., 1991, 23).
Time and study environment	3	28. I try to choose a location to study where I can concentrate on my course work. 29. I try to choose a time with few distractions for studying. 30. I make sure I keep up with the weekly requirements for ACFxxx by engaging with the learning resources available regularly.	Time management involves scheduling, planning and managing one's study time. This includes not only setting aside blocks of time to study, but the effective use of that study time, and setting realistic goals. Study environment management refers to the setting where the student does his or her class work (Pintrich et al., 1991, 25).
Effort regulation	3	31. When the content in ACFxxx is difficult, I give up or only study the easy parts. 32. Even when the ACFxxxx learning resources are dull and uninteresting, I keep working until I finish. 33. I work hard to do well in ACFxxx even if I don't like what we are doing.	Effort management is self-management, and reflects a commitment to completing one's study goals, even when there are difficulties or distractions (Pintrich et al., 1991, 27).
Help-seeking	1	34. When required, I seek assistance from the lecturer/tutor	Another aspect of the environment that the student must learn to manage is the support of others. This includes both peers and instructors. Good students know when they don't know something and are able to identify someone to provide them with some assistance (Pintrich et al., 1991, 29).

Scales (Total = 15)	No. of statements	Questionnaire statement (Total = 46)	Brief Description
OSLQ – Barnard et al. (2009)			
Goal setting	3	35. I try to maintain a high standard of engagement in this unit. 36. I set goals to help me manage my studying time for this unit. 37. I set short term (daily or weekly) goals as well as long-term (monthly or for the semester) goals.	As the blended learning environment is less directed and controlled, students need to set specific and challenging goals in order to contribute to higher and better performance.
Self-evaluation	1	38. I communicate with my classmates to find out whether what I am learning is different to what they are learning.	Students communicating with one another helps them feel connected and may confirm that they are on the right track in their learning.
Propensity for Lifelong Learning (Bath and Smith, 2009)			
Beliefs	5	39. I enjoy learning. 40. I believe learning is important for developing as a person. 41. I am able to use different learning resources to retrieve and process information. 42. I plan to keep my knowledge and skills updated throughout my professional life in order to advance my career. 43. Learning is important for achieving my career goals.	Represents beliefs about learning and knowledge (Bath and Smith, 2009, 181)
Attitudes	3	44. I can identify when I need to learn something. 45. I am aware of the ways I prefer to learn 46. I don't like my learning environment to change to what I am comfortable with.	Represents an individual's abilities in relation to learning and development (Bath and Smith, 2009, 181).

Table 5.3: Scales and corresponding statement on the questionnaire utilised in the pilot study
N.B. The statements are numbered similarly in Tables 5.3 and 5.4 in order to match the statistics against the statement item codes.

Item	Statement number	N	Mean	Median	Std. Dev.	Min.	Max.	Item-total correlation	Cronbach if item removed
Scale: Intrinsic goal orientation (MSLQ)									
MIntCurio	1	62	5.42	6	1.095	2	7	0.694	0.553
MIntEffort	2	62	5.11	5	1.404	2	7	0.481	0.684
MIntSatUnd	3	62	5.89	6	1.073	2	7	0.570	0.626
MIntSatUndAccMajor	4	62	5.81	6	1.212	2	7	**0.340**	0.753
Scale: Task value (MSLQ)									
MTaskUseful	5	78	5.73	6	1.124	2	7	0.573	0.830
MTaskUnd	6	78	6.10	6	1.223	1	7	0.742	0.655
MTaskUse	7	78	6.05	6	1.043	1	7	0.687	0.723
Scale: Control of learning beliefs (MSLQ)									
MControlLearn	8	62	6.03	6	0.905	1	7	0.560	0.688
McontrolNonUse	9	62	4.47	5	1.596	1	7	0.445	0.804
MControlEffort	10	62	6.03	6	1.071	2	7	0.588	0.662
MControlLearnMajor	11	62	5.90	6	0.953	2	7	0.711	0.613
Scale: Self-efficacy for learning and performance (MSLQ)									
MSelfEffCertain	12	62	5.58	6	1.222	1	7	0.741	0.848
MSelfEffConfident	13	62	5.65	6	1.147	1	7	0.792	0.798
MSelfEffConfidMajor	14	62	5.79	6	1.073	1	7	0.759	0.830
Scale: Rehearsal (MSLQ)									
LSRehReuseOver	15	72	5.42	6	1.253	1	7	0.587	0.457
LSRehMemorise	16	72	5.35	6	1.334	2	7	**0.252**	0.887
LSRehReuseMem	17	72	5.57	6	1.197	1	7	0.702	0.307
Scale: Elaboration (MSLQ)									
LSElabRelate	18	72	5.67	6	1.126	2	7	0.693	0.691
LSElabConnect	19	72	5.40	6	1.35	2	7	0.686	0.693
LSElabRelOther	20	72	5.69	6	1.194	2	7	0.580	0.797
Scale: Critical thinking (MSLQ)									
LSCriticalDev	21	72	5.18	5	1.194	2	7		
Scale: Metacognitive self-regulation (MSLQ)									
LSMetaSRAlternate	22	66	5.35	6	1.342	2	7	0.417	0.559
LSMetaSRDistract	23	66	4.38	5	1.586	1	7	**-0.025**	0.723
LSMetaSRDistractR	23 R*	66	3.62	5	1.586	1	7	**0.025**	0.723
LSMetaSRNeed	24	66	5.18	6	1.467	1	7	0.432	0.55
LSMetaSRSetGoals	25	66	5.24	5.5	1.313	1	7	0.510	0.527
LSMetaSRThinkIdeas	26	66	5.33	6	1.232	1	7	0.568	0.512

Item	Statement number	N	Mean	Median	Std. Dev.	Min.	Max.	Item-total correlation	Cronbach if item removed
LSMetaSRPrepareQu	27	66	4.67	5	1.916	1	7	**0.390**	0.571
Scale: Time and study environment (MSLQ)									
LSTimeLoc	28	64	5.75	6	1.48	1	7	0.458	0.302
LSTimeFewDistract	29	64	5.67	6	1.346	1	7	0.540	0.184
LSTimeWeekReg	30	64	5.58	6	1.401	1	7	**0.154**	0.757
Scale: Effort regulation (MSLQ)									
LSEffortEasyParts	31	64	3.25	3	1.834	1	7	**-0.170**	0.642
LSEffortEasyPartsR	31 R*	64	4.75	3	1.834	1	7	**0.170**	0.642
LSEffortPersist	32	64	5.63	6	1.327	1	7	**0.376**	0.238
LSEffortHardWork	33	64	5.63	6	1.339	1	7	**0.367**	0.249
Scale: Help-seeking (MSLQ)									
LSHelpSeekAcad	34	64	5.25	6	1.543	1	7		
Scale: Goal setting (OSLQ)									
OSLQHighStdEngage	35	64	5.75	6	1.069	3	7	**0.277**	0.843
OSLQGoalSetGoals	36	64	5.48	6	1.297	2	7	0.685	0.354
OSLQGoalSTLT	37	64	5.33	6	1.358	1	7	0.619	0.449
Scale: Self-evaluation (OSLQ)									
OSLQEvalComm	38	64	4.63	5	2.20	1	7		
Scale: Lifelong learning beliefs (LLL)									
LLLEnjoy	39	61	5.70	6	1.269	2	7	0.572	0.728
LLLDevelop	40	61	6.15	6	0.813	4	7	0.654	0.702
LLLUseDiff	41	61	5.79	6	0.985	3	7	0.548	0.727
LLLUpdateSkills	42	61	5.79	6	1.112	1	7	0.457	0.762
LLLCareerGoals	43	61	6.41	7	0.739	4	7	0.585	0.727
Scale: Lifelong learning attitudes (LLL)									
LLLIdentifyNeed	44	61	5.84	6	0.640	4	7	0.053	0.244
LLLAwarePref	45	61	5.92	6	0.971	4	7	0.427	-0.487[25]
LLLStatusQuo	46	61	5.13	5	1.678	1	7	**-0.031**	0.692

Table 5.4: Descriptive data and item-total correlations for each statement.
Item-correlations below 0.4 are highlighted in bold.
* These two statements were reversed given the wording of the statement and the negative item-correlation (23 R and 31 R).

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[25] The value is negative due to a negative average covariance among items. The statement was retained as it was relevant to the RQs.

5.5.1 Item analysis of statements contained in the questionnaire

Table 5.5 below details the Cronbach's alpha for each scale in the pilot study and compares these to those reported in Pintrich et al.'s (1991) study.

Questionnaire Scales	Cronbach's Alpha		
	Pilot study - Semester 2 2015	Pintrich et al. (1991)	(↑/↓)
Motivation/Affect			
Intrinsic goal orientation	0.719	0.74	↓
Task value	0.812	0.9	↓
Control of learning beliefs	0.745	0.68	↑
Self-efficacy for learning and performance	0.876	0.93	↓
Learning Strategy			
Rehearsal	0.679	0.69	↓
Elaboration	0.802	0.76	↑
Critical thinking*		0.8	
Metacognitive self-regulation	0.624	0.79	↓
Time and study environment	0.558	0.76	↓
Effort regulation	0.465	0.69	↓
Help-seeking*		0.52	
OSLQ goal setting	0.695		
OSLQ self-evaluation*			
Lifelong Learning			
Lifelong learning	0.709		
Lifelong learning –beliefs	0.771		
Lifelong learning –attitudes	0.692		

Legend: Filled cells denote Cronbach's alpha below the minimum suggested value of 0.7 (Taber, 2018).

* Not enough statements for the Cronbach alpha to be calculated

Arrows: ↓(↑)denotes whether the Cronbach alpha is below (above) Pintrich et al. (1991)

Table 5.5: Cronbach's alpha for each of the questionnaire scales contained in the pilot study in comparison to Pintrich et al. (1991)

As shown, seven of the scales have quite robust Cronbach's alpha (i.e., above 0.7), indicating that the scales are valid and reliable. Further, the Cronbach's alpha are highly similar to those reported in Pintrich et al.'s (1991) study. Close comparison between the two studies shows that the Cronbach's alpha in the pilot study are higher on two scales (i.e., *control of learning beliefs* and *elaboration*), whilst for seven scales it was lower (i.e., *intrinsic goal orientation, task value, self-efficacy for learning and performance, rehearsal, metacognitive*

self-regulation, time and study environment and *effort regulation*). Given the Cronbach alpha for four MSLQ scales were lower (two substantially lower) than the minimum suggested value of 0.7 (Taber, 2018), the item-total correlation for statements making up these scales were reviewed (see Table 5.4 above and Appendix O for more detailed item analysis). Where the item-total correlation is 0.4 or below, and removal of the statement would result in a higher Cronbach alpha (above 0.7), without losing meaning or data that assists in answering the research questions, consideration was given to removing the statement. This resulted in the removal of a statement from the *rehearsal* and *time and study environment* scales. A further two statements were removed from the *metacognitive self-regulation* and *effort regulation* scales. Further, given the Cronbach alpha for the OSLQ *goal setting* scale and the *lifelong learning attitudes* scale was below the minimum of 0.7 (Taber, 2018), one statement from each scale was removed as the item-total correlation was below 0.4 and removal resulted in an improved Cronbach alpha. In all situations, where statements were removed, it was determined that removal of the statement would not impede answering the research questions. In total, based on results from the psychometric analysis, whilst also considering the impact of removal of the statements on the ability to answer the research questions, 8 statements were removed: 6 from the MSLQ scale, and 1 each from OSLQ scale and LLL (see Table 5.6 below for a copy of these). Further, Table 5.7 provides a breakdown of the number of statements per scale, which is delineated according to the research question to which it pertains.

Scales	Questionnaire statement
Learning Strategy scales – MSLQ (Pintrich et al., 1991)	
Rehearsal	• I memorise key words and important terms to remind me of important concepts in this unit.
Metacognitive self-regulation	• When studying, I think of other things and don't really focus on what is contained in the learning resources. • I prepare questions before posting them on the discussion board.
Time and study environment	• I make sure I keep up with the weekly requirements for ACFxxx by engaging with the learning resources available regularly.
Effort regulation	• When the content in ACFxxx is difficult, I give up or only study the easy parts. • I work hard to do well in ACFxxx even if I don't like what we are doing.
OSLQ – Barnard et al. (2009)	
Goal setting	• I try to maintain a high standard of engagement in this unit.
Propensity for Lifelong Learning (Bath and Smith, 2009)	
Attitudes	• I don't like my learning environment to change to what I am comfortable with.

Table 5.6: Statements removed from the questionnaire as a result of item analysis

Scale	Statement number (number refers to the order of appearance in the questionnaire)	Total	RQ2	RQ3
Intrinsic goal orientation	1-3; 29	4	3	1
Extrinsic goal orientation		0		
Task value	4-6	3	2	1
Control of learning beliefs	7-9; 30	4	3	1
Self-efficacy for learning and performance	10-11; 31	3	2	1
Test anxiety		0		
Rehearsal	12-13	2	2	
Elaboration	14-16	3	2	1
Organization		0		
Critical thinking	17	1	1	
Metacognitive self-regulation	18-21	4	4	
Time and study environment	22-23	2	2	
Effort regulation	24	1	1	
Peer Learning		0		
Help-seeking	25	1	1	
Goal setting	26-27	2	2	
Self evaluation	28	1	1	
Lifelong learning beliefs	32-33; 36; 37-38	5	5	5
Lifelong learning attitudes	34-35	2	2	2
Total		**38***	33	12

Table 5.7: Table showing the statements contained in the final questionnaire administered in Semesters 1 and 2, 2016 noting the number of statements categorised under the scales MSLQ, OSLQ and lifelong learning

*N.B. *(the columns i.e., 33 +12 add to greater than 38 because the lifelong learning questions apply to both RQ2 and RQ3).*
Legend*: Non-bold font – Motivation scales contained in MSLQ; Bolded font – learning strategies scales contained in MSLQ; Italicised non-bold font – OSLQ scales; Bold italicised font – Lifelong learning scales.*

In summary, Table 5.8 below provides an overview of the refinements made to the questionnaire as a result of the pilot study, which resulted in 38 statements encompassing motivational, SRL and LLL scales, 5 open-ended statements/questions, and demographic questions.

Pilot study Semester 2, 2015	Main study Semesters 1 and 2, 2016	Summary of the Changes
46 statements encompassing (see Appendix G): • 38 statements addressing motivation and SRL, and • 8 statements addressing lifelong learning; 5 open-ended statements/questions; and Demographic questions (i.e., age, gender, residency, employment status, number of hours employed, and study hours per unit).	38 statements encompassing (see Appendix I): • 31 statements addressing motivation and SRL, and • 7 statements addressing lifelong learning; 5 open-ended statements/questions; and Demographic questions (i.e., age, gender, residency, employment status, number of hours employed, and study hours per unit.) *No changes were made to the 5 open-ended statements/questions nor to the demographic questions*.	Psychometric analysis from the pilot study resulted in 8 statements being removed from the questionnaire due to the item-total correlation being below 0.4 (and their removal not resulting in any loss in meaning). **Seven** statements were removed from motivation, SRL and OSLQ scales, broken down as follows: − 1 from *rehearsal* − 2 from *metacognitive self-regulation* − 1 from *time and study environment* − 2 from *effort regulation* − 1 from *goal setting*; and, **One** from the lifelong learning scale namely: − 1 from *lifelong learning attitudes* *(See Table 5.6 above for a list of the statements that were removed)*.

Table 5.8: Overview of the refinements made to the questionnaire as a result of the pilot study

Table 5.9 below details the remaining statements per scale used in the main study.

Scales (Total = 15)	No. of statements	Questionnaire statement (Total = 38)
Motivation scales – MSLQ (Pintrich et al., 1991)		
Intrinsic goal orientation	4	• In ACFxxxx, I prefer learning material that arouses my curiosity, even if the content is difficult to learn. • I often choose learning resources I will learn something from even if they require more effort. • I find it satisfying to try and understand the content in this unit as thoroughly as possible. • I find it satisfying to try and understand the content in my accounting major as thoroughly as possible.
Task value	3	• I think the learning resources in ACFxxxx are useful for me to learn. • Understanding the content in ACFxxxx is very important to me. • I think I will be able to use what I learn in ACFxxxx in other accounting units or in my professional role as an accountant
Control of learning beliefs	4	• If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in ACFxxxx. • If I don't understand the content in ACFxxxx, it is because I did not use the learning resources provided. • If I try hard enough, then I will understand the ACFxxxx content. • If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in my accounting major.
Self-efficacy for learning and performance	3	• I'm certain I can understand the most difficult content presented in the learning resources provided for this ACFxxxx unit. • I'm confident I can understand the concepts taught in ACFxxxx through engagement with the learning resources provided. • I'm confident I can understand the concepts taught in my accounting major through engagement with the learning resources provided.
Learning Strategy scales – MSLQ (Pintrich et al., 1991)		
Rehearsal	2	• When studying for this ACFxxxx unit, I re-use the learning resources provided over and over again. • When studying, I re-use the learning resources to help me remember material.
Elaboration	3	• When engaging with the learning resources for ACFxxxx, I try to relate the content to what I already know. • When I am studying for ACFxxxx, I try to make connections between the learning resources so that everything fits together. • I try to relate ideas in this unit to those in other accounting units wherever possible.
Critical thinking	1	• I use the learning resources provided as a starting point and try to develop my own ideas from that.
Metacognitive self-regulation	4	• When I become confused about the content taught in this unit, I try to locate alternative learning resources. • Before I begin studying I think about the learning resources that I will need to engage with in order to learn. • When I study for ACFxxxx, I set goals for myself in order to direct my activities and engage with the learning resources provided. • I try to think through ideas and concepts when engaging with the learning resources
Time and study environment	2	• I try to choose a location to study where I can concentrate on my course work. • I try to choose a time with few distractions for studying.
Effort regulation	1	• Even when the ACFxxxx learning resources are dull and uninteresting, I keep working until I finish
Help-seeking	1	• When required, I seek assistance from the lecturer/tutor
OSLQ – Barnard et al. (2009)		
Goal setting	2	• I set goals to help me manage my studying time for this unit. • I set short term (daily or weekly) goals as well as long-term (monthly or for the semester) goals.

Scales (Total = 15)	No. of statements	Questionnaire statement (Total = 38)
Self-evaluation	1	• I communicate with my classmates to find out whether what I am learning is different to what they are learning.
Propensity for Lifelong Learning (Bath and Smith, 2009)		
Beliefs	5	• I enjoy learning. • I believe learning is important for developing as a person. • I am able to use different learning resources to retrieve and process information. • I plan to keep my knowledge and skills updated throughout my professional life in order to advance my career. • Learning is important for achieving my career goals.
Attitudes	2	• I can identify when I need to learn something. • I am aware of the ways I prefer to learn.

Table 5.9: Scales and corresponding statement in the questionnaire utilised in the main study

5.5.2 Factor analysis of data from the pilot study

Due to the small number of usable responses, it was not possible to conduct factor analysis as it yielded an ill-conditioned matrix, resulting in unstable factors (Pett, Lackey and Sullivan, 2003). Consequently, no further analysis was performed on the pilot study data.

5.5.3 Analysis of responses to the open-ended statements/questions

As advised in Section 3.6.1, to allow for qualitative comments from students who solely wished to participate in the study through completion of the questionnaire, 5 open-ended statements/questions were included. These captured students thoughts regarding their motivation for learning and the learning strategies applied when engaging with the learning resources provided in these units. Through reviewing student comments from the pilot study, it was possible to confirm whether the statements/questions posed elicited themes and concepts pertinent to addressing RQ2 and RQ3, thereby validating their inclusion in the questionnaire.

The first three open-ended statements/questions contained in the questionnaire probed students to articulate, in the context of accounting, what motivates them to learn, the way in which they prefer to learn and the learning strategies they apply. It is noted that these three statements/questions do not specifically refer to the learning resources. That is, they do not specifically ask students to comment on what motivates them to engage with the learning resources nor what learning strategies they apply whilst engaging with them. Therefore, these questions are overarching and as such these responses inform the thematic analysis to the student responses obtained through the interviews. Question four probed whether their motivational beliefs changed over time and given it was stated in terms of motivation to study, these responses were used to inform the interview analysis. Question five specifically asked whether their engagement with the learning resources changed over time i.e., whether the learning strategies they applied changed as they progressed through their degree (RQ3). Twenty-six of the respondents completed the five open-ended statements/questions (10 first year; 11 second year; and 5 third year students – see Table 5.1). Preliminary analysis of these comments is reported below.

When prompted with: '*Question 1: Thinking about your accounting studies, can you describe what motivates you to learn?,* student responses ranged from: enjoying accounting and finding it interesting (intrinsic motivation); to recognising that accounting was useful in order to succeed in the unit (extrinsic motivation); being motivated to understand the concepts and apply them to

different contexts (*elaboration*)[26]; and being able to use their knowledge for their future career (*lifelong learning beliefs*). Interestingly the latter ideas came from second year and third year students, suggesting that as students progress through their degree, they make connections between concepts and appreciate that knowledge gained is pertinent to their career.

Next, responses to *Statement 2: The ways I prefer to learn ...* varied from wanting to learn with peers (*peer learning*); to using all available resources; taking notes to organise ideas (*organization*); applying theory to practice (*elaboration*); repeatedly completing the tasks set (*rehearsal*); and trying to use the knowledge to connect to what they already understood (*elaboration*). These ideas came from students across all three year levels.

Question 3 asked students to *describe the learning strategies that they apply* in accounting. The majority of responses across all three year levels revolved around the idea of repetition i.e., re-doing the tutorial questions or reviewing the learning materials to assist them in understanding (*rehearsal, elaboration*). A couple of students also stated that when a concept is difficult to master, and once they have exhausted the learning resources available, they turn to the textbook to complement and aid their understanding (*metacognitive self-regulation*).

In response to *Question 4: Reflecting back on prior semesters, can you describe whether your motivation to study has changed?* a couple of first year students stated that their motivation had definitely changed given that they had failed a unit previously and could not simply just "cruise along" and be successful. Putting these responses aside, the following two comments highlight how student motivation and effort (*effort regulation*) has increased. Further, they show how their learning strategy has moved from a lower level (e.g., *rehearsal*) to a higher-order strategy, namely *elaboration* and *critical thinking*.

> "*Yes, I would say so because I have to put more effort on this semesters units compared to previous semester. This is because the concepts are much harder to grasp and the content is more concentrated*" (**QRP19**[27] - **second year student**).

> "*As the units have become more analytical instead of looking at individual components, my way of studying has changed from memorising theories to understanding a holistic view of the unit and how it relates to everything else. I have to be more motivated to look at things from a conceptual view, which means going beyond the memorisation of information*" (**QRP22** - **third year student**).

In response to the final open-ended question, *Question 5: Reflecting back on prior semesters, can you describe whether your level of engagement with the learning resources changed?,* a

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[26] Bracketed words refer to the relevant MSLQ (Pintrich et al., 1991) scale. Table 5.3 provides a brief explanation of each scale.

[27] As reported in Section 3.7, the code QRP19 is student number 19 who responded to the questionnaire (QR) statements/questions administered in the pilot (P) study.

second year student noted that they "used the resources more efficiently as they had a better understanding of how they liked to learn"(**QRP18**), whilst a third year student noted "as more resources become available they tend to use [them] more"(**QRP22**). Whilst this last statement infers that more resources were available in the latter accounting units, it should be noted that all units (except ACF2491) had quite a number of learning resources available in Semester 2, 2015 – see Table 5.10 below for an overview of the learning resources available in each of the five foci units. Generally speaking the following learning resources were available in all five units: lectures (whether online [28] or via PowerPoint); tutorial questions and solutions; and the unit guide. Additional resources, such as videos, online quizzes, links to articles and newspapers, and additional revision or practice questions, were only provided in a couple of units. Further, as identified in Table 5.10, some additional resources were exclusively provided in the third year accounting units. For example, case study material in ACF3431 (the management accounting unit) and refereed journal articles and links to both YouTube videos and newspapers/professional magazines in ACF3491 (the financial accounting unit). For academics, an important consideration concerns not overwhelming students with too many resources as this adds to their anxiety (Osgerby, 2013) and therefore negatively impacts engagement:

> "*More resources have become available, so I tend to use more. However, in saying that, there are sometimes too many additional resources, and the sheer amount becomes overwhelming (and so some of it gets ignored completely)" (**QRP22 - third year student**).*

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[28] Face-to-face lectures were recorded and provided via a link available on the LMS.

Accounting unit	Learning resources available
ACF1121 *Introduction to Financial Accounting*	• Lectures (PowerPoint and online) • Unit guide • Pre-lecture recordings – 3-4 short videos each week • Pre-lecture questions and answers • Tutorial questions and solutions • Online quizzes • Discussion board
ACF2391 *Introduction to Management Accounting*	• Lectures (PowerPoint and online) • Unit guide • Tutorial questions and solutions • Videos • Links to articles – newspaper and professional • PDFs of some articles • Solutions to lecture illustrations • Practice questions and solutions • Discussion board
ACF2491 *Financial Accounting*	• Lectures (PowerPoint and online) • Unit guide • Tutorial questions and solutions • Exam sample questions and solutions
ACF3431 *Management Accounting*	• Lectures (PowerPoint and online) • Unit guide • Tutorial questions and solutions • Case study material • Self-assessment online quizzes • Discussion board
ACF3491 *Advanced Financial Accounting*	• Lectures (PowerPoint and online) • Unit guide • Tutorial questions and solutions • Revision questions and solutions • Refereed journal articles – links and PDFs • Self-assessment online quizzes • Links to newspaper articles • Links and/or PDFs of professional magazine articles • Videos • YouTube links • Discussion board

Table 5.10: Overview of the learning resources by unit

Based on this preliminary analysis, it is evident that the open-ended statements/questions posed in the questionnaire allow students to articulate what motivates them to learn and the learning strategies they apply when studying one of the five foci units. Further, these responses provide qualitative support, albeit in a general sense, that enhances insight into responses obtained via the Likert-scale questionnaire. The first four statements/questions are broad overarching questions as they did not specifically mention the terms 'learning resources' and as such it is not clear whether students were answering these questions with the learning resources top of mind. This is a limitation of this study in terms of answering the study's research questions, in particular

RQ2. A further limitation concerns the fact that these statements/questions were not amended prior to data collection associated with the main study. However, inclusion of these open-ended statements/questions is useful in that they inform analysis of responses to the student interviews. However, responses to Question 5 provide an understanding of whether students' engagement with the learning resources change as they progress through their degree, which is particularly relevant to RQ3.

5.6   Analysis of interviews conducted with students

Prior to the conclusion of Semester 2, 2015, ten students were interviewed across four of the five foci units: 4 first year; 2 second year; 1 student enrolled in both a second and third year unit; and 3 third year students. None were enrolled in ACF3431. Each interview was transcribed. The purpose of the interviews was to elicit students' thoughts on their motivation behind engaging with the learning resources provided to them, and discussion of the SRL strategies adopted in the unit. Further, they provided an opportunity to determine whether changes needed to be made to the interview protocol prior to it being utilised in the main study. Preliminary manual thematic analysis of the interview transcripts reveals:

- *Question 1*: '*Which learning resources did you engage with?*' – students across all three year levels use, to varying degrees, online lecture recordings, lecture slides (provided using PowerPoint), online self-assessment quizzes, tutorial questions and solutions, prescribed readings, and pre-lecture videos and questions (the pre-lecture materials were offered in the first year accounting unit). A minority of students reviewed the discussion board prior to the exam – most stated that they did not use the discussion board at all.

- *Question 2: 'How frequently do you engage with the learning resources?'* – responses ranged from not regularly (one student); to weekly (5 students); prior to classes (1 student); 2-3 times a week depending on the difficulty of the topic (1 student); to daily (2 students). In this small sample, the majority of students engage with the resources on a weekly basis. In the main, these students review the lecture materials (whether online or the PowerPoint slides), tutorial solutions, videos (if available) and check to see whether additional resources, such as links to relevant news articles or discussion questions, are made available. Students with irregular usage patterns commented that they refer to the learning resources, in particular the lectures and tutorial solutions, if they encounter a problem in understanding the content.

- *Question 3*: *'Why did you choose to or what motivated you to engage with the learning resources?'* and *Question 4: 'What do you like about the resources you engage with?'* –

students across all three year levels highlighted that they were motivated to use the resources because they believed that they: were useful (*task value*); were intrinsically motivated because they enjoyed accounting. Unsurprisingly many students that were interviewed also stated that they were motivated to use the learning resources to achieve good grades (i.e., extrinsic motivation). Further, students stated that they liked the structure of how the resources were presented, especially the ability to review the resources more than once and access them at a time suitable to them. This supports prior research (Osgerby, 2013).

- Responses to the interview question (applicable in answering RQ2), namely '*What makes you want to engage with the learning resources provided?*' was, in principle, similar to those provided by students who completed a similar open-ended question on the questionnaire (see Section 5.5.3 above). For example, utilised the resources so that their understanding was enhanced (*elaboration*). An interesting finding, stated by **IP8**[29] (a student studying a second and a third year unit concurrently), was that they used the learning resources available on the LMS prior to searching for further information themselves (e.g., via a Google search) or prior to seeking assistance from the lecturer or tutor[30]. This is interesting as it demonstrates that students have self-evaluated, identified where assistance is required and have attempted to garner the knowledge through their own efforts. As such, this student is developing lifelong learning skills in that they are using their independent learning skills in determining what needs to be learned and how to learn it.

- Additionally, the following question (linked to RQ3) posed to second and third year students, *Reflecting back on your prior accounting units, can you describe whether your level of motivation and engagement with the learning resources has changed?,* showed that three out of four students stated that in their first year, they tended to rely on the textbook, but over time they relied less on the textbook and more on the learning resources provided to them as they believed these to be more relevant. Further, a third year student noted that previously he simply attended lectures and then utilised the resources prior to the exam, but in his current accounting unit, he was referring to the learning resources on a more regular basis i.e., weekly. This suggests that students change the way they engage with the learning resources provided to them as they progress through their degree. Students, when answering this question, focused on how they engaged with the resources and did not respond to whether they believed

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[29] As explained in Section 3.7, the code IP8 refers to the interviewed (I) student number 8 in the pilot (P) study.
[30] A second year international student (IP4) also made a similar comment, but noted that in his home country, he had no choice but to "disturb the lecturer", whereas in his current accounting unit, he could refer to the learning resources available to him to further his understanding.

their motivation to engage had changed. As such this question, when posed to second and third year students in the main study, was split so that students could firstly focus on motivational changes, if any, and then focus on whether their engagement with the resources indeed changed. This amendment ensured that in-depth analysis could be undertaken in the main study to review changes in both motivation and SRL strategy.

From the preliminary analysis provided above, it is evident that the interviews provide qualitative support that enhances findings from the questionnaire in terms of the motivation and SRL strategies students apply when engaging with learning resources, which provides relevant information in answering RQ2. Further, the ability to pilot the questions enabled identification of a double-barrelled question (related to RQ3), which perhaps resulted in a concentration of student responses in relation to changes in engagement with resources at the expense of information provided regarding motivational changes. Reflection on student responses led to separation of this question into two questions in the main study, namely: (1) regarding motivational changes; and, (2) changes in SRL strategy and engagement. This change led to more informed analysis in relation to RQ3.

5.7   Analysis of interviews conducted with CEs

As aforementioned in Section 3.6.3, the CE of each unit was interviewed to ascertain knowledge regarding the learning resources provided in each unit (see Table 3.3 for the CE interview protocol). A walk-through of the unit's site on the LMS was undertaken during the interview so that familiarity with the type of learning resources available, and the ease with which the resource could be accessed, was ascertained. The five interviews were transcribed and reviewed to determine:

- whether sufficient information was able to be garnered about each of the five foci units with regards to the type of learning resources made available;
- the purpose behind the learning resource i.e., whether it was summative or formative in nature. This is particularly important because if a learning resource is summative, then it has a direct impact on why students are motivated to engage with it e.g., to enhance a mark or grade awarded in an assessment task to which the learning resource is intended to support (see Table 5.10 for a list of learning resources provided per unit). Given the focus in this study on *why* and *how* students engage with formative learning resources rather than summative ones, understanding the purpose behind the resources provided is important; and,

- whether the interview questions posed needed refining prior to the main study.

CE responses to the questions were reflected upon to ensure that enough knowledge was able to be obtained regarding the learning resources available for each unit. This was ascertained to be the case and as this was a pilot, no further analysis was undertaken on the CE responses. The discussion that follows highlights why the questions were asked interspersed with a few illustrative CE quotes.

Following on from the initial question of what learning resources were provided for the unit, CEs were asked what inspired them to place learning resources on to the LMS. This question was asked to ascertain the level of CE enthusiasm as it may have impacted the type and amount of learning resources provided. Generally, CEs felt student learning would benefit if there were a variety of learning resources made available. In addition, the CE of ACF2391 made the following comment:

> *"I try and give them a little bit extra in terms of* [learning resources] *like real life examples and applying it to a real life context….I try and pick resources that appeal to that younger generation so have examples coming from companies like Apple and Facebook as I feel it would encourage them to use them more".*

CEs were then asked whether they continuously prompted or reminded students during the semester as to the learning resources available. Whilst the CEs of the first and second year units did prompt and inform students of when new learning resources were made available on the LMS the CE of ACF3491 stated the following:

> *"I guess as a third year student they should have discovered* [the LMS] *themselves. They should be familiar with the setting and as it is an information hub they should be regularly visiting".*

An understanding of whether continuous prompting or reminding is provided is required as this may have an impact on *why* students were inclined to engage with the learning resources and *how* and *how often* they may engage with them (the latter particularly important in relation to answering RQ1). For example, are students more motivated to engage with the learning resources provided once prompted or if continuously prompted? Having this understanding assists with the analysis of the student interview responses.

Finally, CEs were asked for their perception of what motivates students to engage with the learning resources and the learning strategies they perceive students utilise when engaging with these resources. CEs believed that students were motivated to engage with the learning resources in order to successfully pass the unit as evidenced by the following quote from the CE of ACF3431:

> *"If assessment is attached to it that motivates them very well".*

This was asked as it may have an impact on the particular learning resources provided by the CE and informs subsequent analysis undertaken on student responses.

In most cases the CE interviews were undertaken prior to the student interviews. This enabled the researcher to understand the types of learning resources available such that when students referred to them in the interview, the researcher could visualise what the students were engaging with, and ensure that the discussion focused solely on formative learning resources. Discussion of summative resources by students was discarded in the final analysis.

5.8   Analysis of the learning analytics data

To assist with answering RQ1, which concerns what, when and how often students access and engage with the various learning resources provided to them in each of the five foci units, the learning analytics data was downloaded at four different points in the semester, which covered the period from orientation week until the end of the examinations. The rationale for downloading it periodically relates to file size, which for each unit is large. For each download, the data was reviewed to ensure that it captured both the correct time period and the following variables: the learning resource(s) each student viewed or accessed; when it was accessed; and the number of times a student may have viewed a particular learning resource. In addition, the review of the data was to ensure it captured similar variables to that reported in prior research (see Andergassen et al., 2013), however, no further analysis on the pilot study data was undertaken, but the equivalent data was captured and analysed as part of the main study period (see Section 7.5).

5.9   Actions taken as a result of the pilot study

Drawing on findings from the pilot study, the following changes were made prior to data collection associated with the main study:

- Results from psychometric testing of the motivational, SRL and LLL scales, which report on reliability of the questionnaire, led to the removal of 8 statements: 7 relating to motivational and SRL statements (i.e., MSLQ and OSLQ), and one statement from the lifelong learning attitudes scale (see Tables 5.4 and 5.6 respectively).
- Given issues with the response rate, two changes were introduced: (1) the questionnaire was released in Week 5 as opposed to Week 9 of the semester; and (2) an incentive, in the form of a prize draw for a $100 gift voucher awarded to two students who completed the questionnaire in each foci unit in both Semesters 1 and 2 2016, was provided. As reported

in Section 6.3, both of these changes resulted in an improvement in the participation rate (from 3.3 percent to 5.5 percent (see Section 6.5)), which provides more robust insights into why and how students are motivated to engage with the learning resources provided to them in the five foci units.

- Reviewing student responses to the questionnaire statements/questions and interview questions enabled matching the responses to the motivation, SRL and OSLQ scales to gain some insight into *how* and *why* students are motivated to engage with the learning resources provided to them. As noted earlier, the purpose of including the open-ended statements/questions was to broaden the amount of qualitative data collected as not all students desired to participate in the interviews. Given four of the five open-ended statements/questions were overarching with the RQs for this study, responses to these can help to inform analysis of the interviews. In addition, use of the overarching questions limits double-up of responses from students who completed both the open-ended statements/questions and participated in an interview. Further, as these statements/questions were not amended in the main study, it serves a similar purpose in the main study. It is acknowledged, however, that having overarching statements/questions is a limitation of the study in that these statements/questions were not specific enough to assist in answering RQ2. As preliminary analysis of Question 5 confirmed that this open-ended statement/question assisted in answering RQ3, no change was made. However, one change was made to the student interview protocol. Specifically, the question that probed second and third year students as to whether their motivation and SRL strategies changed as they progressed through their accounting degree was split into two questions to ensure RQ3 could be fully answered.

5.10   Summary

This chapter presents results from the pilot study conducted in Semester 2 2015 related to psychometric analysis of the questionnaire and findings pertinent to student responses to the open-ended statements/questions and interview questions. Whilst the number of student participants is quite small, the pilot study served and delivered on its main purposes, namely to: (1) validate and refine the questionnaire; (2) validate the student and CE interview protocols; and (3) confirm that RQ2 and RQ3 could be answered through administration of the questionnaire and conduct of the interviews. As a result, it details subsequent actions taken with the questionnaire and interview protocols used in the main study.

Chapter 6 is the first of four chapters that presents results from the main study. Specifically, this chapter presents an overview of administration of the questionnaire and interviews. Further, it details the research sample for the main study.

6: An overview of results

6.1   Introduction

Chapter 5 presents findings and actions arising from the pilot study conducted in Semester 2, 2015. Specifically, it details results from psychometric analysis of the questionnaire and findings pertinent to student responses to the open-ended statements/questions therein, as well as responses to the interview questions. It details subsequent actions taken with respect to the questionnaire and interview protocols, which were subsequently used in the main study i.e., Semesters 1 and 2, 2016.

As shown in Figure 6.1 below, this chapter presents information about the research sample, as well as administration of the questionnaire and conduct of the student interviews involved in the main study. Chapter 7 then presents analysis of the learning analytics data and responses to the interview questions pertinent to RQ1, while Chapter 8 details quantitative results from administration of the questionnaire. Chapter 9 then presents analysis of the qualitative results derived from both the open-ended statements/questions contained in the questionnaire and the themes that emerged from the student interviews. Further, it presents a high level summary of the overall findings from all data sources.
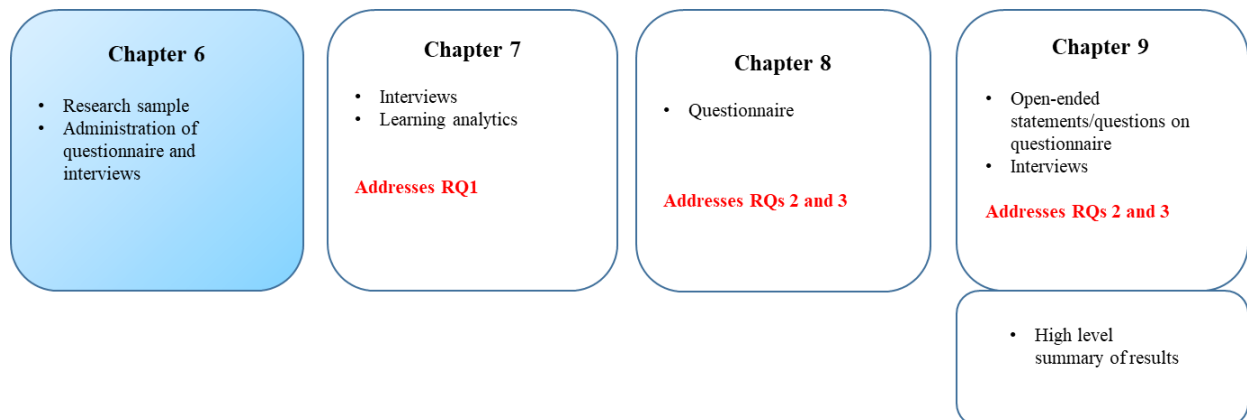
Figure 6.1: Overview of reporting of the results. The shaded box signifies the results presented in this chapter

More specifically, this chapter is organised as follows: after providing an overview of administration of the questionnaire and conduct of the student interviews in Section 6.2, Section 6.3 details the research sample. Next, Section 6.4 reports results from tests for non-response bias, while Section 6.5 provides justification for why the data can be pooled. Section 6.6 then presents demographic information about the participants.

6.2 Overview of administration of the questionnaire and conduct of the student interviews

As shown in Table 6.1 below, the process followed in administering the questionnaire and conducting the interviews was similar to that used in the pilot study. Herein, through a posting made by the CE, the same YouTube video was drawn to the attention of students early in the semester via the respective unit site on the LMS, with students encouraged to review it prior to commencement of the semester. The researcher's attendance at lectures in Week 1 aided in promoting the study via an overview, and promotion of the YouTube video. Further, a copy of the plain language statement, amended to reflect introduction of the prizes, was distributed to students.

Activity	Semester 1		Semester 2	
	Start Date	End Date	Start Date	End Date
YouTube Link to an overview of the study provided to the CE	15 February 2016	24 June 2016	13 July 2016	18 November 2016
Announcement and YouTube video posted on the respective LMS site	22 February 2016	24 February 2016	18 July 2016	20 July 2016
Attendance at lectures to introduce the study and pre-empt the data collection methods	29 February 2016	11 March 2016	1 August 2016	13 August 2106
Link to the questionnaire and email reminder sent to CEs for posting on the LMS	5 April 2016	6 April 2016	23 August 2016	24 August 2016
Posting of the link to the questionnaire on the LMS	6 April 2016	6 April 2016	24 August 2016	24 August 2016
Attendance at lectures to advise that the questionnaire link was available	6 April 2016	11 April 2016	24 August 2016	30 August 2016
Reminder 1 - attendance at lectures – to prompt students to participate in the study	18 April 2016	29 April 2016	12 September 2016	23 September 2016
CE interviews held including a walk-through of the LMS site	16 May 2016	23 May 2016	3 October 2016	12 October 2016
Email sent to students who indicated interest in participating in a one-to-one interview	19 May 2016	23 May 2016	5 October 2016	12 October 2016
Student interviews held	23 May 2016	22 June 2016	12 October 2016	9 November 2016
Email sent to prize recipients	28 June 2016	28 June 2016	3 November 2016	3 November 2016

Table 6.1: Overview of the steps taken and timing in deployment of the questionnaire and interviews

Based on the lessons learnt from the pilot study, to enhance participation, the questionnaire was released earlier i.e., in Week 5 as opposed to Week 9. This ensured that students had some time to engage with the various learning resources provided to them prior to completing the questionnaire, but did not interfere in completion of final assessment tasks in the unit nor preparation for the final exam. A carefully worded announcement that included clear instructions on how to access the questionnaire was provided to each CE to post on their unit site on the LMS. This posting resulted in an automated email being sent to each enrolled student, which meant the

message was not perceived as spam. With support from the CEs, a second round of promotion was carried out in lectures in either Week 8 or 9 to encourage participation prior to the final few weeks of semester.

As with the pilot study, on a weekly basis, systematically the: (1) number of students accessing and completing the questionnaire was monitored; and (2) responses were reviewed to ascertain whether students had expressed interest in being interviewed. This informed whether additional reminders and/or reappearances in lectures were required. Students who expressed interest in participating in an interview were contacted shortly after reminder 1 (see Table 6.1) in order to arrange a mutually convenient time for the interview. Depending on availability, all interviews were conducted over a period of three to four weeks.

Similarly, interviews with each of the CEs was conducted during the course of the semester to gauge understanding about the nature of the learning resources provided and the enthusiasm and encouragement provided to access these as this potentially impacts student motivation to engage with these resources.

Questionnaire responses were downloaded from Qualtrics and stored in an Excel file, with the file name reflecting the respective accounting unit and date the data was downloaded (e.g., ACF1100 S1 2016 survey data 26 May 2016.xlxs). This process was repeated until the end of each semester (Semester 1: 24 June; Semester 2: 18 November) when the final student responses were tallied and final Excel files created. In the final file, individual identification numbers were allocated to each student response.

Given the response rate attained in Semester 1, the same process and timeline was adhered to in Semester 2. At the conclusion of each semester, prize winners were randomly drawn for each unit and winners contacted to collect their prize.

6.3   Research sample

To help in positioning the study, this section provides a high level overview of the overall enrolments and number of participants in both the questionnaire and interviews, together with their respective response rates. Issues with response bias are acknowledged and addressed in Section 6.4, while results from testing for pooling of the data from the two semesters is considered and reported in Section 6.5. Finally, Section 6.6 reports demographic information by year level.

Participants include students enrolled in the five foci accounting units, together with the CEs of these units. Table 6.2 below provides a summary of the number of students who completed the various sections of the questionnaire, together with the number of students interviewed.

	Total enrolment per unit *		Partial completion of statements pertaining to MSLQ, OSLQ and LLL		Completed statements pertaining to MSLQ, OSLQ and LLL		Questionnaire — Completed the demographic questions and MSLQ, OSLQ and LLL statements		Completed the open-ended statements		Volunteered to be interviewed		Students interviewed		Response Rates — Completed the demographic questions and statements pertaining to MSLQ, OSLQ and LLL	Students interviewed
Column number	1		2		3		4		5		6		7		8	9
	Unit	Total	Unit	Total	Unit	Total	Unit	Total	Unit	Total	Unit	Total	Unit	Total		
Semester 1 2016																
First year - ACF1100		834		73		62		58		26		24		8	6.95	0.96
Second year		907		44		39		37		17		11		15		
ACF2100	418		18		17		16		7		4		6		3.83	1.44
ACF2200	489		26		22		21		10		7		9		4.29	1.84
Third year		681		55		51		50		16		17		12		
ACF3100	375		24		23		23		7		6		4		6.13	1.07
ACF3200	306		31		28		27		9		11		8		8.82	2.61
Total		2422		172		152		145		59		52		35		
Semester 2 2016																
First year - ACF1100		378		21		19		18		7		5		2	4.76	0.53
Second year		895		71		61		57		19		15		9		
ACF2100	468		36		31		28		8		8		7		5.98	1.50
ACF2200	427		35		30		29		11		7		2		6.79	0.47
Third year		780		28		27		26		10		5		7		
ACF3100	402		21		20		19		8		4		4		4.73	1.00
ACF3200	378		7		7		7		2		1		3		1.85	0.79
Total		2053		120		107		101		36		25		18		
Overall total		4475		292		259		246		95		77		53		

Table 6.2: Breakdown by semester of students who participated in the questionnaire and interviews[31]

Note: MSLQ = Motivated Strategies for Learning Questionnaire; OSLQ = Online Strategies for Learning Questionnaire; LLL = Lifelong learning statements

* Data on Total enrolments was sourced from the Business Intelligence System of the University.

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[31] The table provides data for all student responses i.e., incomplete (see Column 3), with Column 4 providing complete student responses in relation to the questionnaire statements. Column 5 provides student data for those students who also completed the demographic statements.

As shown in Table 6.2 above, in total 292 students (172 in Semester 1, and 120 in Semester 2) commenced and either provided responses to all of the MSLQ, OSLQ and LLL statements (152 in Semester 1, and 107 in Semester 2), or provided responses to some of the statements. After removing 33 incomplete responses (i.e., where students provided responses to only some of the statements), 259 valid responses remained. The breakdown of responses by the 20 students (Semester 1) and 13 students (Semester 2) who partially completed the MSLQ, OSLQ and LLL statements, and thus were subsequently removed from the analysis, is as follows:

- 22 students completed the first 9 MSLQ statements encompassing *intrinsic goal orientation, task value* and partial completion of *control of learning beliefs* scales;

- a further 3 students completed the next 8 MSLQ statements encompassing *control learning beliefs, self-efficacy for learning and performance, rehearsal, elaboration and critical thinking* scales;

- a further 7 students completed the next 8 MSLQ and OSLQ statements encompassing *metacognitive self-regulation, time and study management, effort regulation, help-seeking* and partial *OSLQ goal setting;*

- the final student completed all statements except the LLL statements.

Removal of these responses (11% of the total responses) means that the analysis was conducted on complete data (Nie, Bent and Hull, 1975). Whilst consideration was given to alternative approaches, namely to include all available responses (Little and Rubin, 2002), after weighing up the disadvantage of this approach, wherein the base changes from scale-to-scale, which creates practical problems such as having a different total number of students for different analyses making comparability more difficult (Little and Rubin, 2002), it was decided to remove the incomplete data. Pleasingly, changes made to the questionnaire as a result of the pilot study lead to an improvement in the number of responses (61 in the pilot study vs. 259 in the main study).

Further, 13 students failed to provide demographic information. Given their retention creates variability in the sample base, making comparison more difficult to interpret (Little and Rubin, 2002), these responses were considered incomplete and thus removed from the analysis. This resulted in a final sample of 246 responses; 145 in Semester 1, and 101 in Semester 2 (see Column 4, Table 6.2).

As evident from Table 6.2, a review of the data on a unit basis across both semesters shows that the final number of students per semester is quite low, ranging from 7 (ACF3200 Semester 2) to 58 (ACF1100 Semester 1). The response rate ranges from 1.85% in ACF3200 (Semester 2) to 8.82% for this unit in Semester 1. For the remaining units, the response rate was between 3.83%

and 6.95%. Whilst these numbers are low, they are within the ranges reported in prior research in voluntary studies (i.e., 64 students, Venema and Lodge (2013); 48 students, So and Brush (2008); and 20-32 students, Osgerby (2013)).

With respect to the interviews, in total 52 students volunteered to be interviewed in Semester 1 and 25 students in Semester 2. Each expressed interest by providing an email address on the questionnaire and were contacted immediately after reminder 1 was sent (see Table 6.1) to arrange a mutually convenient time. Early contact helped to ensure that the interviews could be conducted prior to the examination period but late enough in the semester to ensure that students had had sufficient time to engage with the learning resources provided. The interviews, which were recorded and subsequently transcribed, were conducted on a one-to-one basis with the researcher. Whilst in Semester 1, 24 students in ACF1100 indicated an interest in being interviewed, only 8 were subsequently interviewed. This unit had the highest drop-out rate, closely followed by ACF2200 in Semester 2 where 7 students expressed an interest in being interviewed, with only 2 students actually interviewed. In other units, between 1 student and 11 students expressed an interest in being interviewed, with one or two dropping out per unit[32]. The total number of students interviewed was 35 in Semester 1 and 18 in Semester 2, representing a response rate of 0.47 to 2.61% of the total enrolments across the five foci units. The drop-out rate may have been due to students reconsidering their interest in being interviewed due to a variety of reasons including, but not limited to, a lack of available time[33], lack of interest, or given they had completed the questionnaire, they may have felt they had nothing further to contribute.

6.4   Test for non-response bias

Results from tests for non-response bias, used to determine whether the student responses in the two time periods (i.e., early – Weeks 5 and 6 coinciding with when the questionnaire link was made available and thus would include responses from students who were interested in the study; and late – Weeks 7, 8, 9 and beyond, coinciding with responses from students that were enticed to participate as a result of reminder 1) were similar, were conducted. In testing for non-response bias it is accepted practice to "compare early responses to later responses or first responses to responses generated from a second stimulus to the sample" (Benke and Street, 1992, p.39). In this

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[32] For Semester 1, upon further analysis, it was revealed that four students (two in third year and two in one of the second year units) who nominated to participate in an interview in their respective unit, were also enrolled in the alternative second year unit. These students agreed to be interviewed for both units, undertaking the interviews at the same time.

[33] Every effort was made by the researcher to accommodate time slots for students. Those students who were not interviewed advised that they were too busy to participate further.

study the second stimulus involved attendance at lectures where a reminder was given to students to complete the questionnaire. Seventy-six percent (188 students/246 students) of students completed the questionnaire within 2 weeks of the link being made available i.e., early respondents. Of this group, a high proportion completed the questionnaire within 2 days. The remaining students completed the questionnaire after a reminder was given in lectures i.e., late respondents. All students completed the questionnaire prior to commencement of the examination period as it was thought that responses provided during the course of the semester were less prone to bias that typically arises when students may be more inclined to engage with learning resources, such as in the lead up to examinations, which may impact the intent of their responses.

An independent samples t-test conducted to compare the responses of early versus late respondents shows no significant differences in seven of the ten unit offerings, namely for:

- Semester 1: ACF2100; ACF2200; ACF3100 and ACF3200; and
- Semester 2: ACF2200; ACF3100 and ACF3200.

In Semester 1, 3 of the 58 responses in ACF1100 fell into the late group and statistically were significantly different on the following five statements: *MIntEffort; MIntSatisUnders; LSRehearsalReuseRemember; LSElaborateRelateOtherUnits; and LSCriticalDevelopIdeas*. In all statements except for *LSElaborateRelateOtherUnits,* the mean score was higher for early respondents. The magnitude of the difference in the means were large (eta squared ranging from 0.07 to 0.56).

In ACF1100 in Semester 2, three of the eighteen responses fell into the late group, with a statistically significant difference in *LSTimeFewDistractions.* Here the mean score was higher for early respondents ($M = 5.73$, $SD = 1.223$) compared to late respondents ($M = 5.0$, $SD = 0$; $t (16) =$ 2.323, p. = 0.036, two-tailed), and the magnitude of the difference in the mean (mean difference $= 0.733$, 95% *CI*: 0.056 to 1.410) was large (eta squared = 0.25).

Whilst the number and proportion of late respondents in ACF1100 was low, it was somewhat higher in ACF2100 in Semester 2. Eight out of the 28 responses were considered to be late in this unit. Regardless, only one statement shows a statistically significant difference between the early and late responses, namely, *LSElaborateRelate.* The mean score for early respondents was higher at $M = 5.90$ ($SD = 0.912$) compared to the late respondents where $M = 4.5$ ($SD = 1.604$, $t (26) =$ 2.324, p. = 0.046, two-tailed). The magnitude of the difference in the mean (mean difference = 1.4, 95% *CI*: 0.034 to 2.766) was large (eta squared = 0.17).

The proportion of late respondents in the remaining seven units, where no statistically significant differences were found, was: 3% in ACF2200 (Semester 1); 6% in ACF2200 (Semester

2); between 33 and 39% in ACF2200 (Semester 1), ACF3200 (Semester 1), and ACF3100 (Semester 1); and 57 and 63% respectively in the final two units – ACF3100 (Semester 2) and ACF3200 (Semester 2). Given only seven statements across the three units had statistically significant differences between the early and late respondents, albeit ACF1100 across both semesters, and noting that there were no statistically significant differences found in the units were there was a higher proportion of late respondents, it was considered that in this study there is minimal non-response bias. As a result, late responses have been retained. Further, if we assume that the late responses are a proxy for non-responders, then given the fact that in most units there were no differences in the majority of responses between early and late responses, it can be concluded that there is no evidence of a non-response bias in the results in this study (Welch and Barlau, 2013). However, given the small sample size, increased variances may result and thus caution needs to be taken when reviewing results[34].

6.5   Test to explore pooling the data by year level

Given the low response rate per unit, consideration was given to pooling the data by year level. In making a determination, a Levene's test of equality of variances was undertaken to review variability in student responses in each unit i.e., in the first year unit, responses were compared across Semesters 1 and 2. Table 6.3 below details where statistically significant differences were found in four of the five units, namely ACF1100, ACF2200, ACF3100 and ACF3200. For completeness, Appendix P details results from the Levene's test of equality of variances for all statements across all units.

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[34] See Section 8.4.4 for discussion of comparison between early versus late respondents.

Levene's test for equality of variances

ACF1100 Semester 1 vs. Semester 2

Group statistics

Variable	Semester	N	Mean	Std Deviation	Std. Error Mean
MTaskUseful	Semester 1	58	5.53	1.158	0.152
	Semester 2	18	4.94	0.802	0.189
LSElaborateRelateOtherUnits	Semester 1	58	5.4	1.154	0.151
	Semester 2	18	4.5	1.618	0.381
LLLIdentifyNeed	Semester 1	58	5.95	1.033	0.136
	Semester 2	18	5.17	1.465	0.345
LLLImportantAchieveCareerGoals	Semester 1	58	6.31	0.883	0.116
	Semester 2	18	5.61	1.243	0.293

Independent Samples Test

		Levene's test for Equality of Variances		t test for equality of means					95% Confidence of the	Interval Difference
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
MTaskUseful	Equal Variances assumed	4.982	**0.029**	2.013	74	0.048	0.59	0.293	0.006	1.174
	Equal Variances not assumed			**2.432**	40.974	0.019	0.59	0.243	0.1	1.08
LSElaborateRelateOtherUnits	Equal Variances assumed	4.034	**0.048**	2.605	74	0.011	0.897	0.344	0.211	1.582
	Equal Variances not assumed			**2.185**	22.622	0.04	0.897	0.41	0.047	1.746
LLLIdentifyNeed	Equal Variances assumed	4.921	**0.03**	2.526	74	0.014	0.782	0.309	0.165	1.398
	Equal Variances not assumed			**2.106**	22.491	0.047	0.782	0.371	0.013	1.55
LLLImportantAchieveCareerGoals	Equal Variances assumed	5.39	**0.023**	2.652	74	0.01	0.699	0.264	0.174	1.225
	Equal Variances not assumed			**2.219**	22.57	0.037	0.699	0.315	0.047	1.352

ACF2200 Semester 1 vs. Semester 2

Group statistics

Variable	Semester	N	Mean	Std Deviation	Std. Error Mean
LSElaborateRelate	Semester 1	21	4.86	1.315	0.287
	Semester 2	29	5.79	0.819	0.152

Independent Samples Test

		Levene's test for Equality of Variances		t test for equality of means					95% Confidence of the	Interval Difference
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
LSElaborateRelate	Equal Variances assumed	4.24	**0.045**	-3.099	48	0.003	-0.936	0.302	-1.543	-0.329
	Equal Variances not assumed			**-2.883**	31.054	0.007	-0.936	0.325	-1.598	-0.274

ACF3100 Semester 1 vs. Semester 2

Group statistics

Variable	Semester	N	Mean	Std Deviation	Std. Error Mean
LSTimeChooseLocation	Semester 1	23	5.52	1.238	0.258
	Semester 2	19	6.21	0.787	0.181

Independent Samples Test

		Levene's test for Equality of Variances		t test for equality of means					95% Confidence of the	Interval Difference
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
LSTimeChooseLocation	Equal Variances assumed	4.208	**0.047**	-2.097	40	0.042	-0.689	0.328	-1.353	-0.025
	Equal Variances not assumed			**-2.186**	37.75	0.035	-0.689	0.315	-1.327	-0.051

ACF3200 Semester 1 vs. Semester 2

Group statistics

Variable	Semester	N	Mean	Std Deviation	Std. Error Mean
LSHelpSeekTutor	Semester 1	27	4.81	1.819	0.35
	Semester 2	7	5.71	0.488	0.184
OSLQEvalCommStudents	Semester 1	27	4.3	1.75	0.337
	Semester 2	7	5.43	0.976	0.369

Independent Samples Test

		Levene's test for Equality of Variances		t test for equality of means						95% Confidence of the	Interval Difference
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
LSHelpSeekTutor	Equal Variances assumed	7.469	**0.01**	-1.282	32	0.209	-0.899	0.701	-2.328	0.529
	Equal Variances not assumed			**-2.273**	31.816	0.03	-0.899	0.396	-1.706	-0.093
OSLQEvalCommStudents	Equal Variances assumed	4.355	**0.045**	-1.635	32	0.112	-1.132	0.693	-2.543	0.279
	Equal Variances not assumed			**-2.267**	17.386	0.036	-1.132	0.499	-2.184	-0.08

Table 6.3: Independent samples t-test in units: ACF1100, ACF2200, ACF3100 and ACF3200. Given, no statistically significant differences were identified in ACF2100, the unit is not tabulated

Results from the independent samples t-test, conducted to compare student response scores in each unit across both semesters, shows no significant difference for the majority of statements, with statistical differences found in a total of 8 statements across 4 units. As shown in Table 6.4 below, which reports the mean scores and the magnitude of difference in the mean scores for the eight statements where significant differences were found, these differences relate to:

- 4 statements in ACF1100 namely, *MTaskUseful, LSElaborateRelateOtherUnits*, *LLLIdentifyNeed* and *LLLImportantAchieveCareerGoals;*
- 1 statement in ACF2200: *LSElaborateRelate;*
- 1 statement in ACF3100: *LSTimeChooseLocation;* and
- 2 statements in ACF3200: *LSHelpSeekLectTutor* and *OSLQEvalCommStudents.*

Whilst the mean score for the four statements was higher in Semester 1 in ACF1100, this was reversed in the other three units (i.e., the mean score was higher in Semester 2). The magnitude of the difference in the mean scores ranged from moderate (0.06) to large (0.15).

Whilst in the majority of cases the variance in these statements was large (5 out of 8 statements), the number of statements with statistically significant differences (eight in total) is small. As such, it is permissible to pool the data. Further on a year level basis, the same analysis shows no statistically significant differences in second year, with only two statements showing statistically significant differences in third year (*MSelfEfficacyCertain* and *MControlLearnContentAccMajor,* which untabulated show respectively a large (0.07) and moderate (0.05) magnitude of difference in the means). These results confirm the validity to pool the data, which assists in answering RQ3 concerned with how and why student motivational beliefs and SRL strategies change as students progress through their degree.

Unit	Statement	Semester 1		Semester 2		t	p. (two-tailed)	Mean diff.	95% CI	Eta squared
		Mean	SD	Mean	SD					
ACF1100	*MTaskUseful*	5.53	1.158	4.94	0.802	2.432	0.019	0.59	0.1 – 1.08	0.07
	LSElaborateRelateOtherUnits	5.4	1.154	4.5	1.618	2.185	0.040	0.897	0.047 – 1.746	0.06
	LLLIdentifyNeed	5.95	1.033	5.17	1.465	2.106	0.047	0.782	0.013 – 1.55	0.06
	LLLImportantAchieveCareerGoals	6.31	0.883	5.61	1.243	2.219	0.037	0.699	0.47 – 1.352	0.06
ACF2200	*LSElaborateRelate*	4.86	1.315	5.79	0.819	-2.883	0.007	-0.936	-1.598 - -0.274	0.15
ACF3100	*LSTimeChooseLocation*	5.52	1.238	6.21	0.787	-2.185	0.035	-0.689	-1.327 - -0.051	0.11
ACF3200	*LSHelpSeekLectTutor*	4.81	1.819	5.71	0.488	-2.273	0.03	-0.899	-1.706 - -0.093	0.14
	OSLQEvalCommStudents	4.3	1.75	5.43	0.976	-2.267	0.036	-0.59	-2.184 - -0.08	0.14

Table 6.4: Semester comparisons of statements with statistically significant differences from the independent samples t-tests

Table 6.5 below reports a breakdown of the students by year level. In total seventy-six students were in first and third year, with 94 students in second year, yielding a final sample of 246 students.

	Questionnaire					Response rates	
	Total enrolments in foci accounting units in 2016	Completed statements pertaining to MSLQ, OSLQ and LLL	Completed the open-ended statements/ questions	Volunteered to be interviewed	Students interviewed	Completed the demographic questions and statements pertaining to the MSLQ, OSLQ and LLL	Students interviewed
First year	1212	76	33	29	10	6.27	0.83
Second year	1802	94	36	26	24	5.22	1.33
Third year	1461	76	26	22	19	5.20	1.30
Total	**4475**	**246**	**95**	**77**	**53**		

Table 6.5: Breakdown of students who participated in both aspects of the study – the questionnaire and interviews by year level
Note: MSLQ = Motivated Strategies for Learning Questionnaire; OSLQ = Online Strategies for Learning Questionnaire; LLL = Lifelong learning statements
Data on Total enrolments was sourced from the Business Intelligence System of the University.

Overall, the response rate was 5.5%. On a year-by-year basis, whilst the percentages were quite low (6.27% first year; 5.22% second year; and 5.2% third year), as reported earlier, they are above ranges reported in prior research. In part this may be attributable to the voluntary nature of the study. Of the final sample, 95 students responded to the open-ended statements/questions. As shown in Table 6.5, 53 students were interviewed (10 first year, 24 second year, and 19 third year students). This equates to a response rate of 1.2% (or approximately 0.83% in first year to around 1.3% in second and third year). Chapter 9 reports findings from analysis of the open-ended statements/questions contained in the questionnaire, together with findings from the interviews pertinent to RQs 2 and 3.

6.6 Participant demographics

Table 6.6 below summarises the demographic information by year level. Appendix Q provides a breakdown of this analysis on a unit-by-unit basis.

Year level / Demographic Item	Total Enrolments	%	First Year Total	%	Total partic-ipants	% partic-ipating	Second Year Total	%	Total partic-ipants	% partic-ipating	Third Year Total	%	Total partic-ipants	% partic-ipating	Total Partic-ipants	Student % of total student participation
Gender																
Male	2011	0.45	593	0.49	22	0.29	785	0.44	34	0.36	633	0.43	16	0.21	72	0.29
Female	2464	0.55	619	0.51	54	0.71	1017	0.56	60	0.64	828	0.57	60	0.79	174	0.71
Total	**4475**	**1.00**	**1212**	**1.00**	**76**	**1.00**	**1802**	**1.00**	**94**	**1.00**	**1461**	**1.00**	**76**	**1.00**	**246**	**1.00**
Age																
18-20					72	0.95			60	0.64			24	0.32	156	0.63
21-22					2	0.03			28	0.30			41	0.54	71	0.29
23-24					1	0.01			4	0.04			7	0.09	12	0.05
25-30						0			2	0.02			2	0.03	4	0.02
Other					1	0.01				0			2	0.03	3	0.01
Total					**76**	**1.00**			**94**	**1.00**			**76**	**1.00**	**246**	**1.00**
Residency																
Australian citizen	1999	0.45	653	0.54	45	0.59	761	0.42	40	0.43	585	0.40	30	0.39	115	0.47
Permanent resident	2	0.00	2	0.00	2	0.03			2	0.02			4	0.05	8	0.03
International student	2474	0.55	558	0.46	29	0.38	1041	0.58	51	0.54	875	0.60	42	0.55	122	0.5
Other						0			1	0.01				0	1	0
Total	**4475**	**1.00**	**1213**	**1.00**	**76**	**1.00**	**1802**	**1.00**	**94**	**1.00**	**1460**		**76**	**1.00**	**246**	**1.00**
Course enrolled in																
BBus					31	0.41			29	0.31			15	0.20	75	0.31
BBus (Accounting)					18	0.24			46	0.49			51	0.67	115	0.47
Other					27	0.36			18	0.19			10	0.13	55	0.22
Total					**76**	**1.00**			**93[a]**	**1.00**			**76**	**1.00**	**245[a]**	**1.00**
Major																
Accounting					50	0.66			90	0.96			72	0.96	212	0.87
Other					26	0.34			4	0.04			3	0.04	33	0.13
Total					**76**	**1.00**			**94**	**1.00**			**75[a]**	**1.00**	**245[a]**	**1.00**
Units enrolled in																
Two					2	0.03			2	0.02			4	0.05	8	0.03
Three					4	0.05			15	0.16			8	0.11	27	0.11
Four					68	0.89			76	0.81			60	0.79	204	0.83
Five					2	0.03			1	0.01			4	0.05	7	0.03
Total					**76**	**1.00**			**94**	**1.00**			**76**	**1.00**	**246**	**1.00**
Accounting prior																
Yes					39	0.51			46	0.49			48	0.63	133	0.54
No					37	0.49			48	0.51			28	0.37	113	0.46
Total					**76**	**1.00**			**94**	**1.00**			**76**	**1.00**	**246**	**1.00**

Demographic Item	Enrol-ments	%	Total	%	Total partic-ipants	% partic-ipating	Total	%	Total partic-ipants	% partic-ipating	Total	%	Total partic-ipants	% partic-ipating	Partic-ipants	% of total student participation
Hours paid work																
0					6	0.08			18	0.20			17	0.23	41	0.17
1-5					26	0.34			20	0.23			13	0.18	59	0.25
6-10					19	0.25			16	0.18			19	0.26	54	0.23
11-17.5					17	0.22			17	0.19			15	0.20	49	0.21
18-20					4	0.05			11	0.13			6	0.08	21	0.09
>20					3	0.04			5	0.06			2	0.03	10	0.04
Other					1	0.01			1	0.01			2	0.03	4	0.02
Total					**76**	**1.00**			**88[b]**	**1.00**			**74[b]**	**1.00**	**238[b]**	**1.00**
Study time out of class																
0-1					2	0.03			3	0.03			4	0.05	9	0.04
2-3					25	0.33			36	0.38			17	0.22	78	0.32
4-5					29	0.38			33	0.35			31	0.41	93	0.38
6-7					8	0.11			10	0.11			14	0.18	32	0.13
8-9					7	0.09			7	0.07			6	0.08	20	0.08
10-12					3	0.04			2	0.02			2	0.03	7	0.03
>12					1	0.01			2	0.02			2	0.03	5	0.02
Other					1	0.01			1	0.01			0	0	2	0.01
Total					**76**	**1.00**			**94**	**1.00**			**76**	**1.00**	**246**	**1.00**

a One student did not provide information on their major nor the course they were enrolled in

b Eight students did not provide information on whether they were working or not.

Table 6.6: Breakdown of student demographics by year level. (Note: Data on total enrolments was sourced from the Business Intelligence System)

As shown in Table 6.6 above, whilst overall the split between male (45%) and female (55%) enrolments in the foci units is relatively even, in this study more females (71%) than males (29%) completed the questionnaire, with responses ranging from 21% (in third year) to 36% (in second year) for males, and 64% (in second year) to 79% (in third year) for females[35]. The proportion of female participants is much higher, especially in first and third years. T-tests show that this over representation is indicative of the total enrolment population[36]. Whilst it is acknowledged that the number of participants is small, which limits generalisability of the findings to the broader population of accounting students, this limitation is tempered given that the survey data is supplemented by in-depth interviews. Use of in-depth interviews provides an "opportunity for intensive study" and an "opportunity to learn" from students who actively participate in the study (Stake, 2005, p. 451). Further, this approach means that it is possible to focus on a "few key themes" (Creswell, 2013, p. 101) pertinent to motivation and SRL in a blended learning environment.

As reported (see Table 6.6), the majority of students (92% overall) were "18-20" and "21-22" years old. In first year, 95% were within the age range of "18-20", which is expected given that most students commence university either immediately after completing their final year of secondary school or within one year (allowing for a gap year). Unsurprisingly, students in second and third year fall into the next age range (i.e., "21-22"), with 9% of third year students in the age group "23-24". A possible explanation for the increase in age range in second year to "21-22" could be students enrolling directly via a pathway i.e., students who achieve the required weighted average mark in first year in a college affiliated with the university articulate directly into second year[37]. Overall, the age ranges in this study are reflective of the age range of the *total students* enrolled across the 5 foci units[38] (see Table A6.3 in Appendix Q, which shows that between 97% and 99% of students enrolled in the five foci units are within the age range of "Under 19" and "20-24").

In terms of residency, the majority of first year participants are Australian citizens (59%), with international students accounting for 38%, and 3% denoted as permanent residents. This pattern reverses in both second and third year, where the proportion of international students is

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[35] Appendix Q provides further breakdown of gender by unit.
[36] p=0.02 two sample unequal variance; p = 0.00 two sample equal variance.
[37] 34% of students in ACF2100 and 37% of students in ACF2200 entered 'The University' after competing their studies at one of the University's affiliated pathways. The split of students entering these units from outside 'The University' is less than 1%, with all students entering 'The University' from an affiliated program subject to controlled entry requirements.
[38] The split of total enrolments according to age range is presented in Appendix Q rather than Table 6.6, as the university age ranges do not coincide with the ranges adopted in this study.

greater than Australian citizens. On a unit level basis, third year is the only year that is representative of the *total student* enrolment pattern (see Appendix Q, Table A6.4 a breakdown by unit level).

Unsurprisingly, given the focus on students studying accounting, the majority are enrolled in a Bachelor of Business (Accounting) degree. This is particularly evident in second and third year, where the percentage increases from 24% (first year) to 49% and 67% respectively. This increase is understandable given that these students possess the aspiration of becoming an accountant, meaning that they must complete the 5 foci accounting units as these are required for membership of the respective accounting professional bodies.

It follows then that the majority of respondents (87%) nominated their major as accounting, with the lowest percentage being in first year (66%). A possible explanation for first year being lower is that the unit is available to students enrolled in a number of business majors in the Business School. Overall 21 students reported that they were enrolled in a double major, with accounting being one of those majors[39]. "Other" majors nominated by first year students include: banking and finance (9 students); marketing (3 students); finance (3 students); and either economics, commerce, actuarial studies, public health, sustainability, management or human resources. Four first year students reported that they had not yet chosen a major. In second and third year 96% nominated accounting as their major area of study. This increase in the latter years of study is not surprising given the nature of the units surveyed and given the courses most students are enrolled in.

Given that the recommended study load is 4 units per semester, it is not surprising that most students (83%) are enrolled on a full-time basis. Interestingly, in second and third year, there is a slight increase in the proportion of students enrolling in 3 units as opposed to 4 (16% and 11% respectively versus 5% in first year). This may be attributable to the increased time commitment required in latter units. An alternative explanation is that students reduce their load if they fail prior units.

In total, 54% of students completed an accounting unit prior to commencing their university studies, whether this be at secondary school or via a pathway program. As reported in Table 6.6 above, the majority of students supplement their studies with some part-time work, with most working between 1 to 17.5 hours per week. The breakdown across all three year levels shows that 25% work between 1 and 5 hours; 23% between 6 and 10 hours; and, 21%

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[39] The breakdown of these students was as follows: 4 in ACF1100 (S1); ACF2100 – 2 (S1) and 3 (S2); ACF2200 – 1 in each semester; ACF3100 – 3 (S1) 1 (S2); and ACF3200 – 5 (S1) and 1 (S2).

between 11 and 17.5 hours. With respect to study time per unit per week, the recommendation is that students spend 9 hours per week outside of class time on a unit. Results show that only 8% spend this amount of time, with 38% across all three year levels spending between 4 and 5 hours per week with the highest proportion in third year. This is then closely followed by 32% who spend between 2 and 3 hours studying per week outside of class.

6.7   Summary of the research sample

On a unit-by-unit basis, the number of participants ranged from 7 students in ACF3200 (Semester 2) to 58 students in ACF1100 (Semester 1). Given the low response rate per unit, tests were conducted to determine whether the questionnaire data could be pooled. After pooling the data, the final number of participants across first and third year was 76 students, with 94 students in second year. Of the final sample, 95 students completed the open-ended statements/questions contained in the questionnaire, with 53 students (10 first year, 24 second year and 19 third year) participating in a one-on-one interview.

In total, more females than males completed the questionnaire, with the majority being 18 to 20 years of age. Proportionately more participants were international students, with the majority being full-time students enrolled in either a Bachelor of Business or Bachelor of Business (Accounting) degree, with accounting nominated as their major. Further, the majority worked part-time and most students are spending on average 4-to-5 hours per week on study outside of class.

6.8   Summary

This chapter details information regarding the research sample, including demographic information related to the main study i.e., Semesters 1 and 2, 2016. Further, it describes administration of the questionnaire and the process followed in conducting the student interviews. As there was no non-response bias, the data was able to be pooled.

The next chapter reports findings from analysis of the learning analytics and student interviews regarding which learning resources students engaged with. This analysis addresses RQ1 namely what, when and how often students engage with the learning resources provided to them through the LMS.

7: Results – Learning resources

7.1   Introduction

Chapter 6 provided an overview of administration of the questionnaire and student interviews, including an overview of the participants involved in both. As shown in Figure 7.1 below, this chapter reports findings from analysis of the learning analytics and student interviews regarding the learning resources they engage with, which addresses RQ1, namely what, when and how often do accounting students engage with the different learning resources provided to them in a blended learning environment. Recall learning analytics is referred to by the Society for Learning Analytics Research (SoLAR) as the measurement, collection, analysis and reporting of data about learners and their contexts for the purpose of understanding and optimising learning and the environment in which it occurs.

With respect to RQ1, through the interviews, students self-report on the learning resources they engage with throughout the course of a semester. Next, this is corroborated through the use of learning analytics with what students actually engage with. In reporting on this, the chapter commences by reporting information about the learning resources provided by the CE in each of the five foci accounting units. Following this, analysis from student interviews and learning analytics is presented separately, with responses from the student interviews reported first, followed by collective results that highlight ensuing similarities and differences.
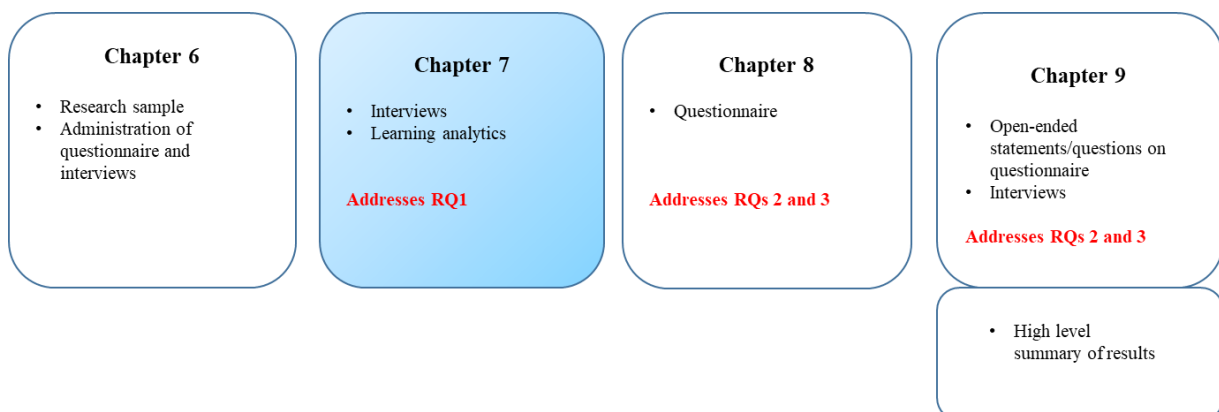
Figure 7.1: Overview of reporting of the results. The shaded box signifies the results presented in this chapter

7.2 Findings from interviews with the CEs

The CEs of each of the five foci units were interviewed to ascertain the learning resources made available in their unit. A different CE led each unit each semester[40], except in ACF1100 and ACF3200, which had the same CE across both semesters, meaning that in total nine interviews were conducted. During the interview, the CE provided a tour of their LMS site.

CE responses to the interview questions are tabulated in Columns 2 and 3[41] in Table 7.1 below. As reported, all units provided lecture slides, online recordings of lectures[42], tutorial questions and solutions, past exam questions and solutions, and the unit guide. A discussion board was available in all units except ACF2100. Two units (ACF3100 and ACF3200) provided a number of YouTube videos for specific topics; two units provided additional practice questions and solutions (ACF1100 and ACF2200); and online quizzes (ACF1100, ACF2200 and ACF3200). In ACF1100, the online quiz took the form of a specific resource developed by an external provider[43] (MyAccountingLab). ACF2100 included an additional link to the accounting standards and provided lecture illustration handouts that were completed by students during the lecture, with a solution uploaded on the LMS at a later stage. ACF2200 and ACF3100 introduced links to either newspaper articles or refereed journal articles (also referred to as readings)[44], whilst ACF3200 introduced case study material. It should be noted that in all units other than ACF1100, ACF2200 and ACF3200, even though the CE changed between the two semesters, the learning resources did not differ between semesters. The differences in ACF1100, ACF2200 and ACF3200 were:

- ACF1100: In Semester 1 online lecture recordings were made available directly through the LMS. A discussion board was only available in Semester 2;

- ACF2200: In Semester 1, additional practice questions and solutions, beyond the tutorial questions and solutions, were uploaded onto the LMS as a separate resource and then combined into a document labelled "tutorial questions" and "tutorial solutions" respectively. In Semester 2, for ease of accessibility and to encourage completion of additional questions, the CE combined the resource; and

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[40] ACF1100, due to its size, had a Campus Co-ordinator at Campus A of 'The University' to assist the CE. This academic was interviewed as well given he was the lecturer students associated with.
[41] The CE interview protocol is presented in Section 3.6.3.
[42] Generally online lectures are made available to students outside of the LMS. Learning analytics data was not able to be collected for this learning resource except in ACF1100 and ACF3200 as the recorded lectures in these two units were made available to students through the LMS in Semester 1 only.
[43] Pearson.
[44] The articles were made available either in PDF format, which could be directly downloaded from the LMS or a link was provided to a reading list or library repository where the article could be downloaded.

- ACF3200: In Semester 1 the online lecture recordings were made available through the LMS.

Column 1	2 As advised by the CE:	3 As advised by the CE:	4 As advised by students:	5 As advised by students:	6 As advised by students:
Unit	Resources available on the LMS	How the resources were uploaded on the LMS and the way in which the CE promoted the learning resources to students	The learning resources that were used	Resources not noted as being used in the interviews	Number of students delineated by frequency of use as advised by students (percentages of the total per year level are shown in brackets)
First year ACF1100	• Lectures slides • Unit guide • Reading guide • Tutorial questions and solutions • Online quizzes (MyAccountingLab) – connected to a study plan and additional textbook • Practice questions and solutions • Past exam questions and solutions • Discussion board (Semester 2 only) • Online lecture recordings • Same CE for both Semesters 1 and 2. • Learning resources, other than availability of the discussion board, were similar across both semesters.	• Lectures, tutorial solutions and practice questions and solutions were released weekly, sometimes lectures were released two weeks in advance. Past exam questions and solutions were made available in Week 9. • Students were regularly reminded of the availability of the resources via email. Students prompted to utilise the resources in order to practice to enhance their understanding. • CE provided resources that were expected to assist students to perform better. CE believed the resources should be fun and easy to use in order to engage the student, and be as interactive as possible (hence provision of MyAccountingLab).	• Lecture slides • Unit guide • Tutorial questions and solutions • Online quizzes - MyAcountingLab • Discussion board (Semester 2 students only) • Textbook[45] • Online lecture recordings	• Practice questions and solutions • Past exam questions and solutions	No set routine: 1 (10%) Daily: 0 (0%) Weekly: 2 (20%) 2-3 times a week: 7 (70%)

[45] The textbook was mentioned by students. However, for the purposes of this study, a resource is not considered to be a learning resource unless it is provided through the LMS. Similarly, as denoted in blue, other similar resources not included in the study – see ACF2100 and ACF3200.

Column 1	2 As advised by the CE:	3 As advised by the CE:	4 As advised by students:	5 As advised by students:	6 As advised by students:
Unit	Resources available on the LMS	How the resources were uploaded on the LMS and the way in which the CE promoted the learning resources to students	The learning resources that were used	Resources not noted as being used in the interviews	Number of students delineated by frequency of use as advised by students (percentages of the total per year level are shown in brackets)
Second year ACF2100	• Lecture slides • Unit guide • Lecture handout exercises and solutions • Tutorial questions and solutions • Sample mid-semester questions and solutions • Presentation questions for tutorials and solutions • Past exam questions and solutions • Links to accounting standards and readings • Online lecture recordings • Different CE for Semester 1 and 2. • Learning resources similar across both semesters.	*Semester 1:* • The majority of the resources were uploaded on the LMS at the start of the semester. Students could, therefore, download the learning resources at the start of semester if they wished. • The CE provided an overview of the LMS site in the first lecture and demonstrated the available resources using Week 1 as an example. No further prompts were provided to the students unless additional ad hoc resources were uploaded. In those instances, students were informed via a News announcement (email via the LMS to all enrolled students). *Semester 2:* • Resources were uploaded on the LMS on a week-by-week basis. • CE continuously prompted students to engage with the resources through each lecture. • As many resources as possible, in particular practice (i.e., exam, mid-semester test, tutorial) questions and solutions, were provided as it allowed students to gain the ability to practice how to complete questions as the unit is quite technical. Students were constantly told that they could not cram for the unit so students were advised to keep up to date and therefore engage on a continuous basis.	• Lecture slides • Lecture handouts and solutions • Tutorial questions and solutions • Sample mid-semester tests and solutions • Presentation questions for tutorials and solutions • Textbook • Google • Other un-prescribed textbooks • Online lectures recordings	• Unit guide • Past exam questions and solutions • Links to accounting standards and readings	No set routine: 0 (0%) Daily: 3 (27%) Weekly: 2 (18%) 2-3 times a week: 6 (55%)

Column 1	2 As advised by the CE:	3 As advised by the CE:	4 As advised by students:	5 As advised by students:	6 As advised by students:
Unit	Resources available on the LMS	How the resources were uploaded on the LMS and the way in which the CE promoted the learning resources to students	The learning resources that were used	Resources not noted as being used in the interviews	Number of students delineated by frequency of use as advised by students (percentages of the total per year level are shown in brackets)
Second year ACF2200	• Lecture slides • Unit guide • Tutorial questions and solutions • Links to articles – newspaper and professional • PDFs of articles • Practice questions and solutions (Semester 1 only – these were combined with the tutorial questions and solutions in Semester 2) • Past exam questions and solutions • Discussion board • Online lecture recordings • Online quizzes • Different CE for Semester 1 and 2. • Learning resources similar across both semesters.	*Semesters 1 and 2:* • Some resources were uploaded at the start of semester (e.g., links to articles/readings, practice questions) whilst others were provided on a weekly basis (lectures and tutorial solutions). • Students were provided with an overview of the LMS in the first lecture where resources were highlighted (*Semester 1*) or in a Welcome email (*Semester 2*). • Further, in each weekly lecture and on the LMS a "Checklist" was provided which highlighted which learning resources students should engage with. This was particularly the case for the real-life case examples sign-posted in the relevant lecture on the lecture slides. • If ad hoc resources were uploaded students were advised of this in the lecture.	• Lecture slides • Tutorial questions and solutions • Academic, professional and newspaper articles • Practice questions and solutions • Online lecture recordings	• Discussion board • Past exam questions and solutions • Online quizzes • Unit guide	No set routine: 0 (0%) Daily: 1 (9%) Weekly: 4 (36%) 2-3 times a week: 6 (55%)

Column 1	2 As advised by the CE:	3 As advised by the CE:	4 As advised by students:	5 As advised by students:	6 As advised by students:
Unit	Resources available on the LMS	How the resources were uploaded on the LMS and the way in which the CE promoted the learning resources to students	The learning resources that were used	Resources not noted as being used in the interviews	Number of students delineated by frequency of use as advised by students (percentages of the total per year level are shown in brackets)
Third year ACF3100	• Lecture slides • Unit guide • Tutorial questions and solutions • Revision questions and solutions • Refereed journal articles – links and PDFs • Links to newspaper articles • Links and/or PDFs of professional magazine articles • Videos -YouTube links • Discussion board • Online lecture recordings • Different CE for Semester 1 and 2. • Learning resources similar across both semesters.	_Semesters 1 and 2:_ • Resources were provided on a week-by-week basis, except for the revision questions and solutions which were available from the start of semester. • Students were advised of the resources on the LMS at the start of semester. No further prompts were made unless the CE (_Semester 1_) believed the resource/s were of extreme importance. "As these are third year students they should be aware that content and information is available on the LMS" – CE Semester 1. • CE (_Semester 2_) provided resources as it allows for equitable access to every student.	• Lecture slides • Tutorial questions and solutions • Revision questions and solutions • Academic journal articles • Online quizzes • Videos • Online lecture recordings	• Links to newspaper articles • Discussion board • Unit guide	No set routine: 0 (0%) Daily: 2 (25%) Weekly: 3 (37.5%) 2-3 times a week: 3 (37.5%)

Column 1	2 As advised by the CE:	3 As advised by the CE:	4 As advised by students:	5 As advised by students:	6 As advised by students:
Unit	Resources available on the LMS	How the resources were uploaded on the LMS and the way in which the CE promoted the learning resources to students	The learning resources that were used	Resources not noted as being used in the interviews	Number of students delineated by frequency of use as advised by students (percentages of the total per year level are shown in brackets)
Third year ACF3200	- Lecture slides - Unit guide - Tutorial questions and solutions - Case study material - Videos (supplement parts of course not adequately dealt with in the lecture) - Discussion board - Discussion board Q&A led by the CE - Online lecture recordings - Past exam questions and solutions - Online quizzes - Same CE for both Semesters 1 and 2. - Learning resources similar across both semesters.	- Resources were uploaded on a week-by-week basis. The CE believed that the resources should not be uploaded at the start of semester as students should be encouraged to work through resources progressively. If they wished to get ahead they could always "read the textbook" (CE). - Students were not prompted regarding the learning resources as the CE believed they were routine items that students should be aware of given they were in third year. - Resources were provided as "students should have used them in order to succeed" (CE). Students should have access to a collection of resources "to learn and develop understanding" (CE).	- Lecture slides - Tutorial questions and solutions - Real-life cases- i.e., case study material - Videos - Discussion board – including Q&A - Online lectures recordings - Textbook	- Past exam questions and solutions - Online quizzes - Unit guide	No set routine: 0 (0%) Daily: 3 (27%) Weekly: 2 (18%) 2-3 times a week: 6 (55%)

Table 7.1: Learning resources available per unit as advised by the CE and student usage based on the interviews

7.3 Student usage of the learning resources as reported by students

Recall, RQ1 seeks to discover what, when and how often accounting students engage with the learning resources provided to them. To assist in answering this research question, students were asked two questions:

Question 1: Which learning resources did/do you engage with? and,

Question 2: How frequently do you engage with the learning resources in this unit?

This section details responses to these questions. Before reporting on these, as mentioned in Section 1.2, it is important to note that for the purposes of this study, a learning resource is any resource made available through the LMS that a student would use as part of the learning process and excludes resources of a summative nature. As such, these resources include, but are not limited to, online lectures, lecture slides, answers to tutorial questions, YouTube videos, readings, links to articles, quizzes not linked to assessment purposes, and past exam questions and solutions.

As reported in Column 4 of Table 7.1 above, students engaged with most of the learning resources provided to them, including lecture slides, tutorial questions and solutions, online self-assessment quizzes (where available), videos and journal and newspaper articles. Interestingly, only students enrolled in ACF1100 specifically stated that they used the unit guide. Further, perhaps due to the timing of the interviews and the strong possibility that these learning resources may not have been uploaded on to the LMS yet, students did not specify that they used past exam questions and solutions[46]. As denoted in blue ink (see Table 7.1, Column 4), students mentioned a number of resources, such as the textbook, Google and other un-prescribed textbooks as learning resources that aided them in their study. Even though these were not loaded on to the LMS, a short discussion of these is included as interesting insights were provided by the interviewed students.

In terms of frequency of use (Table 7.1, Column 6), in first year the majority of students (70%) engaged with the learning resources two-to-three times a week, whilst in second and third year this percentage dropped to 55% in three of the units, namely ACF2100, ACF2200 and ACF3200, and to 37.5% in ACF3100. No first year students accessed the learning resources on a daily basis, although approximately 27% of second (ACF2100) and third year

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[46] This was true for all units except ACF3100, which provided revision questions at the start of each semester. The revision questions were a mix of additional questions and past exam questions. Solutions were provided to the calculation type questions only at the start of each semester.

students did. In ACF1100, ACF2100 and ACF3200, 18–20% of students accessed the learning resources on a weekly basis, with this percentage increasing to 36% and 37.5% in ACF2200 and ACF3100 respectively. This is discussed further in Section 7.3.2 below.

The following section provides in-depth discussion regarding the learning resources students engaged with across the three year levels.

7.3.1 Discussion and analysis of which learning resources students engage with

7.3.1.1 Lecture slides and online lecture recordings

The majority of students made extensive use of the lecture slides. Where students attended the lecture, many used the lecture slides as their base for note-taking (i.e., Factor 2, *elaboration*[47]). These students downloaded the lecture slides directly from the LMS prior to the lecture, reviewed them, and engaged with them (through note-taking) whilst in the lecture. Further, many students referred to the lecture slides when completing or going through the homework questions *(metacognitive self-regulation)*. Students use the knowledge gained from the lecture to attempt the tutorial questions, thus trying to improve their performance by checking back with the lecture when completing the assigned tutorial questions.

Not surprisingly, the online lecture recordings were used by students who did not attend the lecture. Whilst students were not asked why they chose not to attend the lecture, a third year student offered the following explanation:

> *"I used the online resources, like the lecture slides and lecture recordings. So I've got a part-time job at the time of the lecture, so that's why I mainly just get access to the online recording and the lecture slides help me to catch up with the work".*
> **[IM20[48] – third year student]**

Further, students who responded to the qualitative section of the questionnaire commented that they did not attend lectures due to being distracted for parts of the lecture and not being able to concentrate for the full length of the lecture.

Where students did attend the lecture, many referred back to the online recording to fill in gaps or to pick up on content that was missed whilst in the face-to-face lecture. This shows *metacognitive self-regulation* behaviour given they acknowledge that they may have missed important content and thus choose to listen to the online lectures to correct prior behaviour:

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[47] Where appropriate the factor is provided **followed** by the relevant scale. Five factors were identified through Principal Components Analysis (see Section 8.4.1). The five factors were: **Factor 1:** Goal setting and metacognitive self-regulation (SR); **Factor 2:** Rehearsal and elaboration; **Factor 3:** Importance of learning; **Factor 4:** Self-efficacy and control of learning beliefs; and **Factor 5:** Task value and time and study environment.

[48] Appendix AH provides the list of interviewees for each semester. The code, IM20 (see Section 3.7) denotes student number 20 interviewed (I) in the main study (M).

"I found myself, I zone out when I'm there and as much as I'm trying to get myself to go to the lecture instead of just watching [it online] *and then my concentration just* [wanes] *so then I go back and go over it … you cannot afford to have any gaps in this unit".* **[IM05 – first year student]**

"… go to the lectures, have used the online recordings for this unit, a little bit, to go back over… Just sometimes with the two hour lectures, I don't always manage to pay attention the whole time, so I have to go back over them occasionally". **[IM16 – second year student]**

Whilst the above two quotes bring in to question the length of lectures, the following quote from a second year student studying ACF2200 shows how students extend use of the online lectures to self-manage and self-regulate the knowledge attained:

"I pause and make notes. So instead of two hours, it will probably take me three or four to pause and summarise and then I go and look things up in between". **[IM12 – second year student]**

This student is engaging in *elaboration* through summarising and note-taking, and then taking the next step through fine-tuning and improving her knowledge by referring to other resources to assist in her understanding (*metacognitive self-regulation*). She is also exhibiting self-management targeted at improving her understanding. The use of online lectures was not evident in first year students. This may be due to the duration of the lectures offered in first year where the weekly content was broken up into two one hour lectures per week, thus ensuring students were not overloaded in each session. However, having a second year student state their use of the online lectures provides insight into the level of maturity exhibited by this student as it shows her willingness to take control of her own learning, which is an important skill, given emphasis on self-management as an accounting learning standard and its importance in lifelong learning.

A student enrolled in both second year accounting units (i.e., ACF2100 and ACF2200) made the following comment in relation to their use of the online lectures:

"The ACF2200 lecture slides are fairly detailed. I can go through and replay the [online] *lectures if I need to, if I don't understand anything. Whereas ACF2100 the lecture slides aren't detailed and if I want to find out something, I don't even know what I don't know… So I don't watch those lectures again, I just try and figure it out through the lecture handout or the questions and answers from the tutorials, so yeah I don't really use those lecture resources, I just don't find them to be very helpful".* **[IM11 – second year student]**

ACF2100 encompasses topics such as tax effect accounting, consolidation and equity accounting, among other financial accounting topics, which require students to understand and perform respective calculation and journal entries. Practice exercises, examples and lecture handouts may be better learning resources in this unit as they enable students to put their

understanding into practice. A contrasting view was presented by student **IM16**, who in engaging in *metacognitive self-regulation,* reinforced the importance of lecture examples and online lecture recordings in ACF2100:

> *"I have* [used the online recordings] *a couple of times, mostly to go back through when I'm doing the* [tutorial] *question. Because they'll have the solutions up on the* [LMS] *site, but looking at the solution and the question, I'll be like 'I have no idea how he* [lecturer] *mentioned we get from point A to point B?' So I do like to use* [online lectures] *those to see how he got there, because the questions aren't necessarily straight forward to me". [IM16 – second year student]*

Thus, this student combined listening to the online lecture with reviewing the lecture examples, so that they were able to fine-tune their understanding in order to master difficult concepts (*metacognitive self-regulation).* In contrast, ACF2200 uses readings and case studies to impart the theoretical knowledge students are required to grasp. As such, the content presented on the lecture slides in this unit may be more effective, which is why these lecture slides are seen to be "*more detailed*" from the student's perspective (**IM11 – second year student**).

The following third year student uses the online lectures in a slightly different way:

> *"I attend them* [lectures]*. If I don't, I'll use the* [online] *lectures but I use them for studying as well I might listen to the first ten minutes and last ten minutes just to see where the focus was on if I've forgotten. Usually, they* [the lecturer] *go 'the main takeaway from this lecture is this part' and I'll go back over it and focus on this part. But I don't really go back over the whole lecture that much". [IM21 – third year student]*

Another third year student made the following comment:

> *"First I go to* [the] *lecture, take notes on the lecture slides, highlighting the learning objectives, then I go off and make a list of those learning objectives and then I listen to* [the online lecture] *and make sure I haven't missed out on anything". [IM38 – third year student]*

These quotes provide insight into the approach students take in ensuring they are cognisant of the key learning objectives and key takeaways. As a higher-order skill, academics hope students exhibit this. Thus, it is pleasing to see the skills evident in third year accounting students.

In summary, students at all levels rely on lecture slides (and the online recordings) to assist them with their learning. Students utilise and re-utilise this learning resource to fine-tune their understanding by filling in gaps or clarifying issues encountered when they originally attend face-to-face lectures. This suggests that students engage in SRL strategies that encompass *elaboration* and *metacognitive self-regulation*. In contrast, the strategies adopted by third year students when engaging with the lectures changes – they no longer refer to the learning resource

to simply take notes or enhance their understanding, but rather review the lecture slides to garner the main takeaways and/or pinpoint the key learning objectives – exhibiting higher-order learning skills.

7.3.1.2   *Tutorial questions and solutions*

Across all three year levels students made extensive use of the tutorial questions and solutions. Setting tutorial questions provides students with the opportunity to put into practise the knowledge they have gained through lectures and further reading (Factor 2, *rehearsal, elaboration*). Students use the solutions to check their own work and to identify areas where they need to extend their knowledge and understanding (*metacognitive self-regulation*):

> *"When the tutorial solutions were up, I use them the following week so that I could look back and see what I actually did not answer correctly or not enough … I used that to enhance my learning process".* **[IM24 – third year student]**

A student who had not studied accounting before, and who found the content presented in lectures and tutorials difficult, made extensive use of the tutorial solutions:

> *"I do find … helpful the tutorial questions that were given as part of the homework because they supply answers for it, worked solutions. I take that back over the weekend, usually, when I get time to go over, and read through it myself. That tends to make sense, because in the lectures I don't really understand what's going on. In the tutorials, I don't actually understand what's going on. I need to take it down, step it through myself, little by little, because it is a whole new subject to me".* **[IM06 – first year student]**

Interestingly, however, one student commented:

> *"There were solutions put up* [on the LMS] *but in our tutorials my tutor went over the more important questions. So we went over them and understood how to do them and then got the solutions. So I felt like I didn't have to look at the* [online] *solutions for the sort of less important problems".* **[IM07 – first year student]**

This statement highlights the importance of a well-structured tutorial, but more importantly the ability for students to be able to identify where they are in their learning, and feel confident to be more discerning in terms of the resources they choose to engage with.

Tutorial questions allow students, at all levels, to practice concepts introduced to them through lectures and prescribed readings. Students can then assess where they are with their learning when reviewing either the tutorials solutions placed on the LMS or engaging in the tutorial whilst questions are being completed and reviewed. Moreover, the ability for students to utilise the tutorial questions and solutions through continual practice in conjunction with the lecture slides allows them to enhance their understanding, with some using tutorial solutions as a means to revise for upcoming tests and examinations (Factor 2, *rehearsal*). Further, continual engagement with the learning resources enables students to gain confidence and

belief that they are able to learn the content required of them (*control of learning beliefs* and *self-efficacy for learning and performance*) in order for them to be successful.

7.3.1.3 YouTube videos

ACF3100 had a number of short YouTube videos that covered some of the more difficult topic areas such as extractive industries and accounting for hedges. These were prepared by a lecturer, in addition to other publicly available YouTube videos, and were provided to support content areas such as the use of IFRS, fair value and sustainability. Many students commented that they utilised these resources:

> *"Once I've done all that* [attend the lecture, listen to the online lecture and work through the lecture examples a couple of times]*, and I understand all the learning objectives, I then actually watch the video nice and relaxed and make sure I understand all that is being said". [**IM38 – third year student**]

> *"… depending on the content. Because I'm a more visual learner I find that if I don't understand the concept as easily I refer back to the videos and it kind of links everything for me a bit better". [**IM40 – third year student**]*

This acknowledgement that students use the resource to link concepts together (i.e., engage in *Factor 2,* in particular *elaboration*) is an example of them engaging in a deeper approach to learning. Whilst it is pleasing that third year students can make these linkages, academics in earlier accounting units need to be more overt in linking resources together so that it fosters this kind of behaviour, or more importantly, can assist students who are unable to make the linkages themselves. Interestingly, as noted in Table 7.1, the CEs of the third year units do not promote learning resources on a regular basis. Perhaps this could be undertaken so that the linkages can be provided for all students, otherwise we run the risk of students disengaging:

> *"… there's a disconnect between the textbook and whatever other learning resources we have, which is why the textbook becomes a really, really scary thing to kind of get". [**IM31 – second year student**]*

The provision of overt linkages or pointers by academics is particularly important in a blended learning environment where many learning resources are provided and where the environment is less directed.

In both semesters, the CE of ACF3200 provided students with YouTube videos of between 10 and 15 minutes in duration of content he was either unable to complete in the face-to-face lecture or content he felt he had not adequately covered. Whilst infrequent, the resources were provided on the LMS on the same day as the lecture with students subsequently informed of the additional learning resource through an announcement on the LMS. Students commented that they referred to these videos because they helped clarify topics that they were confused

with. Further, as they were short, they provided a useful reference when consolidating knowledge and understanding (Factor 5). Whilst academics feel pressured to ensure that they complete their weekly lecture materials, it is comforting to know that students are receptive to lectures being supplemented with additional short YouTube videos of missed material, which students refer to in their own time.

7.3.1.4 Textbook(s) and prescribed readings/articles

First year students referred to the prescribed textbook if the lecture materials raised concepts that required further in-depth knowledge. This suggests they are managing their effort to overcome difficulties (*effort regulation*). Across all year levels, students used the prescribed textbook or other additional textbooks to clarify content that was not clearly presented in the lectures (Factor 5 [aid] *understanding,* and *metacognitive self-regulation*):

> "*I don't usually read the textbook that much unless I'm struggling". [IM25 – third year student].*

> "*I went to most of the lectures and I found they were really helpful, and those that I missed I just watched them online. The book was really useful as well, and even some of the books, which I took in the library, like not the prescribed one, so just to clarify some of the things that might not have been too clear for me". [IM01 – first year student]*

> "*... if I really get stuck I will go back to the textbook and read it but otherwise I take it as read". [IM17 – second year student]*

The following is an example of a second year student who made extensive use of the lecture slides, online lectures, and weekly tutorial questions, commenting that:

> "*The textbook not as much because it's a bit too much information and* [the content] *it's overall in the lecture slides, because I find that when you study too much things in detail it's a bit too time consuming in the wash with everything else. I find these units and others are just brushed over so to save time I probably just skip to those few resources* [lectures and tutorial solutions]*". [IM12 – second year student]*

Whilst this student makes reference to the lack of time available to delve into other resources, such as the textbook, it also suggests that the student has a very surface approach to learning and infers that is the behaviour we engender by brushing over concepts. This student was studying ACF2200, which relies heavily on case studies that were integrated throughout the lecture and "*interesting real-life academic journal articles that analysed management accounting scenarios*" [**IM14 – second year student**], as well as other resources to impart detailed content. Students, throughout their university degree, can exhibit surface versus deep approaches to learning. It is incumbent on academics to provide the context for students to gradually move from a surface approach to a deeper approach to learning.

With respect to prescribed readings or refereed journal articles, students noted that they engaged with these particularly if the lecturer referred to them in the lectures.

7.3.1.5 Discussion board

In general, students did not mention utilising the discussion board. A possible explanation for this is that students may not consider this as a resource given they constantly communicate in an online environment in one form or another, and see this as a means of communicating with lecturers and tutors. For the few students who stated that they viewed the discussion board, they did so to peruse responses to questions posted by other students. This was particularly the case where students required further clarification when completing assignments or preparing for tests or their examination, which supports findings from prior literature (Dawson et al., 2008). Other than two third year students – one posted questions of an administrative nature [**IM21**], whilst the other posted questions relating to content clarification when they could not attend consultation [**IM27**], the students interviewed did not actually post questions themselves.

An ACF3200 student made the following comment:

> *"There was also a Q&A page which the Chief Examiner would post questions and a corresponding answer and you could read it in your own time". [**IM42 – third year student**]*

The lecturer in ACF3200 used the discussion board as a teaching tool, posting content related questions, encouraging students to ponder the issue and post responses. This set-up of the discussion board was different than in the other accounting units as there was a separate discussion board set-up for each week, which could be a possible avenue in ensuring students see the discussion board as a valuable teaching resource so they attain *critical thinking* skills and continue to facilitate communication and engagement amongst students (*peer learning*).

The following first year student (Semester 2 2016) noted that the discussion board assisted them in feeling connected and validates that they are not the only student with a particular question or concern:

> *"… because maybe some students have the same problem as you and then when you go to the discussion board you will see oh there's someone also like me and then you can see the solutions. It is quite useful". [**IM29 – first year student**]*

However, a problem identified with the discussion board is:

> *"It takes time* [to review the questions and answers on the discussion board]*, and you're not sure if you will get the correct answer". [**IM36 – second year student**]*

This criticism may be overcome if the discussion board is set-up on a week-by-week or topic-by-topic basis, as per ACF2200 and ACF3200, which may assist students in gaining confidence

in utilising it as a valuable resource, and may engender interest in further engaging students in the learning process:

> *"And then the discussion forums are especially important because ideas that I really wouldn't look at twice, some people identify it's really interesting to find out things that I don't realise and recognise, and then this lecturer actually provides a really good answer … And it's like he gives every single part of the question, like from the history towards the end and it's really interesting – especially this subject* [ACF3200] *I think, the discussion forums are really interesting". [IM22 – third year student]*

This quote supports Phillip et al.'s (2011) finding that students are more inclined to review what is posted on the discussion board if it is placed there by the lecturer or an expert.

7.3.1.6 *Online self-assessment quizzes*

Where there are online weekly quizzes, which are of a formative nature, students engage with them to test their understanding of content and continually assess their learning behaviours to ensure that they master the concepts required (*metacognitive self-regulation*). Further, given the multitude and variety of questions, many students use these resources as a means of revision (Factor 2, *rehearsal*) for upcoming tests:

> *"And obviously the online quizzes it's a good revision for a midterm test, or for the upcoming exam. There's just a variation of questions". [IM08 – first year student]*

7.3.1.7 *Revision questions and practice questions and solutions*

Most students engage with the revision questions and or practice questions and solutions as it aids in "*revising for tests and exams*" (Factor 2, *rehearsal)* [**IM40 – third year student**]. The following student enrolled in ACF3100 commented on their use of this very valuable resource:

> *"This unit had very thorough weekly revision questions that were on offer from week one, so you could study as much as you wanted which I thought was really good because many students in third year level subjects have lots of commitments, so they allowed you to basically study the whole unit yourself if you wanted to … I just methodically went through all the revision questions which I found that's worked best for financial accounting". [IM42 – third year student]*

The LMS encourages academics to present information on a week-by-week basis. However, as this student's comment indicates, we could make resources available as soon as possible to ensure we cater for students who have the capability and time to get ahead.

7.3.1.8 Google searches

To clarify issues with content, students often conduct 'Google' searches, especially if they feel unable to pose their particular questions and/or issues to tutors or lecturers. Whilst students were not probed as to why they did not approach teaching staff, the initiative shown by students to find other resources to assist them in gaining knowledge is applauded.

7.3.1.9 Unit guide

A small minority of students referred to the unit guide on a regular basis to keep abreast of the weekly schedule and when particular assessments were due. In doing so, these students are regulating their learning against set goals (Factor 1, *goal setting*) and are planning their time to ensure adequate effort is put into completing tasks (Factor 5, *time and study management* and *effort regulation*), which is something that should be encouraged in the wider student community.

7.3.1.10 Summary

As evident, students engage with a variety of resources in order to meet their needs of ensuring they understand the required content. Whilst many use the resources, one needs to ponder whether they are using them effectively. As noted, many utilise them to enhance their understanding (Factor 5), but do refer to other resources outside the LMS (e.g., Google searches, non-prescribed textbooks). Whilst applauded, perhaps it is also incumbent on academics to ensure that we link the required resources more effectively to ensure students engage with them as effectively as possible.

In terms of RQ2, the discussion provides insight into the learning strategies students exhibit whilst engaging with the resources (namely, Factors 2 and 5, *rehearsal*, *elaboration*, *effort regulation*, *time and study management*, *goal setting* and *metacognitive self-regulation*). It would appear from the lack of usage of the discussion board that one of the learning strategies academics could foster is *peer learning* through better utilisation of the discussion board.

Further, it is imperative that academics invest in resources that the majority of students will find beneficial:

> *"I try to use everything I possibly can that is there* [on the LMS]. *Of course, not everything is going to engage every student. So if I find that I'm not getting benefit out of it then I won't use it". [IM33 – second year student]*

When students commented on their usage of certain learning resources, such as the lecture slides (and online recordings), tutorial solutions, online quizzes and revision questions and solutions, students inferred constant engagement with these learning resources through their

ability to exhibit the specific learning strategies of *elaboration* and *rehearsal* (i.e., Factor 2), which enabled them to gain confidence and belief that they are able to learn the content required (*control of learning beliefs* and *self-efficacy for learning and performance* i.e., Factor 4).

7.3.2 Discussion and analysis of how frequently students engage with the learning resources as advised by students

As shown in Table 7.1 above, in the majority of cases the learning resources that students made extensive use of, namely lecture slides and tutorial questions and solutions (see Section 7.3.1), were made available by the CE on a weekly basis. In some cases, other resources such as practice/revision questions and solutions, YouTube videos and journal articles, were made available to students at the start of the semester. As noted in Table 7.1, students in first and second year were regularly reminded as to the availability of the resources. This was not the case in the third year units where students were expected to be fully cognisant of the availability of resources and the fact that they should be regularly accessing the learning resources available.

In response to Question 2, as shown in Table 7.1, student responses regarding the frequency of engagement with these resources ranged from not regularly; to weekly; 2-3 times a week; and daily, with the majority across all three year levels engaging with the resources 2-3 times per week. In general, when discussing the frequency of their engagement, they referred to the following resources: lecture slides, online lecture recordings and tutorial questions and solutions. The most common engagement with resources is consistent with the manner in which the learning resources are uploaded on the LMS i.e., lectures are usually loaded a week before the lecture by the CE, the online lectures are available once the face-to-face lecture has occurred, and the tutorial solutions are usually loaded once all tutorials for that week have occurred. In general students reviewed the lecture slides prior to their lecture or downloaded them before attending the lecture, and referred to them again when they were completing set tutorial questions prior to attendance at tutorials, or when preparing for summative assessments.

A small minority of students (1 first year; 3 second year; and 2 third year) set aside particular days each week to access and utilise the resources, thus managing their time (Factor 5, *time and study management)*. Herein a second year student had quite a structured approach:

> *"I find I will download them but I like to go through and download everything to my computer and have it all sorted. So then you can see if anything's been updated or changed. So I'll go through after the first six weeks and I'll download everything and make sure I've got it all, in my folders or have it all sorted but then I'll probably log on, I don't know, weekly or every few days but then I'll go through and have a closer look weekly". [IM12– second year student]*

A third year student, enrolled in both ACF3100 and ACF3200, accessed the learning resources for ACF3100 more frequently each week because the topics were more challenging.

Many students frequently checked to see what additional resources were placed on the LMS as they feared missing out or did so to ensure they were aware of the available resources:

> *"But generally each day I'll go and make sure that nothing else has been uploaded, 'cause sometimes things go under the radar, so a practice exam might be uploaded and we haven't been emailed about it. So I generally just go in and have a look or make sure, oh did I look at the tutorial solutions for last week, go in and look at that. So I look at it quite frequently".* **[IM32 –second year student]**

Further, students checked regularly to ensure they were familiar with the content prior to attendance at tutorials, especially towards the end of semester:

> *"Yeah, so most days I check* [the LMS] *just to make sure that if something new is up, especially coming to the end of semester, if there is exam content, or revision content. Definitely I engage with that before they bring it up in class, because they usually bring it up and then get to it straight away. So I would like to get a handle on that before it is talked about, so I understand it".* **[IM33 – second year student]**

Students across all three year levels tended to regularly review lectures (both the slides and the online lectures if they referred to these) and tutorial solutions after attending the face-to-face lectures and tutorials to enhance their understanding (Factor 5). Indeed, a second year student noted that he listened to the online lecture recordings for ACF2100 more than once to ensure he understood the concepts required (**IM31**). Students also checked to see if additional announcements and materials were provided on the LMS, and did so on a regular basis on particular days i.e., the day before the lecture and the day after their tutorial. This demonstrates that students are not only able to self-regulate cognition, but many are able to schedule and set aside blocks of time to study – an attribute of Factor 5 and *time and study management.*

Further, most students accessed the tutorial solutions weekly, especially if they did not attend the tutorial and reviewed questions and solutions, which were not completed within the allocated tutorial time.

Not surprisingly, some students accessed the resources more frequently when they were revising for the mid-semester test or the final examination. As discussed previously in Section 7.3.1, this is particularly true for the online quizzes and the discussion board.

7.3.2.1 Summary

Irrespective of the year level, the majority of students accessed the learning resources 2-3 times per week. In general, the frequency with which students accessed the lecture slides, online lecture recordings and tutorial questions and solutions, is not surprising given the way resources are uploaded on the LMS. That is, students access the LMS to review the lectures

prior to attendance at the lectures, and they review the tutorial solutions at the end of the week given that these resources are uploaded regularly (i.e., on a weekly basis). Unsurprisingly, students access the LMS on a more frequent basis if the content is more challenging, as was the case in ACF3100 and ACF3200, or when they were revising for mid-semester tests or the final examination.

This section provided an analysis of the interview data, which recounted the learning resources students advised they engaged with during the semester, and how often (RQ1). Given limitations around recollection and whether the small number of students that were interviewed reflect engagement with the learning resources that the majority of students actually engaged with, learning analytics data was collected in the same time period i.e., Semesters 1 and 2, 2016. This goes some way to overcoming this limitation. Findings from the learning analytics data is presented next.

7.4   Learning analytics data captured

As noted in Section 7.3, for the purposes of this study, a learning resource is any resource made available through the LMS that a student would use as part of the learning process. As such, the learning analytics data includes, but is not limited to, student usage of lecture slides, answers to tutorial questions, YouTube videos, readings, links to articles, quizzes if not for assessment purposes, and past exam questions and solutions. As reported in Table 7.2 below, data captured comprised the following:

Data Type	Description
Time	Date and time the particular student engaged with the LMS or a learning resource
User full name	Student name
Username	Student username
Event context	Description of what the student did within the LMS. This was presented as one of the following e.g.: a. Unit: ACF2100 Financial Accounting – S2 2016 b. File: ACF2100 Lecture 4 c. Forum[49]: Week 2 – Standard costing and variance analysis (Q&A) d. Assignment: Assignment (Soft copy submission) e. URL: link to an online resource f. Choice: Student choice of topic covered in a revision lecture g. Lesson: Construction contracts short video. h. Quiz: Academic Integrity Quiz i. Turnitin Assignment 2: Turnitin assignment submission drop box j. Page: Frequently asked questions (FAQs Week 1) k. Label: Lecture.
Component	Identifies what was accessed; e.g., file, system, Forum, Turnitin assignment, quiz
Event name	Title given to what the student accessed e.g., discussion viewed.
Description	Description of what the student did e.g., The user with id '380203' viewed the 'resource' activity with the course module id '3408369'.
Origin	Web
IP Address	The unique string of numbers, which identifies each computer accessing the LMS.

Table 7.2: Type and description of the learning analytics data collected in each accounting unit

As shown in Table 7.2, the event context is where the learning analytics data captures reference to the learning resource students accessed via the LMS. The LMS is also used to communicate administrative information, such as notification of face-to-face consultation times, assignment submission reminders, and information about professional body events, to name just a few, to students. Items of this nature were removed from the analysis as they do not assist students in the process of learning. Further, simple line items, such as viewing the home page of the unit, have also been removed. Additionally, as the learning analytics data captures activity from both campuses where the unit is taught, activity relating to the Bachelor of Commerce (Campus B), for example, 'Lecture 12 for Campus B', was removed as this cohort of students is excluded from the study (see Section 3.6.4). To illustrate, Table 7.3 details the items that were removed in ACC/ACF2100[50] in Semesters 1 and 2, 2016, whilst Table 7.4 lists the learning resources that were subsequently retained and delineated per unit[51] (see

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[49] The discussion board in the LMS is referred to as the Forum. For the purposes of this study, the generic term 'Discussion board' is used.

[50] The corresponding unit code for the equivalent unit at Campus B is prefaced with ACC, followed by the unique unit number. Therefore, data for one of the second year accounting units, for example, is denoted ACC/ACF2100.

[51] There are resources included in the learning analytics data that were not mentioned by the CE nor students in the interviews. Namely, ACC/ACF1100 'Additional readings' and 'Tutorial program'; and ACC/ACF2100 'Practice questions'. Students and CEs were recalling learning resources utilised. Even though a walk-through of the LMS site was also undertaken if the CE did not inform the researcher it was not able to be identified.

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Appendix R for a full list of items that were removed from each of the accounting units in Semesters 1 and 2, 2016).

Classification of Items	Examples as labelled in LMS
Consultation times	File: ACF2100 Exam consultation times – Campus A
	File: ACC2100 Exam consultation times – Campus B
	File: ACF2100 Final exam consultation times – Campus A
	File: ACC2100 Final exam consultation times – Campus B
	File: ACF2100 Consultation times – Campus A
	File: ACC2100 Consultation times – Campus B
Services and study support	File: Disability support services
	File: Calculator workshop session
	File: Calculator instructional video
	File: P2P information[52]
	File: Campus A P2P workshop
	File: Student futures
Home page hits	Unit: ACC2100 – ACF2100 Financial accounting – S1 2016
	Unit: ACC2100 – ACF2100 Financial accounting – S2 2016
Further study	File: Accounting Honours Information sessions
Assignment submission	Assignment: Assignment (Soft copy submission)
Items specific to other campuses	File: ACC2100 In-semester Test solution Campus B V2
	File: ACC2100 In-semester Test solution Campus B V1
Communication from CE	File: News forum[53]
Other	File: Campus A students: PhD project information video
	File: Invitation to participate in Lorena Mitrione's PhD project

Table 7.3: Sample of items removed from analysis of the learning analytics data – unit ACC/ACF2100

As shown in Table 7.4 below, it is evident that across the five core accounting units, students engage with similar learning resources. For example, lecture notes, tutorial solutions, tutorial program/questions, unit guide, additional readings, past exam questions and solutions, and the discussion board. Some of the unique learning resources in each unit or in a maximum of two units are: MyAccountingLab (multiple choice questions externally sourced – ACC/ACF1100); videos (ACC/ACF3100 and ACC/ACF3200); quizzes (ACC/ACF2200 and ACC/ACF3200); lecture illustration/handout solutions (ACC/ACF2100); assignment feedback (ACC/ACF2100 and ACC/ACF2200); guided reading worksheet for refereed articles (ACF3100); overview of examiner information (ACC/ACF3100) and case studies (ACC/ACF3200). As mentioned previously, there was no discussion board available for ACC/ACF2100 in either semester, and this learning resource was only available in ACC/ACF1100 in Semester 2. Actual hits per semester on the learning resources students engaged with are presented next.

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[52] P2P is a peer-to-peer session where students from a prior semester provide additional assistance to current students in a face-to-face session.

[53] This refers to email notifications made through the LMS. These notifications are sent to all students. Only lecturers (CE) can make these postings.

ACC/ACF1100	ACC/ACF2100	ACC/ACF2200	ACC/ACF3100	ACC/ACF3200
File: ACC/ACF1100 Unit guide	File: ACC/ACF2100 Unit guide	File: ACC/ACF2200 Unit guide	File: ACC/ACF3100 Unit guide	File: ACC/ACF3200 Unit guide
File: Lecture slides	File: Lecture slides	File: Lecture slides	File: Lecture slides	File: Lecture slides
	File: Lecture handout solutions			
File: Tutorial solutions	File: Tutorial solutions	File: Tutorial solutions	File: Tutorial solutions	File: Tutorial solutions
File: Next week's tutorial questions	File: Presentation questions for tutorials	File: Unit schedule and planned tutorial activities	File: Unit schedule and weekly activities	File: Detailed program with activities and assessments
File: Tutorial program	File: Tutorial program	File: Tutorial schedule		
		File: Unit schedule		
File: Additional readings	File: Additional readings	File/URL: Additional readings	File: Additional readings	File/URL: Additional readings
File: Textbook reading guide				
			URL: Reading list	
	File: Tutorial presentation question solutions			
				Case studies
File: Practice questions	File: Practice questions		File: Revision questions[54]	
File: Practice question solutions	File: Practice/In-semester test solutions		File: Solutions to revision questions	
Discussion board (S2 only)		Discussion board	Discussion board	Discussion board
URL: Lecture recordings				File: Lecture recordings
External tool: MyAccountingLab[55]		Quizzes		Connect quizzes
	File: Assignment details	File: Assignment	File: Individual research assignment and rubric	
			File: Group research assignment and rubric	
			File: Guided reading worksheet for academic articles	
			File: Handout slides for first assignment	

[54] Whilst these are headed 'Revision questions' in the LMS, they comprise a mix of past exam questions and practice questions. Subsequent analysis of ACC/ACF3100 (later) renames this resource "past exam questions" in order to allow for comparisons to be made against the other 4 accounting units in this study.

[55] Incorporated in this tool are a range of multiple choice quizzes.

ACC/ACF1100	ACC/ACF2100	ACC/ACF2200	ACC/ACF3100	ACC/ACF3200
		File: Assignment feedback		
			Videos	Videos
File: Past exam questions	File: Past exam questions	File: Past exam questions		File: Past exam questions
File: Solutions to past exam questions	File: Solutions to past exam questions	File: Solutions to past exam questions		File: Solutions to past exam questions
File: Exam review and administrative matters				
			File: Overview of examiner information for financial accounting exams	

Table 7.4: Learning resources retained and analysed (RQ1)

7.5 Analysis of the learning analytics data – general overview

Table 7.5 below provides the number of unique hits or unique line items captured per unit per semester. To assist with this analysis, in each unit the data is broken down into 4 time periods per semester together with a total for the semester [56]. The four periods comprise: the first 4 weeks of semester (including Orientation week), labelled ACFXXX Semester X First 4 weeks; Weeks 5–8, labelled as the Mid 4 weeks; Weeks 9–12, labelled as the Final 4 weeks; and the fourth time period, labelled as SWOT Vac and exam period. The SWOT Vac and exam period consists of one week of SWOT Vac and a maximum period of 3 weeks for the examination. As the final exam in each unit may be scheduled anytime within the 3 week examination period, this time period may be shorter than 4 weeks. Further, Table 7.5 provides, for each of the four time periods, the number of students who engaged in the LMS; the average number of hits per student; minimum and maximum; and corresponding standard deviation.

As there are different student enrolments per unit and different learning resources offered per unit (as provided in Table 7.4 above), it is not feasible to do any comparisons across units on this other than to discuss general overall observations. As shown in Table 7.5, the pattern of unique hits i.e., the increments and decrements between the four distinct time periods is similar in ACC/ACF2200, ACC/ACF3100 and ACC/ACF3200 across both semesters. In ACC/ACF2200 both the unique hits and the maximum number of hits (particularly for the mid and final periods) are somewhat higher. This could be due to the use of a formative quiz (i.e., Academic Integrity Quiz), which students must successfully complete in order to attempt the

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[56] Justification for this split was provided in Section 3.8.5.

two summative quizzes in the unit (see Section 7.6). With regards to ACC/ACF2100, the pattern is similar in three of the four time periods – the only variation is that there are more unique hits in the SWOT Vac and exam period in Semester 1, even though the number of students engaging with the LMS is similar. In both semesters, the exam was scheduled in the first week of examinations, so does not explain why students exhibited more engagement with the learning resources in Semester 1. In ACC/ACF1100 there are no general trends other than to acknowledge that due to higher student enrolments in Semester 1, there are higher numbers of students who engage with the LMS and therefore a higher number of unique hits.

The standard deviations range from a low of 20.24 (ACC/ACF1100 SWOT Vac and exam period Semester 1) to a high of 142.57 (ACC/ACF2200 Final 4 week period, Semester 1). Indeed, the standard deviations for ACC/ACF2200 for both semesters are quite large, and across all units (except ACC/ACF1100 and ACC/ACF2200) the standard deviations are generally higher in the SWOT Vac and exam periods, indicating that the unique hits in this time period are quite spread out. Tables 7.5a, 7.5c, 7.5e, 7.5g and 7.5i in Section 7.6 provide an overview of the number of hits per learning resource in each unit for each time period.

Semester 1, 2016	No. of unique data points	No. of students engaged with the LMS	Avg. per student	Min.	Max.	Std. dev.	Semester 2, 2016	No. of unique data points	No. of students engaged with the LMS	Avg. per student	Min.	Max.	Std. dev.
ACC/ACF1100							**ACC/ACF1100**						
First 4 weeks	126,543	2028	62.54	1	287	37.73	First 4 weeks	37,088	867	42.91	1	1401	57.30
Mid 4 weeks	91,793	1882	48.82	1	375	28.36	Mid 4 weeks	51,805	713	75.28	1	324	41.41
Final 4 weeks	63,536	1850	34.39	1	316	22.65	Final 4 weeks	27,389	687	39.97	2	167	25.19
SWOT Vac & exam period	50,915	1827	27.92	1	210	20.24	SWOT Vac & exam period	26,976	686	39.39	1	358	23.46
Total	**332,787**						**Total**	**143,338**					
ACC/ACF2100							**ACC/ACF2100**						
First 4 weeks	63,879	872	73.33	1	308	41.25	First 4 weeks	48,735	864	56.45	1	237	32.80
Mid 4 weeks	38,081	847	44.98	1	274	28.82	Mid 4 weeks	37,166	825	45.10	1	206	25.82
Final 4 weeks	54,261	844	64.34	1	437	39.39	Final 4 weeks	54,276	810	69.45	2	305	35.36
SWOT Vac & exam period	55,999	836	67.02	1	364	51.09	SWOT Vac & exam period	45,898	804	57.09	1	362	41.21
Total	**212,220**						**Total**	**186,075**					
ACC/ACF2200							**ACC/ACF2200**						
First 4 weeks	54,181	857	66.02	2	396	46.96	First 4 weeks	40,918	713	63.35	1	392	49.46
Mid 4 weeks	108,065	839	205.28	2	774	99.91	Mid 4 weeks	83,524	697	190.25	1	761	92.94
Final 4 weeks	158,371	833	261.30	2	2073	142.57	Final 4 weeks	127,082	693	259.09	1	1482	134.17
SWOT Vac & exam period	94,009	831	159.89	1	811	111.02	SWOT Vac & exam period	77,771	685	158.44	1	860	112.15
Total	**414,626**						**Total**	**329,295**					
ACC/ACF3100							**ACC/ACF3100**						
First 4 weeks	44,396	643	73.63	2	313	36.52	First 4 weeks	59,588	755	85.66	2	388	43.57
Mid 4 weeks	30,123	621	49.85	1	212	25.98	Mid 4 weeks	39,415	728	55.49	3	269	35.15
Final 4 weeks	21,934	619	35.84	1	211	27.70	Final 4 weeks	26,546	725	37.09	1	191	27.03
SWOT Vac & exam period	38,053	620	61.91	1	683	59.59	SWOT Vac & exam period	38,467	722	53.94	1	340	42.00
Total	**134,506**						**Total**	**164,016**					

Semester 1, 2016	No. of unique data points	No. of students engaged with the LMS	Avg. per student	Min.	Max.	Std. dev.	Semester 2, 2016	No. of unique data points	No. of students engaged with the LMS	Avg. per student	Min.	Max.	Std. dev.
ACC/ACF3200							**ACC/ACF3200**						
First 4 weeks	65,591	606	110.23	1	482	73.27	First 4 weeks	53,580	729	73.59	1	389	50.92
Mid 4 weeks	35,271	582	61.10	1	210	35.05	Mid 4 weeks	49,220	705	70.30	1	308	43.96
Final 4 weeks	37,955	582	65.46	1	282	43.69	Final 4 weeks	52,086	703	74.30	1	491	48.50
SWOT Vac & exam period	66,722	580	115.46	2	767	91.80	SWOT Vac & exam period	55,808	702	79.69	1	453	62.18
Total	**205,539**						**Total**	**210,724**					

Table 7.5: Unique data points in each accounting unit separated into the four time periods

7.6 Analysis of the learning analytics data

For each unit, this section details the following:

- Based on the four time periods, a table reporting the number of hits on each learning resource. For a graphical representation of this, please see Appendix S, which presents the data in the form of pie charts (see Figures 7.2 to 7.11)[57].

- A table, together with some commentary, highlighting the major learning resources utilised per semester. For ease of comparison, similarities between the two semesters are printed in red.

This section concludes with an overall summary of the insights gained from the learning analytics data, followed by analysis of similarities and differences, compared to reported usage, recollected by students during the interviews.

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[57] The pie charts show, at a glance, the relative importance of each of the learning resources students engaged with.

Learning resources: ACC/ACF1100	Semester 1, 2016					Semester 2, 2016				
	Total	First 4 weeks	Mid 4 weeks	Final 4 weeks	SWOT Vac and exam period	Total	First 4 weeks	Mid 4 weeks	Final 4 weeks	SWOT Vac and exam period
File: Lecture slides	51514	17053	13807	13207	7447	18938	4720	5744	5300	3174
File: Tutorial solutions	23071	4196	5067	6835	6973	9758	621	2703	2956	3478
File: Next week's tutorial questions	19427	10326	6405	1857	839	0	0	0	0	0
File: Tutorial program	13338	7999	2762	2113	464	5313	2875	1266	983	189
External Tool: MyAccountingLab	10108	4256	3083	2171	598	2044	382	1000	521	141
URL: lecture recordings	6549	4624	919	643	363	0	0	0	0	0
File: ACF1100 unit guide	6385	3739	1561	713	372	2774	1563	827	277	107
File: Additional readings	4655	2388	1397	525	345	1928	1168	479	189	92
File: Practice questions	3467	0	0	813	2654	1175	0	0	348	827
File: Practice question solutions	2854	0	0	381	2473	1035	0	0	221	814
File: Past exam questions	2638	0	0	293	2345	2156	0	0	555	1601
File: Solutions Past exam questions	2475	0	0	146	2329	2206	0	0	346	1860
Discussion board	0	0	0	0	0	9986	1080	5368	962	2576
Exam review and administrative matters	0	0	0	0	0	546	0	0	34	512

Table7.5a: Unique hits on the learning resources in ACC/ACF1100 split by semester and time period

Learning resource / Unit and semester	ACC/ACF1100 Semester 1	ACC/ACF1100 Semester 2
Lecture slides	The most viewed resource across all 4 time periods	The most viewed resource for the semester. However, overtaken by the tutorial solutions in the *SWOT Vac and exam* period
Tutorial solutions	Viewed most in the *final* 4 week and SWOT *Vac and exam* periods	Viewed most in the *final* 4 week and *SWOT Vac and exam* periods
Past exam questions and solutions	Viewed most in the *SWOT Vac and exam* period with some interest in the *final* 4 week period	Viewed most in the *SWOT Vac and exam* periods with some interest in the *final* 4 week period. Solutions were more heavily used
Tutorial program	Viewed most in the *first* 4 week period	Viewed most in the *first* 4 week period
Unit guide	Viewed most in the *first* 4 week and *mid* 4 week periods	Viewed most in the *first* 4 week and *mid* 4 week periods
Practice questions and solutions	Viewed most in the *SWOT Vac and exam* period. Students commenced viewing in the *final* 4 week period	Viewed most in the *SWOT Vac and exam* period. Students commence viewing in the *final* 4 week period
Additional readings	Not prominently used other than in the *first* 4 week period	Not prominently used other than in the *first* 4 week period
External tool: MyAccountingLab	Consistently used throughout the semester – not as much usage in the *SWOT Vac and exam* period	Consistently used throughout the semester – not as much usage in the *SWOT Vac and exam* period. Not as highly viewed as in Semester 1
Next week's tutorial questions	Viewed consistently in the *first* and *mid* periods	Not available
Discussion board	Not available	Viewed most in *mid* and *SWOT Vac and exam* periods
Lecture recordings	Viewed most in *first* 4 week period	Not available

Table 7.5b: Overview of the learning resource usage in ACC/ACF1100

As reported in Table 7.5a above, the number of unique hits in ACC/ACF1100 in Semester 1 ranged from a low of 2,475 (solutions to past exam questions) to a high of 51,514 (lecture slides). In Semester 2, again the lecture slides had the highest number of hits (18,938), with the lowest (546) being the exam review and administrative matters document. Some of this variation may be accounted for by the large variation in student numbers. Further, as reported in Table 7.5b above, the pattern of usage in ACC/ACF1100 across both semesters is similar in the viewing/usage of the following learning resources: tutorial solutions, tutorial program, unit guide, practice questions and solutions, and additional readings. In terms of the tutorial program, one possible explanation for its increased usage in the first 4 weeks is that students may download and/or print this document and continuously refer to this version throughout the semester. This may also be the case with the unit guide when students plan their learning and completion of the assessment tasks.

With reference to Table 7.5a, the following general observations can be made:

- The most utilised learning resource is the lecture slides – this is particularly the case in Semester 1. In Semester 2, this is also true, except during the *SWOT Vac and exam*

period, where usage of the tutorial solutions outweighs the lecture slides. The learning analytics data shows students referred back to the lecture slides in Weeks 1–4, in the subsequent *mid* 4 week period (i.e., Weeks 5–8), with the percentage of total views ranging from 4.4%[58] (Semester 1)/7.3% (Semester 2) on average for the first three weeks of topics. This percentage increases to approximately 12% (Semester 1)/14% (Semester 2) in the Week 4 topic on balance day adjustments, suggesting students find this topic particularly challenging.

- The percentages follow a similar pattern for the tutorial solutions, with usage ranging from 7.7% to 16.9% in Semester 1, and 16.5 % to 26.5% in Semester 2. This suggests students commence self-regulating their learning through revising prior topics before the end of semester. This is particularly true in the *final* 4 weeks of semester (i.e., Weeks 9–12) wherein students are revising topics (principally the lecture slides and tutorial solutions) covered in Weeks 5–8, with the lecture slide usage being 5.5% (Semester 1) and 8.1% (Semester 2); and approximately 18% for the tutorial solutions across both semesters. Students continue to revise the content from Weeks 1–4 in the *final* 4 weeks (both semesters) but in much smaller proportions.

- In the *final* 4 weeks, a small proportion use the practice questions and solutions, suggesting students commence revising prior to the *SWOT Vac and exam* period.

- With the past exam questions and solutions loaded on to the LMS in Week 9 (i.e., in the *final* 4 week period), students commence viewing these in the *final* 4 weeks. In total, 5.9% (Semester 1)/15.6% (Semester 2) view the solutions in this *final* week period; whilst the percentage of exam question views is 11% (Semester 1) and 25.7% (Semester 2) respectively. It is possible that students view the exam questions on a number of occasions but refer to the solution once they are satisfied with their attempt.

As noted in Table 7.5b above, two learning resources, namely next week's tutorial questions and the discussion board[59], were made available in one semester but not the other. As the CE had a preference for encouraging students to attend face-to-face consultations, the discussion board was not offered in Semester 1. As reported in Table 7.5a, in Semester 2 the total number of hits on the discussion board was 9,986 (second highest utilised resource), with it mostly utilised in the *mid* 4 week and the *SWOT Vac and exam* periods. Even though the CE

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[58] This granular analysis is not tabulated.
[59] The data captured regarding the 'Discussion board' is as either 'Discussion board viewed' or 'Discussion board post'. The hits to the 'Discussion board' were not split between these two as this study is not interested per se in whether students are viewing prior questions or answers posted or actually creating those.

may be averse to the merits of a discussion board, it is evident that students make extensive use of it if it is available, and as aforementioned helps them to feel connected.

Due to a shortage of the recommended text, a PDF of the textbook questions named 'next week's tutorial questions', was uploaded onto the LMS for the unit in Semester 1.

Learning resources ACC/ACF2100	Semester 1, 2016					Semester 2, 2016				
	Total	First 4 weeks	Mid 4 weeks	Final 4 weeks	SWOT Vac and exam period	Total	First 4 weeks	Mid 4 weeks	Final 4 weeks	SWOT Vac and exam period
File: Lecture slides	35554	11572	7090	9908	6984	31859	10062	6630	8704	6463
File: Lecture handout solutions	15968	3199	2552	4147	6070	15025	1981	2877	4129	6038
File: Tutorial solutions	14137	2404	2031	3466	6236	8911	854	1990	2429	3638
File: Presentation questions for tutorials	9999	4215	2141	1842	1801	8480	4053	1794	1223	1410
File: Tutorial presentation questions solutions	6333	518	793	1510	3512	6761	485	1434	1809	3033
File: Additional readings	5907	1980	270	2341	1316	3957	1353	218	1609	777
File: Assignment details	5011	0	1239	3367	405	3130	0	639	2380	111
File: Tutorial program	4755	2721	778	693	563	4989	2861	856	806	466
File: ACF2100 unit guide	3209	1879	507	573	250	3017	1765	635	484	133
File: Practice/in-semester test solutions	3023	1038	1090	60	835	2638	243	1463	317	615
File: Practice questions	2769	1466	874	90	339	2174	431	1448	70	225
File: Past exam questions	2616	0	0	241	2375	2166	0	0	149	2017
File: Past exam solutions	2501	0	0	87	2414	2191	0	0	63	2128
File: Tutorial presentation guide	1216	899	193	98	26	1107	818	194	73	22
File: Assignment solution	947	0	0	126	821	386	0	0	0	386

Table 7.5c: Unique hits on the learning resources in ACC/ACF2100 split by semester and time period

Learning resource / Unit and semester	ACC/ACF2100 Semester 1	ACC/ACF2100 Semester 2
Lecture slides	The most viewed resource across all 4 time periods	The most viewed resource across all 4 time periods
Lecture handout solutions	Regular usage ranging from a low of 10%[60] (*first 4 week* period) to a high of 18% (*SWOT Vac and exam* period)	Regular usage ranging from a low of 8% (*first* 4 week period) to a *high* of 22% (*SWOT Vac and exam* period)
Tutorial solutions	Viewed most in the *SWOT Vac and exam* period; second most widely used in the *SWOT Vac and exam* period. Least viewed in *mid* 4 week period (8%) – usage increases by 2 percentage points each subsequent period until the *SWOT Vac and exam* period (18%). The third most widely used resource in the *final* 4 week period	Third most widely viewed resource in all periods (10-13%), except the *first* 4 week period *(3%)*
Past exam questions and solutions	Slight viewing commences in the *final* 4 week period with usage increasing to 7% in the *SWOT Vac and exam* period	Slight viewing commences in *final* 4 week period with usage increasing in *SWOT Vac and exam* period
Tutorial program	Viewed most in the *first* 4 week period	Viewed most in the *first* 4 week period
Unit guide	Viewed most in the *first* 4 week period	Viewed most in the *first* 4 week period
Practice questions and solutions	Viewed across all 4 periods, although small percentages except for the *mid* 4 week period (6%)	Viewed across all 4 periods, although small percentages except for the *mid* 4 week period (7%)
Presentation questions for tutorials	Second most widely viewed resource in *first* 4 week period, and third most widely used resource in the *mid* 4 week period	Second most widely viewed resource in *first* 4 week period, and fourth most widely used resource in the *mid* 4 week period
Tutorial presentation questions solutions	Usage increases steadily in each time period with the *SWOT Vac and exam* period having 55% of the total views	Usage increases steadily in each time period with the *SWOT Vac and exam* period having 45% of the total views

Table 7.5d: Overview of the learning resource usage in ACC/ACF2100

As reported in Table 7.5c, similar hits per learning resource per semester ensues in ACC/ACF2100. For example, the highest unique hits is the for lecture slides – 35,554 in Semester 1 and 31,859 in Semester 2, with the lowest number of unique hits being on the assignment solution at 947 (Semester 1) and 386 (Semester 2) respectively. The pattern of viewing in this unit is similar to that in ACC/ACF1100, where the:

- Lecture slides dominate the viewing/usage patterns of students.

- Students view the tutorial program and unit guide early in the semester. As reported under ACC/ACF1100, this suggests that students download these two resources to plan and regulate their time and study habits in preparation for completing the required assessments.

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[60] Where shown and in most instances percentages are obtained from the pie charts in Appendix S.

- Students commence viewing the lecture slides, lecture handout solutions and tutorial solutions from prior topics from the *mid* 4 week period (e.g., in Weeks 5–8 students review the content covered in Weeks 1–4; in Weeks 9–12 students review content from Weeks 1–8, with more emphasis on content from Weeks 5–8). Not surprisingly, given the level of difficulty, the average percentages are higher in this unit:
  - 6% (Semester 1)/17.4% (Semester 2) for the lecture slides;
  - 14% for the lecture handout solutions (Semesters 1 and 2); and,
  - 20.6% (Semester 1)/22.7% (Semester 2) for the tutorial solutions for the *mid* period, with slightly higher averages for the *final* period.
  - Interestingly, approximately 1 percent of students referred to the entire semesters lecture slides in the *first* period (i.e., Weeks 1–4) – this suggests that only a small proportion of students download these well in advance.
- On a weekly basis, nominated students were required to prepare and present answers to specific questions to their fellow classmates. These were called 'presentation questions for tutorials.' Whilst this formed part of the summative assessment in the unit for the students presenting, all students were encouraged to view the questions and solutions for their own learning purposes. As reported in Table 7.5d, these are heavily viewed in the *first* 4 week period, with the solutions most heavily viewed in the *SWOT Vac and exam* period.
- Students view the past exam questions and solutions during the *SWOT Vac and exam* period. As with ACC/ACF1100, these were released on the LMS in the *final* 4 week period of semester.
  - A very small percentage of students viewed these in the *final* 4 weeks of semester (Past exam questions: 9.2% (Semester 1)/6.9% (Semester 2); Solutions to past exam questions: 3.5% (Semester 1)/2.9% (Semester 2).

Based on prior limited usage, a discussion board was not made available to students in either semester.

Learning resources ACC/ACF2200	Semester 1, 2016					Semester 2, 2016				
	Total	First 4 weeks	Mid 4 weeks	Final 4 weeks	SWOT Vac and exam period	Total	First 4 weeks	Mid 4 weeks	Final 4 weeks	SWOT Vac and exam period
File: Academic Integrity Quiz	52327	0	11024	41023	280	44899	3129	3783	37824	163
File: Lecture slides	35572	6885	8650	11753	8284	24646	4200	7318	7255	5873
Discussion board	30165	3270	1663	16968	8264	19765	1394	149	11250	6972
File: Tutorial solutions	23170	3438	4599	4776	10357	12258	496	2395	2057	7310
URL: Additional readings	17889	8205	1446	7781	457	6844	4464	696	1439	245
File: Tutorial program	7622	3330	1865	1751	676	5703	2502	1454	1392	355
File: Past exam questions	4212	128	216	953	2915	3708	0	0	1184	2524
File: Past exam solutions	4049	58	71	494	3426	3310	0	0	4	3306
File: Assignment	3842	412	1184	2200	46	3482	444	749	2242	47
File: Tutorial schedule	3719	2378	679	486	176	2781	1715	485	459	122
File: ACF2200 unit guide	3353	1625	784	713	231	2572	1159	520	699	194
File: Assignment feedback	2743	0	1	1441	1301	1198	0	0	0	1198

Table 7.5e: Unique hits on the learning resources in ACC/ACF2200 split by semester and time period

Learning resource / Unit and semester	ACC/ACF2200 Semester 1	ACC/ACF2200 Semester 2
Lecture slides	The second most viewed resource in the *first* 4 week, *mid* 4 week, *SWOT Vac and exam* periods	The most viewed resource in the *mid* 4 week period; second most used in the *first* 4 week period; the third most viewed in the *final* 4 week, *SWOT Vac and exam* periods
Tutorial solutions	Viewed most in *SWOT Vac and exam* period; third most viewed in *first* 4 week and *mid* 4 week periods	Most viewed resource in the *SWOT Vac and exam* period; third highest viewing in the *mid* 4 week period. Not as heavily viewed in the *first* 4 week period
Past exam questions and solutions	Low viewing in *first* 4 week and *mid* 4 week periods; increases in *final* 4 week and, *SWOT Vac and exam* periods. Viewed most in *SWOT Vac and exam* period. Solutions viewing higher by 1% in *SWOT Vac and exam* period	Low viewing in the *final* 4 week period. Viewed most in the *SWOT Vac and exam* period. Solutions viewing higher by 3% in *SWOT Vac and exam* period
Tutorial program	Viewed most in the *first* 4 week period	Viewed most in the *first* 4 week period
Tutorial schedule	Viewed most in the *first* 4 week period	Viewed most in the *first* 4 week period
Unit guide	Viewed most in the *first* 4 week period	Viewed most in the *first* 4 week period
Additional readings	Viewed most in the *first* 4 week period with heavy usage also in the *final* 4 week period	Viewed most in the *first* 4 week period
Discussion board	Widely viewed in the *final* 4 week (19%), *SWOT Vac and exam* (23%) periods, with 11% in the *first* 4 week period	Widely viewed in the *final* 4 week (17%), *SWOT Vac and exam* (25%) periods, with only 7% in the *first* 4 week period
Quiz: Academic Integrity Quiz	Heavy usage in the *mid* 4 week and *final* 4 week periods	Unlike Semester 1, utilised across all four periods with heaviest usage in the *final* 4 week period

Table 7.5f: Overview of the learning resource usage in ACC/ACF2200

In the very first lecture, students are advised of the integrated additional readings pertinent to each lecture. As such, it is not surprising that the viewing of this learning resource is quite high in the *first* and *final* weeks of Semester 1, and viewed most in the *first* 4 weeks of Semester 2 (see Tables 7.5e and 7.5f). Lecture slides are the most widely used resource in the *mid* period in Semester 2, and is the second most widely used resource in the *first* four week period in Semester 2 and in both the *first, mid* and *SWOT Vac and exam periods* in Semester 1.

As part of the assessment, this unit requires students to complete two multiple choice quizzes worth 10 percent each[61]. In order for students to gain access to these summative quizzes, they must successfully complete a formative Academic Integrity Quiz. As the title suggests, students learn concepts such as how to correctly reference third party materials. This content

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[61] The quizzes for assessment have been removed from the learning analytics analysis as they are summative.

is not specifically covered in lectures or tutorials. As shown in Table 7.5e above, students engage with this quiz quite heavily, suggesting multiple student attempts.

The discussion board is used extensively in this unit, particularly in the *final* 4 week and *SWOT Vac and exam* period. As previously mentioned, this unit and the third year management accounting unit i.e., ACC/ACF3200 (discussed below), set-up this resource differently to the other accounting units, with a discussion board created for each week. This clearly delineates, for each topic, where students should post questions and review answers (for example, the LMS displays "Please post any questions relating to Topic X here"). The high usage may be a direct result of this set-up, as students may find it easier to identify specific topics and issues.

Further observations (refer to Table 7.5e) are:

- As discussed in the prior accounting units, tutorial solutions are extensively used by students during the *SWOT Vac and exam* period. Similar to the pattern identified in other units, students commence viewing prior content from the *mid* period, which extends into the *final* 4 week period. Again, students tend to concentrate on the content presented later in the semester. Further, as identified in ACC/ACF2100, a small proportion of students view or download lecture slides for the entire semester in the *first* four weeks of semester.

- In Semester 1, 2016, the past exam questions and solutions were viewed from the *first* 4 week period, albeit in a very small percentage. Students commence using them in the *final* 4 week period in Semester 2, with very little usage of the solutions. Similar to prior units, this resource is heavily utilised in the *SWOT Vac and exam* period. The solutions to these questions are more utilised than the questions, which suggests that students print or download the past exam questions and therefore do not need to refer to them again directly from the LMS. Perhaps students refrain from printing the solutions to ensure they practice the questions without referring to the suggested solution. If this is the case, then these students are exhibiting a deeper approach to learning rather than simply rote learning suggested answers.

Learning resources ACC/ACF3100	Semester 1, 2016					Semester 2, 2016				
	Total	First 4 weeks	Mid 4 weeks	Final 4 weeks	SWOT Vac and exam period	Total	First 4 weeks	Mid 4 weeks	Final 4 weeks	SWOT Vac and exam period
File: Lecture slides	19546	5896	4920	4085	4645	19410	6392	4890	4098	4030
File: Tutorial solutions	15593	2968	5168	1791	5666	17825	3406	5729	2194	6496
Discussion board	15218	1518	1180	1207	11313	12270	3485	1653	1480	5652
File: Additional readings	5091	1556	653	989	1893	6813	2627	993	1164	2029
File: Research assignment and rubric	4417	3614	803	0	0	5718	4242	1413	63	0
URL: Reading list	2667	1635	230	339	463	2203	1316	178	254	455
File: Tutorial program	2601	1642	459	290	210	3113	1863	625	361	264
File: Past exam questions	2251	397	690	256	908	3461	634	1083	377	1367
File: ACF3100 unit guide	2000	1359	354	193	94	1914	1310	358	160	86
File: Past exam question solutions	1916	251	536	174	955	2993	321	777	299	1596
File: Handout slides for the first assignment	1422	1238	184	0	0	0	0	0	0	0
File: Videos	1203	155	276	316	456	890	203	204	210	273
File: Guided reading worksheet for academic articles	911	503	48	143	217	855	502	69	118	166
File: Overview of examiner information for financial accounting exams	751	243	220	275	13	1679	351	340	448	540

Table 7.5g: Unique hits on the learning resources in ACC/ACF3100 split by semester and time period

Learning resource / Unit and semester	ACC/ACF3100 Semester 1	ACC/ACF3100 Semester 2
Lecture slides	The most viewed resource in *first* and *final* 4 week periods*;* second most viewed in the *mid* 4 week period; third most in the *SWOT Vac and exam* period	The most viewed resource in the *first* and *final* 4 week periods; second most viewed in the *mid* 4 week period; third most in the *SWOT Vac and exam* period
Tutorial solutions	The most viewed resource in the *mid* 4 week and second most in the *final* 4 week*, SWOT Vac and exam* periods	The most viewed resource in the *mid* 4 week and *SWOT Vac and exam* periods; second most viewed in the *final* 4 week period
Past exam questions and solutions	Viewed throughout the semester. In the *SWOT Vac and exam* period, solutions viewed more	Viewed throughout the semester. In the *SWOT Vac and exam* period, solutions viewed more
Tutorial program	Viewed most in the *first* 4 week period	Viewed most in the *first* 4 week period
Unit guide	Viewed most in the *first* and *mid* 4 week periods	Viewed most in the *first* and *mid* 4 week periods
Additional readings	Similar viewing throughout all 4 periods	Similar viewing throughout all 4 periods
Discussion board	Highest viewing in the *SWOT Vac and exam* period; similar viewing across the 3 other time periods, ranging from 6% to 12%	Highest viewing in *SWOT Vac and exam* period; similar viewing across the 3 other time periods, ranging from 9% to 13%
Assignment and rubric	Viewed most in the *first* 4 week period	Viewed most in the *first* 4 week period
Videos	Similar viewing throughout	Similar viewing throughout
Guided reading worksheet for academic articles	Viewed most in the *first* 4 week period	Viewed most in the *first* 4 week period

Table 7.5h: Overview of the learning resource usage in ACC/ACF3100

Similar viewing patterns occurs in ACC/ACF3100 for the following resources:

- Tutorial program and the unit guide.

- Lecture slides are one of the most or second most viewed learning resource in both semesters. As identified in both ACC/ACF2100 and ACC/ACF2200, a small proportion of students in this unit view or download the lecture slides for the entire semester in the *first* four weeks.

- Tutorial solutions are still viewed heavily, with peak viewing occurring in the *mid* period for both semesters (33% Semester 1; 31% Semester 2). Similar to the pattern in prior units, students commence viewing prior content from the *mid* period, which continues in the *final* period, with emphasis again on the most immediate prior 4 weeks lecture slides and tutorials dominating viewing.

- An important difference with the past exam questions and solutions in ACC/ACF3100 is that this resource is viewed throughout the semester. Whilst named past exam questions and solutions in this study, its actual title is 'Revision questions' on the LMS. Students are informed that this resource comprises a mix of practice and past exam

questions presented by topic area. As these are uploaded on the LMS at the start of semester, students are inclined to engage in SRL behaviours. It is important to note that solutions to past theoretical exam questions are not supplied, but students are encouraged to read widely to form their own solutions. Similar to prior units, the solutions to computational questions are viewed slightly more than the questions themselves in the *SWOT Vac and exam* period.

Closer inspection of Table 7.5g shows that similar unique hits occur across both semesters for many of the available learning resources. Interestingly:

- The videos are not highly viewed, even though these are short in duration (maximum 10 minutes).

- One of the refereed journal articles studied each semester is examined in the final examination. Given this, students are consistently viewing each of the five refereed journal articles throughout the semester.

- To assist students on how to read the refereed journal articles, they are provided with a templated titled 'guided reading worksheet,' which encourages them to summarise the issue being researched, the methodology adopted and findings. This resource, however, does not appear to be heavily viewed other than in the *first* 4 week period. A plausible explanation may be that students save this Word document and utilise the saved version to complete their summaries.

Learning resources ACC/ACF3200	Semester 1, 2016					Semester 2, 2016				
	Total	First 4 weeks	Mid 4 weeks	Final 4 weeks	SWOT Vac and exam period	Total	First 4 weeks	Mid 4 weeks	Final 4 weeks	SWOT Vac and exam period
Discussion board	38120	7981	4040	3786	22313	23772	5511	5742	3747	8772
File: Lecture slides	26084	8594	3753	5135	8602	30577	8420	5402	6969	9786
File: Tutorial solutions	11384	1098	895	1830	7561	10651	717	736	1730	7468
File: Tutorial program	3744	1497	853	891	503	3906	1912	966	699	329
File: Additional readings	3477	440	1991	790	256	5195	820	2464	1295	616
File: ACF3200 unit guide	1821	1105	339	258	119	1836	951	435	341	109
File: Past exam questions	1800	66	0	319	1415	2189	0	0	649	1540
File: Past exam question solutions	1638	20	0	0	1618	1917	0	0	328	1589
File: Videos	981	737	0	35	209	891	552	28	74	237
File: Lecture recordings	968	735	46	57	130	0	0	0	0	0
Quiz: Connect quiz	0	0	0	0	0	762	0	0	309	453
File: Case studies	0	0	0	0	0	7103	0	3630	3388	85

Table 7.5i: Unique hits on the learning resources in ACC/ACF3200 split by semester and time period

Learning resource / Unit and semester	ACC/ACF3200 Semester 1	ACC/ACF3200 Semester 2
Lecture slides	The most viewed resource in *first* and *final* 4 week periods; second most viewed in *mid* and *SWOT Vac and exam* periods	The most viewed resource in the *first, final, SWOT Vac and exam* periods; second most viewed in the *mid* 4 week period
Tutorial solutions	Around 5 and 8% respectively in first two periods; increases to 14% and 18% in the *final* and *SWOT Vac and exam* period	Not heavily viewed until the *SWOT Vac and exam* period
Past exam questions and solutions	Some viewing in the *first* 4 week period; more in the *final, SWOT Vac and exam* periods; solutions more highly viewed in the *SWOT Vac and exam* period	Some viewing in the *final* 4 week period with most viewing occurring in the *SWOT Vac and exam* period. Solutions and past exam questions viewed in equal proportion
Tutorial program	Viewed most in the *first* 4 week period	Viewed most in *first* 4 week period
Unit guide	Viewed most in the *first* 4 week period	Viewed most in *first* 4 week period
Additional readings	Prominent in the *mid* and *final* 4 week periods	Prominent in the *mid* and *final* 4 week periods
Discussion board	The most viewed resource in the *mid, SWOT Vac and exam* periods; second most in the *first* and *final* 4 week periods	The most viewed resource in *mid* 4 week period; second most viewed in all three other periods. Not as highly viewed in *final* 4 week period
Lecture recordings	High viewing in the *first* 4 week period with little viewing until the *SWOT Vac and exam* period	Not available through the LMS
Videos	Viewed most in the *first* 4 week period	Viewed most in the *first* 4 week period
Case studies	Not on offer through the LMS[62]	Approx. 19 and 17% respectively for *mid* and *final* 4 week periods
Connect quizzes	Not on offer through the LMS	Little viewing in *final* and *SWOT Vac and exam* periods (appears to be offered only in these two periods)

Table 7.5j: Overview of the learning resource usage in ACC/ACF3200

As reported in Table 7.5j, in ACC/ACF3200:

- Viewing of the unit guide is similar to prior units (i.e., in the *first* four week period).

- The tutorial program is similarly viewed to prior units.

- The tutorial solutions are viewed in a different pattern to prior units i.e., they are viewed in equal proportions in the first two periods (i.e., between 5 and 8%) with this increasing to 14 and 18% in the final two periods within Semester 1; with the resource viewed mostly in the *SWOT Vac and exam* period in Semester 2. Case studies were provided in both semesters. However, in Semester 1 these were available directly from the textbook. In Semester 2, these cases were adapted by the CE and made available through the LMS. Given management accounting units make extensive use of case studies, a plausible explanation is that students are referring to the case studies in lieu of tutorial solutions. Irrespective of this, with regards to students commencing revising

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[62] Case studies used were directly from the prescribed textbook.

prior topics, the pattern of usage of the tutorial solutions follows prior semesters, however, the proportion of this occurring is somewhat lower in both semesters (averaging around 7% compared to averages of between 18–20% in prior units such as ACC/ACF1100 and ACC/ACF2100).

- The lecture slides were viewed in a similar manner to prior units.

- Past exam questions and solutions were made available early in the semester in Semester 1, which explains why there is some viewing of this resource in the *first* four weeks. Viewing of this resource is similar to that noted in prior units i.e., mainly in the *final* and *the SWOT Vac and exam* period. Of note, however, is that in Semester 2 the solutions and questions were viewed in equal proportion; a difference to other units where the solutions were more highly viewed.

- Viewing of videos is quite low, with viewing occurring in the *first* four weeks. As the content of these resources relates to material covered in this first 4 weeks, it would account for the pattern of usage.

- Viewing of additional readings was similar across both semesters i.e., mostly in the *mid* and *final* periods.

7.7 Overall summary from analysis of the learning analytics data

Based on the commentary in Section 7.6, the following general trends can be observed:

- In all units, the unit guide is similarly viewed i.e., students refer to this document in the *first* 4 weeks to view the learning program for the semester, taking note of the topics covered and importantly due dates. It is surmised that students use the document, along with the tutorial program, to assist with planning and self-regulation of their learning to ensure that they allow adequate time to prepare for assessments to achieve the best possible result (Factors 1, *goal setting* and 5). With regards to the tutorial program students utilise this in a similar way. This resource is viewed heavily in the *first* 4 weeks. It is surmised that students download the document at the start of semester and continually refer to it when preparing for their weekly tutorials.

- Overall, in most periods, with the exception of ACC/ACF2200, lecture slides are the most viewed resource. The Academic Integrity Quiz was the most utilised resource in ACC/ACF2200. As previously explained, students must successfully complete this quiz in order to be given access to the two remaining summative quizzes. Given this, it is understandable that it is the most utilised resource as students may need a few attempts at completing it successfully. If this resource was removed from the analysis, then the lecture slides are the most utilised resource in ACC/ACF2200.

- Generally, in all units, a small number of students view the past exam questions and solutions in the *final* 4 weeks. This viewing increases in the *SWOT Vac and exam* period. The pattern for accessing past exam questions and solutions is different in ACC/ACF2200 and ACC/ACF3100. In these units, students use this resource in all four periods, as unlike other units, this resource is uploaded onto the LMS at the start of semester. It is surmised that students view these resources as early as possible to gain additional practice and feedback whilst engaged in learning. Irrespective of early release of this resource, the highest usage is still in the *SWOT Vac and exam* period. This is not surprising given students will be more focused on preparing for the final exam, and therefore rely on this resource to enhance their understanding through practice (Factors 2, *rehearsal* and 5, in particular understanding). Students also look to this resource to gauge the standard of questions likely to be in the final examination.

- Tutorial solutions are generally the second or third most viewed resource. In ACC/ACF2100 the lecture handout solutions are more widely used than the tutorial

solutions, which is understandable given students are more likely to utilise this resource whilst revising the lectures. The tutorial solutions are extensively viewed in the *SWOT Vac and exam* period, in conjunction with the lecture slides. Students appear to be revisiting the tutorial questions and solutions in order to practice and master concepts required (Factors 2 *rehearsal, elaboration* and 5, in particular understanding).

- For the management accounting units, the most extensively used learning resource is the discussion board. Recall, the set-up of the discussion board is partitioned on a weekly basis. It can be surmised that this set-up assists students in being able to locate and view questions and answers for specific issues more efficiently.

RQ3 asks whether, as undergraduate accounting students progress through their degree, their motivational and SRL learning strategies change. The learning analytics analysis suggests that a change does occur from first year to the latter two years i.e., second and third year combined. Whilst students across all three year levels revise prior content and do so from Week 5 onwards, this is done by more second and third year students. Evidence suggests that they re-engage with the lecture slides and tutorial solutions. Engagement in this way suggests that students see the importance of improving their understanding of later content by referring back to prior content (i.e., Factor 2*, rehearsal, elaboration)*. Further, this may be evidence that students are making connections and linkages between topics. In addition, whilst additional readings are viewed across all units, it appears that this resource is not considered as important in the first year unit. Greater viewing occurs in the second year (particularly ACC/ACF2200 where the readings are integrated with the lecture slides), and third year units, which suggests that as students progress through their degree and mature, they are better able to appreciate the linkages to real-life cases or organizations to which these additional readings pertain.

7.8 Comparison of results concerning use of the learning resources: Student interviews vs. learning analytics data

Table 7.6 below compares the findings across the two data sources i.e., student interviews and learning analytics. Column 1 presents the common learning resources identified across both data sources, whilst Column 2 highlights the learning resources reported in the learning analytics analysis only. In addition, this column reports the common learning resources followed by the learning resources identified specific to four of the accounting units. Column 3 suggests a plausible explanation for the identified differences.

Student interviews v. learning analytics		
Column 1	**Column 2**	**Column 3**
Similar findings	**Learning resources as identified in the learning analytics data**	**Plausible explanation for resulting difference**
Extensively used: • Lectures slides • Tutorial questions and solutions	Past exam questions and solutions	ACF1100, ACF2100 and ACF2200: interviews were held prior to these resources being uploaded on the LMS i.e., meaning that they were not top of mind during the interview. ACF3100 and ACF3200: students may consider these in the lead up to the exam only, and so associate this valuable resource with the final summative assessment and may not see that they would be a valuable learning resource in their own right.
Used but not extensively: • Quizzes • Videos • Refereed journal articles	Tutorial program and/or unit guide	Whilst a few interviewed students referred to using the unit guide, many did not. Students may not view this as a learning resource. However, it assists them in planning and setting goals in order to be successful. Similar justification can apply for the tutorial program.
	Discussion board	Little discussion by the interviewed students, although extensive usage was identified particularly in the management accounting units. There may have been a lack of discussion as they do not consider this to be a resource as they continually communicate in an online environment in one form of another. Alternatively, this resource may be specifically turned to when students are preparing for summative assessments to clarify content issues. Therefore, as they link it to assessment, they failed to mention their reliance on it in the interviews. Setting up the discussion board on a topic-by-topic basis with frequently asked questions may encourage greater usage given ease and efficiency of use.

Student interviews v. learning analytics		
Column 1	Column 2	Column 3
Similar findings	Learning resources as identified in the learning analytics data	Plausible explanation for resulting difference
	ACC/ACF2100 • Presentation questions and solutions	Interviewed students may have felt this resource was part of the assessment. However, the CE informed students to refer to these questions and solutions as they were considered to be a valuable learning resource.
	ACC/ACF2200 • Academic Integrity Quiz	Students must complete this to succeed in other summative quizzes. As it is associated with a form of assessment, students may have neglected to mention it in the interviews.
	ACC/ACF3100 • Assignment details and handout slides for the assignment • Guided reading worksheet	These resources may impart learning of concepts outside of the realm of accounting, such as how to reference correctly and how to adequately structure an assignment. Thus, students do not view them as a learning resource applicable to accounting. Given the interviewed students were asked to consider the specific accounting unit these may have been overlooked.
	ACC/ACF3200 • Case studies	Students may view the provision of case studies as a requirement in management accounting units, and therefore did not see it as a specific resource to mention in the interviews. Conversely, perhaps students do not appreciate the benefit of such a learning resource to their learning.

Table 7.6: Comparison of results between student interviews and learning analytics

As noted in Table 7.6 the two data sources corroborate extensive usage of lecture slides, tutorial questions and solutions, and practice questions and solutions. Other resources utilised, but not to the same extent include: quizzes, videos and refereed journal articles. Past exam questions and solutions, and specific resources pertaining to particular units, were captured in the learning analytics data. However, these were not mentioned in the student interviews. Reasons for this include:

- Timing of the interviews and availability of the learning resource on the LMS (e.g., past exam questions and solutions);

- Students fail to see the resource as part of the learning process (e.g., unit guide, tutorial program, and discussion board); and

- Students viewed the resource as being tied to assessment (e.g., presentation questions and solutions; Academic Integrity Quiz; and guided reading worksheet).

7.9   Summary

This chapter reports findings from analysis of data drawn from the student interviews and learning analytics to address RQ1. Herein, the chapter identifies the learning resources students engage with across the five foci accounting units, and describes both how and how often students engage with these resources in a blended learning environment.

Chapter 8 presents analysis and findings from administration of the questionnaire, including the Cronbach's alpha for each of the questionnaire scales, evidence reflecting the non-normal distribution of the questionnaire data, and thus results from non-parametric testing. Further, the chapter presents results from principal components analysis, identifying the factors resulting from this analysis.

8: Results – Analysis of findings from the questionnaire

8.1 Introduction

Chapter 7 reported on findings from the student interviews and learning analytics regarding the learning resources students engaged with, when they engaged with these resources and how often they engaged with them throughout the semester. As shown in Figure 8.1 below, this chapter presents analysis from administration of the questionnaire, including the Cronbach's alpha for the questionnaire scales, evidence relating to the non-normal distribution of the questionnaire data, and results from the non-parametric tests. Finally, the results from principal components analysis (PCA) of the questionnaire's statements are reported.
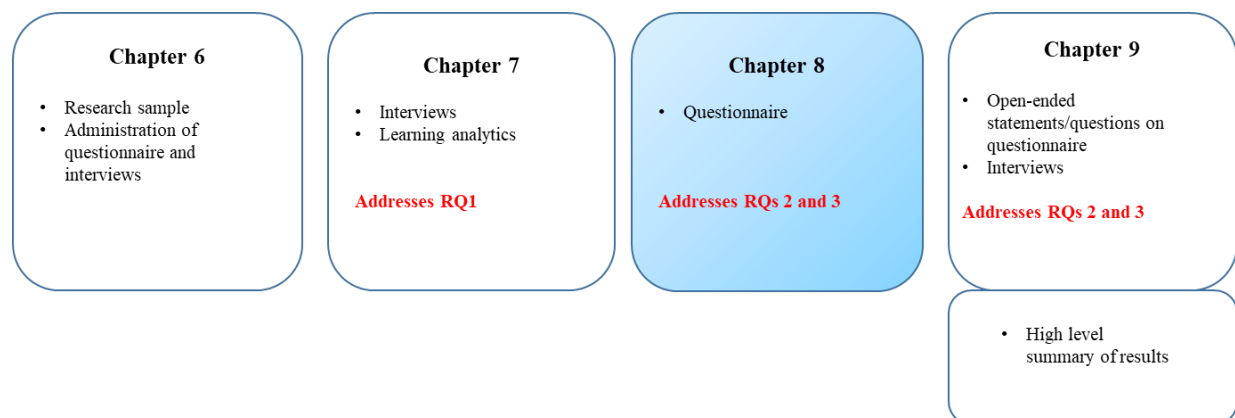
Figure 8.1: Overview of reporting of the results. The shaded box signifies the results presented in this chapter

8.2 Reliability analysis

At the conclusion of the pilot study, the resultant questionnaire comprised 11 scales from the MSLQ (Pintrich et al., 1991), 2 scales from the OSLQ (Barnard et al., 2009), and 2 scales relating to lifelong learning (LLL) (Bath and Smith, 2009). Recall Table 5.9 detailed a breakdown of the final statements presented per scale, whilst Table 8.1 below reports the Cronbach's alpha for each scale for the pilot study, the main study, and the corresponding scale reported in Pintrich et al. (1991).

| Scale | Cronbach's Alpha | | Pintrich et al. (1991) |
	Pilot study – Semester 2 2015	Main study – Semesters 1 and 2 2016	
Motivation/Affect			
Intrinsic goal orientation	0.719	0.76	0.74
Task value	0.812	0.608	0.9
Control of learning beliefs	0.745	0.582	0.68
Control of learning beliefs 2	0.78	0.677	0.68
Self-efficacy for learning and performance	0.876	0.829	0.93
Learning Strategy			
Rehearsal	0.679	0.873	0.69
Elaboration	0.802	0.784	0.76
Critical thinking*			0.8
Metacognitive self-regulation	0.624	0.781	0.79
Time and study environment	0.558	0.752	0.76
Effort regulation*	0.465		0.69
Help-seeking*			0.52
OSLQ goal setting	0.695	0.823	
OSLQ self-evaluation*			
Lifelong Learning			
Lifelong learning	0.709	0.876	
Lifelong learning -beliefs	0.771	0.839	
Lifelong learning -attitudes	0.692	0.738	

Legend: Pink cells denote Cronbach's alpha below the min. suggested value of 0.7 (Taber, 2018).

* Scale with insufficient statements for the Cronbach alpha to be calculated.

Table 8.1: A comparison of the Cronbach's alpha in the questionnaire scales from the pilot study; main study and as reported in Pintrich et al. (1991)

As shown in Table 8.1 above, whilst the Cronbach alpha for 8 scales was more robust in the main study than in the pilot study, it was lower and less robust in four scales, namely *task value, control of learning beliefs, self-efficacy for learning and performance,* and *elaboration.* Whilst the Cronbach alpha for *self-efficacy for learning and performance* and *elaboration* are both somewhat lower in the main study compared to the pilot study (0.829 compared to 0.876; and 0.784 compared to 0.802 respectively), each is still robust.

Cronbach's alpha for the four motivation scales ranged from 0.582 to 0.829, whilst for the four learning strategy scales (where the required minimum number of statements was available) it ranged from 0.752 to 0.873. For the OSLQ scale *goal setting,* it was 0.823, whilst for the LLL

scales values ranged from 0.738 to 0.876[63]. With the exception of *task value* and *control of learning beliefs,* all are comparable with prior research (Opdecam et al., 2014; Hair et al., 2006; Cho and Summers, 2012; Hativa and Birenbaum, 2000; Pintrich et al., 1991[64]). The cells highlighted in green denote three occurrences where Cronbach's alpha for the main study exceed those reported in Pintrich et al. (1991), namely: *intrinsic goal orientation, rehearsal* and *elaboration.* In terms of the MSLQ statements, *metacognitive self-regulation* and *time and study environment* are very close to those reported in Pintrich et al. (1991) at 0.781 (compared to 0.79) and 0.752 (compared to 0.76) respectively. As reflected, in all but two scales (refer to the pink cells in Table 8.1), namely *task value* and *control of learning beliefs,* the Cronbach's alpha were above the minimum suggested value of 0.7 (Taber, 2018). The results for these two are discussed in greater detail below, where it needs to be acknowledged that given their low reliability, care needs to be taken when interpreting results relating to these two scales.

Task value, which comprises the following statements yields a low Cronbach alpha of 0.608:[65]

- *I think the learning resources in ACFxxxx are useful for me to learn (MTaskUseful).*

- *Understanding the content in ACFxxxx is very important to me (MTaskUnders).*

- *I think I will be able to use what I learn in ACFxxxx in other accounting units or in my professional role as an accountant (MTaskUse).*

With the exception of *MTaskUseful*, statements 2 and 3 above had item-total correlations above the recommended 0.4. As removal of *MTaskUseful* did not improve the Cronbach alpha for this scale, and given its importance in answering RQ2, the statement was retained[66]. However, given its relatively low Cronbach alpha, care has been taken in analysing and discussing the concepts relevant to this scale[67].

The lowest Cronbach alpha related to the *control of learning beliefs* scale at 0.582, which comprised the following statements:

- *If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in ACFxxxx (MControlLearn).*

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[63] Initially, results for the lifelong learning scale was calculated on the entire seven statements and then split between the two individual scales, beliefs and attitudes, as per Bath and Smith (2009).

[64] Interestingly Pintrich et al. (1991, 4) states that in reference to his instrument: "The Cronbach's alpha are robust, ranging from 0.52 to 0.93". As such, given that the Cronbach alpha for task value is 0.608 and control of learning beliefs is 0.582, which are both above 0.52, and below the required minimum of 0.7, these scales have been retained. However, care has been taken when interpreting results.

[65] The statements, restated here, are tabulated in Section 5.5.1 – see Table 5.9.

[66] The re-calculated Cronbach alpha upon removal of the *MTaskUseful* statement was 0.607.

[67] Pacharn, Bay and Felton (2013) reported a Cronbach alpha of 0.60 for *intrinsic goal orientation* and noted that "only intrinsic motivation has reliability near the minimum acceptable level [of 0.7] of 0.60" (p.156) and continued to use this scale in their analysis.

- *If I don't understand the content in ACFxxxx, it is because I did not use the learning resources provided (MControlNonuse).*
- *If I try hard enough, then I will understand the ACFxxxx content (MControlEffort).*
- *If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in my accounting major (MControlLearnContentAccMajor).*

The item-total correlation for both *MControlNonuse* (0.233) and *MControlEffort* (0.347) was below 0.4 (see Appendix T). Removal of *MControlNonuse* (creating a scale denoted as *control of learning beliefs 2* – see Table 8.1 above) improved the Cronbach alpha to 0.677 and improved the item-correlation for *MControlEffort* from 0.347 to 0.423. Concerning *MControlNonuse*, students may have found this difficult to interpret given the tenuous causal link between use or non-use of the learning resources made available to them and their perceived impact on understanding accounting content. Thus, this statement was removed and a new scale, *control of learning beliefs 2,* utilised. It should be noted that the Cronbach alpha is very similar to that reported in Pintrich et al. (1991), namely 0.68, and only slightly below the 0.7 accepted minimum.

Compared to Pintrich et al. (1991), the *self-efficacy for learning and performance* scale reveals a lower Cronbach alpha of 0.829 vs. 0.93. The three statements that make up this scale are:
- *I'm certain I can understand the most difficult content presented in the learning resources provided for this ACFxxxx unit (MSelfEfficacyCertain).*
- *I'm confident I can understand the concepts taught in ACFxxxx through engagement with the learning resources provided (MSelfEfficacyConfident).*
- *I'm confident I can understand the concepts taught in my accounting major through engagement with the learning resources provided (MSelfEfficacyConfidentAccMajor).*

Further analysis, on a unit-by-unit basis (not tabulated), reveals that the lowest Cronbach's alpha were in the two management accounting units, namely ACF2200 and ACF3200 in Semester 1, 2016. The learning resources utilised in ACF3200 make extensive use of case based materials. ACF2200 embeds real life case examples in its lecture materials. The extensive use of cases is in direct contrast to the first year unit, which is financial accounting oriented (ACF1100) and the subsequent second and third year units, namely ACF2100 and ACF3100. Given the focus on case studies, students may feel less confident or certain regarding whether engagement with the learning resources assists them in their understanding in these units.

As shown (see Table 8.1), the following scales have Cronbach's alpha above that reported in Pintrich et al. (1991):
- *Rehearsal* – 0.873 (compared to 0.69); and

- *Elaboration* – 0.784 (compared to 0.76),

with *time and study environment* – 0.752 (compared to 0.76), and *metacognitive self-regulation* being slightly below at 0.781 (compared to 0.79). Given these scales are all above the minimum of 0.7, they will not be discussed further.

The LLL scale, which includes 7 statements from the *Propensity for Lifelong Learning* (Bath and Smith, 2009), revealed a Cronbach alpha of 0.876. When, as identified in Bath and Smith (2009), this scale is separated into 'beliefs' and 'attitudes', it can be seen that the Cronbach alpha for 'attitudes' is marginally lower (0.738) than 'beliefs' of 0.839.

8.2.1 Summary: Reliability analysis

As detailed above, the reliability of the statements used in the questionnaire was checked by calculating the Cronbach alpha for each scale. As a result, one statement pertaining to *control of learning beliefs* was removed, resulting in a new scale named *control of learning beliefs 2*. With the exception of *task value* and *control of learning beliefs 2* scales, all other scales have robust Cronbach's alpha. This suggests that the questionnaire has predictive validity.

8.3   Non-parametric tests

Table 8.2 below reports the median, range, skewness and kurtosis for each statement. Tests for normality (graphical review of histograms and normality plots; Shapiro-Wilk test and z-tests) reveal that the data is not normal (see Appendix U for histograms with normality plots; Appendix V for Shapiro-Wilk test results; and Appendix W for z-tests). As shown in Table 8.2, all statements are negatively skewed, meaning responses are skewed at the high end of the Likert scale. Further, in general the median score is 5 or 6, with the median for motivation/affect being 6 in 8 of the thirteen possible statements (i.e., in 61% of cases). This indicates that students are highly motivated to engage with the learning resources provided. Other responses were 5 in all but one statement where the median was 5.5. In terms of the statements relating to learning strategy (including those drawn from the OSLQ), the median response was 5 for 11 of the seventeen possible statements (i.e., 65%), which indicates that students are moderately exercising the learning strategies available to them. It was 6 for the other 6 statements. Lastly, the median was 6 for 5 of the LLL statements, and 7 in the remaining two, indicating that students are exhibiting high lifelong learning beliefs and attitudes.

The relationship between the MSLQ, OSLQ and LLL statements was investigated using Spearman Rank Order Correlation (see Table 8.3). Spearman rho was in the medium range (i.e., .30 to .49) for most statements, with some in the low range (i.e., .1 and .29).

Code as used in statistical analysis	Median	Minimum	Maximum	Range	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis
Motivation/Affect (MSLQ)								
MIntCuriosity	5	1	7	6	-0.68	0.155	0.525	0.309
MIntEffort	5	1	7	6	-0.626	0.155	0.432	0.309
MIntSatisUnders	6	2	7	5	-0.377	0.155	-0.45	0.309
MIntSatUnderstandAccMajor	6	1	7	6	-0.92	0.155	1.374	0.309
MTaskUseful	5.5	2	7	5	-0.319	0.155	-0.488	0.309
MTaskUnders	6	3	7	4	-0.703	0.155	-0.404	0.309
MTaskUse	6	2	7	5	-0.824	0.155	0.478	0.309
MControlLearn	6	3	7	4	-0.46	0.155	-0.4	0.309
MControlEffort	6	2	7	5	-0.999	0.155	1.042	0.309
MControlLearnContentAccMajor	6	2	7	5	-0.535	0.155	0.377	0.309
MSelfEfficacyCertain	5	2	7	5	-0.565	0.155	-0.054	0.309
MSelfEfficacyConfident	5	2	7	5	-0.499	0.155	-0.094	0.309
MSelfEfficacyConfidentAccMajor	6	2	7	5	-0.772	0.155	0.45	0.309
Learning Strategy (MSLQ)								
LSRehearsalReuseOver	5	1	7	6	-0.658	0.155	-0.003	0.309
LSRehearsalReuseRemember	6	1	7	6	-0.969	0.155	1.06	0.309
LSElaborateRelate	6	1	7	6	-1.017	0.155	1.566	0.309
LSElaborateConnect	6	1	7	6	-1.017	0.155	1.302	0.309
LSElaborateRelateOtherUnits	5	1	7	6	-0.591	0.155	0.147	0.309
LSCriticalDevelopIdeas	5	1	7	6	-0.496	0.155	0.03	0.309
LSMetaSRAlternativeRes	5	1	7	6	-0.718	0.155	0.329	0.309
LSMetaSRNeedEngage	5	1	7	6	-0.483	0.155	-0.14	0.309
LSMetaSRSetGoals	5	1	7	6	-0.302	0.155	-0.69	0.309
LSMetaSRThinkIdeas	5	2	7	5	-0.375	0.155	-0.263	0.309
LSTimeChooseLocation	6	2	7	5	-0.78	0.155	-0.245	0.309
LSTimeFewDistractions	6	1	7	6	-0.743	0.155	0.107	0.309
LSEffortWorkUntilFinished	6	1	7	6	-0.591	0.155	-0.187	0.309
LSHelpSeekLectTutor	5	1	7	6	-0.743	0.155	-0.218	0.309
Learning Strategy (OSLQ)								
OSLQGoalSetGoals	5	1	7	6	-0.609	0.155	-0.172	0.309
OSLQGoalSTermLTerm	5	1	7	6	-0.542	0.155	-0.497	0.309
OSLQEvalCommunicateStudents	5	1	7	6	-0.541	0.155	-0.528	0.309

Code as used in statistical analysis	Median	Minimum	Maximum	Range	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis
Lifelong Learning (LLL)								
LLLEnjoyLearning	6	1	7	6	-0.922	0.155	0.888	0.309
LLLDevelopPerson	7	3	7	4	-0.893	0.155	-0.176	0.309
LLLIdentifyNeed	6	2	7	5	-0.977	0.155	1.045	0.309
LLLAwarePreferLearn	6	1	7	6	-0.996	0.155	1.026	0.309
LLLUseDifferentResources	6	1	7	6	-0.835	0.155	0.748	0.309
LLLUpdateSkills	6	1	7	6	-1.049	0.155	1.262	0.309
LLLImportantAchieveCareerGoals	7	3	7	4	-1.038	0.155	0.266	0.309

Table 8.2: Descriptive data on the MSLQ, OSLQ and LLL statements

Table 8.3: Spearman's Rho correlation

	MIntCuriosity	MIntEffort	MIntSatisUnders	MTaskUseful	MTaskUnders	MTaskUse	MControlLearn	MControlEffort	MSelfEfficacyCertain	MSelfEfficacyConfident	LSRehearsalReuseOver	LSRehearsalReuseRemember	LSElaborateRelate	LSElaborateConnect	LSElaborateRelateOtherUnits	LSCriticalDevelopIdeas	LSMetaSRAlternativeRes	LSMetaSRNeedEngage	LSMetaSRSetGoals	LSMetaSRThinkIdeas	LSTimeChooseLocation	LSTimeFewDistractions	LSEffortWorkUntilFinished	LSHelpSeekLectTutor	OSLQGoalSetGoals	OSLQGoalSetSTermLTerm	OSLQEvalCommunicateStudents	MIntSatUnderstandAccMajor	MControlLearnContentAccMajor	MSelfEfficacyConfidentAccMajor	LLLEnjoyLearning	LLLDevelopPerson	LLLIdentifyNeed	LLLAwarePreferLearn	LLLUseDifferentResources	LLLUpdateSkills	LLLImportantAchieveCareerGoals
MIntCuriosity	1.000	.477	.475	.279	.232	.226	.338	.270	.339	.347	.288	.239	.298	.284	.322	.291	.376	.346	.323	.446	.270	.240	.329	.216	.340	.294	.144	.361	.351	.376	.423	.349	.341	.323	.404	.404	.227
MIntEffort	.477	1.000	.505	.370	.313	.316	.340	.150	.274	.346	.354	.370	.358	.382	.323	.374	.415	.394	.447	.511	.320	.304	.476	.392	.422	.404	.328	.414	.386	.354	.367	.235	.308	.286	.424	.396	.235
MIntSatisUnders	.475	.505	1.000	.410	.486	.461	.408	.337	.350	.375	.365	.349	.406	.341	.248	.246	.410	.332	.359	.494	.346	.301	.449	.316	.409	.326	.166	.562	.352	.316	.408	.405	.355	.307	.409	.411	.403
MTaskUseful	.279	.370	.410	1.000	.281	.337	.495	.239	.333	.393	.307	.345	.307	.314	0.121	.207	.203	.271	.292	.288	.146	0.107	.276	.267	.301	.268	.133	.276	.429	.403	.182	.197	.152	.195	.313	.285	.274
MTaskUnders	.232	.313	.486	.281	1.000	.453	.341	.241	.130	.183	.287	.295	.304	.307	.139	.206	.274	.214	.225	.381	.334	.249	.324	.196	.242	.220	0.096	.432	.286	.233	.243	.452	.291	.179	.241	.338	.399
MTaskUse	.226	.316	.461	.337	.453	1.000	.497	.266	.220	.433	.281	.361	.367	.364	.267	.303	.375	.223	.318	.384	.222	.241	.270	.235	.288	.179	0.097	.338	.382	.337	.231	.350	.287	.157	.204	.334	.347
MControlLearn	.338	.340	.408	.495	.341	.497	1.000	.347	.296	.533	.336	.369	.358	.438	.277	.266	.271	.338	.238	.404	.354	.354	.367	.229	.390	.231	0.096	.385	.506	.475	.225	.188	.175	.284	.289	.340	.266
MControlEffort	.270	.150	.337	.239	.241	.266	.347	1.000	.525	.482	.190	.245	.222	.231	.150	.161	.188	.153	.138	.276	.193	.164	.246	.090	.167	.172	-0.058	.350	.441	.353	.223	.260	.244	.269	.272	.271	.281
MSelfEfficacyCertain	.339	.274	.350	.333	.130	.220	.296	.525	1.000	.647	.266	.294	.304	.283	.246	.222	.238	.205	.249	.308	.166	0.084	.278	.184	.198	.251	0.054	.375	.430	.539	.289	.165	.244	.309	.359	.312	.132
MSelfEfficacyConfident	.347	.346	.375	.393	.183	.433	.533	.482	.647	1.000	.440	.444	.426	.402	.358	.344	.329	.295	.263	.380	.256	.186	.281	.238	.254	.260	0.083	.349	.506	.532	.287	.244	.252	.278	.331	.307	.249
LSRehearsalReuseOver	.288	.354	.365	.307	.287	.281	.336	.190	.266	.440	1.000	.815	.584	.503	.395	.406	.348	.409	.342	.393	.360	.296	.321	.336	.405	.291	.167	.307	.422	.316	.297	.251	.292	.353	.443	.413	.312
LSRehearsalReuseRemember	.239	.370	.349	.345	.295	.361	.369	.245	.294	.444	.815	1.000	.616	.539	.443	.415	.408	.366	.351	.442	.304	.280	.368	.315	.385	.284	.218	.292	.450	.292	.246	.228	.272	.294	.402	.412	.341
LSElaborateRelate	.298	.358	.406	.307	.304	.367	.358	.222	.304	.426	.584	.616	1.000	.689	.542	.453	.473	.387	.351	.468	.344	.338	.403	.367	.399	.329	.279	.310	.428	.367	.306	.289	.386	.464	.474	.451	.349
LSElaborateConnect	.284	.382	.341	.314	.307	.364	.438	.231	.283	.402	.503	.539	.689	1.000	.478	.446	.446	.431	.459	.582	.378	.336	.384	.291	.427	.368	.238	.358	.496	.384	.279	.266	.389	.415	.468	.467	.318
LSElaborateRelateOtherUnits	.322	.323	.248	0.121	.139	.267	.277	.150	.246	.358	.395	.443	.542	.478	1.000	.435	.334	.417	.369	.433	.256	.202	.325	.217	.357	.349	.165	.294	.343	.346	.182	.185	.286	.324	.321	.397	.257
LSCriticalDevelopIdeas	.291	.374	.246	.207	.206	.303	.266	.161	.222	.344	.406	.415	.453	.446	.435	1.000	.391	.460	.373	.442	.235	.257	.294	.355	.404	.299	.263	.258	.375	.327	.256	.187	.307	.311	.460	.371	.269
LSMetaSRAlternativeRes	.376	.415	.410	.203	.274	.375	.271	.188	.238	.329	.348	.408	.473	.446	.334	.391	1.000	.410	.383	.446	.362	.385	.379	.305	.288	.262	.290	.320	.383	.289	.329	.221	.319	.360	.444	.363	.189
LSMetaSRNeedEngage	.346	.394	.332	.271	.214	.223	.338	.153	.205	.295	.409	.366	.387	.431	.417	.460	.410	1.000	.590	.539	.364	.300	.377	.272	.443	.400	.330	.291	.410	.341	.297	.167	.313	.227	.431	.371	.236
LSMetaSRSetGoals	.323	.447	.359	.292	.225	.318	.238	.138	.249	.263	.342	.351	.351	.459	.369	.373	.383	.590	1.000	.599	.370	.349	.461	.298	.675	.625	.354	.334	.381	.363	.304	.180	.296	.279	.425	.379	.199
LSMetaSRThinkIdeas	.446	.511	.494	.288	.381	.384	.404	.276	.308	.380	.393	.442	.468	.582	.433	.442	.446	.539	.599	1.000	.402	.342	.446	.346	.472	.478	.299	.433	.449	.384	.391	.289	.351	.380	.479	.476	.293
LSTimeChooseLocation	.270	.320	.346	.146	.334	.222	.354	.193	.166	.256	.360	.304	.344	.378	.256	.235	.362	.364	.370	.402	1.000	.637	.408	.234	.391	.349	.194	.397	.366	.230	.417	.315	.326	.413	.414	.401	.356
LSTimeFewDistractions	.240	.304	.301	0.107	.249	.241	.354	.164	0.084	.186	.296	.280	.338	.336	.202	.257	.385	.300	.349	.342	.637	1.000	.368	.235	.364	.308	.204	.289	.364	.192	.263	.252	.220	.320	.270	.218	.195
LSEffortWorkUntilFinished	.329	.476	.449	.276	.324	.270	.367	.246	.278	.281	.321	.368	.403	.384	.325	.294	.379	.377	.461	.446	.408	.368	1.000	.288	.458	.404	.220	.371	.363	.310	.321	.274	.383	.372	.507	.419	.292
LSHelpSeekLectTutor	.216	.392	.316	.267	.196	.235	.229	.090	.184	.238	.336	.315	.367	.291	.217	.355	.305	.272	.298	.346	.234	.235	.288	1.000	.484	.304	.387	.193	.268	.188	.203	.135	.256	.286	.368	.318	.205
OSLQGoalSetGoals	.340	.422	.409	.301	.242	.288	.304	.167	.198	.254	.405	.385	.399	.427	.357	.404	.288	.443	.675	.472	.391	.364	.458	.484	1.000	.702	.355	.309	.378	.311	.354	.263	.281	.294	.403	.422	.297
OSLQGoalSetSTermLTerm	.294	.404	.326	.268	.220	.179	.231	.172	.251	.260	.291	.284	.329	.368	.349	.299	.262	.400	.625	.478	.349	.308	.404	.304	.702	1.000	.356	.327	.379	.272	.306	.258	.261	.335	.375	.414	.251
OSLQEvalCommunicateStudents	.144	.328	.166	.133	0.096	0.097	0.096	-0.058	0.054	0.083	.167	.218	.279	.238	.165	.263	.290	.330	.354	.299	.194	.204	.220	.387	.355	.356	1.000	.202	.214	0.098	.231	0.111	.259	.212	.279	.182	0.099
MIntSatUnderstandAccMajor	.361	.414	.562	.276	.432	.338	.385	.350	.375	.349	.307	.292	.310	.358	.294	.258	.320	.291	.334	.433	.397	.289	.371	.193	.309	.327	.202	1.000	.534	.448	.401	.363	.370	.335	.333	.450	.336
MControlLearnContentAccMajor	.351	.386	.352	.429	.286	.382	.506	.441	.430	.506	.422	.450	.428	.496	.343	.375	.383	.410	.381	.449	.366	.364	.363	.268	.378	.379	.214	.534	1.000	.659	.337	.315	.313	.418	.402	.462	.356
MSelfEfficacyConfidentAccMajor	.376	.354	.316	.403	.233	.337	.475	.353	.539	.532	.316	.292	.367	.384	.346	.327	.289	.341	.363	.384	.230	.192	.310	.188	.311	.272	0.098	.448	.659	1.000	.310	.236	.266	.358	.393	.431	.288
LLLEnjoyLearning	.423	.367	.408	.182	.243	.231	.225	.223	.289	.287	.297	.246	.306	.279	.182	.256	.329	.297	.304	.391	.417	.263	.321	.203	.354	.306	.231	.401	.337	.310	1.000	.524	.438	.414	.519	.513	.433
LLLDevelopPerson	.349	.235	.405	.197	.452	.350	.188	.260	.165	.244	.251	.228	.289	.266	.185	.187	.221	.167	.180	.289	.315	.252	.274	.135	.263	.258	0.111	.363	.315	.236	.524	1.000	.541	.396	.368	.554	.711
LLLIdentifyNeed	.341	.308	.355	.152	.291	.287	.175	.244	.244	.252	.292	.272	.386	.389	.286	.307	.319	.313	.296	.351	.326	.220	.383	.256	.281	.261	.259	.370	.313	.266	.438	.541	1.000	.596	.556	.613	.525
LLLAwarePreferLearn	.323	.286	.307	.195	.179	.157	.284	.269	.309	.278	.353	.294	.464	.415	.324	.311	.360	.227	.279	.380	.413	.320	.372	.286	.294	.335	.212	.335	.418	.358	.414	.396	.596	1.000	.586	.576	.412
LLLUseDifferentResources	.404	.424	.409	.313	.241	.204	.289	.272	.359	.331	.443	.402	.474	.468	.321	.460	.444	.431	.425	.479	.414	.270	.507	.368	.403	.375	.279	.333	.402	.393	.519	.368	.556	.586	1.000	.599	.470
LLLUpdateSkills	.404	.396	.411	.285	.338	.334	.340	.271	.312	.307	.413	.412	.451	.467	.397	.371	.363	.371	.379	.476	.401	.218	.419	.318	.422	.414	.182	.450	.462	.431	.513	.554	.613	.576	.599	1.000	.639
LLLImportantAchieveCareerGoals	.227	.235	.403	.274	.399	.347	.266	.281	.132	.249	.312	.341	.349	.318	.257	.269	.189	.236	.199	.293	.356	.195	.292	.205	.297	.251	0.099	.336	.356	.288	.433	.711	.525	.412	.470	.639	1.000

** Correlation is significant at the 0.01 level (2-tailed).

*Corelation is significant at the 0.05 level (2-tailed).

Reportedly, most data in social science research fails to meet the assumptions of parametric statistics (i.e., Micceri, 1989). As the data in this study is not normally distributed, parametric statistics cannot be utilised. Thus, consideration was given to data transformation. However, as several transformations need to be attempted before an appropriate one is found, and moreover, inferential analysis is more difficult to interpret using transformed variables as opposed to variables in their original form (Leech and Onwuegbuzie, 2002), the data has not been transformed. Consequently, non-parametric techniques have been utilised (Leech and Onwuegbuzie, 2002). Non-parametric techniques are customarily used when there are random samples, independent observations and the data is measured using ordinal (ranked) scales (Pallant, 2013). Recall, in this study the questionnaire utilises ranked Likert scales from 1 to 7. Further, as the questionnaire was administered across 5 core accounting units, and each unit is different in terms of content, meaning that a response for one unit will not necessarily influence a response in another unit, each student response is considered to be independent[68]. Non-parametric Mann-Whitney U and Kruskal-Wallis tests were conducted on the MSLQ, OSLQ and LLL scales, and on each individual statement. Tables 8.4, 8.4a, 8.4b, 8.5, 8.5a, 8.5b, 8.6a and 8.6b (discussed below) report the results of the non-parametric tests.

Prior to discussing the results based on demographic characteristics, such as gender and residency, non-parametric tests were conducted to determine if there were differences amongst the students in different year levels, that is, from first year to third year. This is important in addressing RQ3.

8.3.1. Non-parametric tests based on year level

Recall, RQ3 seeks to discover whether and how, in a blended learning environment, students' motivational and SRL strategies change as they progress through their accounting degree. Results from a Kruskal-Wallis test, performed to determine if there were differences across the three year levels, shows statistically significant differences over the three year levels in the following six scales: *intrinsic goal orientation; intrinsic goal orientation major[69]; rehearsal; metacognitive self-*

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[68] Completion of the questionnaire was voluntary and students did not have to identify themselves either through provision of a student identification number or name. Many students completed the questionnaire without providing this information. Therefore, it is not possible to identify whether a student completed a questionnaire for each year level. Irrespective of this as each unit is different this is not an issue.

[69] Given RQ3 seeks to discover whether motivational and SRL strategies change over time, three statements peculiar to notions around an "accounting major", specifically related to *intrinsic goal orientation*, *control of learning beliefs 2* and *self-efficacy for learning and performance,* were separated out. These statements made reference to the "accounting major" and have been identified with the term 'major' included in its statement name, e.g. *intrinsic goal orientation major.* Where the statement relating to the major has been included in the scale, the scale includes the term 'major'.

regulation; OSLQ goal setting and *LLL beliefs.* Table 8.4 provides the Chi-Square value, degrees of freedom (df), significance level and medians for each scale for each year level.

Statistics/ Scale	Intrinsic goal orientation	Intrinsic goal orientation major	Rehearsal	Metacognitive self-regulation	OSLQ Goal setting	LLL beliefs
Chi-Square	12.131	8.381	5.762	6.184	6.783	5.811
Df	2	2	2	2	2	2
Significance level	**0.002***	**0.015****	**0.056*****	**0.045****	**0.034****	**0.055*****
Median – First year	5.33	5.50	5.5	5.25	5	5.9
Median – Second year	5	5.25	5.5	5	4.5	5.8
Median – Third year	**5.67**	**5.63**	**6**	**5.5**	**5.5**	**6.2**

Table 8.4: Results of Kruskal-Wallis test based on year level. *, ** and *** Significant at the 0.01, 0.05 and 0.10 level, respectively

As shown in Table 8.4 above, the medians for third year students (in bold) were higher than those of second and first year students, indicating that third year students have higher levels of *intrinsic goal orientation*; *rehearsal*, *metacognitive self-regulation, goal setting* and *lifelong learning beliefs*. Based on Pintrich's (1991) description of *intrinsic goal orientation*, it can be inferred that these students engage with the learning resources because they see engagement as an end all to itself. On the MSLQ, goal orientation refers to students' general goals and so they participate through engagement with the learning resources because they are curious to learn, are challenged and wish to master concepts. Third year students place greater reliance on *rehearsal* strategies through engaging with the learning resources and have higher *self-regulation of metacognition*. It could be argued that third year students are more experienced in terms of engaging with the learning resources provided, given their experiences with such resources in the earlier years. As a result, they are more adept to engaging in cognitive strategies such as *rehearsal.* This was observed in Samruayruen et al. (2013) who found that learners with more internet experience had higher levels of *self-efficacy* and cognitive strategies of *rehearsal* and *elaboration.* Additionally, Hood's (2013) study into the use of online lectures found that students who placed greater reliance on *rehearsal* were more inclined to engage with online lectures. Moreover, third year students show evidence of higher *intrinsic goal orientations* given that it is their final year of study, they may perceive the final units as being more reflective of what they expect to encounter when entering the workforce. It is also unsurprising that these students have higher levels of lifelong learning beliefs given that they will enter the accounting workforce imminently. In accounting, it is not uncommon for some students to have already secured a job dependent upon completion of their degree.

Further, in all scales except for *rehearsal,* first year students recorded higher medians than second year students. A possible explanation for this is that first year students are unaware of the

acceptable standard of effort required to succeed at university. In addition, given their lack of understanding of the acceptable standard required they are more driven to ensure they are gaining the required mastery level and thus exhibit higher *intrinsic goal orientations.* These students are better able to set goals than their second year counterparts. Further, they have higher lifelong learning beliefs. Having most recently left high school where considerable time would have been spent with career counsellors and advisors to ensure students chose courses that align with their career aspirations, these students show a commitment to learning and learning accounting.

For completeness, Table 8.4a reports results for the Kruskal-Wallis test for all scales delineated by year level, whilst Table 8.4b reports results of the Kruskal-Wallis tests for each statement. As shown in Table 8.4b, the statistically significant differences lay with statements within the scales identified earlier. That is, no additional scales were identified through analysis on a statement-by-statement basis.

Mann-Whitney U tests, conducted to understand which year level is statistically significantly different, shows (see Appendix X) a statistically significant difference between first and second year students in relation to *intrinsic goal orientation*; no statistical differences between first and third year students; and statistically significant differences between second and third year students for *intrinsic goal orientation, intrinsic goal orientation major, OSLQ goal setting* and *LLL beliefs* scales. To control for Type 1 errors, a Bonferroni adjustment was made to the significance values resulting in a stricter significance level of 0.017 (0.05/3).

Test Statistics[a,b]

	Subscale MIntrinsic	Subscale MIntrinsic Major	Subscale MTask value	Subscale MControl2	Subscale MControl Major2	Subscale MSELFEFF	Subscale MSELFEFF Major	Subscale Rehearsal	Subscale Elaborate	Subscale MetacogSR	Subscale Time and Environment	Subscale OSLQGoalSetting	Subscale LLLBEliefs	Subscale LLLAttitudes
Chi-Square	12.131	8.381	2.608	1.447	2.569	1.716	2.704	5.762	1.334	6.184	4.345	6.783	5.811	1.639
df	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Asymp. Sig.	0.002	0.015	0.272	0.485	0.277	0.424	0.259	0.056	0.513	0.045	0.114	0.034	0.055	0.441

a. Kruskal Wallis Test

b. Grouping Variable: YearIdentifier

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YearIdentifier		Subscale MIntrinsic	Subscale MIntrinsic Major	Subscale MTask value	Subscale MControl2	Subscale MControl Major2	Subscale MSELFEFF	Subscale MSELFEFF Major	Subscale Rehearsal	Subscale Elaborate	Subscale MetacogSR	Subscale Time and Environment	Subscale OSLQGoalSetting	Subscale LLLBEliefs	Subscale LLLAttitudes
First year	N	76	76	76	76	76	76	76	76	76	76	76	76	76	76
	Median	5.33	5.50	6.00	6.00	5.67	5.50	5.50	5.50	5.67	5.25	5.50	5.00	5.90	6.00
Second year	N	94	94	94	94	94	94	94	94	94	94	94	94	94	94
	Median	5.00	5.25	5.67	5.75	5.67	5.00	5.33	5.50	5.33	5.00	5.50	4.50	5.80	6.00
Third year	N	76	76	76	76	76	76	76	76	76	76	76	76	76	76
	Median	5.67	5.63	6.00	6.00	6.00	5.50	5.50	6.00	5.67	5.50	6.00	5.50	6.20	6.00
Total	N	246	246	246	246	246	246	246	246	246	246	246	246	246	246
	Median	5.33	5.50	5.67	6.00	5.67	5.50	5.33	5.50	5.50	5.00	6.00	5.00	6.00	6.00

Table 8.4a: For each scale, Kruskal-Wallis results and median results reported by year level

	Year Level Panel A												
Motivation/Affect	(MSLQ)												
Scale	**Intrinsic goal orientation**				**Task value**			**Control of learning beliefs 2**			**Self-efficacy for learning and performance**		
Statement	**MIntCuriosity**	**MIntEffort**	**MIntSatisUnders**	**MIntSatUndestandAccMajor**	**MTaskUseful**	**MTaskUnders**	**MTaskUse**	**MControlLearn**	**MControlEffort**	**MControlLearnContentAccMajor**	**MSelfEfficacyCertain**	**MSelfEfficacyConfident**	**MSelfEfficacyConfidentAccMajor**
N First year	**76**	**76**	**76**	**76**	**76**	**76**	**76**	**76**	**76**	**76**	**76**	**76**	**76**
Median	6	5	6	6	5.5	6	6	6	6	5.5	5	6	6
Range	4	4	4	6	4	3	5	4	3	5	5	5	5
N Second year	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**
Median	5	5	5	6	5	6	6	6	6	5	5	5	5
Range	5	6	4	3	5	3	5	4	4	4	5	4	4
N Third year	**76**	**76**	**76**	**76**	**76**	**76**	**76**	**76**	**76**	**76**	**76**	**76**	**76**
Median	6	5	6	6	6	6	6	6	6	6	5	6	6
Range	6	6	5	6	4	4	4	3	5	5	5	5	5
Chi-Square	9.187	2.982	17.024	2.065	1.342	1.432	1.285	4.228	0.118	4.568	1.143	2.024	3.728
df	2	2	2	2	2	2	2	2	2	2	2	2	2
Significance level	**0.010**	0.225	**0.000**	0.356	0.511	0.489	0.526	0.121	0.943	0.102	0.565	0.363	0.155
	*		*										

*, **, *** Significant at the 0.01, 0.05 and 0.10 level, respectively

		Year Level Panel B												

Learning Strategies	(MSLQ)													
Scale		Rehearsal		Elaboration			Critical thinking	Metacognitve self regulation				Time and study environment		Effort regulation	Help seeking
Statement		LSRFehearsalReuseOver	LSRehearsalRemember	LSElaborateRelate	LSElaborateConnect	LSElaborateRelateOtherUnits	LSCriticalDevelopIdeas	LSMetaSRAlternative	LSMetaSRNeedEngage	LSMetaSRSetGoals	LSMetaSRThinkIdeas	LSTimeChooseLocation	LSTimeFewDistractions	LSEffortWorkUntilFinished	LSHelpSeekLectTutor
N First year		76	76	76	76	76	76	76	76	76	76	76	76	76	76
Median		5	6	6	6	6	5	5.5	5	5	5	6	6	5	5
Range		5	6	6	5	5	5	5	5	6	4	5	5	6	6
N Second year		94	94	94	94	94	94	94	94	94	94	94	94	94	94
Median		5	5	5.5	5	5	5	5	5	5	5	6	5	5	5
Range		6	6	5	6	6	5	6	6	5	5	5	5	5	6
N Third year		76	76	76	76	76	76	76	76	76	76	76	76	76	76
Median		6	6	6	6	5	5	6	5	5	6	6	6	6	6
Range		4	4	6	6	5	6	6	6	5	5	5	6	5	6
Chi-Square		5.098	5.182	1.407	3.275	0.454	4.032	4.422	0.680	4.217	9.141	3.927	3.123	1.576	1.985
df		2	2	2	2	2	2	2	2	2	2	2	2	2	2
Significance level		0.078	0.075	0.495	0.194	0.797	0.133	0.110	0.712	0.121	0.010	0.140	0.210	0.455	0.371
		***	***								*				

*, **, *** Significant at the 0.01, 0.05 and 0.10 level, respectively

	Year Level Panel C				Year Level Panel D						
Learning Strategies (OSLQ)				Lifelong learning (LLL)							
Scale	OSLQ Goal setting		OSLQ Self-evaluation	Scale	Lifelong learning beliefs					Lifelong learning attitudes	
Statement	OSLQGoalSetGoals	OSLQGoalSetSTermLTerm	OSLQEvalCommunicateStudents	Statement	LLLEnjoyLearning	LLLDevelopPerson	LLLUseDifferentResources	LLLUpdateSkills	LLLImportantAchieveCareerGoals	LLLIdentifyNeed	LLLAwarePreferLearn
N First year	76	76	76	N First year	76	76	76	76	76	76	76
Median	5	5	5	Median	6	6.5	5	6	6	6	6
Range	5	6	6	Range	6	4	5	4	4	5	4
N Second year	94	94	94	N Second year	94	94	94	94	94	94	94
Median	5	5	5	Median	5	6	6	6	6	6	6
Range	6	6	6	Range	5	3	6	6	4	5	6
N Third year	76	76	76	N Third year	76	76	76	76	76	76	76
Median	6	6	5	Median	6	7	6	6	7	6	6
Range	6	6	6	Range	5	3	5	6	3	5	6
Chi-Square	8.658	4.622	1.148	Chi-Square	5.029	3.996	2.648	2.527	4.381	0.598	1.548
df	2	2	2	df	2	2	2	2	2	2	2
Significance level	0.013	0.099	0.563	Significance level	0.081	0.136	0.266	0.283	0.112	0.742	0.461
	**	***			***						

Table 8.4b: Non-parametric tests for each individual statement reported by year level

8.3.2 Non-parametric tests based on demographic variables of residency and gender

Given the split in residency of students (47% Australian citizens, 50% international students, and 3% permanent residents), to determine whether a difference exists in how the motivational beliefs and SRL strategies for each group impact how and why accounting students engage with the learning resources provided to them, a Kruskal-Wallis test was performed (see Table 8.5)[70]. This reveals a statistically significant difference at the 0.05 level for the following scales: c*ontrol of learning beliefs 2, control of learning beliefs 2 major, OSLQ goal setting, LLL beliefs* and *LLL attitudes. Task value* was statistically significantly different at the 0.10 level.

Statistics/ Scale	Task value	Control of Learning beliefs 2	Control of learning beliefs 2 Major	OSLQ Goal setting	LLL beliefs	LLL attitudes
Chi-Square	6.623	8.707	7.973	8.647	8.790	8.506
Df	3	3	3	3	3	3
Significance level	**0.085*****	**0.033****	**0.047****	**0.034****	**0.032****	**0.037****
Median – Australian citizens	5.67	6.00	5.67	5.00	6.00	6.00
Median – Permanent residents	**6.33**	**6.50**	**6.33**	**6.25**	**6.70**	**6.75**
Median – International students	6.00	5.50	5.5	5.00	5.80	6.00
Median – Other	6.00	5.50	5.5	6.00	**7.00**	**7.00**

Table 8.5: Results of the Kruskal-Wallis test on based on residency. *, ** and *** Significant at the 0.01, 0.05 and 0.10 level, respectively

As shown, the median score is higher for permanent residents[71] across all 6 scales. Australian students have the second highest median for all scales except *task value,* where the result is reversed; and *OSLQ goal setting* and *LLL attitudes* where the medians are the same for both Australian and international students. For completeness, Table 8.5a reports results of the Kruskal-Wallis tests on all scales based on residency, with Table 8.5b reporting results on a statement-by-statement basis.

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[70] T-tests show that the students across the three year levels who participated in the study were indicative of the entire enrolment population ($p = 0.00$ two sample equal variance; $p = 0.00$ two sample unequal variance).

[71] One student did not provide information on residency and is denoted in Table 8.5 as 'Other'. With reference to discussion on the Kruskal-Wallis results based on residency, this student's result has been disregarded.

Test Statistics[a,b]

	Subscale MIntrinsic	Subscale MIntrinsic Major	Subscale MTask value	Subscale MControl2	Subscale MControl Major2	Subscale MSELFEFF	Subscale MSELFEFF Major	Subscale Rehearsal	Subscale Elaborate	Subscale MetacogSR	Subscale Time and Environment	Subscale OSLQGoalSetting	Subscale LLLBEliefs	Subscale LLLAttitudes
Chi-Square	2.972	4.545	6.623	8.707	7.973	4.128	5.256	2.433	1.007	5.789	3.773	8.647	8.790	8.506
df	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Asymp. Sig.	0.396	0.208	0.085	0.033	0.047	0.248	0.154	0.488	0.800	0.122	0.287	0.034	0.032	0.037

a. Kruskal Wallis Test

b. Grouping Variable: Residency

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Residency		Subscale MIntrinsic	Subscale MIntrinsic Major	Subscale MTask value	Subscale MControl2	Subscale MControl Major2	Subscale MSELFEFF	Subscale MSELFEFF Major	Subscale Rehearsal	Subscale Elaborate	Subscale MetacogSR	Subscale Time and Environment	Subscale OSLQGoal setting	Subscale LLLBEliefs	Subscale LLLAttitudes
Australian Citizen	N	115	115	115	115	115	115	115	115	115	115	115	115	115	115
	Median	5.33	5.50	5.67	6.00	5.67	5.50	5.67	5.50	5.33	5.00	6.00	5.00	6.00	6.00
Permanent Resident	N	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Median	5.67	5.75	6.33	6.50	6.33	6.25	6.17	5.50	5.67	5.75	6.00	6.25	6.70	6.75
International Student	N	122	122	122	122	122	122	122	122	122	122	122	122	122	122
	Median	5.33	5.25	6.00	5.50	5.67	5.00	5.33	5.50	5.50	5.13	5.50	5.00	5.80	6.00
Other	N	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Median	5.67	5.75	6.00	5.50	5.67	6.00	6.00	7.00	6.00	4.25	4.50	6.00	7.00	7.00
Total	N	246	246	246	246	246	246	246	246	246	246	246	246	246	246
	Median	5.33	5.50	5.67	6.00	5.67	5.50	5.33	5.50	5.50	5.00	6.00	5.00	6.00	6.00

Table 8.5a: For each scale, Kruskal-Wallis results and median results reported based on residency status

	Residency Panel A											
Motivation/Affect	**(MSLQ)**											
Scale	**Intrinsic goal orientation**				**Task value**			**Control of learning beliefs 2**			**Self-efficacy for learning and performance**		
Statement	**MIntCuriosity**	**MIntEffort**	**MIntSatisUnders**	**MIntSatUndestandAccMajor**	**MTaskUseful**	**MTaskUnders**	**MTaskUse**	**MControlLearn**	**MControlEffort**	**MControlLearnContentAccMajor**	**MSelfEfficacyCertain**	**MSelfEfficacyConfident**	**MSelfEfficacyConfidentAccMajor**
N Australian Citizen	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**
Median	5	5	6	6	5	6	6	6	6	6	5	5	6
Range	5	6	4	6	4	4	4	4	5	4	5	5	4
N Permanent Resident	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**
Median	5.5	6	6.5	6.5	6	7	7	6	7	6	6	6	6
Range	2	3	2	2	3	2	1	2	2	2	3	2	4
N International Student	**122**	**122**	**122**	**122**	**122**	**122**	**122**	**122**	**122**	**122**	**122**	**122**	**122**
Median	5	5	5	5	6	6	6	6	6	6	5	5	6
Range	6	6	5	6	5	3	5	4	5	5	5	5	5
N Other	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Median	6	5	6	6	5	7	6	5	6	6	6	6	6
Range	0	0	0	0	0	0	0	0	0	0	0	0	0
Chi-Square	2.210	1.404	5.929	7.352	1.844	5.489	6.303	4.666	8.504	2.935	3.116	3.802	4.520
df	3	3	3	3	3	3	3	3	3	3	3	3	3
Significance level	0.530	0.705	0.115	**0.061**	0.605	0.139	**0.098**	0.198	**0.037**	0.402	0.374	0.284	0.210
				**			***		**				

*, **, *** Significant at the 0.01, 0.05 and 0.10 level, respectively

						Residency Panel B								
Learning Strategies	**(MSLQ)**													
Scale	**Rehearsal**		**Elaboration**			**Critical thinking**	**Metacognitve self regulation**				**Time and study environment**		**Effort regulation**	**Help seeking**
Statement	**LSRFehearsalReuseOver**	**LSRehearsalRemember**	**LSElaborateRelate**	**LSElaborateConnect**	**LSElaborateRelateOtherUnits**	**LSCriticalDevelopIdeas**	**LSMetaSRAlternative**	**LSMetaSRNeedEngage**	**LSMetaSRSetGoals**	**LSMetaSRThinkIdeas**	**LSTimeChooseLocation**	**LSTimeFewDistractions**	**LSEffortWorkUntilFinished**	**LSHelpSeekLectTutor**
N Australian Citizen	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**	**115**
Median	5	6	6	6	6	5	5	5	5	5	6	6	5	5
Range	6	5	6	6	5	5	6	6	6	5	5	5	5	6
N Permanent Resident	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**
Median	5.5	5.5	6	6	5	4.5	6	5.5	6	6	6.5	6	6.5	5
Range	4	6	1	2	3	4	2	4	3	2	2	2	2	2
N International Student	**122**	**122**	**122**	**122**	**122**	**122**	**122**	**122**	**122**	**122**	**122**	**122**	**122**	**122**
Median	6	6	6	6	5	5	5	5	5	5	6	6	5	5
Range	5	6	6	6	6	6	6	6	5	5	5	6	6	6
N Other	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Median	7	7	6	6	6	4	7	2	4	4	6	3	5	6
Range	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chi-Square	2.394	2.414	1.273	2.647	1.422	11.209	6.170	3.515	6.081	6.037	3.450	3.745	8.308	7.600
df	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Significance level	0.495	0.491	0.736	0.449	0.700	**0.011**	0.104	0.319	0.108	0.110	0.327	0.290	**0.040**	**0.055**
						**							**	***

*, **, *** Significant at the 0.01, 0.05 and 0.10 level, respectively

Panel C — Residency

Learning Strategies (OSLQ)

Statement	OSLQ Goal setting		OSLQ Self-evaluation
	OSLQGoalSetGoals	OSLQGoalSetSTermLTerm	OSLQEvalCommunicateStudents
N Australian Citizen	115	115	115
Median	5	5	5
Range	6	6	6
N Permanent Resident	8	8	8
Median	6	6.5	3.5
Range	3	3	5
N International Student	122	122	122
Median	5	5	5
Range	6	6	6
N Other	1	1	1
Median	6	6	1
Range	0	0	0
Chi-Square	8.670	6.403	11.122
df	3	3	3
Significance level	0.034	0.094	0.011
	**	***	**

Panel D — Residency

Lifelong learning (LLL)

Statement	Lifelong learning beliefs					Lifelong learning attitudes	
	LLLEnjoyLearning	LLLDevelopPerson	LLLUseDifferentResources	LLLUpdateSkills	LLLImportantAchieveCareerGoals	LLLIdentifyNeed	LLLAwarePreferLearn
N Australian Citizen	115	115	115	115	115	115	115
Median	6	7	6	6	7	6	6
Range	5	4	4	5	4	5	4
N Permanent Resident	8	8	8	8	8	8	8
Median	6.5	7	7	7	7	7	7
Range	2	2	5	3	2	1	6
N International Student	122	122	122	122	122	122	122
Median	5	6	6	6	7	6	6
Range	6	3	6	6	4	5	6
N Other	1	1	1	1	1	1	1
Median	7	7	7	7	7	7	7
Range	0	0	0	0	0	0	0
Chi-Square	11.285	2.968	6.266	6.989	2.441	7.671	9.406
df	3	3	3	3	3	3	3
Significance level	0.010	0.397	0.099	0.072	0.486	0.053	0.024
	*		***	***		***	**

*, **, *** Significant at the 0.01, 0.05 and 0.10 level, respectively

Table 8.5b: Non-parametric tests for each individual statement reported based on residency status

Mann-Whitney U tests, conducted to obtain an understanding of which category of residency was statistically significantly different (see Appendix Y), shows a statistically significant difference between Australian students and permanent residents for the *metacognitive self-regulation* and *OSLQ goal setting* scales; no statistical differences between Australian and international students; and differences in *control of learning beliefs 2* and *control of learning beliefs 2 major* between international students and permanent residents. To control for Type 1 errors, a Bonferroni adjustment was made to the significance values resulting in a stricter significance level of 0.017 (0.05/3)[72] being applied.

Given that in this study a number of learning strategy scales (namely, *critical thinking, effort regulation, help-seeking* and *OSLQ self-evaluation)* included only one statement, a scale cannot be calculated. As shown in Table 8.5b, non-parametric test results on each of the individual statements shows statistically significant differences at the 0.05 level for the different residency categories for *critical thinking (p. = 0.011), effort regulation (p. = 0.040)* and *help-seeking (p. = 0.055)*. In terms of *critical thinking*, the median was highest for international and Australian students (both at 5) compared to permanent residents (4.5). With respect to *effort regulation*, permanent residents have a higher median (6.5) than their Australian and international counterparts (5 each). For *help-seeking* the median was the same for all categories (*Md* = 5).

Concerning gender, Mann-Whitney U tests (see Table 8.6a below) show statistically significant differences between males and females at the 0.05 level for two scales, namely (1) *task value:* females (*Md* = 6, *n*= 174) vs. males (*Md* = 5.5, *n* = 72), *U* = 4723.500, *z* = -3.058, *p.* = 0.002, *r* = 0.19; and (2) *rehearsal:* females (*Md* = 5.5, *n*= 174) vs. males (*Md* = 5, *n* = 72), *U* = 4940, *z* = -2.638, *p.* = 0.008, *r* = 0.17. Further, at the 0.10 level, statistically significant differences were found in the following two scales: (1) *OSLQ goal setting* - females (*Md* = 5, *n*= 174) vs. males (*Md* = 5, *n* = 72), *U* = 5330, *z* = -1.851, p.= 0.064, *r* = 0.12, and (2) *LLL beliefs* - females (*Md* = 6, *n*= 174) vs. males (*Md* = 5.8, *n* = 72), *U* = 5409, *z* = -1.689, *p.* = 0.091, *r* = 0.11[73]. In all cases the medians for females were larger, indicating that females were more motivated to engage with the learning resources because they perceived them to be interesting, important and of great use to them. Further, female students utilised the learning strategies of *rehearsal* more than males; they engaged more heavily in setting goals and had stronger lifelong learning beliefs.

Additionally, when reviewing the statistical tests on a statement basis (see Table 8.6b), additional differences were noted between females and males with regard to *intrinsic goal*

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[72] The category of 'Other' was not included in the Mann-Whitney U tests so the Bonferroni significance level is still 0.017 as there were only 3 further tests undertaken.

[73] The effect sizes for each of these four scales were large.

orientation (MIntSatisUnders, *p.* = 0.016), suggesting that female students are more satisfied, curious and seeking to master concepts when trying to understand content as thoroughly as possible. Further, differences were noted in two statements related to the *elaboration* scale (*LSElaborateRelate*, *p.* = 0.019) and (*LSElaborateConnect*, *p.* = 0.082) female medians were higher than they were for males. This suggests that female students are more inclined to engage in strategies that assist them in building internal connections between items to be learned when engaging with the learning resources provided to them. The higher *intrinsic goal orientations* and increased interest, use, and perceived value of engaging with the learning resources exhibited by females in this study, supports the findings found in Opdecam et al. (2014).

Interactions between gender and residency was attempted through Anova. However, all assumptions are violated.

	Subscale MIntrinsic	Subscale MIntrinsic Major	Subscale MTask value	Subscale MControl2	Subscale MControl Major2	Subscale MSELFEF F	Subscale MSELFEF F Major	Subscale Rehearsal	Subscale Elaborate	Subscale MetacogSR	Subscale Time and Environment	Subscale OSLQGoalSetting	Subscale LLLBeliefs	Subscale LLLAttitudes
Test Statistics[a]														
Mann-Whitney U	5683.500	5822.000	4723.500	5478.500	5552.500	6225.500	6226.500	4940.000	5454.500	5814.500	6116.500	5330.000	5409.000	5935.000
Wilcoxon W	8311.500	8450.000	7351.500	8106.500	8180.500	8853.500	21451.500	7568.000	8082.500	8442.500	8744.500	7958.000	8037.000	8563.000
Z	-1.149	-0.873	-3.058	-1.573	-1.413	-0.077	-0.074	-2.638	-1.605	-0.888	-0.294	-1.851	-1.689	-0.657
Asymp. Sig. (2-tailed)	0.250	0.382	0.002	0.116	0.158	0.939	0.941	0.008	0.109	0.375	0.768	0.064	0.091	0.511

a. Grouping Variable: Gender

Report		Subscale MIntrinsic	Subscale MIntrinsic Major	Subscale MTask value	Subscale MControl2	Subscale MControl Major2	Subscale MSELFEF F	Subscale MSELFEF F Major	Subscale Rehearsal	Subscale Elaborate	Subscale MetacogSR	Subscale Time and Environment	Subscale OSLQGoal setting	Subscale LLLBeliefs	Subscale LLLAttitudes
Gender															
Male	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72
	Median	5.17	5.25	5.50	5.50	5.67	5.50	5.33	5.00	5.33	5.00	6.00	5.00	5.80	6.00
Female	N	174	174	174	174	174	174	174	174	174	174	174	174	174	174
	Median	5.33	5.50	6.00	6.00	5.67	5.50	5.33	5.50	5.67	5.00	6.00	5.00	6.00	6.00
Total	N	246	246	246	246	246	246	246	246	246	246	246	246	246	246
	Median	5.33	5.50	5.67	6.00	5.67	5.50	5.33	5.50	5.50	5.00	6.00	5.00	6.00	6.00

Table 8.6a: For each scale, Mann-Whitney U results and median results reported according to gender

Motivation/Affect	(MSLQ)												
Scale	Intrinsic goal orientation				Task value			Control of learning beliefs 2			Self-efficacy for learning and performance		
Statement	MIntCuriosity	MIntEffort	MIntSatisUnders	MIntSatUndestandAccMajor	MTaskUseful	MTaskUnders	MTaskUse	MControlLearn	MControlEffort	MControlLearnContentAccMajor	MSelfEfficacyCertain	MSelfEfficacyConfident	MSelfEfficacyConfidentAccMajor
N Male	72	72	72	72	72	72	72	72	72	72	72	72	72
Median	5	5	5	6	5	6	5.5	6	6	5	5	5	6
Range	5	5	4	3	5	4	4	4	4	4	5	4	4
N Female	174	174	174	174	174	174	174	174	174	174	174	174	174
Median	5	5	6	6	6	6	6	6	6	6	5	5	6
Range	6	6	5	6	4	3	5	4	5	5	5	5	5
Mann-Whitney U	6010.00	6112.00	5083.50	5956.50	5209.50	5325.50	4845.00	5684.50	5741.00	5751.50	5996.00	5948.00	6232.50
z	-0.517	-0.309	-2.405	-0.629	-2.156	-1.957	-2.919	-1.193	-1.081	-1.062	-0.545	-0.645	-0.065
p, two tailed	0.605	0.758	**0.016**	0.529	**0.031**	**0.050**	**0.004**	0.233	0.280	0.288	0.586	0.519	0.948
			**		**	**	*						

*, **, *** Significant at the 0.01, 0.05 and 0.10 level, respectively

Learning Strategies	(MSLQ)	Rehearsal		Elaboration			Critical thinking	Metacognitve self regulation				Time and study environment		Effort regulation	Help seeking
Statement		LSRFehearsalReuseOver	LSRehearsalRemember	LSElaborateRelate	LSElaborateConnect	LSElaborateRelateOtherUnits	LSCriticalDevelopIdeas	LSMetaSRAlternative	LSMetaSRNeedEngage	LSMetaSRSetGoals	LSMetaSRThinkIdeas	LSTimeChooseLocation	LSTimeFewDistractions	LSEffortWorkUntilFinished	LSHelpSeekLectTutor
N Male		72	72	72	72	72	72	72	72	72	72	72	72	72	72
Median		5	5	5	5	6	5	5	5	5	5	6	6	5	5
Range		6	5	6	6	5	5	6	6	6	4	5	6	5	6
N Female		174	174	174	174	174	174	174	174	174	174	174	174	174	174
Median		6	6	6	6	5	5	5	5	5	5	6	6	5	5
Range		5	6	6	6	6	6	6	5	5	5	5	5	6	6
Mann-Whitney U		5022.50	5031.00	5121.00	5417.00	6138.50	5941.50	5663.00	5946.50	5943.50	6197.00	6234.50	6088.00	5833.50	5666.50
z		-2.511	-2.513	-2.349	-1.739	-0.255	-0.656	-1.218	-0.642	-0.644	-0.136	-0.060	-0.357	-0.873	-1.201
p, two tailed		0.012	0.012	0.019	0.082	0.799	0.512	0.223	0.521	0.520	0.891	0.952	0.721	0.383	0.230
		**	**	**	**										

*, **, *** Significant at the 0.01, 0.05 and 0.10 level, respectively

Statement	Gender Panel C Learning Strategies (OSLQ)			Statement	Gender Panel D Lifelong learning (LLL)						
		OSLQ Goal setting	OSLQ Self-evaluation			Lifelong learning beliefs				Lifelong learning attitudes	
	OSLQGoalSetGoals	OSLQGoalSetSTermLTerm	OSLQEvalCommunicateStudents		LLLEnjoyLearning	LLLDevelopPerson	LLLUseDifferentResources	LLLUpdateSkills	LLLImportantAchieveCareerGoals	LLLIdentifyNeed	LLLAwarePreferLearn
N Male	72	72	72	N Male	72	72	72	72	72	72	72
Median	5	5	5	Median	6	6	5	6	6	6	6
Range	6	6	6	Range	5	3	4	5	3	4	4
N Female	174	174	174	N Female	174	174	174	174	174	174	174
Median	5	5	5	Median	6	7	6	6	7	6	6
Range	6	6	6	Range	6	4	6	6	4	5	6
Mann-Whitney U	5478.50	5443.00	6166.00	Mann-Whitney U	6018.00	5471.00	5703.50	5527.50	4940.00	5934.50	5918.00
z	-1.580	-1.648	-0.197	z	-0.502	-1.701	-1.149	-1.509	-2.853	-0.677	-0.707
p, two tailed	0.114	**0.099**	0.844	p, two tailed	0.616	**0.089**	0.251	0.131	**0.004**	0.498	0.480
		***				***			*		
*, **, *** Significant at the 0.01, 0.05 and 0.10 level, respectively											

Table 8.6b: Non-parametric tests for each individual statement reported by gender

8.3.3 Non-parametric tests of other demographic variables

Other demographic variables were tested to see whether there were differences based on the student's age; whether the student had studied accounting prior to entering university; and whether having an accounting major or the course the student was enrolled in made a difference to the motivational and SRL strategies adopted when engaging with the learning resources. Results revealed no significant differences based on whether the student had completed accounting prior to entering university. Differences at the 0.05 level were noted in the *task value* scale (*p.* = 0.038), with the "25-30" age group having the highest median;[74] *time and study environment* scale *(p. = 0.042)*, the "21-22" age bracket had the highest median[75]. In terms of the individual statements, a statistical difference was noted for learning strategies: *LSElaborateRelate, LSMetaSRSetGoals* and *OSLQGoalSetGoals* at the 0.10, 0.10 and 0.05 levels respectively, with the highest median reported in the "25-30" age group.

At the course level, differences were noted in the *OSLQ goal setting* scale, with those who nominated a Bachelor of Business (Accounting), ranking this higher. Looking at the differences in individual statements at the 0.10 level, *metacognitive self-regulation* revealed some differences, specifically *LSMetaSRNeedEngage* and *LSMetaSRSetGoals*. Further, *effort regulation* was ranked higher in the Bachelor of Business (Accounting). Finally, with regards to nominations of an accounting major or other, significant differences were reported for *MIntSatUnderstandAccMajor* (*p.* = 0.021) and *LSCriticalDevelopIdeas* (*p.* = 0.025). In both cases the median was higher for students who nominated an accounting major. These results are not surprising given the questionnaire was administered to students enrolled in units required for membership to the accounting professional bodies.

8.3.4 Summary: Non-parametric statistics results

In summary, tests reveal that the data in this study is not normally distributed. The median responses to most statements provided by the majority of students is 5 or 6. This suggests that they are highly motivated to engage with the resources; are moderately utilising the learning strategies available to them when studying the foci units; and exhibit high lifelong learning beliefs and attitudes.

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[74] Whilst the 'Other' category yielded the highest result, it was removed from the discussion as students in this category did not provide their age.

[75] Again, whilst the 'Other' category yielded the highest result, it was removed from the discussion as students in this category did not provide their age.

Non-parametric tests of demographic characteristics reveal statistically significant differences with regards to gender and residency. Females recorded higher medians in the following scales: *task value, rehearsal, OSLQ goal setting,* and *LLL beliefs.* This suggests that females are more motivated to engage with the learning resources because they perceive them to be highly interesting, important and of great use to them; they utilise the learning strategies of *rehearsal* more than males; and they engage more heavily in setting goals and have stronger lifelong learning beliefs. Further, female students are more inclined to engage in strategies, which assists them in building internal connections between items to be learned when engaging with the learning resources, thus exhibiting higher *elaboration* strategies. With regard to residency, statistically significant differences were found in the following scales: *task value, control of learning beliefs 2, control of learning beliefs 2 major, OSLQ goal setting, LLL beliefs* and *LLL attitudes*. Further, results reveal no differences between Australian and international students, with the only differences noted between Australian students and permanent residents with respect to the *metacognitive self-regulation* and *OSLQ goal setting* scales, and between international students and permanent residents with respect to *control of learning beliefs 2.*

RQ3 seeks to determine whether motivational and SRL strategies change as accounting students progress through their degree. Across all 6 scales, tests reveal that the medians for third year students are statistically higher than for second and first year students, indicating that third year students have higher levels of *intrinsic goal orientation, rehearsal, metacognitive self-regulation, OSLQ goal setting* and *LLL beliefs.* Further, first year students ranked higher than second year students in five of these areas, with *rehearsal* being the only scale where second year students were equal to first year students. Given third year is the final year for students, it is understandable that these students exhibit *high intrinsic goal orientations* with the aim of ensuring they successfully complete their accounting units. Further, given continuous learning is expected of them once they are employed as an accountant, it is pleasing that they exhibit higher levels of lifelong learning beliefs. Finally, it is understandable that first year accounting students put more effort into planning and regulating their learning, being that it is their first year of university and they may be unaware of the acceptable standard of effort required to succeed at university.

8.4 Principal components analysis

The remaining 37 statements contained in the questionnaire, encompassing MSLQ, OSLQ and LLL, were subjected to PCA in order to summarise patterns of correlations among the items and to reduce the large number of variables (Tabachnick and Fidell, 2013). Prior to performing PCA, the data was assessed for suitability. Inspection of the factor correlation matrix (see Appendix Z) revealed coefficients of .3 and above, together with many below 0.3, signifying that items are not strongly correlated (Pett et al., 2003). Despite this, the correlation matrix was factorable and PCA was undertaken. The Kaiser-Meyer-Olkin value was .905, exceeding the recommended value of .6 (Kaiser 1970, 1974) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix.

PCA revealed the presence of eight factors[76] with eigenvalues exceeding 1, explaining 34.4%, 6.6%, 5.9%, 4.4%, 4.2%, 3.4%, 3.2% and 2.8% of the variance respectively (see Table 8.7). Use of the Kaiser criterion (i.e., factors where the eigenvalue is above 1) often results in too many components being extracted (Pallant, 2013). As Tabachnick and Fidell (2013) note the more factors extracted, the less parsimonious the solution, therefore the screeplot (see Figure 8.2) was reviewed. With a horizontal and vertical line drawn from each end of the curve, results suggest five factors should be retained. This is supported by Catell (1966) who recommends retaining all factors above the elbow or break in the screeplot, which in this study is five.

Component/Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	12.713	34.359	34.359
2	2.427	6.559	40.918
3	2.194	5.929	46.847
4	1.637	4.424	51.271
5	1.535	4.150	**55.420**
6	1.270	3.434	58.854
7	1.196	3.233	62.087
8	1.042	2.817	64.904

Table 8.7: PCA – total variance explained

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[76] The terms factors and components are generally used interchangeably – see Pallant (2013) and Tabachnick and Fidell (2013). The term factors is used in this study.
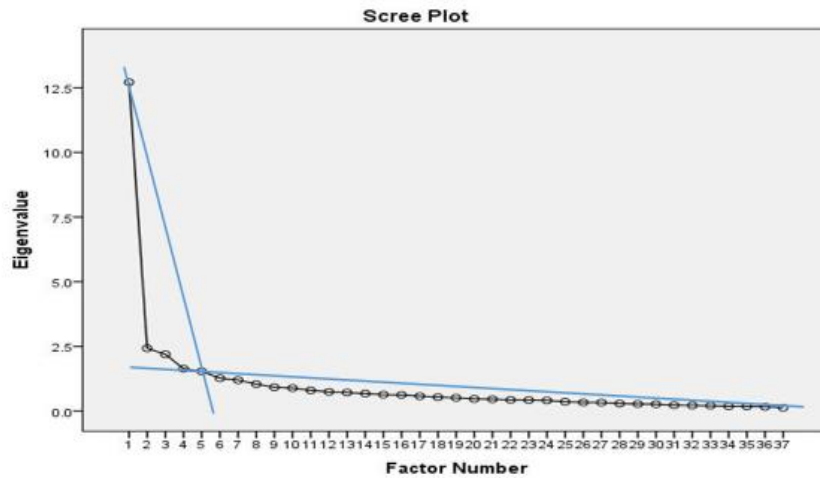
Figure 8.2: Screeplot

As an alternative to retaining all principal components with eigenvalues larger than 1, Horn (1965) proposed parallel analysis. Herein, utilising Monte Carlo PCA for Parallel Analysis (Watkins, 2000), parallel analysis was undertaken (see Appendix AA for the output from the parallel analysis). As shown in Table 8.8 below, which compares the eigenvalues from PCA and criterion values from parallel analysis, the number of factors to be retained is five, which confirms the screeplot. Adoption of the five-factor solution explains 55.4% of the variance (refer Table 8.7).

Component number	Actual eigenvalue from PCA	Criterion value from parallel analysis	Decision
1	12.713	1.8271	**accept**
2	2.427	1.7154	**accept**
3	2.194	1.6387	**accept**
4	1.637	1.5740	**accept**
5	1.535	1.5123	**accept**
6	1.270	1.4553	reject
7	1.196	1.4127	reject
8	1.042	1.3650	reject

Table 8.8: Comparison of eigenvalues from PCA and criterion values from parallel analysis using Monte Carlo PCA

As discussed previously, given the factor correlation matrix reveals the presence of many coefficients below 0.3, the Varimax rotation method was chosen[77]. Table 8.9 below presents the pattern/structure coefficients for the five-factor solution. A rotated component matrix, with all coefficients provided, together with communalities, is provided in Appendix AB and AC

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[77] Pett et al. (2003) recommend applying both orthogonal and oblique rotations to the data, interpretation and reporting of both. As such, oblique rotation was also undertaken, which reveals the same five factors, albeit in a different order.

respectively. Looking at this rotated component matrix, it is apparent that most of the loadings are above the minimum of 0.32 required for interpretation. Moreover, as shown in Table 8.9, four of the factors have six strong loadings. Indeed, many of the variables (18) load substantially onto only one factor, indicating a simple structure (Thurstone, 1947).

Rotated Component Matrix[a]					
	Component				
	1	**2**	**3**	**4**	**5**
OSLQGoalSetGoals	0.736				
LSMetaSRSetGoals	0.730				
OSLQGoalSetSTermLTerm	0.715				
OSLQEvalCommunicateStudents	0.618				
MIntEffort	0.573			0.300	
LSHelpSeekLectTutor	0.518				
LSMetaSRNeedEngage	0.511	0.419			
LSMetaSRThinkIdeas	0.483	0.309			
LSEffortWorkUntilFinished	0.439		0.329		
LSRehearsalReuseRemember		0.786			
LSRehearsalReuseOver		0.734			
LSElaborateRelate		0.688			
LSElaborateConnect		0.635			
LSCriticalDevelopIdeas	0.322	0.558			
LSElaborateRelateOtherUnits		0.511			
LSMetaSRAlternativeRes	0.344	0.446			
LLLIdentifyNeed			0.777		
LLLImportantAchieveCareerGoals			0.744		0.342
LLLDevelopPerson			0.739		0.401
LLLUpdateSkills			0.718		
LLLUseDifferentResources	0.338	0.389	0.591		
LLLEnjoyLearning			0.589		
LLLAwarePreferLearn			0.577		
MSelfEfficacyCertain				0.805	
MSelfEfficacyConfident		0.392		0.742	
MSelfEfficacyConfidentAccMajor				0.737	
MControlEffort				0.601	
MControlLearnContentAccMajor		0.373		0.556	
MTaskUseful				0.532	0.317
MControlLearn				0.513	0.473
MIntSatUnderstandAccMajor				0.445	0.366
MIntCuriosity	0.396		0.324	0.409	
MTaskUnders					0.746
MIntSatisUnders				0.369	0.568
MTaskUse		0.312		0.308	0.525
LSTimeFewDistractions	0.373	0.304			0.446
LSTimeChooseLocation	0.346				0.401
Extraction Method: Principal Component Analysis.					
Rotation Method: Varimax with Kaiser Normalization.[a]					
a. Rotation converged in 7 iterations.					

Table 8.9: PCA rotated component matrix with Varimax rotation - 5-factor solution

As noted in Section 8.3, the data is not normal. When the data violates the assumption of multivariate normality, Costello and Osborne (2005) recommend Principal Axis Factoring (PAF). Table 8.10 below provides the pattern/structure coefficients for a five-factor solution using PAF with a Varimax rotation. The results, using PAF, are similar to those reported using PCA, except that the order of the factors for PAF is slightly different (i.e., Factors 2 and 4 identified under PCA are reversed under PAF).

Rotated Factor Matrix[a]					
	Factor				
	1	**2**	**3**	**4**	**5**
OSLQGoalSetGoals	0.728				
LSMetaSRSetGoals	0.720				
OSLQGoalSetSTermLTerm	0.671				
MIntEffort	0.528				
LSMetaSRNeedEngage	0.506			0.357	
OSLQEvalCommunicateStudents	0.505				
LSMetaSRThinkIdeas	0.488				
LSHelpSeekLectTutor	0.453				
LSEffortWorkUntilFinished	0.427		0.308		
LSTimeFewDistractions	0.371				
LSTimeChooseLocation	0.353				
MSelfEfficacyCertain		0.779			
MSelfEfficacyConfident		0.731		0.356	
MSelfEfficacyConfidentAccMajor		0.700			
MControlLearnContentAccMajor		0.534		0.333	
MControlEffort		0.504			
MControlLearn		0.481			0.426
MTaskUseful		0.448			
MIntSatUnderstandAccMajor		0.399			0.332
MIntCuriosity	0.348	0.350			
LLLIdentifyNeed			0.738		
LLLImportantAchieveCareerGoals			0.703		0.342
LLLUpdateSkills			0.690		
LLLDevelopPerson			0.690		0.397
LLLUseDifferentResources	0.363		0.566	0.349	
LLLAwarePreferLearn			0.517		
LLLEnjoyLearning			0.514		
LSRehearsalReuseRemember				0.753	
LSRehearsalReuseOver				0.688	
LSElaborateRelate	0.308			0.624	
LSElaborateConnect	0.335			0.558	
LSCriticalDevelopIdeas	0.353			0.461	
LSElaborateRelateOtherUnits	0.306			0.407	
LSMetaSRAlternativeRes	0.358			0.393	
MTaskUnders					0.645
MIntSatisUnders		0.340			0.540
MTaskUse					0.454

Extraction Method: Principal Axis Factoring.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Table 8.10: PAF rotated component matrix with Varimax rotation – 5-factor solution

8.4.1 Naming of the factors that emerged from PCA

Table 8.11 details the names of the five factors, the pertinent statements for each factor, and a brief description of each factor including its relationship with the RQs derived using PCA with Varimax rotation.

Factor, and name and number of statements per factor (bracketed)	Statement from the questionnaire	Description	Relationship to RQs
Factor 1: Goal setting and metacognitive self-regulation (9)	- I set goals to help me manage my studying time for this unit. - When I study for ACFxxxx, I set goals for myself in order to direct my activities and engage with the learning resources provided. - I set short term (daily or weekly) goals as well as long-term (monthly or for the semester) goals. - I communicate with my classmates to find out whether what I am learning is different to what they are learning. - I often choose learning resources I will learn something from even if they require more effort. - When required, I seek assistance from the lecturer/tutor. - Before I begin studying I think about the learning resources that I will need to engage with in order to learn. - I try to think through ideas and concepts when engaging with the learning resources. - Even when the ACFxxxx learning resources are dull and uninteresting, I keep working until I finish.	Includes items relating to students setting goals to manage their study time, and guide them in terms of activities, in particular in relation to which learning resources to engage with. Furthermore, this factor embodies the reflection students undertake when deciding which of the learning resources to engage with, and ensuring that they study similar things to their fellow students.	**RQ2.** Students see the importance of setting goals to ensure effective management of their time. This is a key skill required by accountants – self-management is a required threshold learning outcome of accounting graduates. Students need to be able to take responsibility for their own behaviour and activities – one-way to try and achieve this is through setting individual goals to ensure students continual self-improvement.
Factor 2: Rehearsal and elaboration (7)	- When studying, I re-use the learning resources to help me remember material. - When studying for this ACFxxxx unit, I re-use the learning resources provided over and over again. - When engaging with the learning resources for ACFxxxx, I try to relate the content to what I already know. - When I am studying for ACFxxxx, I try to make connections between the learning resources so that everything fits together. - I use the learning resources provided as a starting point and try to develop my own ideas from that. - I try to relate ideas in this unit to those in other accounting units wherever possible. - When I become confused about the content taught in this unit, I try to locate alternative learning resources.	Includes simple strategies to ensure information is placed in short term memory and the use of cognitive strategies to ensure students acquire new knowledge into memory and build internal connections between items that have been learned. Further, these strategies help the learner to integrate and connect new information with prior knowledge.	**RQ2.** Students use and re-use the learning resources provided to assist them in remembering content, to make connections between what they already know, use the resources to gain new knowledge, and to ensure that the content from various sources fits together.

Factor, and name and number of statements per factor (bracketed)	Statement from the questionnaire	Description	Relationship to RQs
Factor 3: Importance of learning (7)	• I can identify when I need to learn something. • Learning is important for achieving my career goals. • I believe learning is important for developing as a person. • I plan to keep my knowledge and skills updated throughout my professional life in order to advance my career. • I am able to use different learning resources to retrieve and process information. • I enjoy learning. • I am aware of the ways I prefer to learn.	Concerns students being able to understand and identify when they need to learn something, and the belief that learning develops the student as a person, ultimately being important in updating skills and achieving career goals. This relates to lifelong learning, which is a key attribute required by the accounting profession.	**RQ2.** Students appreciate that they need to embrace learning in various forms and that they will be required to continually learn throughout their careers.
Factor 4: Self-efficacy and control of learning beliefs (9)	• I'm certain I can understand the most difficult content presented in the learning resources provided for this ACFxxxx unit. • I'm confident I can understand the concepts taught in ACFxxxx through engagement with the learning resources provided. • I'm confident I can understand the concepts taught in my accounting major through engagement with the learning resources provided. • If I try hard enough, then I will understand the ACFxxxx content. • If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in my accounting major. • I think the learning resources in ACFxxxx are useful for me to learn. • If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in ACFxxxx. • I find it satisfying to try and understand the content in my accounting major as thoroughly as possible. • In ACFxxxx, I prefer learning material that arouses my curiosity, even if the content is difficult to learn.	Items that load onto this factor include students' belief that they are able to master a task or accomplish a task well, and with confidence when engaging with the learning resources, and that the effort they put in to engaging with the learning resources results in positive outcomes i.e., they learn and understand the content expected of them.	**RQ2 and RQ3[78].** The effort students put in to engaging with the learning resources results in positive outcomes i.e., they learn and understand the content expected of them.

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[78] RQ3 has also been noted here given this factor includes statements relating to the accounting major.

Factor, and name and number of statements per factor (bracketed)	Statement from the questionnaire	Description	Relationship to RQs
Factor 5: Task value and time and study environment (5)	• Understanding the content in ACFxxxx is very important to me. • I find it satisfying to try and understand the content in this unit as thoroughly as possible. • I think I will be able to use what I learn in ACFxxxx in other accounting units or in my professional role as an accountant. • I try to choose a time with few distractions for studying. • I try to choose a location to study where I can concentrate on my course work.	Includes items related to understanding and that students are studying at a time and place conducive to learning.	**RQ2.** Students acknowledge the importance of trying to understand the content being taught and that understanding the content is very satisfying for them. They enhance their understanding through engaging with the learning resources. Further, they seek a study environment with few distractions to ensure concentration.

Table 8.11: Names, list of statements and description of the five factors derived using PCA with Varimax rotation

8.4.2 Reliability of the factors that emerged from PCA

Table 8.12 reports the Cronbach alpha for each factor (see Appendix AD for item analysis and factor reliability calculated for each of the five factors), which are robust ranging from 0.715 to 0.876.

Factor/(number of statements)	Cronbach's Alpha
1. Goal setting and metacognitive self-regulation (9)	0.862
2. Rehearsal and elaboration (7)	0.862
3. Importance of learning (7)	0.876
4. Self-efficacy and control of learning beliefs (9)	0.857
5. Task value and time and study environment (5)	0.715

Table 8.12: Emerging factors and associated Cronbach's alpha

8.4.3 Non-parametric tests on the factors

Recall RQ3 seeks to discover whether and how students' motivational and SRL strategies change as they progress through their accounting degree in a blended learning environment. A Kruskal-Wallis test was performed to determine if there were differences across the three year levels for the five-factor model. As shown in Table 8.13 below, there are statistically significant differences over the three year levels in Factor 1: *Goal setting* and *metacognitive self-regulation*, at the 0.05 significance level; in Factors 3: *Importance of learning* and 5: *Task value* and *time and study environment* at the 0.10 significance level. The medians for third year students were higher than those for second and first year students across all five factors. This suggests that third year students are more inclined to set goals and reflect on their learning, and therefore undertake self-management strategies; are more inclined to consider lifelong learning aspects and engage with the learning resources available to them in order to ensure they fully understand the content and concepts required. Interestingly, first year student medians were higher than those of second year students in four of the factors, with the median being equal for the two year levels in Factor 3: *Importance of learning*. A possible explanation for lower median levels in second year may be due to it being the middle year of their university education and as such students may have lost the excitement of first year and cannot see an end to their degree.

Test Statistics[a,b]

	Goal setting and metacognitive self-regulation	Rehearsal and elaboration	Importance of learning	Self-efficacy and control of learning beliefs	Task value and time and study environment
Chi-Square	6.056	4.284	4.711	4.301	5.762
df	2	2	2	2	2
Asymp. Sig.	.048	.117	.095	.116	.056

a. Kruskal Wallis Test

b. Grouping Variable: YearIdentifier

Report

YearIdentifier		Goal setting and metacognitive SR	Rehearsal and elaboration	Importance of learning	Self-efficacy and control of learning beliefs	Task value and time and study environment
First year	N	76	76	76	76	76
	Median	5.00	5.43	5.86	5.56	5.80
Second year	N	94	94	94	94	94
	Median	4.67	5.14	5.86	5.33	5.60
Third year	N	76	76	76	76	76
	Median	5.33	5.57	6.14	5.67	6.00
Total	N	246	246	246	246	246
	Median	5.00	5.43	5.86	5.56	5.80

Table 8.13: Kruskal-Wallis and medians for each year level for the PCA with Varimax rotation 5-factor solution

As shown in Tables 8.14a–8.14c below, Mann-Whitney U tests, conducted to obtain an understanding of which year level was statistically significantly different with regard to the five factors, reveal no statistically significant differences when one year level is compared to the next. Note: in calculating this, to control for Type 1 errors, a Bonferroni adjustment to the significance values was adopted, resulting in a stricter significance level of 0.017 (0.05/3).

Test Statistics[a]

	Goal setting and metacognitive self-regulation	Rehearsal and elaboration	Importance of learning	Self-efficacy and control of learning beliefs	Task value and time and study environment
Mann-Whitney U	3014.000	3229.000	3405.000	3201.000	3075.500
Wilcoxon W	7479.000	7694.000	7870.000	7666.000	7540.500
Z	-1.750	-1.076	-.524	-1.164	-1.561
Asymp. Sig. (2-tailed)	.080	.282	.600	.244	.118

a. Grouping Variable: YearIdentifier

Table 8.14a: Mann-Whitney U tests comparing first year to second year

Test Statistics[a]

	Goal setting and metacognitive self-regulation	Rehearsal and elaboration	Importance of learning	Self-efficacy and control of learning beliefs	Task value and time and study environment
Mann-Whitney U	2652.500	2623.000	2513.000	2671.500	2651.000
Wilcoxon W	5578.500	5549.000	5439.000	5597.500	5577.000
Z	-.869	-.978	-1.385	-.799	-.877
Asymp. Sig. (2-tailed)	.385	.328	.166	.424	.381

a. Grouping Variable: YearIdentifier

Table 8.14b: Mann-Whitney U tests comparing first year to third year

Test Statistics[a]

	Goal setting and metacognitive self-regulation	Rehearsal and elaboration	Importance of learning	Self-efficacy and control of learning beliefs	Task value and time and study environment
Mann-Whitney U	2854.500	2921.000	2872.000	2912.000	2846.000
Wilcoxon W	7319.500	7386.000	7337.000	7377.000	7311.000
Z	-2.250	-2.043	-2.198	-2.071	-2.283
Asymp. Sig. (2-tailed)	.024	.041	.028	.038	.022

a. Grouping Variable: YearIdentifier

Table 8.14c: Mann-Whitney U tests comparing second year to third year

In order to gain additional insight into which year level may have resulted in the statistically significant differences identified in the Kruskal-Wallis tests, a one-way between groups multivariate analysis of variance was performed. Five dependent variables were used: Factors 1 through 5. The independent variable was year level. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity. As noted earlier, the data for this study is not normal, so the assumptions of normality and linearity are not met. However, all other assumptions tested noted no serious violations. There was no statistically significant difference between year levels on the combined dependent variables (see Table 8.15a), $F (10, 478) = 0.835$, $p. = 0.595$; Wilks' Lambda = 0.966; partial eta squared = 0.017. When results for the dependent variables are considered separately, there is no statistically significant difference using a Bonferroni adjusted significance level of 0.01 (see Table 8.15b for the results of the post-hoc Tukey HSD tests).

				Hypothesis df			Partial Eta
Multivariate Tests[a]							
Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	0.986	3439.809[b]	5.000	239.000	0.000	0.986
	Wilks' Lambda	0.014	3439.809[b]	5.000	239.000	0.000	0.986
	Hotelling's Trace	71.963	3439.809[b]	5.000	239.000	0.000	0.986
	Roy's Largest Root	71.963	3439.809[b]	5.000	239.000	0.000	0.986
YearIdentifier	Pillai's Trace	0.034	0.836	10.000	480.000	0.594	0.017
	Wilks' Lambda	0.966	.835[b]	10.000	478.000	0.595	0.017
	Hotelling's Trace	0.035	0.833	10.000	476.000	0.597	0.017
	Roy's Largest Root	0.026	1.240[c]	5.000	240.000	0.291	0.025
a. Design: Intercept + YearIdentifier							
b. Exact statistic							
c. The statistic is an upper bound on F that yields a lower bound on the significance level.							

Table 8.15a: One-way between year level multivariate tests

Multiple Comparisons

Tukey HSD

Dependent Variable	(I) YearIdentifier	(J) YearIdentifier	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Goal setting and metacognitive self-regulation	First year	Second year	.2358	.15417	.279	-.1277	.5994
		Third year	-.0556	.16212	.937	-.4379	.3268
	Second year	First year	-.2358	.15417	.279	-.5994	.1277
		Third year	-.2914	.15417	.144	-.6549	.0721
	Third year	First year	.0556	.16212	.937	-.3268	.4379
		Second year	.2914	.15417	.144	-.0721	.6549
Rehearsal and elaboration	First year	Second year	.1323	.14389	.629	-.2071	.4716
		Third year	-.1617	.15132	.535	-.5185	.1952
	Second year	First year	-.1323	.14389	.629	-.4716	.2071
		Third year	-.2939	.14389	.104	-.6332	.0454
	Third year	First year	.1617	.15132	.535	-.1952	.5185
		Second year	.2939	.14389	.104	-.0454	.6332
Self-efficacy and control of learning beliefs	First year	Second year	.0931	.11832	.711	-.1859	.3721
		Third year	-.0950	.12442	.726	-.3884	.1984
	Second year	First year	-.0931	.11832	.711	-.3721	.1859
		Third year	-.1882	.11832	.252	-.4672	.0909
	Third year	First year	.0950	.12442	.726	-.1984	.3884
		Second year	.1882	.11832	.252	-.0909	.4672
Importance of learning	First year	Second year	.0583	.13205	.898	-.2531	.3697
		Third year	-.2068	.13887	.298	-.5342	.1207
	Second year	First year	-.0583	.13205	.898	-.3697	.2531
		Third year	-.2650	.13205	.113	-.5764	.0464
	Third year	First year	.2068	.13887	.298	-.1207	.5342
		Second year	.2650	.13205	.113	-.0464	.5764
Task value and time and study environment	First year	Second year	.1742	.12300	.334	-.1158	.4643
		Third year	-.0947	.12934	.744	-.3997	.2103
	Second year	First year	-.1742	.12300	.334	-.4643	.1158
		Third year	-.2690	.12300	.075	-.5590	.0211
	Third year	First year	.0947	.12934	.744	-.2103	.3997
		Second year	.2690	.12300	.075	-.0211	.5590

Based on observed means.
The error term is Mean Square(Error) = .636.

Table 8.15b: Post-hoc Tukey HSD results on the five factors for differences in year level

8.4.4 Comparison of early versus late responses

As noted in Section 6.4, an independent samples t-test, which was conducted to compare early and late respondents, revealed statistically significant differences in seven statements. As the differences related to a small number of statements, responses from the late respondents were retained. Further tests were conducted to determine whether the late respondents (58 students) behaved in a similar way to the early respondents (188 students). The results from this are reported in Appendix AE. Whilst the expectation was that these two groups of students will behave in a similar way, as shown in results for the Cronbach's alpha, PCA and non-parametric tests related to RQ3, this was not the case. In terms of the Cronbach's alpha, whilst the measure of *task value* was low for both student groups, low Cronbach's alpha was noted in the early respondents (namely *lifelong learning attitudes*), whilst *control of learning beliefs 2* and *time and study environment* were below 0.70 for the late respondents. Irrespective all other Cronbach's alpha were above the 0.70 threshold.

PCA results show a reversal of Factors 1 to 4 between the two groups. Additionally, statements from *rehearsal, intrinsic goal orientation* and *time and study environment* scales load on to different factors. With respect to RQ3, statistically significant differences were evident in the following scales for the early respondents: *intrinsic goal orientation* and *intrinsic goal orientation major* (at the 5% level) and *lifelong learning beliefs* at the 10% level, with *task value* (at the 10% level) and *rehearsal* (at the 5 % level) statistically significant for the late respondents. Further, differences were noted on a statement-by-statement basis (albeit one statement from each scale) for *metacognitive self-regulation* for the early respondents and *elaboration, critical thinking, help-seeking* and *OSLQ goal setting* for the late respondents. It is difficult to explain the variation except to note that the late respondents comprise only approximately 24% of the total sample.

8.4.5 Summary: Principal components analysis

To reduce the large number of statements, PCA with Varimax rotation was undertaken. This resulted in a five-factor model explaining 55.4% of the variance, which corroborated with findings in a screeplot and parallel analysis. The five factors identified were: goal setting and metacognitive self-regulation; rehearsal and elaboration; importance of learning; self-efficacy and control of learning beliefs; and task value and time and study environment. Factor reliability revealed very strong Cronbach's alpha. In order to answer RQ3, a Kruskal-Wallis test was undertaken to determine if there were differences among the three year levels. This

revealed statistically significant differences, albeit weak, on three factors, namely: goal setting and metacognitive self-regulation; importance of learning; and task value and time and study environment. In all factors median scores for third year students were higher than those of first or second year students, suggesting that third year students are more inclined to set goals and reflect on their own learning; are more inclined to consider lifelong learning aspects; and are more inclined to engage with the learning resources to aid their understanding.

8.5 Confirmatory factor analysis

Confirmatory factor analysis (CFA), which is a statistical technique used to verify the factor structure of a set of observed variables, tests the hypothesis that a relationship between observed variables and their underlying latent constructs exists. As reported in Appendix AF, CFA was undertaken to evaluate results from the PCA. Results suggest that whilst four of the scales (i.e., *rehearsal, elaboration, metacognitive self-regulation* and *time and study environment*) are consistent with prior expectations *control of learning beliefs* correlates highly with *self-efficacy for learning and performance (*Factor 4*).* Further, the statement *McontrolLearn* does not correlate with the expected scale *control of learning beliefs.* This reaffirms that care needs to be taken when analysing the results related to *control of learning beliefs* given the Cronbach alpha was below the 0.70 threshold (see Section 8.2). Three additional statements, namely *MTaskUseful, MIntSatisUnders* and *MIntSatisUnderstandAccMajor*, do not appear to be highly correlated to other statements pertaining to their respective scale (namely, *task value* and *intrinsic goal orientation*). A possible explanation for this is that not all statements pertaining to the scales were utilised in this study, with only 28 of the 81 possible statements available in the MSLQ utilised (see Section 3.6.1). This may have impacted the loading of the statements. Whilst it would appear that these statements should be removed from the analysis, exclusion of these statements limits the understanding about how and why students engage with the learning resources provided to them through the LMS. Specifically, *MIntSatisUnderstandAccMajor* is one of only three statements utilised in the study to address RQ3. Future research could involve further analysis with the removal of *MTaskUseful* and *MIntSatisUnders.*

8.6   Summary

This chapter presented analysis of the administered questionnaire, including robust Cronbach's alpha for the questionnaire scales, and evidence and discussion relating to the non-normal distribution of the questionnaire data. Further, it reported results from the non-parametric tests. Finally, the chapter reports on results from PCA of the questionnaire's statements.

PCA resulted in a five-factor model explaining 55.4% of the variance. The five factors identified were: goal setting and metacognitive self-regulation; rehearsal and elaboration; importance of learning; self-efficacy and control of learning beliefs; and task value and time and study environment. Statistically significant differences were noted on three of these factors suggesting that third year students are more inclined to set goals and reflect on their own learning; place greater importance on lifelong learning and are more inclined to engage with the learning resources to aid their understanding. CFA, in the main, validated the PCA with most of the scales utilised in this study.

In relation to RQ3, tests reveal statistically higher medians for third year students than their first and second year counterparts in relation to *intrinsic goal orientations, rehearsal, metacognitive self-regulation*, *OSLQ goal setting* and *LLL beliefs*. In addition, first year students ranked higher than second year students in all these areas except in relation to the *rehearsal* learning strategy.

Chapter 9 presents the analysis of student responses to the open-ended statements/questions contained in the questionnaire, together with findings from analysis of student responses to the semi-structured interview questions.

9: Results – Student interviews

9.1   Introduction

Chapter 8 presented analysis of the administered questionnaire, including Cronbach's alpha for the questionnaire scales, and evidence and discussion relating to the non-normal distribution of the questionnaire data. With respect to *intrinsic goal orientation, rehearsal, metacognitive self-regulation*, *goal setting* and *lifelong learning beliefs*, non-parametric tests report statistically higher medians for third year students than their first and second year counterparts. Additionally, with the exception of the *rehearsal* learning strategy, first year students ranked higher in all areas than second year students did. PCA was undertaken, which resulted in a five-factor model, namely: goal setting and metacognitive self-regulation; rehearsal and elaboration; importance of learning; self-efficacy and control of learning beliefs; and task value and time and study environment. Three factors were shown to be statistically significant suggesting: third year students are more inclined to set goals and reflect on their own learning; place greater importance on lifelong learning; and are more inclined to engage with learning resources to aid understanding.

As shown in Figure 9.1 below, this chapter presents the themes derived from responses to the open-ended statements/questions contained in the questionnaire and student interviews. Analysis of data from the questionnaire, which was conducted prior to analysis of student responses to the interviews, shows that the statements/questions are broader than required to answer the three research questions. Irrespective of this, findings informed thematic analysis of the interview responses, and thus is detailed first. Next, detailed analysis and reporting of identified themes, which emerged from the student interviews, is reported.
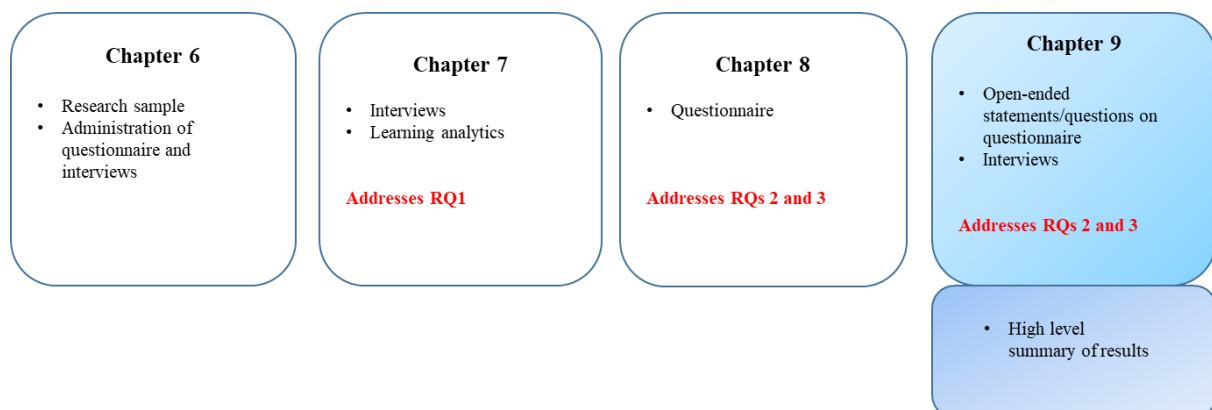
Figure 9.1: Overview of reporting of the results. The shaded box signifies the results presented in this chapter

9.2 Analysis of responses to the open-ended statements/questions contained on the questionnaire

In total 95 students responded to the open-ended statements/questions posed on the questionnaire – 33 first year, 36 second year and 26 third year (see Table 6.5). In the context of accounting, the first three open-ended statements/questions probed what motivates students to learn, the way students prefer to learn, and the learning strategies students apply. These overarch with student responses to the interviews, where the questions are more targeted to answer RQs 2 and 3, namely how motivational and SRL strategies impact how and why students engage with the learning resources provided to them (RQ2), and whether these change over time (RQ3).

Analysis of these three open-ended statements/questions was undertaken in NVivo. An image, in the form of a word cloud, which comprises the words used, are included in Figures 9.2–9.5[79]. Specifically, in response to '*Question 1: Thinking about your studies in accounting, can you describe what motivates you to learn?'*, Figure 9.2 below depicts the most commonly used words across all three year levels, whilst Figure 9.3 shows respectively the most commonly used words by students across first year (ACF1100), second year (ACF2100 and ACF2200) and third year (ACF3100 and ACF3200). Figures 9.4 and 9.5 depicts the most commonly used words across all three year levels in response to questions 2 and 3 respectively.

Questions four and five probed whether students' motivational beliefs and SRL strategies changed over time i.e., whether they changed as they progressed through their degree (RQ3). As noted in Section 3.8.2, in hindsight the fourth statement/question was considered to be too broad, as it used the term "motivation to study" rather than motivation to engage with the learning resources provided. As such, no analysis of this statement/question was undertaken. The final open-ended statement/question relating to RQ3, *Reflecting back on prior semesters, can you describe whether your level of engagement with the learning resources changed?* was analysed in conjunction with the same interview question (see Section 9.4.4.2).

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[79] With respect to each word cloud, it should be noted that the size of each word indicates its frequency and importance.

Figure 9.2: Combined responses from all students in both semesters regarding their motivation to learn
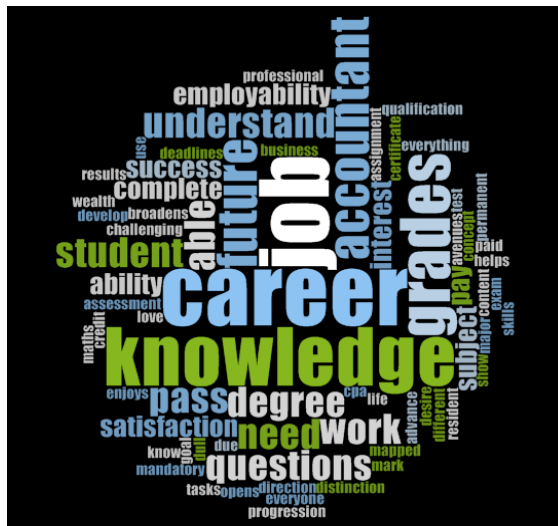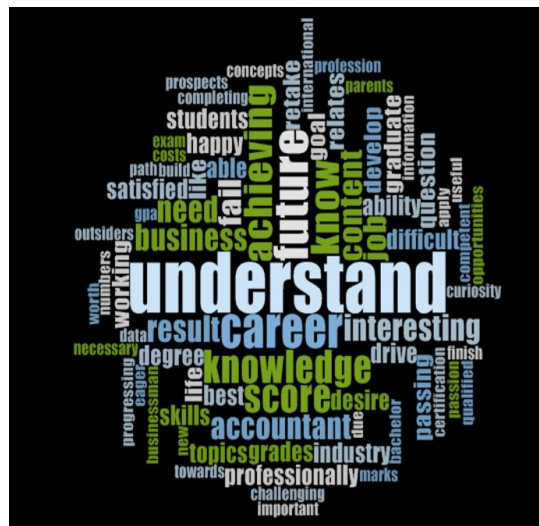
First Year   **Second Year**   **Third Year**

Figures 9.3: Responses from students by year level regarding their motivation to learn

Figure 9.2 above reveals the most common words when all three year levels is combined revolve around understanding, knowledge, content, future, career and job prospects. When this is broken down by year level, (see Figure 9.3 above and Table 9.1 below for illustrative responses reflecting the main words used), first year students reported that their motivation to learn accounting revolved around gaining knowledge, career and future job prospects as an accountant, and attaining good grades (extrinsic motivation[80]). Interestingly, there appears to be a slight shift in second year concerning why students are motivated to learn accounting. Whilst their motivation still relates to future career and job prospects, gaining knowledge, and achieving and attaining good results, additional emphasis is placed on their desire to understand accounting content or concepts. Moreover, they appear to make a connection between understanding content and being able to apply this knowledge once they enter the workforce.

This theme was echoed by third year students. However, as the first four quotes (see Column 4, Table 9.1) show, students extended the idea acknowledging that they wished to gain an understanding of the content in order to apply it to real life experiences or the next unit of study. Further, they acknowledge that the difficulty in the content makes it challenging and stimulating, which requires them to question their thinking and draw on prior accounting knowledge (*critical thinking[81]*). This provides further motivation to gain the knowledge required (*intrinsic goal orientation*) – see quotes 5 and 6 in Table 9.1. Unsurprisingly, third year students are motivated to achieve good grades and job prospects (extrinsic motivation) – see quote 7 in Table 9.1. Quote 3 highlights the enjoyment of learning more accounting content (intrinsic motivation), noting how this knowledge will be useful in their future career (extrinsic motivation). This highlights the contemporary view of motivation where intrinsic and extrinsic motivation may act simultaneously (Pintrich and Schunk, 2002).

In summary, what is particularly noticeable is the shift in importance on job and career. Whilst of utmost importance to first year students, in second and third year the emphasis shifts to understanding content. This reflects the increasing level of difficulty in content as students progress through their degree.

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[80] As noted in Chapter 2, the MSLQ statements relating to *extrinsic goal orientation* were not included in the study as the focus of this study concerns motivation to engage with the learning resources rather than motivation linked to performance. Here extrinsic motivation, as defined by Deci and Ryan (2000), relates to student behaviour concerning engagement with learning resources, which is driven by rewards and punishments such as attaining good grades or future career prospects.

[81] Bracketed words refer to the SRL MSLQ scale and/or the named factor as identified in the PCA (see Section 8.4.1).

Column 1	2	3	4
Question or Statement Contained in the Questionnaire	Comments from First Year Students	Comments from Second Year Students	Comments from Third Year Students
Question 1: Thinking about your studies in accounting, can you describe what motivates you to learn?	*"I want to complete my degree and get a good job[82]." [QRM01[83]]* *"Future **career** - success requires top tier knowledge." [QRM05]* *"I hope to pursue a **career** in accounting, and this end goal motivates me to do well, particularly in accounting units." [QRM09]* *"The idea that accounting opens up many avenues to you. It broadens your ability to pursue a **career** in many different areas." [QRM17]* *"Have the knowledge needed to be able to show off to my employers the wealth of knowledge I have." [QRM16]* *"**Job**. If I learn well and manage professional skills, I would be able to get a CPA and this helps me find a good job as an accountant." [QRM61]* *"Get a **high distinction.**" [QRM62]* *"The need to pass, as well as the satisfaction from **good grades.**" [QRM63]*	*"I want to be an accountant after graduating from this course, and this motivates me to learn and make sure I **understand** all the content." [QRM33]* *"I am motivated by **learning new concepts** and challenging myself in study to be able to develop personally and professionally." [QRM34]* *"My need to **understand** the content, as I will need it as a base when I start progressing into a career. The need for **development.**" [QRM41]*	1. *"I want to pass the exam obviously, but I've found it helpful to **understand** the content not just rote learn it. I believe learning to be understanding, remembering and applying the content. Therefore, short term motivation includes passing the exam and long term motivation includes better setting myself up with knowledge for the **next subject and my career." [QRM47]*** 2. *"I find the content interesting, it helps me **understand** how businesses and the economy work and operate. I love relating what I learn happen to what happens in real life." [QRM49]* 3. *"I **enjoy** the content so I am motivated to learn more of it, because it is useful for my **future career**." [QRM54]* 4. *"Having content that is engaging and **relevant to the field** that I will hopefully end up working in the future." [QRM85]* 5. *"As I progress through my accounting degree and the **content gets harder**, it's very stimulating to use prior learning skills from other subjects to help understand the current subject ACF3100. As the content gets harder I begin to find out more about accounting and knowing I'm close to the end of the degree motivates me to finish strongly." [QRM90]* 6. *"**Challenging** units. Content that questions my thinking. Content that requires **application**." [QRM94]* 7. *"I learn accounting because I want to get **good grades and a good job**. The **desire of knowledge** also motivates me to learn." [QRM53]*

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[82] Bolded words within the excerpts are provided to point the reader to themes identified and discussed within the body of the chapter

[83] As explained in Section 3.7 the code QRM01 refers to questionnaire (Q) respondent (R) number 1 who participated in the main study (M).

Column 1	2	3	4
Question or Statement Contained in the Questionnaire	Comments from First Year Students	Comments from Second Year Students	Comments from Third Year Students
Question 2: The ways I prefer to learn are…	*"Through online, interactive resources that allow me to test my knowledge and understanding as I progress through material." [QRM09]* *"Watching lectures myself because I can pause, rewind, fast forward the videos to synchronise with my learning pace." [QRM12]* *"By writing notes before the lecture to gain a brief understanding then going through and adding more depth in the lecture and revising after." [QRM17]*	*"To be honest, I prefer not to go to the lecture because I often get distracted but come home and listen to the recorded lecture instead. That way I can pause the lecture any time I want and actually make proper notes and not miss anything."[QRM33]* *"Through watching videos, trying to connect links in different topics and knowing how I can apply the content to real life and career." [QRM38]*	*"Listening to lectures online where I have the liberty to watch at my own pace, and replay content if I miss out or fail to understand. I enjoy attending my tutorials where I am encouraged to participate and engage in discussions, which help me remember new content." [QRM85]* *"YouTube videos help me learn the content when I find I don't have an adequate grasp on the content." [QRM86]* *"I prefer to learn by watching online lectures and videos. Also practical assessments that are related to what I expect to encounter in the workforce." [QRM91]*
Question 2: The ways I prefer to learn are… Extensive use of the *"rehearsal"* learning strategy	*"Re-write notes over and over" [QRM07]* *"Repetition of learning theory and practice of practical problems if doing number work." [QRM22].* *"Reading and taking notes. Listening to lectures. With accounting subjects - practice, practice and more practice!" [QRM24]*	*"Apply theory to examples and continuing to complete examples until I am confident that I know it." [QRM76]*	*"Revising lecture content and tutorial questions. Practice past exam questions" [QRM94]*
Question 2: The ways I prefer to learn are… Peer learning	*"In a group face-to-face." [QRM10]* *"Interactions with other people and sharing ideas." [QRM14]*		*"Self-learning first then group discussion." [QRM56]* *"Discussions with class members. I am able to share my opinion while listening to others who may have interpreted questions in a way I never would have thought of." [QRM57]*

Table 9.1: Excerpts from student responses to the open-ended statements/questions posed on the questionnaire

As shown in Figure 9.4 below, in response to '*Question 2: The ways I prefer to learn are…*', a number of themes emerged across the three year levels ranging from: the use of resources such as lectures, tutorial questions and examples, the textbook and other online resources such as YouTube videos; to learning strategies encompassing practising (Factor 2, *rehearsal*), reading, listening and writing notes (Factor 2, *elaboration*); to completing questions and seeking help either through asking a tutor or during consultation.

Responses across the three year levels (see Table 9.1 above) provides insight in terms of the use of learning resources such as lectures (whether face-to-face or online) and student preferences in using interactive resources given the flexibility they provide (Osgerby, 2013). A response from a second year student in particular (**QRM38**) supports the notion of moving to a deeper approach to learning in terms of linking content together in order to apply what is learnt to the real world or future career (see the bolded statement in Table 9.1 above). Students engage in learning strategies that are repetitive in nature to enhance understanding (Factor 2, *rehearsal*), and use learning resources such as recorded lectures, tutorial questions and videos to improve their notes (Factor 2, *elaboration)* in order to gain more in-depth understanding. In addition, students appreciate the ability to discuss concepts with peers (*peer learning*[84]) – a theme noted in first and third year student responses.

Figure 9.4: Combined responses from all students in both semesters concerning the way students prefer to learn

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[84] *Peer learning* is an MSLQ scale, which is not used in this study.

Question 3 asked students to '*describe the learning strategies that they apply*' in accounting. As shown in Figure 9.5 below, students used a number of low-level words such as memorising and remembering. Conversely, also noted were other higher-order level words such as practising, writing, reviewing, revising, applying, creating and summarising (Factor 2, *elaboration*). Further, students like to listen, focus and try.

Figure 9.5: Combined responses from all students in both semesters concerning the learning strategies they apply

Across all three year levels, the majority of responses revolve around constant practice and repetition (i.e., re-doing tutorial questions, practice questions and exam questions) (Factor 2, *rehearsal*); and note taking and preparing summaries to consolidate understanding (Factor 2, *elaboration*). In terms of note taking and summarising, whilst these were commented on by all students, third year students introduced tools such as diagrams, flow charts, acronyms, glossaries and cue cards to assist them in enhancing their understanding, and breaking concepts down as noted by the following quotes:

> *"I enjoy writing notes with a lot of colour, creating diagrams and flowcharts as I am a more visual learner. I also enjoy creating acronyms, which help me remember steps or certain points. By taking notes and preparing for tutorials, I feel I am better prepared to understand the content and have any queries rectified". (**QRM85** – **third year student**)*

> *"I use cue cards to break down concepts into digestible amounts. I type my notes, then summarise and hand write them, then identify challenging areas and focus on those". (QRM92 – third year student)*

These quotes make reference to the student's ability to identify and therefore be aware of 'challenging areas', which results in an adjustment of focus to improve understanding (*metacognitive self-regulation*).

The following quote refers to repetition as a learning strategy, with a preference to rely on the use of online learning resources, such as YouTube videos, to consolidate knowledge and link topics together:

> *"Accounting is a very repetitive learning area. I do use a lot of rote learning, which is effective for studying for tests such as re-doing questions, tutorial work and class exercises. However, to further concrete the knowledge, I prefer to watch videos on YouTube and link topics together". (QRM38 – second year student)*

9.2.1 Summary findings to the open-ended responses to questions or statements posed on the questionnaire

With respect to what motivates students to learn accounting, the word clouds show a marked difference in student responses between first and second year. Whilst in first year, students seem to be extrinsically motivated to achieve good grades or by future career prospects, second year students are similarly motivated but have a greater desire to understand accounting content. It is pleasing to note that in third year students want to be able to apply learned content to real life experiences or the next unit of study, or be challenged with content that questions their thinking (*critical thinking*).

Across all three year levels, students prefer to learn through engaging with particular resources, such as online lectures, attendance at tutorials and use of YouTube videos. Further, they undertake *rehearsal* and *elaboration* (i.e., Factor 2) learning strategies, and are keen to communicate with their peers through sharing ideas and group discussion (*peer learning*). The use of diagrams, flow charts, acronyms and cue cards by third year students to assist with understanding content was also interesting.

9.3 Analysis of findings from the student interviews

Having reported results from analysis of responses to the open-ended statements/questions contained in the questionnaire, the focus in this section is analysis of findings from the student interviews. After outlining the sample, the themes derived from the interviews, supported by results from the questionnaire (see Section 9.4), in particular the factors identified through PCA

and the non-parametric statistical tests, are presented. In presenting these themes, insights garnered from the interviews with CEs are interspersed.

9.3.1 Student interview sample

In Week 10 students who had provided an email address upon completion of the questionnaire, thereby indicating a preparedness to be interviewed (see Table 3.2 for a copy of the interview protocol, rationale and linkage to theory and/or methodology), were contacted via email and invited to nominate a preferred interview time (see Appendix AG for a sample email). As identified in Table 9.2 below, across both semesters 77 students volunteered to be interviewed, with 42 students actually interviewed – 27 students in Semester 1 and 15 in Semester 2. The difference (53 vs. 42) of eleven students (8 in Semester 1 and 3 in Semester 2) was due to these students being interviewed once for two of the foci units they were studying concurrently. Overall, slightly more female students were interviewed (29 vs. 24), with substantially more female students interviewed in Semester 1. This trend is consistent with completion of the questionnaire. Upon receiving the email, twenty-four students decided to cease participation in this voluntary study, which they were entitled to do at any time. Each one-on-one semi-structured interview lasted on average approximately 10 minutes (see Appendix AH for a de-identified list of students interviewed per year level, the code assigned to each interviewee and interview durations).

Student interviews conducted in Semesters 1 and 2 2016			
Semester 1 2016	**Volunteered to be interviewed**	**Interviewed**	**Female/Male**
ACF1100	24	8	8/0
ACF2100	4	6	2/4
ACF2200	7	9	5/4
ACF3100	6	4	1/3
ACF3200	11	8	5/3
Total	**52**	**35**	**21/14**
Semester 2 2016			
ACF1100	5	2	0/2
ACF2100	8	7	5/2
ACF2200	7	2	1/1
ACF3100	4	4	1/3
ACF3200	1	3	1/2
Total	**25**	**18**	**8/10**
Overall total	**77**	**53**	**29/24**

Table 9.2: Student interviews: breakdown by unit and gender

9.3.2 Recap of interview questions posed to students

To address RQs 1 and 2, students were asked five questions, which assisted with ascertaining information about the learning resources they engaged with, how frequently they engaged with these resources (reported in Sections 7.3.1 and 7.3.2), thoughts on their motivation to engage with the learning resources, and discussion of the SRL strategies adopted whilst engaging with the learning resources. Further, as a means to elicit ideas regarding what may have motivated them to engage with the learning resources, students were asked what they *liked* about the learning resources and what made them *want* to engage with these resources. Second and third year students were also asked whether the motivation and SRL strategies they adopted in prior accounting units changed as they progressed through their degree (RQ3).

The interviews were audiotaped, transcribed and manually reviewed to identify key themes pertaining to student motivation and the SRL strategies adopted. The next section reports analysis of the interview responses to RQs 2 and 3.

9.4   Motivation and SRL strategies students engage in when using the learning resources

Recall, RQ2 seeks to discover how motivational beliefs and SRL strategies impact how and why students engage with the learning resources provided to them in a blended learning environment. To address this research question, and as identified in the student interview protocol (see Section 3.6.2), three questions were posed, namely:

> *3[85]. Why did you choose to or what motivated you to engage with the learning resources?*
>
> *4. What do you like about the learning resources you engaged with?* and
>
> *5. What makes you want to engage with the learning resources?*

Question 3 was designed to elicit the motivational beliefs and SRL strategies students exhibit when engaging with learning resources, whilst Questions 4 and 5 sought to extract additional reasons as to why students may have been motivated to engage with the learning resources. For example, if students liked a particular resource, they may have been more motivated to engage with that resource. Given students were unaware of the motivational beliefs and learning strategy scales adopted in this study, the question '*what makes you want to engage*' may have allowed for

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[85] It is numbered Question 3, as it was the third question posed to students in the interview. Questions 1 and 2 pertained to the learning resources students engaged with and the frequency of use. Responses to these two questions is reported in Section 7.3.

additional reasons to be revealed as to why students are inclined to engage with the learning resources and how they went about using the resources.

Table 9.3 (below) lists, by year level, the main themes related to what motivates students to engage with the learning resources. In responding to '*Why did you choose to or what motivated you to engage with the learning resources?*', students tended to answer either in general terms or specifically highlight what motivated them to engage with specific resources. Hence, the motivational themes are reported in 'general', alongside themes related to specific resources. Where applicable, motivational beliefs and SRL scales, as well as factors derived from PCA (see Section 8.4.1) have been matched to student themes (these are shown in brackets in Table 9.3). In reporting the themes, they are listed in order of the scale presented in the MSLQ, followed by the factors derived from PCA, with the factors presented in numerical order (i.e., Factor 2 is listed before Factor 5). Initially, the discussion reported in Section 9.4.1 concentrates on themes related to motivation in 'general', followed by motivation in relation to specific resources.

As noted in Section 2.4.3, whilst the questionnaire uses *intrinsic goal orientation*, findings from the interviews more closely align with Deci and Ryan's (2000) definition of intrinsic motivation. Thus, this term will be referenced. However, where students discuss their motivation in relation to a goal or perception of a goal, *intrinsic goal orientation* will be referenced.

Themes derived from the student interviews cross referenced to SRL scales and Factors		
Year	**General**	**Specific resources**
First year	- Interest in accounting (**intrinsic motivation**) - To succeed and do well (**extrinsic motivation**) - Determine where gaps in knowledge are (*metacognitive self-regulation*) - Revise and review content (**Factor 2**) - Supplement knowledge (**Factor 2**) - Apply what is being learned (**Factor 3**) - Understand content (**Factor 5**)	- Lecture slides/Lectures online - Ability to take notes (**Factor 2**) - Catch up on what was missed - Jogs memory - Part of the learning structure - Comprehensive - Tutorial solutions - Check to see if 'on the right path' (*metacognitive self-regulation*) - Online quizzes - Assists in preparing for upcoming tests (**Factor 2**) - Put knowledge into practice
Second year	- Interesting (**intrinsic motivation**) - Get better grades (**extrinsic motivation**) - Useful (*task value*) - Provides ability to understand why things are done the way they are (*control of learning beliefs*) - Assists in "figuring out what I did wrong" (*metacognitive self-regulation*) - Feels compelled to use them – "they are there" - Provides ability for more practice (**Factor 2**) - Assists in consolidating knowledge (**Factor 5**) - Understand/clarify difficult content (**Factor 5**) - Helps to learn - Needs to because "I want to be an accountant" - Peer pressure	- Lecture slides/Lectures online - Exam focused (**extrinsic motivation**) - Be ahead and prepared prior to lecture (*metacognitive self-regulation*) - Ability to pause and take notes (**Factor 2**) - Re-listen/reviews to help understand difficult content (**Factors 2 and 5**) - Content - Listens to online as cannot attend F2F - Tutorial solutions - Developed by lecturer so are focused and therefore important (*task value*) - Revise for test and assignments (**Factor 2**) - Practice questions (**Factor 2**) - Reiterate knowledge - Textbook - Assists in clarifying issues (**Factor 5**) - Get a deeper understanding (**Factor 5**) - Learn at own pace (**Factor 5**) - Journal articles - Assisted with assignment (*task value*) - Discussion board - Fear of missing out on important information

Year	General	Specific resources
Third year	- Love to learn and study (**intrinsic motivation**) - Get good grades (**extrinsic motivation**) - See what I can improve on (*metacognitive self-regulation*) - Want to be confident to answer questions (**Factor 4**) - Helps me to learn better and improve my understanding (**Factor 5**) - Know what to focus on - Allows me to stay up-to-date - Take advantage of all resources - Accessibility - Best I can be as it will impact me in the workplace - Lecturer	- Lecture slides/Lectures online - Know what lecturer wants us to focus on (*task value*) - Listen to main "take away" from each lecture so student knows what to focus on (*metacognitive self-regulation*) - Listens at F2F lecture and note takes from re-listening to online lecture (**Factor 2**) - Ability to take notes (**Factor 2**) - Cannot understand F2F lecturer – clarify what lecturer said - Ability to be able to refer back to them - Tutorial solutions - See how one should approach answering questions (*task value*) - Check answers (*metacognitive self-regulation*) - Redo questions (**Factor 2**) - Revise content (**Factor 2**) - Reinforces understanding (**Factor 5**) - Textbook - Get a more comprehensive understanding (**Factor 5**) - Journal articles - Not covered in lecture so needs to review to gain additional information - Discussion board - See what other students are asking and what other students are finding interesting and focusing on (*self–evaluation*) - Videos - Links everything together (**Factor 2**) - Aids understanding (**Factor 5**)

Table 9.3: Themes derived in response to Question 3: Why did you choose to or what motivated you to engage with the learning resources?

9.4.1 'General' motivation to engage with the learning resources

When reviewing the motivational themes in 'general', Factor 5 (task value and time and study environment[86]) appears as a motivator across all three year levels for engaging with the learning resources. Students engage with these as they assist them in understanding content; and in supplementing their knowledge or clarifying issues that they are encountering as they are engaging with the accounting content:

"Most of the time it's just if I don't understand something and I want a little more

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[86] Reference is only made to 'Understanding' in the interview transcripts which is surmised to refer to students believing the learning resources have task value as it assists in their understanding. Time and study environment is not referred to by the students but was discussed in relation to how frequently they engaged with the resources (see Section 7.3.2).

*clarification ... Mostly just so that I can get a better understanding." [**IM19**[87] –*
second year student]

"I feel like I want to but I just feel like I need to, you know, use the resources to
*improve my understanding of the subject." [**IM20 – third year student**]*

In first year, whilst students stated they used the resources to assist them in understanding and supplementing knowledge, a second year student extended this noting that it assisted them in understanding more difficult content and allowed them to consolidate their knowledge:

"The fact that everything is so clear means that I know what needs to be done. So
if there's tutorial solutions uploaded, I'm motivated to go and look at it because it
will help me consolidate what I've learnt or figure out what I did wrong if it wasn't
covered in the tutorial. And just making sure I'm ahead for the lecture, 'cause I
like to write my notes before I go to the lecture. So it motivates me to go online,
check if it's on there, then download it and get it all laid out before I go in, so I'm
*already prepared." [**IM32 – second year student**]*

This student also evaluates and seeks to improve her level of competency through engaging deeper with learning resources such as tutorial solutions. She also likes to prepare in advance of the lecture by engaging with the content to facilitate her learning and grasp new concepts – a higher-order cognitive skill level. This notion of digging deeper into content is evident in the following student excerpt, even though this student is referring to using resources other than those placed on the LMS:

"It's mostly just to get much more, I'm not the person who is able to immediately
replicate what I do, and I'm not the person who enjoys just copy pasting stuff
because a lot of people tend to do that, just memorise everything. But I need to
understand what actually is the reason why certain transactions are done in a
certain way. So that's the reason why I have to dig deeper than others ... and that's
the reason why I have to use so many outside resources, I need to keep asking
questions, I need to keep reviewing online. I went to YouTube ... which helped a
*lot." [**IM31 – second year student**].*

Unsurprisingly, a common motivator in all three year levels is the use of resources to achieve an overall better grade (extrinsic motivation)*:*

"I guess I just needed them to understand the content. And if you understand the
content, you can get a better mark. I think, overall, getting a good mark is my
*motivation." [**IM07 – first year student**]*

The interviewed CEs substantiated this as a main motivator as they believed that students engage with the learning resources to achieve the best possible results in summative assessments. As reiterated by a third year student, students are motivated to engage with the resources in order to pass assessments, such as mid-semester tests, and the final examination.

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[87] As reported in Section 3.7, the code noted with the student quote, such as IM19 denotes student number 19 interviewed (I) in the main (M) study.

Interestingly, choosing to use resources allowed the student to gain confidence in ensuring he was able to perform well in the examination:

> "*First of all I want to get good grades and when I'm in the exam I don't want to hesitate and waste my time thinking what was this lesson about? When I'm in the exam I want to be able…. know how to solve it. I want to be confident. So that motivates me.*" [**IM04 – first year student**]

This notion of confidence to perform well and knowing how to answer examination questions is akin to Factor 4, self-efficacy and effort to learn. This student is motivated to engage with the learning resources to ensure he can accomplish a task with confidence. Further, he believes that the effort he puts in will result in positive outcomes.

In contrast to being extrinsically motivated, students across all three year levels are also intrinsically motivated to engage with the resources:

> "*I love to learn, love to study. I hope to get all possible resources I could – take advantage of them. I do love all of them* [learning resources] *– I just like to expand my learning. …pretty helpful.*" [**IM27 – third year student**]

Students engage with learning because they are interested and curious to learn accounting, and in some instances meet their ultimate goal of expanding their knowledge in the hope of achieving mastery (*intrinsic goal orientation*). This is not surprising given that the students partaking in this study seek to become accountants.

A first year mature age student working in an accounting role indicated that she was motivated to engage with the resources due to her interest (intrinsic motivation), a desire to apply her knowledge and understanding to her work environment, and to ensure that she continues to add to her knowledge to attain a mastery level (*intrinsic goal orientation*):

> "*Well, my area of interest is accounting so I just want to have a really thorough understanding of all the content that we need to know. I also do that as a job so it just supplements my knowledge as well, so it's just nice to make sure that I really understand what the content is and I think by using all of those resources* [lectures, lectures online, tutorial solutions, quizzes] *I gain that knowledge.*" [**IM02 – first year student**]

Whilst this cannot be generalised to the first year student population (see their age reported in Section 6.6), it is pleasing to see that the notion of being able to apply what is learned (i.e., Factor 3, importance of learning) to the workforce was also reiterated by a second year student:

> "*Well first of all I want to be an accountant after graduating so I believe I really need to understand each and every topic so that it will enable me to use my knowledge properly in the actual industry. So I think it's kind of my self-motivation that wants me to go back and actually understand and obviously I want to get good grades for the unit.*" [**IM17 – second year student**]

The ability to be able to apply what one learns (i.e., Factor 3) was another theme reiterated by a first year student. This notion of being able to 'apply' and to integrate theory into practice aligns with lifelong learning, where lifelong learning requires one to respond flexibly to changing circumstances, to learn throughout a career, and to integrate theory and practice (Bligh, 1982). A student in third year also noted that they were motivated to engage with the learning resources as it will impact them when they enter the workforce – acknowledging that they need to draw on the knowledge gained at university whilst working as an accountant.

A second year student stated:

> *"It's pretty interesting in itself* [accounting] *but I do place a high value on my grades." [**IM16 – second year student**]*

suggesting that for both intrinsic and extrinsic reasons they are simultaneously motivated to engage with the learning resources, which confirms Pintrich and Schunk (2002).

Interestingly, in discussion about their motivation to engage with the learning resources, Factor 2 (*rehearsal* and *elaboration*) appears as a learning strategy. For example, first year students note that using online quizzes allows them to gain more practice. In doing so, they are engaging in *rehearsal*. This theme emerged across all three year levels in discussion about the use of specific resources, in particular tutorial solutions. For example, students specifically stated that they were able to: redo questions to revise content; take notes in lectures, whether online or face-to-face; continue practising difficult technical concepts such as consolidations through the use of lecture handouts, which the CE specifically provided for this purpose; and for third year students, use videos that assist in linking everything together i.e., *elaboration*. Beyond simply committing new content to short term memory, which is associated with the *rehearsal* learning strategy, third year students exhibit higher-order learning skills that enables them to *elaborate* and make connections in what is being learned.

A second year student was motivated to re-engage with the learning resources, as she felt that other students would be doing the same and was fearful of falling behind, thus feeling compelled to do so because of self-imposed peer pressure:

> *"the fact that it* [learning resources] *is available there makes me feel like maybe other students are going back* [and re-doing] *so I just don't want to get behind them so I go back and do it." [**IM17 – second year student**]*

Interestingly, a second year student was motivated to engage with the resources because they were there:

> *"If it* [learning resources] *is there, it is there for a reason. They are not just going to put up materials for fun." [**IM33 – second year student**]*

This highlights the importance students place on the resources academics provide. Thus, as academics we need to be very mindful of this and discerning in the resources we make available. Indeed, the CE for ACF2200 stated that as academics we need to be clear in communicating the importance and value of the learning resources we wish students to engage with.

A couple of second year accounting students stated that they were more motivated to engage with the resources in second year as the content was a lot harder:

> *"Some of the topics were harder than I anticipated, particularly consolidation. So yeah that forced me to go a little further. I went and maybe Googled a few things…I needed to actually get more practice* [tutorial questions, weekly quizzes] *and just understand why things were how they were,* [and understand] *the theory behind it as well." [IM30 – second year student]*

Given it is generally accepted that the level of difficulty markedly increases from one year to the next, this is unsurprising.

Fascinatingly, across the three year levels, students feel that engaging with learning resources assists them in determining where gaps exist in their knowledge, which assists them in identifying areas where they may not have grasped the required concepts thereby identifying areas where they can improve (*metacognitive self-regulation*). Students are able to monitor their level of understanding and regulate and fine-tune their cognitive activities, through engagement with resources and activities such as checking their work against learning resources like tutorial solutions and lecture illustrations to improve understanding.

Finally, a third year student made the following comment:

> *"Well generally it's because this is my last semester so I as well want to do the best I can. Yep, as much as I can and get a score as high as possible, come up to the working force as a really good worker." [IM24 – third year student]*

This highlights that as students get closer to completing their degree, this is an end of itself, providing the additional impetus or motivation required (*intrinsic goal orientation*). This student also sees the connection of doing well with his eventual employment in the workforce as an accountant.

9.4.2   Motivation to engage with specific resources

Specific resources, referred to by students across all three year levels, include: lecture slides, both in PowerPoint form and online; and tutorial solutions. Many students note that they are motivated to use the lecture slides for a variety of reasons, namely: ability to take notes whilst attending the lecture (Factor 2*, elaboration*); ability to review a hard-copy version before and after attendance at the lecture, which saved time in terms of writing out full detailed notes;

and *"I use them when I'm going through the homework just to see if I can get the methods"* **[IM09 – second year student]**, or because it is considered the best way for them to learn:

> *"in the past, I use the same method and it helps me to learn. So by printing out the slides and writing out my notes I can visually see what I'm studying and learning ... I get a summary of what is going on so then I understand what the lecturer is speaking during the whole time ... So I feel it is the best way for me to learn."* **[IM34 – second year student]**

In terms of the online lectures, students were motivated to engage with these as they allowed them to catch up if they missed a lecture or they could re-listen and refer back to them at a convenient time. Not surprisingly, given issues with language comprehension, a few international students were motivated to listen to the online lectures after attending the face-to-face lectures to enhance their understanding:

> *"Because I am not a native speaker and I'm an international student here, so English is still a challenge for me, more or less. So when I go to the lecture, of course I attend them ... but I still miss something and sometimes I would choose to listen to the lecturer instead of taking notes, because if I take notes I might miss something that the lecturer said. So during the lecture I prefer to listen to the explanation of everything hopefully and then when I go back home I went to the lecture recording and then make up my notes."* **[IM23 – third year student]**

Students were motivated to use the tutorial solutions posted on the LMS as a form of verification so that they could *"just ... make sure I'm doing the right thing and keeping on track"* **[IM03 – first year student]**. This student also noted that once she identified where gaps were in her knowledge, she was motivated to engage with the resources at a later stage to revise and thus fill in these gaps (*metacognitive self-regulation*):

> *"Because it helps me to make sure that – because after every topic, once I have reviewed the questions in both units* [ACF3100 and ACF3200], *it helps me to make sure that I'm on the right track. I look at the answers and see whether it matches up correctly, to see whether they do, if I'm on the right track or what else I can improve on, to see if I'm missing something or what else I can do to get my answer."* **[IM39 – third year student]**

A further common theme regarding use of tutorial solutions was for practice:

> *"For lecture slides it is the content itself. You have to know the content to do this well. For tutorial questions, or something like that, it's practising."* **[IM30 – second year student]** – (Factor 2, *rehearsal*)

As evident from the quote below, a third year student identified various benefits from engaging with different resources. For example, lecture materials highlight what she should cover, whilst tutorial questions and solutions serve a different purpose i.e., she is motivated to

re-use them so that she performs well in the final summative assessment (Factor 2, *rehearsal and extrinsic motivation*):

> *"Usually the lecture just shows what other material I should cover and then the tutorial questions usually set out what they* [lecturers] *want us to remember for the final exam, and it's kind of revision I think."* **[IM22 – third year student]**

This theme of students gaining pointers as to where to focus their study time is reiterated thus:

> *"Because that's going to help me learn better … from the slide presentation you get to know what the lecturer wants* [us] *to focus on."* **[IM19 – third year student]**

In terms of online quizzes, first year students noted that they were motivated to engage with these resources:

> *"The quizzes help just my studying, to be able to put your knowledge learnt into practice.* **[IM04 – first year student]**

Students in second and third year were also motivated to engage with academic journal articles as these helped with their assignment **[IM14 – second year student]**. Given students are extrinsically motivated, it is not surprising that they engage with learning resources attached to assessments. A third year student noted that he engaged with the academic journal articles to gain further knowledge as it was not covered in the lecture.

These students also revealed that they engaged with the textbook to gain deeper and more comprehensive understanding of content, with one student revealing that he could use it to assist him in learning at his own pace (Factor 5, *time and study management*).

Two second year students were motivated to frequently engage with the discussion board to ensure that they did not miss any vital information by perusing questions and answers posed by other students. Further, one noted that by reviewing the discussion board, it enabled her to feel "*that others were in a similar boat as me, and you know, I can identify with them*" **[IM09 – second year student]**. In a sense it enables students to feel more comfortable with where they are at with their learning if they can see others are in a similar predicament to themselves. A third year student **[IM22]** undertaking ACF3200 found that reviewing the discussion board, which was actively facilitated by an academic who used it as a medium to impart additional knowledge, peaked and spurred her interest in new areas within management accounting. This motivated her to continually engage with this learning resource.

9.4.2.1   Summary regarding motivation to engage with specific resources

Overwhelmingly, students are motivated to engage with the learning resources because they are extrinsically motivated. Further, some students are intrinsically motivated. Neither is

unsurprising given that the students participating in this study are enrolled in a Bachelor of Business or Bachelor of Business (Accounting) and are majoring in accounting. What is pleasing is that students are motivated to engage with the resources because they can see the relevance of being able to apply the knowledge gained once they enter the workforce as accountants, which links with the importance of lifelong learning (Factor 3*)*. Additionally, a third year student was motivated to engage in order to build his confidence in being able to answer questions (exhibiting *self-efficacy* i.e., Factor 4*)*.

Across all three year levels, a main theme emerged that students were motivated to engage with the learning resources in order to understand the content (Factor 5, in particular understanding*)*. For academics, this validates the importance of providing various resources in order for students to have somewhere to turn should they require additional information. Interestingly, it appears that for third year students, understanding shifted to not only gaining a comprehensive understanding but the ability to use resources to consolidate and extend knowledge thus moving towards a deeper approach to learning. Given the level of difficulty in second year, it is not surprising that these students are motivated to engage with the resources.

The discussion also highlights some of the reasons why students are motivated to engage with specific resources, such as online lectures (as a catch-up resource; and for international students to review given a language barrier), and tutorial solutions and online quizzes (to practice learned concepts thereby engaging in the *rehearsal* strategy i.e., Factor 2). Further, students noted that specific learning resources were useful and thus important to engage with, thereby recognising the *task value* of the resource. Emergence of these two motivational and SRL strategies supports the non-parametric results in relation to gender, which identified that compared to their male counterparts, female students felt that the learning resources were of greater value to them. Further, the non-parametric results also revealed a statistically significant difference regarding *rehearsal,* which shows females use this strategy more than males. As noted earlier, more females completed the questionnaire and were interviewed (in total 29 females versus 24 males albeit not in the same proportion[88]). Given an over-representation of females, it is not surprising that the qualitative data supports these findings.

9.4.3   Discussion and analysis of student responses to: 'What they liked' and 'What makes them want to engage' with the learning resources

As noted in Section 9.4, interviewed students were asked two additional questions, namely:

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[88] The proportion of females interviewed was 60% in Semester 1 and 44% in Semester 2 (Table 9.2).

4. What do you like about the learning resources you engaged with? and,

5. What makes you want to engage with the learning resources?

as a means of trying to extract additional reasons as to why students may have been motivated to engage with the learning resources. In general, student responses to these questions included convenience and ease of access to the resource. Further, students appreciated the variety of online resources available as it afforded them the ability to learn similar concepts from more than one resource and allowed for *"a different perspective on the topic, and it's just easier to get an idea of what it actually is if you look at it from different angles"* **[IM30 – second year student].** Another student noted:

> *"So, I would say that for studying at university, it is very important that you learn not only from one resource, but from many others. Like, combined together, you can get a different perspective for the same stuff and you can just get an overall understanding of it".* **[IM20 – third year student]**

This is an attitude that academics should aim to engender in all students. For this student, it seems that they are well placed in understanding that different perspectives expand knowledge, which is an attribute required for lifelong learning – i.e., the ability to use different resources to process and learn new information. It also validates the effort put in by many academics who take the initiative to either source and/or provide or develop different learning resources.

Students liked the ability to re-use resources, particularly lectures (both slides and online recordings), and tutorial solutions, especially for the purpose of revision (Factor 2, *rehearsal).* Students in first year [**IM06 and IM28**], together with a second year student [**IM35**] believe that the tutorial solutions reflect what is expected in the examination and thus are written at the expected standard. They felt that these resources are valuable (*task value*) and thus continually engage with them in order to feel prepared for their final summative assessment (extrinsic motivation*).* A third year student reiterated the same point, liking quite detailed tutorial solutions as they assisted her in her understanding (Factor 5) and helped her prepare for her final examination (extrinsic motivation). As noted by **IM12 – second year student**, students are extrinsically motivated and will look for cues from academic staff in order to ensure they are well placed to perform well in the final summative assessment:

> *"… I think it's to get clarity on exactly what we need and exactly on what's examinable … you know that's what I have to do."* **[IM12 – second year student]**

First year students appreciate well laid out lecture slides and the ability to listen to different lecture streams (i.e., different lecturers) as they provide a new voice and often a new approach, which aids in cementing their understanding of content. These students like the many examples and step-by-step instructions provided in lectures, which they could easily refer back to when

completing set tutorial questions. Given, for these students, that it is the first year they have encountered a self-directed learning environment, it is not surprising that they still search for materials, which are more prescriptive in nature. Additionally, students in first year value online quizzes as they supplement knowledge and confirm understanding through the provision of immediate feedback (*task value*).

Not surprisingly, students reiterated appreciation for online lecture recordings, particularly if they were unable to attend the face-to-face lecture:

> *"I do like that you can also access the lectures because when you don't get an opportunity to go, it's nice to know that you can still watch it."* **[IM04 – first year student]**

A second year student appreciated that the lecture slides were uploaded on the LMS well before the actual face-to-face lecture:

> *"I like that the lecture slides are uploaded well and truly before the next lecture, so at your own pace you can go in and start looking at it, 'cause I find that I have so much on during the week that if I'm able to prepare myself in my own time, it's a lot easier."* **[IM32 – second year student]**

This reinforces the importance of making available as much material as possible as early as possible in the semester as it enables students to engage with the resources at a time convenient to them, and to self-manage (an accounting learning standard) and take control of their own learning. This engenders sought after skills (i.e., self-management and *time and study environment*) which will be required when they undertake their professional program and engage in CPD activities when out in the workforce and continue on their lifelong learning journey.

A student completing ACF2100 noted that as the content was difficult, he preferred and relied heavily upon practice questions, which had been developed by teaching staff:

> *"content in the unit was massive and doing the practice questions was almost better than, sometimes, listening to the lecture ... keeping one day a week for the practice questions helped with that unit. I feel like the academics were able to deconstruct the convoluted textbook and make it, you know, readable and understandable."* **[IM14 – second year student]**

This sentiment was echoed by **IM31 (second year student)** *"it's simpler, they break it down into much easier terms to understand"*. As academics, our role is to ensure students have the requisite knowledge prior to completing their degree. It is pleasing to see that students are appreciative of the effort academics take to simplify difficult content to enhance student understanding.

In contrast, a student noted that *"To be honest, ACF2100 don't have the best learning resources that I've had across my university experience"* **[IM33 – second year student].** A

review of the available resources across the five foci accounting units (see Table 7.1) shows that with the exception of a discussion board, similar resources are available in this unit. Thus, it is difficult to know why this student made this comment. Regardless, most universities embrace the notion of a blended learning environment, with the current student cohort expecting it. Thus, it is essential, if not obligatory that universities encourage academics and provide the required assistance for them to invest time into providing useful online learning resources.

Finally, students in second and third year made reference to the LMS in general, commenting that they preferred a well-structured and clearly set out LMS i.e.:

> *"Well, it's set out nice and easy and it's not hard to make a study plan for this unit."* **[IM38 – third year student]**

> *"It's really neat. If you go onto* [the LMS]*, you can see what's happening this week and if you click on that, every tutorial question that you are required to do this week – it's up there – very clear ... can just go and watch what I want that you need to learn for this week. And also, I think, there is some external links ... so it's quite helpful."* **[IM20 – third year student]**

This is important as it provides structure to students, helping them set weekly goals (Factor 1, *goal setting*) and can assist them in managing their time (Factor 5, *time and study environment)*. Academics need to foster these skills in students so that they can continue when they enter the world of work.

With regards to why students ***want*** to engage with the learning resources, key themes revolve around getting good grades (extrinsic motivation), assisting with developing understanding (Factor 5, in particular *understanding*), and the ability to keep practising to improve understanding (Factor 2*, rehearsal*). These themes are similar to the reasons provided when students were asked what motivates them to engage with the learning resources (see Sections 9.4.1 and 9.4.2).

With regards to engaging with learning resources, a key theme identified by four third year students is that it allowed them to stay up-to-date on a week-to-week basis, ensuring they remained on track, and thus do *"not fall behind"* **[IM39 – third year student]** with their learning. It appears that whilst these students did not plan and set goals, or if they did, they did not mention it, the idea of regularly engaging with the resources allowed them to quasi self-manage and stay in touch to continuously upgrade their knowledge.

Student **IM22 (third year student)** also noted that he did not perform as well in the first few years at university as *"he didn't engage much with the resources online"* and found the

> *"transition from high school a bit different so wasn't really looking at stuff online ... after a couple of years I started using* [the LMS] *more effectively by going through it week by week ... allows me to keep up-to-date every week".*

After becoming aware of his failing to engage, in third year he took control of his engagement with the learning resources in order to perform better *(metacognitive self-regulation)*.

Interestingly, two students enrolled in ACF3100 noted that they engaged with the learning resources because the lecturer continuously referred to various resources within his lectures, which not only increased awareness of the resources available but engendered interest amongst students to engage with the various resources. Whilst this is a very small sample, academics need to make definite and overt links to the various resources available in order to motivate students to engage with them. This is particularly important for students who are not intrinsically motivated and need further external stimulus to engage.

It is interesting to note that two second year students stated that they engaged with the resources because they want to learn, whilst a third year student stated that they just loved to study. These are valuable lifelong learning beliefs as accounting graduates are required to engage in CPD once they enter the accounting profession. A third year student [**IM41**], motivated to use the learning resources to be confident when approaching examination questions, also noted that they engaged with them as they wanted to *"look professional and be confident when in my working field"*. They wanted to be able to draw on the knowledge gained at university whilst out in the workforce, thereby ensuring that they looked and acted the part whilst working, which is an attribute we want all graduates to have:

> *"I'll be using* [knowledge gained] *after graduating, I want to look professional, I don't want to be like "I learned this at uni but I don't know"... I want to be confident in the society and in my working field."* [**IM41 – third year student**]

A third year student took this notion one step further stating that in first and second year, he took a very short term view and engaged with the learning resources that assisted him in being successful in a particular unit of study (extrinsic motivation). However, in third year the notion of purely studying to pass a unit changed to a realisation as he was about to enter the workforce, he had to ensure he understood concepts in a bit more depth, which required him to engage more deeply with the available learning resources. He noted that he was:

> *"more inclined to read and engage with the learning resources if it is going to help him get a job or get something out of it at the end."* [**IM21 – third year student**]

Pleasingly, this student appears to be engaging in a deeper approach to learning – an attribute that the accounting profession wishes to be instilled in accounting students and graduates.

9.4.3.1 Summary of student responses to: 'What they liked' and 'What makes them want to engage' with the learning resources

For practicality reasons, students like resources i.e., ease of access, ability to re-use them for revision purposes (Factor 2*, rehearsal)*, and to download documents, such as lecture slides in order to facilitate note taking (Factor 2*, elaboration)*. Students also like the ability to refer to extensive tutorial solutions to further their understanding (Factor 5*, in particular understanding*) and appreciate provision of a variety of resources in a timely manner as this allows them to gain a different perspective. Academics should take note of the importance of having a structured LMS and how this enables students to regulate their learning through planning, setting goals and managing their time effectively.

In conjunction with reasons as to why students are motivated to engage with learning resources (RQ2 – see the summary presented in Section 9.4.2.1), this section has identified additional reasons as to why students want to engage with the resources provided, namely:

- assistance in focusing on what they believe is going to be examinable;
- an ability to stay up-to-date because of the ease of using the learning resources;
- the importance of the lecturer in promoting and identifying valuable learning resources; and
- the love of learning accounting.

9.4.4 Discussion and analysis of the two questions pertaining to RQ3

Concerning RQ3, when second and third year students were interviewed, they were prompted to reflect on their prior core accounting units and to consider whether their motivation to engage with the learning resources had changed. The relevant questions here were:

6. *Reflecting back on your prior accounting unit(s), do you think your level of motivation to engage with the learning resources has changed? Explain.*
7. *Reflecting back on your prior accounting unit(s), do you think your engagement with the learning resources has changed? Explain.*

(Note: The questionnaire contained a similar question to Question 7. Thus, these responses are also considered in Section.9.4.4.2[89]).

In answering these questions, students in second year (i.e., ACF2100 and/or ACF2200) answered by reflecting back on either first year (ACF1100) and/or one of the second year units, whilst students enrolled in third year reflected back on first year, second year and/or one of the

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[89] The motivation question on the questionnaire was an overarching question that relates to motivation to study i.e.: *Reflecting back on prior semesters, can you describe whether your motivation to study has changed?*

third year units. The discussion presented below is delineated between second and third year students.

9.4.4.1 Discussion and analysis of Question 6: Has the level of motivation to engage with the learning resources changed?

In total, eighteen second year students were interviewed[90]. Four stated that their motivation to engage with the resources had not changed[91]. Seven indicated that their motivation had increased; two noted that it had decreased; whilst four students stated that their motivation to engage with *specific* resources had changed. Interestingly, all of the third year students interviewed acknowledged that their motivation had increased from prior units. Some reasons for this include: students acknowledgement that they are close to graduation; as they are in their final year, more effort is required given an increase in the level of difficulty in the content; thus exhibiting higher *intrinsic goal orientations* and being both intrinsically and extrinsically motivated. Table 9.4, which presents themes and illustrative quotes, is structured such that the themes are derived and split initially according to the year level, with similarities and differences across the year levels identified in the final two rows.

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[90] Six students were interviewed concurrently whilst they were studying both 2nd year accounting units; with two 2nd year students interviewed also studying one of the foci third year units.

[91] One student did not answer the question.

Year	Themes: Motivation to Engage	Illustrative Quotes – Interviews
2nd year	***Motivation remains unchanged*** Use of resources helped students learn and understand content regardless of unit. Extrinsic motivation	
	Increase in motivation to engage with the resources Increased difficulty of content	*"I think it has gone up a little bit. I remember the last unit....I was actually finding* [it] *a bit easier because I'd already done half of it in VCE. I think this time because it's a lot more difficult, I'm forcing myself to engage more and to do more to find more motivation wherever I can." [IM09]*
	Increased confidence (*self-efficacy*)	*"...then you have tests and exams then you have to study so you get a little more motivated and when you see results from what you have studied for it gets me a bit more confident ...and it gets me a bit more motivated.[92]" [IM35]*
	Ability to apply previous knowledge and appreciation that the student is learning	*"Yeah, I'd say the content stepping up and then even like applying previous knowledge and knowing that you have learnt something and you are one step closer to getting a degree, it adds to the motivation."[IM15].*
	Extrinsic motivation	*"Slightly, because in ACF1100 honestly my motivation there was low...a first year student mentality, grades weren't really my main concern, but now I actually do care about my grades...so I actually am aiming for HDs or at least Ds in these subjects* [now studying ACF2100 and ACF2200]*." [IM11]*
	Change in motivation for particular resources	**IM30**, this student enrolled in ACF2200 felt she was more motivated to engage with materials which included real life examples as it could be applied in practice. *Whilst:* **IM36**, enrolled in ACF2100 was more motivated to use the practical exercises available on the LMS as this unit required her to excel in activities such as the completion of determining the tax journal entries given tax effect accounting and intercompany worksheets when consolidating companies within a group.
	Decrease in motivation to engage with the resources Slow progression Increased difficulty of content	
3rd year	***Motivation to engage with resources increased*** Increased difficulty of content	*"Yeah definitely. Well first year accounting, because I did accounting in high school, a lot of it was the same so I really didn't do enough work that I probably should have. I still got a decent mark at the end of it but I didn't read a lot, I didn't do a lot of the questions. Second year I tried doing the same thing but because I hadn't done enough previously and given the content gets harder, I had to study a lot more for the final*

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[92] This student is also extrinsically motivated.

		exam. And then coming into third year, I've learnt from my mistakes and I've been engaged for the whole time." **[IM21]**
	Extrinsically motivated	*"I think definitely because when you're in third year your motivation is to do obviously better, to obviously get a better score, so that you can graduate and find a job. That's when you're in third year you kind of take more – that is a priority, in a way, because that's your last chance to do better. I think, during my first year, it was more like, "I'm getting used to things" and maybe academic wasn't the main priority; it was more like getting to enjoy more of the social part of university life. As it progressed, education became more important because it just tracked back on, "Why did I choose this major in the first place? When you see the final line being so near, you feel motivated to study and do well. I definitely have used the resources more frequently than in my first and second year."* **[IM19]**
	Ability to stay up-to-date	*"Yes. When I first started I didn't really go on* [the LMS] *that much. I'd go to the lecture and make notes, do them, or I wouldn't even make my own notes. I'd just print off the slides and read them…but now I'm actually frequently looking at* [the LMS] *and seeing what there is to do and staying up-to-date with the questions. I never used to do the tute questions …* [in this unit ACF3200] *if you didn't do the questions you wouldn't be able to contribute."* **[IM25]**
	More thinking/more understanding required	*"Yes…definitely increased because the units are obviously a lot harder in third year so taking more time to keep up-to-date, seeing other resources. So in previous years I didn't really look at the journal articles or anything because it was a bit hard with time and everything. But in third year it is even more important because it requires more thinking and more understanding of the topics…so I make sure I'm looking at those journal articles and everything else that is accessible on* [the LMS].[93]*"* **[IM39 student enrolled in both ACF3100 and ACF3200]**
	Intrinsic goal orientation	*"Yes. So I think this is common ….for all uni students because when you actually get in – firstly….your only goal is to pass the subject and to survive uni, I would say. But, like, as the time goes by, you sort of know "what you are going to get from unit and what uni's going to offer you", and your motivations going to change too. Take me as an example, I would say instead of passing, I…require to learn more,….Because once you get into the final year and you're starting to look for a job, it's the moment that you realise that the result is not enough for you to find a job, but the overall control of the knowledge that you own this subject – it matters. Yes, so that's what changed me about my motivation. I just want to learn more to improve my learning, not just the grades".* **[IM20]** *"yep, so personally I like to improve each semester. I feel like there's room to improve in my study".* **[IM38]**
	Engaging lecturers who continuously referred to online resources in face-to-face lectures	*"I definitely think it's changed because I came from a background where I never did accounting. I found it really hard initially to approach the lectures, I found they were just really dense with a lot of information. I really, really enjoy doing this unit* [ACF3100], *it's probably my favourite accounting unit at 'The University' and I think what motivated me is I like the way they've* [lecturer] *broken down the content. Rather than just throwing you in the deep and giving you all*

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[93] This quote also makes reference to staying up-to-date and the increased difficulty level in the unit.

		this information, he actually really explains everything through the use of examples, he provides videos online. Also, the additional resources that he provides, if you don't understand something you can always refer back to it." **[IM40]**
	Provision of many varied resources to refer to as needed	
Similarities	Motivation *__increased__* due to: - Increased difficulty of content - Extrinsic motivation	
Differences	2nd year students experienced *__unchanged__* and *__decreased__* motivation whereas 3rd year students experienced only increased motivation to engage with the learning resources *__Unchanged__* due to: - Assist understanding of content - Extrinsic motivation *__Decreased__* due to: - Slow progression - Increased difficulty of content *__Increased__* due to: - Knowing that students are learning and ability to apply prior knowledge (2nd year) - Changed motivation to engage with particular resources due to the stream of accounting (i.e., management v. financial) (2nd year) - *Intrinsic goal orientation* (3rd year) - Integration of resources by engaging lecturers (3rd year) - Ability to remain up-to-date (3rd year) - Various resources to refer to (3rd year)	

Table 9.4: Themes and illustrative quotes in response to RQ3: As undergraduate accounting students progress through their degree, how do their motivational beliefs change in a blended learning environment?

As identified in Table 9.4, similar themes are evident from both second and third year students, namely their motivation increases due to an increased level of difficulty in content when moving from one year level to the next, and not surprisingly, students are extrinsically

motivated to engage with the resources. An increased level of difficulty is an overarching reason for second year students [**IM09; IM10; IM15**; and **IM35**], and is the case regardless of whether or not students completed an accounting unit prior to attending university. As the first accounting unit is designed to cater to students who have not completed an accounting unit prior to attending university, there is some repetition with what is offered in high school (i.e., VCE)[94], particularly in the first 4-5 weeks. Consequently, this overlap provides a plausible explanation as to why some students find ACF1100 easier and are therefore less motivated to engage with the learning resources provided compared with second year when the content is all new. Unless business schools or universities are willing to allow students who have completed a prior accounting unit to commence the first year unit at a later stage, in say Week 5 or Week 6, it might be opportune for academics to consider requiring these students to undertake different learning tasks, such as an interactive online case study or practice sets, to foster a higher level of motivation and engagement in the first year unit[95]. A challenge is that if students feel they do not need to engage with the learning resources in first year, they may carry that attitude over into second year, which may be detrimental to their overall learning experience. Note, it is comforting that some students recognise that in order to learn and be successful in later years, they need to apply themselves as they progress through their degree.

Interestingly, two additional reasons second year students stated as to why their motivation to engage with the learning resources increased include **IM15** and **IM35,** who commented that they were aware that they were learning, which increased their confidence and provided further impetus to be motivated to engage with the learning resources. This reinforces knowledge that as students realise their own effort to study, they are more likely to study strategically and effectively in order to achieve a required goal (*control of learning beliefs*). **IM15** extended this theme, acknowledging that he was able to apply prior knowledge to assist in understanding the current accounting unit (*critical thinking*). In doing so, he is making connections across accounting units, evidencing engagement in the higher-order skill *elaboration* (Factor 2), which is an attribute academics desire students continue to foster throughout their degree.

Further, it is interesting to observe changes in second year students' motivation to engage with certain types of resources due to the subject area in accounting. For example, increased use of real-life cases and examples within lecture materials and additional readings in ACF2200,

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[94] Victorian Certificate of Education (VCE) is the credential available to secondary school students who successfully complete the final year. Many Australian universities do not require, as a pre-requisite, students to have completed an accounting unit in VCE. Therefore, students enrolled in ACF1100 comprise a mix of students with accounting knowledge and those without.

[95] It is believed that most Australian universities do not offer this flexibility in their first year core accounting unit.

which reflects real life situations and requires application of concepts students expected to encounter as a management accountant. This link between the use of real-life examples incorporating application of theoretical concepts and application to the world of work is a critical requirement and often requested by professional bodies and the accounting profession. Conversely, a student completing ACF2100 was more motivated to use the practical exercises to master certain financial accounting concepts, such as completion of intercompany worksheets when consolidating companies within a group. The take away is that academics need to ensure that they provide relevant learning resources to impart the understanding and knowledge required and also to engender student motivation to engage.

Further, third year students confirmed it allowed them to stay up-to-date [**IM25** and **IM39**]. Interestingly, they acknowledge that by engaging with the learning materials, they have the opportunity to not only contribute to conversations in the classroom, with communication being a key attribute required by the accounting profession, but that it also enables them to engage in *critical thinking* in order to fully understand expected content. It is pleasing to see that these skills are coming to the fore and further that students are ready to appreciate and attain them.

As evidenced from two third year students namely **IM20** and **IM38**, some exhibit aspects of *intrinsic goal orientation,* with these students noting that their change in motivation was to enhance their overall learning and study habits. For example, **IM20** acknowledges that she wants to own the learning process, having moved from engaging with learning resources for purely extrinsic reasons to ensuring that her learning, knowledge and understanding improves.

Another factor that led to increased motivation to engage with resources is engagement with lecturers. Further, as **IM40 (third year student)** noted, as the academic provides lots of examples and short online videos, he felt more motivated to engage.

Three second year students stated that their motivation to engage with the resources had not changed, citing: they used the resources in all of their accounting units to help them to learn and understand content, and their motivation was, and remained, extrinsic.

Two second year students noted that their motivation to engage had decreased. One had completed ACF1100 a couple of years back (i.e., 2014) and had converted from being a full-time student to being a part time student. She felt her progress was much slower than expected, which contributed to a reduction in her motivation. The other student was demotivated to engage with the learning resources due to the increased level of difficulty encountered in second year. Whilst some students can be spurred on by the challenge of an increase in difficulty, this is certainly not the case for this student.

9.4.4.1.1   Summary of whether the level of motivation to engage with the resources changed

RQ3 probed whether students' motivation to engage with the learning resources provided changed as they progressed through their degree. As evident from the discussion presented above, whilst some students' motivation did not change, there is evidence that it does change over time. The majority of students noted that their motivation to engage with the resources increased as they progressed through their degree, with only two second year students commenting that their motivation had decreased compared to the prior year. This lack of change in motivation for some students is not surprising as they felt that the learning resources helped them to learn, which validates the provision of learning resources.

Overall, the themes identified include: (1) increased level of difficulty in the content from one year to the next; (2) increased motivation based on seeing results from the effort expended; (3) *intrinsic goal orientation* to engage more; (4) extrinsic motivation; (5) ability to remain up-to-date; and (5) appreciation of choice in the resources available to assist in understanding. Interestingly, a further theme concerns the change in importance of certain resources given the stream of accounting i.e., management versus financial accounting.

The next section discusses whether students felt that their level of engagement with the learning resources changed as they progressed through their degree.

9.4.4.2   *Discussion and analysis of Question 7: Do you think your engagement with the learning resources has changed?*

Covered in both the questionnaire and interviews, Table 9.5 below presents themes and illustrative quotes from second year and third year students concerning whether they thought their engagement with the resources changed. Whilst the majority of responses are similar, there are some marked differences. In reporting on these, initially the themes derived by level across the two data sources are reported. Next, in the final two rows, similarities and differences are identified.

Year	Themes – engagement with the resources	Illustrative quotes from the interviews	Illustrative quotes from the questionnaire
2nd year	**_Unchanged_**	"It's similar ... I'm pretty happy with the resources available in accounting….there's a lot of resources and I mean there's always somewhere to turn if you're struggling." **[IM15].**	"It is still the same, learning resources are always the most important in learning accounting." – **[QRM28 -ACF2100]**
	Increased Due to increased difficulty in content	"I think it has increased because there's a need for it to increase. A need for me to get more information in here [student was tapping their head]." **[IM09]**	"In my opinion my level of engagement with learning resources has increased as the topics each week get harder and need more practice in order to completely understand the concept." – **[QRM29 -ACF2100]**
	Changed engagement with various resources	"In regards to the tutorial solutions, I put a lot more weight on the tutorial and [the LMS] is able to help me then go back and make sure I'm doing everything. So my strategy has changed overall, I'm able to have a better understanding, get better consolidation, I'm more motivated to do more of the tutorial questions rather than leaving a few out, 'cause I know that I'm going to get the most out of it." **[IM32]** "Definitely I mean I don't think I really looked at the other textbook unless I was looking for a method or just one or two more sentences because that one [ACF1100] was so detailed [reference was made to the pre-class YouTube videos in earlier comments]. So this one [as there are no pre-class videos] I would have to read the whole chapter which I hadn't usually done in any other subject. I'm assuming that as my experience, that is, as it progresses there's kind of the assumption that you know more and can understand more. I think once you get in to second year there's the assumption already that you're able to grasp it a lot quicker and you can understand it with less information, which doesn't always happen which is where the text book fits [in]." **[IM37]** "reliant on YouTube. Because I guess basic accounting knowledge is easy to get anywhere. Like something simple like just bookkeeping, like that's accounts payable, accounts receivable, these are things that internationally will never change. So it's easy to access……When it comes down to specifically Australian stuff, consolidation …that's probably where you're not going to find any resources	"I have been increasingly looking at readings for subjects, as they generally provide familiar definitions and use real businesses as examples. I actively look for links between topics now and this has helped me remember content." **[QRM41 – ACF2200]** "I actively engage with the resources in a more active way as reading and attending lectures is not really helpful to me if I'm not doing questions and other things to make them worthwhile." **[QRM42– ACF2200]**

		*online or it's a lot more difficult to find them. So I guess it depends on the difficulty of finding these resources." [**IM31**]* *"Yes definitely. Well as a first year student honestly I thought that everything was just easy - well it wasn't. I thought I wouldn't really need to use those resources, I thought I would just be able to pass without using those resources but now that I am in second year I just value it more, value the information that is placed in there* [the LMS] *and I realise that it is actually important to use them for my knowledge and engagement in the studies. .....my lecturer said "read the unit guide and that answers a lot of your questions". So, I actually go through unit guides like even before Week 1 and look at the percentages that contributes to my grades and which assignment is due in which week so I will be able to prepare for those assignments." [**IM17**]*	
	More discerning in which resources are more useful / made effective use of resources		*"I have more knowledge of how to use the resources and understand which ones suits* [and] *which to disregard." [**QRM71** – ACF2100]* *"I focus on getting a broad understanding more recently (focusing on key lecture slides and questions). Whereas in the beginning of my accounting studies, I would try and focus on all resources and their detail very closely, which proved to be too time consuming and inefficient for most topics covered only very broadly." [**QRM34** – ACF2200]*
	Decreased Lack of resources compared to first year	*"To be honest, ACF2100 doesn't have the best resources that I've had across my university experience." [**IM33**]*	
	Using the LMS resources less and seeking alternatives outside the LMS		*"I look at* [the LMS] *less now and refer to other online resources more. Mostly due to less content available and the slides being more vague." [**QRM70** – ACF2100* *"My engagement with learning resources has changed. I am using learning resources more effectively and using textbooks and other resources which are not on the recommended booklist." [**QRM38**– ACF2200]*
3rd year	***Unchanged***	*"learning accounting comes down to practice[ing]" [**IM22; IM23; IM39; IM42**]*	*"Remained the same." [**QRM58** and **QRM93** – ACF3100 and ACF3200]*

	Ability to apply to world of work		*"No, I still use them the same amount but for slightly different reasons. Now that I am looking for placement and job opportunities I am more interested in actively relating my knowledge to a real environment. Before I learned the content to get decent grades."* **[QRM49** – ACF3100]
	Increased Impacts final mark (i.e., extrinsic motivation)	*"I engaged more as well* [because] *I realised how it impacts on my mark."* **[IM21]**	*"I find that I engage in more learning resources when I need to, for example, when I have assignments or mid-semester tests."* **[QRM86** – ACF3100] *"It has changed. From my experience, the more emphasis tutors put on the learning resources, the more likely that the content will appear in assessments."* **[QRM57** – ACF3200]
	Observing what their peers do	*"Because when you're in the library say studying and you look around, everyone seems to be focusing and doing their work so you just go for it and study."* **[IM25]**	
	Due to increased level of difficulty	*"Yep, so there's more resources available as opposed to previous ones. And all the previous ones are really good subjects too. I guess my learning strategies have changed - it's just a harder unit so I need to do more study."* **[IM38]**	*"Yes, to a certain extent as 1st year units were much easier and I could do most of them on my own, with time I am seeking more help from tutors and internet resources to gain a better understanding."* **[QRM48** – ACF3100] *"As subjects have become increasingly challenging, I have had to study harder in order to thoroughly understand the content, which has meant that I've accessed various resources to cope."* **[QRM92** – ACF3100]
	Integrated	*"So I guess in a sense it has changed but for ACF3491 (pre-cursor code for ACF3100) because it was like I didn't really have a choice…it's actually integrated in with the way you have to learn."* **[IM26]**	
	Effective use of resources	*"I've definitely been using all the resources more effectively. In prior years I would always use just the lectures. I'd never bother with the tutorial solutions, I'd just go to tutes and whatever was done that was it and that did not help approaching exams and that's probably why I didn't do as well. Whereas with this subject I really find the fact that he actually puts the solutions up at the end of the week really helpful because after my tute's done I have the opportunity to go and revise the topic again, and if there's any questions I can always approach the tutor again."* **[IM39]**	*"Previously I would spend a lot of time reading. I have found reading very time consuming and difficult whilst under stress. Online lectures and video resources have been more helpful recently."* **[QRM91** – ACF3100]

	Changed engagement due to stream of accounting (i.e., management v. financial)	*"Generally I really think the reason why I did so well in this unit is because of Lecturer X, he's really good. And also because it is interesting in general. Financial accounting to be precise is more engaging than management accounting." [**IM24**]*	
	Impact of teaching staff	*Same quote as above [**IM24**] – this student was more motivated to engage for a couple of reasons – interesting content and was inspired by the lecturer in charge of the unit.*	*"I usually use the resources when the lecturer or tutors mention them frequently." [**QRM57** – ACF3200]*
	Wants to engage more – to improve understanding	*"Definitely. Since I'm more motivated to study this semester, by the frequency of me using the online resources, definitely has gone much higher, because that's mainly what I use to study, in the first place. I have definitely used the resources more frequently than my first and second year – I want to study more – just to actually understand the unit better." [**IM19**]*	
	Decreased More discerning – based on whether the resource looked interesting	*"I don't think there's a particular reason as to why I've not engaged with the resources. I think I sort of just have a quick skim and look at it and judge …[if] it doesn't really look interesting I'm not going to use it." [**IM26**]*	
Similarities and differences regarding engagement with the learning resources			
Similarities	<u>Unchanged</u> <u>Increased</u> - Increased difficulty of content		
Differences	<u>Unchanged</u> - Ability to apply to world of work (3rd year) <u>Increased</u> - Changed engagement with various resources (2nd year) - Extrinsic motivation (3rd year) - Observing what their peers do (3rd year) - Integration (3rd year) - Effectively using resources (3rd year) - Changed engagement due to stream of accounting (3rd year) - Impact of teaching staff (3rd year) - More motivated to engage to improve understanding (3rd year) <u>Decreased</u> - Lack of resources compared to first year (2nd year) - Seeks alternative resources outside those provided via LMS (2nd year) - More discerning – based on interest (3rd year)		

Table 9.5: Focusing on engagement, themes and illustrative quotes in response to RQ3: As undergraduate accounting students progress through their degree, how do their SRL strategies change in a blended learning environment?

Students were asked to reflect on whether their engagement with the learning resources changed from one year to the next. In general students described their engagement by making reference to and taking notes on lecture slides prior to and during the lecture (Factor 2,

elaboration), listening to online lecture recordings, checking their answers to set tutorial questions in their own time via reviewing online solutions, listening to YouTube videos (when available) and generally engaging with other available resources on a regular basis.

Consistent with responses to Question 6 above (see Section 9.4.4.1), engagement with the resources remained the same or increased due to: an increase in the level of difficulty, requiring access to more resources; belief in an ability to apply knowledge gained to the world of work; being spurred on as the resources were integrated with the face-to-face component or continuously referred to by the lecturer; and changes in the accounting subject matter (i.e., management versus financial accounting).

In terms of engaging with various resources, the student quotes provided in Table 9.5 highlight that students are able to identify the resource/s that assist them in meeting their immediate learning needs, and more importantly allow them to acquire different perspectives, which may assist in their overall understanding (Factor 5, in particular understanding*)*. Akin to this is the notion that students become more adept and efficient in utilising particular resources. Further, some students adopt higher-order skills such as looking for linkages between topics (Factor 2*, elaboration*) and are active in using various resources, whether supplied on the LMS or not, to ensure they gain the understanding required. A benefit of students using various resources is that it prepares them for the environment they are likely to encounter when they enter the workforce and engage in lifelong learning where they are likely to encounter different types of resources when completing the professional program and undertaking CPD activities.

An interesting and somewhat unusual reason put forth by **IM25**, due to being on campus more frequently, is that this student spent additional time in the library. Thus, they were spurred on by other students who were actively engaging in learning. Whilst this comment seems to relate more to engagement in learning more generally, it is feasible to infer that this student feels spurred on to engage more fully with the learning resources by his fellow peers. As academics cannot control the effort, or lack thereof, put in by students when engaging with learning resources – we can encourage them to engage by imparting passion of the subject area, which was evident in some of the teaching staff.

9.4.4.2.1 *Summary of whether engagement with the resources has changed*

As reported, student responses to whether they felt their engagement with the learning resources changed varied from remaining the same to an increasing level of engagement. In general students are satisfied with the learning resources provided and engage with them as they see value in doing so, whether to improve understanding for its own sake or to perform

well in summative assessment tasks. A common theme is that students' level of engagement with the resources increased as they progressed through their degree due to increased difficulty and an expectation of increased understanding of content. Students also noted that having a good range of learning resources available meant they could choose the one that better suited them for the task at hand (*task value)*. Further, the provision of different types of resources caters for needs in the different streams of accounting. For example, use of cases in management accounting and practice exercises in financial accounting (*task value)*.

Interestingly, the level of engagement with resources links to the inherent interest students have. That is, students more interested in management accounting were more inclined to engage more with resources in that unit as opposed to the financial accounting units. For academics, the implication is that some students will gravitate to one aspect of accounting. Thus, we need to ensure that we provide the best and most applicable resources, whether they are developed in-house or sourced from other available online resources.

Further, and perhaps more importantly, we need to provide learning resources that reflect the real world of work as an accountant, as this encourages students to engage more fully and may assist them in making linkages between the theoretical concepts we seek them to understand and real world application. In addition to the use of newspaper articles being discussed in class, there are many other approaches that can be undertaken to build the nexus between theoretical and practical application, which academics are encouraged to consider. For example: greater use of case studies; inclusion of expert guest lecturers in the classroom (whether face-to-face or online); and encouragement given to students to utilise placement opportunities or to volunteer in business to foster learning.

The next section summaries overall findings from Chapters 7 through 9.

9.5   Summary of the findings from the research

Table 9.6 provides high level results pertaining to the three research questions. This should be read in conjunction with the discussion in this section.

RQ	Key results
RQ1	Lecture slides, tutorial questions and solutions, discussion board, past exam questions and solutions are extensively utilised. Majority of students accessed the learning resources 2-3 times per week. Greater usage noted in lead up to major summative assessment.
RQ2	Pooling of data – Principal Components Analysis resulted in a 5-factor model. **Table 8.12:** Emerging factors and associated Cronbach's alpha **Qualitative results** • Extrinsically and intrinsically motivated to engage with the learning resources. • Reflect similar themes to those noted in Table 8.12 above, particularly in relation to *rehearsal* and *elaboration*; engagement to enhance understanding and because they can see the relevance of being able to gain knowledge once they enter the workforce (linking to lifelong learning and the importance of learning).

Table in RQ2:

Factor/(number of statements)	Cronbach's Alpha
1. Goal setting and metacognitive self-regulation (9)	0.862
2 .Rehearsal and elaboration (7)	0.862
3. Importance of learning (7)	0.876
4. Self-efficacy and control of learning beliefs (9)	0.857
5. Task value and time and study environment (5)	0.715

RQ3

Statistics/ Scale	Intrinsic goal orientation	Intrinsic goal orientation major	Rehearsal	Metacognitive self-regulation	OSLQ Goal setting	LLL beliefs
Chi-Square	12.131	8.381	5.762	6.184	6.783	5.811
Df	2	2	2	2	2	2
Significance level	**0.002***	**0.015****	**0.056*****	**0.045****	**0.034****	**0.055*****
Median – First year	5.33	5.50	5.5	5.25	5	5.9
Median – Second year	5	5.25	5.5	5	4.5	5.8
Median – Third year	**5.67**	**5.63**	**6**	**5.5**	**5.5**	**6.2**

Table 8.4: Results of Kruskal-Wallis test based on year level. *, ** and *** Significant at the 0.01, 0.05 and 0.10 level, respectively

Test Statistics[a,b]

	Goal setting and metacognitive self-regulation	Rehearsal and elaboration	Importance of learning	Self-efficacy and control of learning beliefs	Task value and time and study environment
Chi-Square	6.056	4.284	4.711	4.301	5.762
df	2	2	2	2	2
Asymp. Sig.	.048	.117	.095	.116	.056

a. Kruskal Wallis Test

b. Grouping Variable: YearIdentifier

Table 8.13 Kruskal-Wallis test

Qualitative results

- Motivation to engage increased as students progressed through their degree.
- Engagement increased given the increased level of difficulty of content and an expectation of having increased understanding.

Table 9.6: Summary of results broken down by research question

Whilst there is some variation in the learning resources provided across the five units, in general all units provide the following: lectures slides, and tutorial questions and solutions. Across both semesters, a discussion board was available in ACF2200, ACF3100 and ACF3200, with it only available in Semester 2 in ACF1100. Some units provide additional resources, such as: YouTube videos; links to or PDFs of journal articles, case studies, practice questions and solutions; online quizzes; and prior exam and revision questions and solutions.

RQ1 sought to identify what, when and how often accounting students engage with the different learning resources provided to them in a blended learning environment. Through the one-on-one interviews, students across all five units indicated engagement with the lecture slides and the tutorial questions and solutions. This is not surprising given the structure of these units i.e., weekly lectures and tutorials. Whilst there was little reference by interviewed students regarding the discussion board, those that did mention it acknowledged that they reviewed what was posted with none actively posting questions themselves. Where provided, students also engaged with online quizzes, YouTube videos and journal articles. Irrespective of year level, the majority access learning resources 2-3 times per week, which is not surprising given that the resources are uploaded on the LMS on a week-by-week basis. Moreover, as confirmed by the learning analytics data, unsurprisingly students access the resources more frequently in the lead up to summative assessment tasks, such as mid-semester tests, submission of assignments and the final semester examination, with the lecture slides and tutorial solutions the most heavily utilised resource across the semester. This data revealed additional resource usage students failed to mention in the interviews, namely past exam questions and solutions and resources specific to particular units, such as the Academic Integrity Quiz in ACF2200. A major point of difference between findings from the interviews and the learning analytics data is usage of the discussion board. Whilst interviewed students downplayed access to this resource, the learning analytics data shows it was a heavily utilised resource, especially in the management accounting units (ACF2200 and ACF3200).

RQ2 sought to identify how motivational beliefs and SRL strategies impact how and why students engage with the learning resources provided to them in a blended learning environment. The two data sources used to provide insight into this question are: (1) the questionnaire; and (2) one-on-one interviews. PCA on the pooled questionnaire data shows five factors as to why students are motivated to engage with the learning resources and the particular SRL strategies they exhibit when engaging with these resources, namely: (1) goal setting and metacognitive self-regulation; (2) rehearsal and elaboration; (3) importance of learning; (4) self-efficacy and control of learning beliefs; and (5) task value and time and study environment.

Students set goals to manage their study time and reflect on what learning resources to engage with to ensure that ultimately they understand the content required of them. Further, students use cognitive strategies to acquire new knowledge into memory and build connections between this new knowledge and prior knowledge. Students appreciate the importance of learning in order to update their skills, which ultimately assists them in achieving their short term and future career goals. Further, they believe that their effort to engage with the resources will allow them to accomplish and complete tasks with confidence; and that the effort they put into engaging with the learning resources leads to positive outcomes, such as success in summative assessments.

Non-parametric tests reveal statistically significant differences with regards to gender and residency. Females have higher medians on the following scales: *task value, rehearsal, OSLQ goal setting,* and *LLL beliefs.* This suggests that they are more motivated to engage with the learning resources because they perceive them to be highly interesting, important and of great use to them. Further, they utilise the learning strategies of *rehearsal* more than males; engage more heavily in setting goals; and have stronger lifelong learning beliefs. With regard to residency, statistically significant differences were found in the following scales: *task value, control of learning beliefs 2, control of learning beliefs 2 major, OSLQ goal setting, LLL beliefs* and *LLL attitudes.* Whilst there weren't any differences between Australian and international students, Australian students and permanent residents differed with respect to the *metacognitive self-regulation* and *OSLQ goal setting* scales, and international students and permanent residents differed with respect to *control of learning beliefs 2.*

The interview and questionnaire open-ended responses reflect similar themes to those identified in the factor analysis, in particular the motivational and SRL strategies students undertake, including *rehearsal* and *elaboration (*Factor 2)*, engagement to enhance understanding (Factor 5) and because they can see the relevance of being able to gain knowledge once they enter the workforce, which links to the importance of lifelong learning (Factor 3). Not surprisingly, overwhelmingly interviewed students stated that they engaged with the learning resources because they were extrinsically and intrinsically motivated. Students noted that specific learning resources were useful and thus important to engage with thereby acknowledging that the learning resources have *task value.* This latter finding supports the non-parametric results in relation to gender, which shows that compared to their male counterparts, female students felt that the learning resources were of greater value to them. Whilst the interviewed students were not delineated according to residency, more female students were interviewed, which is in line with the gender split of participants who completed

the questionnaire, and explains why this learning strategy surfaced amongst the interviewed students.

RQ3 probed whether students' motivational beliefs and SRL strategies changed as they progressed through their degree. The majority of students interviewed noted that their motivation to engage with the resources increased. Reasons provided include: (1) increased level of difficulty in the content from one year to the next; (2) greater motivation once they see the results from the effort they have put in; (3) *intrinsic goal orientation*; (4) extrinsic motivation; (5) ability to remain up-to-date; and (5) appreciation in choice of the resources available to assist in overall understanding. Interestingly, a further theme emerged around the change in importance of certain resources given the stream of accounting (management versus financial accounting). Student responses to whether their engagement with the learning resources changed ranged from remaining the same to an increasing level of engagement. Unsurprisingly many students noted that their engagement increased given the increased level of difficulty from one year to the next and that they felt they were expected to have an increased understanding of the content as they progressed through their degree.

Finally, the questionnaire revealed statistically significant differences over the three year levels in three of the factors, namely: Factor 1: *Goal setting* and *metacognitive self-regulation*; Factor 3: *Importance of learning*; and Factor 5: *Task value* and *time and study environment*. Results show that third year students are more inclined to set goals and reflect on learning, therefore undertaking self-management strategies; are more inclined to consider lifelong learning aspects and engage with the learning resources available to them to enhance their understanding. Results from a Kruskal-Wallis test show statistically significant differences over the three year levels in six motivational and SRL strategies: *intrinsic goal orientation; intrinsic goal orientation major, rehearsal, metacognitive self-regulation, OSLQ goal setting* and *LLL beliefs*. Again, the medians for third year students were higher than that of first and second years.

9.6   Summary

This chapter reported on the themes derived from responses to the open-ended statements/questions contained in the questionnaire and student interviews, concluding with an overall summary of the findings identified from the three data sources – the learning analytics data, questionnaire and interviews.

The next chapter discusses findings related to accounting students' motivation to engage with learning resources in a blended learning environment, and establishes theoretical contributions to the SRL literature. Additionally, it examines the contribution that the findings make in relation to lifelong learning, which is an important aspect for graduates from an accounting degree.

10: Discussion

10.1 Introduction

Chapter 9 reported the themes derived from responses to the open-ended statements/questions in the questionnaire and student interviews. It concluded with an overall summary of the findings identified from the three data sources – learning analytics, questionnaire and student interviews.

This chapter discusses the findings reported in the previous four chapters regarding students' motivation to engage with learning resources in a blended learning environment, and establishes theoretical contributions to the SRL literature. The chapter commences with discussion of the learning resources students engaged with (captured via learning analytics data and student interviews – RQ1), followed by what motivates them to engage with such resources and the strategies they adopt whilst engaging (which were captured via a questionnaire and interviews – RQ2). Finally, there is discussion of whether students' motivation and strategies change as they progress through their undergraduate studies (RQ3).

As RQs 2 and 3 focus on student motivation and adoption of SRL strategies, and whether these change over time, conclusions regarding these two research questions are presented together. Figure 10.1 (see below) provides an overview of the data sources that contribute to the conclusions drawn, together with key findings and where they're discussed in the chapter. The chapter concludes with a summary of the contributions concerning the motivation and SRL strategies students adopt whilst engaging with the learning resources provided in a blended learning environment, and discussion of implications for educators and the accounting profession.
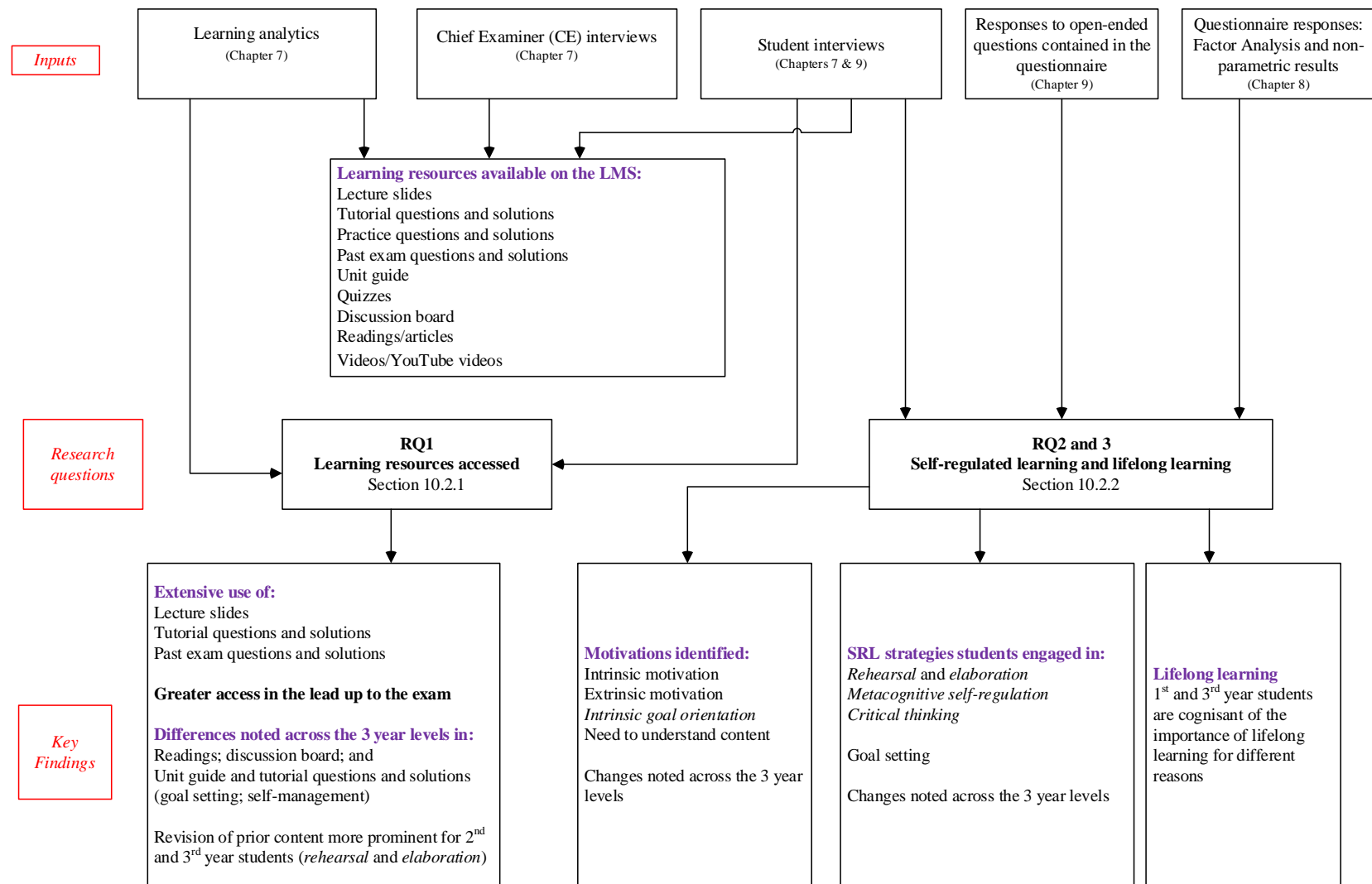
Figure 10.1: Overview of the data sources and main findings

10.2   Discussion of the research questions

10.2.1 Research Question One

RQ1 sought to gain an understanding of what, when and how often students engage with the formative learning resources available to them in each of the five foci accounting units. The data was captured in two ways, namely through: (1) interview questions; and (2) learning analytics data captured directly through the LMS. The self-reported student interview data required students to recall when and how often they engaged with the learning resources provided throughout the semester, their motivation for engaging with these resources and the learning strategies adopted whilst they engaged. The learning analytics data, akin to trace data, was captured to corroborate interview responses from students, providing specific details regarding the resources accessed. It is noted, however, that without sitting with students whilst they access the learning resources and/or without using a technique such as the think aloud protocol, it is impossible to connect students' usage of the learning resources with why or what strategies they adopt.

In one-on-one interviews, students identified engagement with a variety of learning resources, including lecture slides (both in PowerPoint form and online recorded lectures), and tutorial questions and solutions. Learning analytics data confirms, where available, that students also engaged with online quizzes, YouTube videos and journal articles. In contrast to Lust et al. (2013) where these resources were not used to a great extent, in this study they were used more extensively. Discussion related to RQ2 shows that engagement with these latter resources and tutorial solutions enables students to engage in higher-order learning strategies such as *elaboration,* reflection and application of prior concepts learned.

On average, students who were interviewed stated that they engaged with the learning resources uploaded on the LMS two to three times a week. Whilst Dawson et al. (2008) and Phillips (2006) found that students mainly accessed the LMS home page, content pages, and discussion forums, in this study students were found to engage more with content. Akin to Lust et al. (2013) who reports extensive use of lecture slides, the learning analytics data in all five units confirms extensive, regular (i.e., across each week) use of lecture slides and tutorial solutions across the entire semester. In part this is not surprising given that the structure of each unit consists of weekly lectures and tutorials. Similarly, unsurprisingly students use these resources, as well as past exam questions and solutions, more extensively in the lead up to examinations. This supports findings by Andergassen et al. (2013), Phillips et al. (2011) and

Dawson et al. (2008). Akin to Andergassen et al.'s. (2013) study, in the majority of units, usage of learning resources peaked in the final four weeks of the semester and in the SWOT Vac study periods, which led up to the examination.

Interestingly, the learning analytics data shows that students accessed a number of additional learning resources, which they failed to discuss in any great detail in the interviews – most notably, the unit guide, tutorial program/schedule (i.e., tutorial questions) and discussion board. With regard to the unit guide, in conjunction with the tutorial program/schedule, the learning analytics data reveals that students across all year levels accessed these resources in the first four weeks of semester, confirming Lust et al. (2013). As the unit guide details a schedule of topics, assessments and due dates, it is pleasing that students place emphasis on accessing this in the early part of the semester, as this reflects their ability to identify when they need to learn concepts and thus engage with learning resources to enable assessment deadlines to be met. This supports the notion that students plan, set goals and thereby enable themselves to effectively manage their time i.e., they exhibit self-management, an accounting learning standard (Hancock et al., 2010). Results from factor analysis of the questionnaire data corroborates this by showing that a key strategy for students is setting goals, planning and managing their study time. Graduates of accounting degree programs are expected to attain the self-management accounting learning standard. This study suggests that through engagement with the unit guide, students across all year levels are able to take control of their learning, prepare and carry out the steps required to effectively plan their learning. This finding is positive news for the accounting profession, who require accounting graduates to develop independent learning skills and self-manage their understanding of what needs to be learnt and how to learn it. Having these skills enables accounting graduates to effectively engage in lifelong learning, as once they enter the workforce, they can take stock of the knowledge and skills they currently possess to aid in determining new learning opportunities.

Whilst not a focus, a difference is apparent in frequency of use of the discussion board, as reported via the student interviews compared to access levels seen in the learning analytics data. Whilst the students interviewed did not discuss using this resource to any great extent, in four units where a discussion board was offered, analysis of the learning analytics data shows heavy use throughout the semester. This usage peaked in the lead up to the examinations, supporting findings by Dawson et al. (2008). A possible explanation for omission of this resource in the interviews is that current university students do not really take note of when they access this resource, given they continually communicate in an online environment in one form or another. Further, as students may see it simply as a communication tool, they may fail to acknowledge

it as a learning tool, even though they may be reviewing answers to questions on content and concepts supplied by the academic or fellow students. As noted, this study did not delve into use of the discussion board. However, it is surmised that students use the discussion board for clarification of content – a plausible explanation particularly for the two management accounting units, which based on the learning analytics data, show higher usage of the discussion board than is evident in the financial accounting units. A likely cause for this difference concerns different configurations. In the management accounting units, the discussion board was set up on a topic-by-topic basis, with this further enhanced in the third year unit by the addition of frequently asked questions and answers. This set up enables easy and more efficient access for students such that they can identify and review issues of concern more easily, which may have contributed to increased usage. As noted by Winne (2006), an educational tool will be adopted if students believe it has *task value* (i.e., useful for their learning) and they have sufficient skills to use the tool effectively.

Analysis of the learning analytics data also shows that more students in second and third year revisit learning resources relating to prior week's topics well before the end of each semester. In doing so, these students are engaging in *rehearsal* and *elaboration* strategies to ensure content is understood and learnt (see Section 10.2.2.3).

In general, students in later years viewed readings and/or articles on the LMS more than their first year counterparts. This suggests that as students progress through their degree and mature, they are better able to appreciate linkages to real life scenarios or workings within organizations through additional readings. Provision of these resources exposes students to the professional world which they will enter and provides them with the opportunity to connect what they are studying with its application. This highlights the importance of providing learning resources, which overtly link to real world scenarios, as it fosters students' appreciation and awareness of the profession of which they will become a part.

In summary, across the five foci units, lecture slides, tutorial questions and answers and the discussion board were the most heavily accessed learning resources with, on average, two to three accesses a week. Extensive usage occurred during the final weeks of the semester and the SWOT Vac study period. In this latter period, students also heavily accessed past exam questions and solutions. The unit guide and journal articles were also utilised.

The next section, which addresses RQs 2 and 3, reports contributions regarding: (1) motivations to engage with the learning resources provided; and (2) the SRL strategies students adopt when engaging with these resources. In doing so, where relevant, specific linkages are made to the data sources.

10.2.2 Research Questions Two and Three

Recall, as stated in Section 2.4.5, RQ2 seeks an understanding of how motivational beliefs and SRL strategies impact how and why accounting students engage with the learning resources provided to them in a blended learning environment, whilst RQ3 specifically seeks to understand whether these motivational and SRL strategies change as students progress through their degree.

Given the accounting focus in this study, findings extend prior research regarding the strategies students adopt in higher education beyond maths, social studies, humanities, natural sciences, arts, english, behavioural sciences, bioscience and medicine, science, programming, education, statistics and psychology (see Endedijk et al., 2013; Hood, 2013; Kesici et al., 2011; Virtanen and Nevgi, 2010; Bergin et al., 2005; Wolters and Pintrich, 1998; and VanderStoep et al., 1996). Specifically, in contrast to prior studies, this study does not seek to identify the SRL strategies that students adopt and their impact on academic performance or level of satisfaction (Torenbeek et al., 2013; Ning and Downing, 2012; Puzziferro, 2008; Yukselturk and Bulut, 2007; Nota et al., 2004; VanderStoep et al., 1996). The rationale for not pursuing engagement with learning resources and its association with academic performance or satisfaction levels, includes: (1) interest in determining the underlying motivation and learning strategies adopted with respect to formative learning resources irrespective of their impact on performance; and (2) the extensive body of literature that examines these associations.

With respect to accounting, this study extends the current literature in two respects: it studies a different environment, namely the autonomous and self-directed learning environment of blended learning; and secondly it examines different levels within the undergraduate degree, namely first, second and third year. This contrasts with specific studies in accounting that focussed on: an intervention on SRL behaviours (Becker, 2013); accounting students' preferences in relation to motivation and learning strategies for team learning (Opdecam et al., 2014); and the relationship between intrinsic and extrinsic motivational constructs, deep versus surface learning approaches, and academic performance (Everaert et al., 2017).

In contrast, the main contributions from this study are twofold: (1) better understanding regarding why students are motivated to engage with the learning resources provided to them in a blended learning environment; and (2) in response to requests made by Cassidy (2011), Virtanen and Nevgi (2010), and VanderStoep et al. (1996), further understanding about the SRL strategies students adopt when engaging with the learning resources provided to them in

an undergraduate blended learning environment, including whether these strategies change over time. Herein research is scarce. For example, Hood (2013) examined the predictors of student intentions to access face-to-face or online lectures and tutorial options in a blended learning second year psychology statistics course, finding that higher work commitment, greater reliance on *rehearsal,* higher self-regulation, and higher *critical thinking* were the most important predictors of intentions to use online lectures. Similarly, results from a review of twelve studies (in the period 2004 – 2014) looking at the motivational and SRL strategies adopted by students in online and traditional higher education environments (i.e., face-to-face) suggest that application of *time management, effort regulation, critical thinking* and *metacognitive strategies* lead to higher academic outcomes, whereas *rehearsal, elaboration*, and *organization* were not related to online academic achievement in an online environment (Broadbent and Poon, 2015). In contrast, results from this study show that the learning strategies students adopt in a blended learning environment include new aspects (*goal setting* and *metacognitive self-regulation),* and to a lesser extent *critical thinking,* together with what was previously seen as less significant (*rehearsal* and *elaboration).*

Previous longitudinal studies and studies looking at prior experience report that where students in a traditional face-to-face environment witness their lecturers modelling the strategies of *self-efficacy, elaboration* and *critical thinking,* students' use of these strategies increases throughout the semester (Muis and Duffy, 2013). Similarly, over time students in web-based and online environments are shown to adapt planning, *organization, help-seeking* and reflection strategies, and utilise *task value, time management, metacognition* and *critical thinking* more effectively (Whipp and Chiarelli, 2004; Wang et al., 2013). In contrast this study, in a blended learning environment, shows that this varies with student experience as third year students are more adept at utilising *rehearsal* and *elaboration* than their first and second year counterparts, and that they are more able to *set goals and reflect* on their learning.

The following discussion elaborates on these contributions to the SRL literature and to practice.

10.2.2.1 Motivation to engage with the learning resources provided

Across all three year levels, results from the student interviews suggest that students are both intrinsically and extrinsically motivated to engage with the learning resources provided. This supports contemporary views of motivation, which argue that intrinsic and extrinsic motivation act simultaneously (Pintrich and Schunk, 2002). As noted in the interviews with CEs across all five units, various learning resources are made available to students to enable

them to "perform at their best" (ACF1100 CE) and "to learn and develop understanding" (ACF3100 CE). Indeed, eight out of the nine CEs interviewed believed students were motivated to engage with the learning resources purely for extrinsic reasons. Therefore, academics should be heartened to know that students are both intrinsically and extrinsically motivated to engage with the resources, and should continue to invest time in the provision of learning resources.

Given the research sample comprises students majoring in accounting, it is unsurprising that they seek to master accounting concepts and gain knowledge that they will draw upon as practising accountants i.e., evidence of *intrinsic goal orientation*. With respect to whether there is a change across the three year levels, results from the questionnaire concerning *intrinsic goal orientation* and student interviews suggest that third year students are more intrinsically motivated and exhibit greater *intrinsic goal orientations* to engage with learning resources than their first and second year counterparts. In part, this is unsurprising, as these students are about to embark upon their chosen career and thus are interested in ensuring that they have the requisite technical skills expected by employers and are able to show they have achieved the required mastery of expected accounting concepts (Kavanagh and Drennan, 2008).

Whilst this study does not explore linkages between motivational aspects and resultant academic performance, findings reveal that students in all three year levels are extrinsically motivated to engage with learning resources. Those students interviewed stated that engaging with learning resources, such as lecture slides, tutorial solutions and past examination questions and solutions, assisted them in ensuring academic success in their unit.

In addition, across all three year levels, a common motivator underpinning student engagement is acquisition of understanding with students becoming more goal directed and critically reflective as they progressed as students. This was particularly true in relation to the usage of lecture slides, tutorial solutions and the textbook. Thus, as accounting students progress through their degree (RQ3), there is a slight but consistently positive change regarding students' engagement with learning resources to facilitate their understanding. For example, the *first year students* interviewed stated that they engaged with the learning resources as it assisted them to understand content. *Second year students* mentioned such use not only allowed them to understand content, but further assisted them in clarifying difficult concepts and issues they encountered. These second year students appear to establish a clear purpose or goal with respect to engaging with these learning resources, as they identify where their level of understanding is lacking and regulate their usage to address this, thus exhibiting *metacognitive self-regulation* and self-management. This purpose was echoed and extended by *third year students,* who acknowledged that difficulty in content makes it challenging and stimulating, as

it requires them to question their thinking and draw on prior accounting knowledge to consolidate their understanding. As a result, they engaged in the higher-order strategy, *critical thinking*. Whilst these students involved did not specifically state that they applied their prior knowledge to new situations to solve problems, which would meet Pintrich et al.'s (1991) definition of *critical thinking* and satisfy accounting educators who rank problem solving skills very highly (see Howcroft, 2017), it goes part way to suggest that third year accounting students exhibit some aspects of *critical thinking*. It is difficult, however, to categorically state that these students exhibit all aspects of *critical thinking* and to corroborate this qualitative outcome with findings from the questionnaire, as the questionnaire only contained one statement relating to *critical thinking,* which is a limitation of this study.

In relation to the importance of engaging with learning resources to enhance understanding, the following statements, which are drawn from the *intrinsic goal orientation* scale (Pintrich et al., 1991) and amended to suit this study, were included in the questionnaire:

> *I find it satisfying to try and understand the content in this unit as thoroughly as possible.*
> *I find it satisfying to try and understand the content in my accounting major as thoroughly as possible.*

The importance that third year students attributed to these two questionnaire items, corroborate the interview findings and highlight the interconnectedness between *intrinsic goal orientation* and understanding. Thus, students progressively in the course of their studies see the inherent benefit of engaging with learning resources as it leads to further understanding and mastery of content, something required when they enter the profession.

Further, this transition in understanding, particularly evident in third year students, could imply that as students progress through their degree, they engage in a deeper approach to learning and more advanced Conceptions of Learning (CoL). Herein findings show some support for a number of the CoLs, as identified by Saljo's (1979) seminal work, and Marton et al.'s (1993) work, where CoL refers to students' beliefs about what constitutes learning. Whilst not a main aim of this study, a student's CoL has a direct nexus with his/her learning intentions or motivations as it refers to the student's beliefs about what constitutes learning. Given second and third year students noted that their motivation to engage with learning resources enabled them to consolidate their understanding and meaning, and relate new material to prior knowledge and experiences, findings reflect the qualitative higher-order CoL 4, namely abstraction of meaning, CoL 5, an interpretive process aimed at the understanding of reality, and CoL 6, changing as a person (Abhayawansa et al., 2017). Accordingly, results from this study show that both second and third year students exhibit higher-order CoLs when engaging

with the learning resources provided, with statistical support (albeit at the 10 percent level) for this being more prominent in third year. This qualifies some findings by Abhayawansa et al. (2017). For example, whilst Abhayawansa et al.'s (2017) study suggests that third year students are more likely to exhibit higher-order CoLs than second year students, they found that the majority of second and third year students exhibit lower-order CoLs, reflecting learning as an increase in knowledge. In contrast, this study shows students develop higher order CoLs as they progressed – an outcome that should be expected of graduating students.

10.2.2.2 Additional motivators for students to engage delineated by year level

Notwithstanding the overwhelming intrinsic and extrinsic motivation to engage with learning resources, coupled with the underlying motivation to gain understanding, albeit in various degrees across all three years, results from the student interviews yield additional motivators. For example, for *first year students,* lifelong learning attributes are top of mind. Findings that students are concerned with being able to understand and identify when they need to learn something and thus engage with the learning resources to facilitate this understanding, shows self-management and is an attribute academics should continue to foster. Further, appreciation for lifelong learning, also evidenced by *third year students*, suggesting that students are well placed to adopt an ethos of continual learning (IES 7), such that they will continue to develop skills in an ever-changing world once they enter the workforce. Given technological enhancements such as artificial intelligence, big data, cybersecurity and globalisation, the role of accountants is continually evolving making continual learning an imperative for graduates.

Whilst accounting educators can use learning resources to teach students skills how to analyse and interpret large amounts of data, there is need for greater emphasis on providing resources to enhance communication, strategic, analytical and critical thinking skills. Focusing on these attributes will ensure accounting graduates are better able to interpret and analyse the data obtained from artificial intelligence, machine learning and big data so that they can advise management in order to add business value. Moreover, in light of students' evident intrinsic motivation and display of lifelong learning attributes, provision of learning resources that enable them to learn topics or concepts of interest that may not directly relate to the curriculum, should be made available throughout the accounting degree.

Further, findings extend and amplify earlier research by Kavanagh and Drennan (2008) who found that Australian business and accounting students rate continuous learning (i.e., being up-to-date) as the most important attribute in their future career. The study's findings of

first year students being concerned with future career goals is perhaps unsurprising, given that they have just completed the final year of high school, where considerable thought would have been given to ensuring alignment between university courses and each student's future job aspirations. This aligns with findings from Teixeira, Gomes and Borges (2016).

The study's *second year students* were less career-focussed, noting engagement with the learning resources if they felt that doing so would: (1) be useful i.e., it would assist them in completing the task at hand (*task value)*; and (2) result in positive outcomes, whether that be completing an assessment task or ensuring learning goals are achieved (*control of learning beliefs).* Thus, their motivation relates to effort and its impact on current learning.

There are evident changes for *third year students* where, as a result of *self-efficacy,* findings indicate that the more confidence they garner from their studies in accounting, the more likely they are to engage with the learning resources provided. While supporting prior research showing that students with higher internet experience have significantly higher levels of *self-efficacy* and cognitive strategy (i.e., Samruayruen et al., 2013), this study's findings indicate *third year students* are more *intrinsically goal oriented* and motivated by the immediacy of their chosen career path.

10.2.2.3 SRL strategies adopted by students when engaging with the learning resources

The study's findings differ in several ways from prior research related to two strategies concerning students' use of learning resources, namely *elaboration* and *rehearsal*. Firstly Broadbent and Poon (2015) found that the *elaboration* "technique seems to be useful in the traditional classroom, [however] it appears to be less useful in the online environment" (p. 12). Secondly, Hood (2013) found that students who place a higher reliance on *rehearsal* (a surface approach) are more likely to use online lectures. Findings from this study extend Hood (2013) as accounting students also demonstrate evidence of employing *elaboration* techniques when engaging with online resources (lecture slides, tutorial solutions and online quizzes).

This is important as whilst *rehearsal* does not promote rich learning (Pintrich, 2000), *elaboration* is considered a higher-order strategy as it involves deeper processing of information (Broadbent and Poon, 2015). Findings showing that these accounting students engage in both *rehearsal* and *elaboration* techniques, support conclusions drawn by authors such as Hall et al. (2004), Birkett and Mladenovic (2002), Lucas (2001), English et al. (1999), and Jackling (1999), who suggest that encouraging adoption of a deep approach to learning is possible. However, studying accounting, which by its nature comprises a mix of mechanical and conceptual approaches, firstly requires lower surface level strategies to take place prior to

students undertaking a deeper approach to learning in order to progress to higher levels of understanding. Thus, this study supports prior research that students may use both a deep and a surface approach on different occasions or simultaneously (Entwistle et al., 2000; Kember, 1996) when engaging with various learning resources.

As evident from interviews in this study, students engaged with learning resources in order to make connections between what they already know and through *elaboration* strategies, integrate this with new knowledge in order to commit it to long term memory. *Second year students* engage in *elaboration* through summarising and note-taking, particularly when engaging with the lecture slides. *Third year students* expand on these techniques through utilising more sophisticated tools such as diagrams, flow charts and cue cards as they engage with learning resources in order to assist them in understanding and committing new concepts to long term memory. Further, analysis of the learning analytics data confirms that all students, with a greater proportion of *second and third year students,* revising prior content consistently throughout the semester. These findings suggest that these students see the importance of improving their understanding of later content by referring back to prior content, thereby making linkages between topics and facilitating progression to the higher-order strategy of *elaboration*.

However, reflecting on changes in reliance on the *rehearsal* strategy across the three years, non-parametric results reveal that *third year* students engage in a surface approach to a greater extent than both first and second year students. This over-reliance on the *rehearsal* strategy may be a consequence of the nature of accounting and how it is taught and assessed, as it is consistently evident even in all three years (see Becker, 2013). For example, in the third year financial accounting unit where, for example, topics such as accounting for extractive industries, leasing transactions and financial instruments, may encourage this kind of behaviour as students can rote learn the journal entries required. A further possible explanation for the increased reliance on *rehearsal* by third year students may relate to pressures, including anxieties, in ensuring that they are well placed and prepared for job interviews to secure graduate employment positions.

Whilst third year students appear to rely more heavily on *rehearsal* as a strategy, a second year student commented:

> "*Accounting is a very repetitive learning area. I do use a lot of rote learning, which is effective for studying for tests*".

Alternatively, such comments suggest that it is the nature of accounting and how it is taught and assessed that encourages this type of strategy. Thus, one is left to ponder whether this is

unique to accounting. Here, Wynn-Williams, Beatson and Anderson (2016) found second year accounting students showed an increase in the surface approach to learning when engaging with unstructured business cases in presentations. Whilst the authors felt that using unstructured business cases should have encouraged further investigative and critical analysis, thus moving to a deeper approach to learning, their students did not put in the extra effort required given the presentations formed only ten percent of the grade. Similarly, as students in this study are drawn from units required for professional accreditation where accreditation guides the curriculum and assessments set, this could also be a plausible explanation for such behaviours. For example, the focus on knowledge and skills, as listed in IES2 *Initial Professional Development – Technical Competence* encourages universities to concentrate on ensuring students are cognisant of the accounting standards and technical requirements, and, IES 6 *Initial Professional Development – Assessment of Professional Competence,* encourages assessment of these concepts via an examination. This may contribute to over-reliance on *rehearsal* even though exam questions can be of the higher-order application and analysis type. Whilst the rhetoric from the professional bodies is that the accreditation guidelines are not prescriptive, it is difficult for academics to stray too far from current practices especially in an environment where outcomes from research and teaching and learning affect promotion. Regardless, it is imperative that academics become more creative in the use of assessment types to encourage students to move from the rote learning behaviour of *rehearsal* to higher-order learning strategies. In achieving this, consideration could be given to setting assessments that encourage students to apply the accounting concepts learned through assessments linked to real world scenarios. In addition, consideration should be given to increasing the marks available or weighting of such assessments thereby encouraging students to put in the extra effort required to achieve a deeper approach to learning. Further, students could be required to present their findings as if they were in the workplace e.g., *viva voce* type assessments, which is a practice not currently utilised in these units.

Alternatively, third year students may arguably be more experienced in terms of engaging with learning resources. Consequently, consistent with Samruayruen et al. (2013), students with increased internet experience, and higher levels of *self-efficacy* are more adept at engaging in these cognitive strategies of *rehearsal* and *elaboration*.

This is supported by results from factor analysis showing that in comparison to their *first and second year* counterparts, *third year students* are more adept at utilising both *rehearsal* and *elaboration* strategies. Herein, as students engage with the various learning resources available to them, they may switch from one SRL strategy to another. For example, students

may utilise *elaboration* when reviewing lectures and attempting tutorial questions to ensure they understand content and commit concepts to long term memory. Concurrently they may engage in *rehearsal* to memorise certain terms, concepts and procedural transactions through using and re-using learning resources such as quizzes and tutorial questions and solutions. Providing learning resources through a LMS in a blended learning environment affords students the opportunity and convenience of applying both of these strategies. These findings that students utilise both *rehearsal* and *elaboration* strategies to differing degrees as they engage with resources such as lecture slides and tutorial questions and solutions, add support to the use of SRL strategies being cyclical and subject to change over time (Azevedo and Witherspoon, 2009; Zimmerman, 2008; Pintrich, 2004; Schunk, 2001; Winne, 2001; Winne and Perry, 2000; Pintrich, 2000). This further supports Duff (2004, p.412) who noted that "[a]pproaches to learning [surface v. deep] are malleable, dynamic and sensitive to the learning context".

Additionally, results from the factor analysis show that students set goals and are able to reflect on performance feedback to identify and action learning opportunities and self-improvement (Factor 1). Akin to the self-management accounting learning standard (Hancock et al., 2010), this suggests that the accounting students in this study take responsibility and accountability for their own learning, choosing learning resources that assist them in completing tasks and enhancing knowledge and understanding. This can be further extrapolated to students being able to identify where they feel learning needs to be enhanced, and so can identify learning opportunities. Whilst the students did not refer to goal setting, reflection or self-management per se in the interviews, which may be due to a lack of direct questioning (an acknowledged limitation of this study), they identified that they engaged with a variety of available learning resources. Thus, their reflection on their current level of understanding, in turn directs and guides these students in terms of the relevant learning resources. For example, by referring to the unit guide and tutorial program/schedule to regulate their learning against set goals, students showed evidence of planning their time to ensure adequate effort is put in to completing tasks (i.e., Dabbagh and Kitsantas (2005) who showed that administrative tools, such as the unit guide, support self-monitoring, self-evaluation and time planning and management).

Of the cognitive strategies used by students, factor analysis points to *goal setting* and *metacognitive self-regulation* strategies being more pronounced in *third year students*. Having a stronger grasp on these strategies in third year and taking charge of learning to incorporate autonomy and self-management skills, puts these students in good stead for when they enter

the workforce as an accountant and are required to juggle their job and further study to become a fully qualified certified practising accountant (CPA) or chartered accountant (CA), and beyond this enhance their knowledge and skills through CPD.

Metacognitive self-regulation is shown by non-parametric analysis of results from the questionnaire to be a common strategy utilised across all three year levels. This strategy, where students monitor, regulate and fine-tune their cognitive activities through engagement with learning resources, is more prominent in *third year students.* When combined with findings of the role of intrinsic motivation, this finding is consistent with an early study of students of mathematics, english and social science where students reported higher levels of cognitive strategy if they value and have an interest in the subject area (Wolters and Pintrich, 1998). These findings are also consistent with research showing that higher *metacognitive self-regulation* is an important predictor in accessing online lectures (Hood, 2013), and that *metacognitive self-regulation* improved after students engaged with an ePortfolio (Nguyen and Ikeda, 2015).

10.2.2.4 Reflections on whether students' motivation and engagement with learning resources changed as they progressed through their degree

In addition to the changes detailed above, the following insights are noted concerning how students' motivation and SRL strategies change as they progress through their degree. Results from the student interviews suggest that *third year students* believe their motivation to engage with learning resources increases as they progress through their degree. As identified earlier, this is understandable as these students are about to enter the workforce to commence their prospective career. Thus, they wish to be successful by ensuring that they have the requisite technical skills that employers expect (Kavanagh and Drennan, 2008). This was less evident in *second year students*, as in some instances their motivation to engage with the resources remained unchanged from first year.

Interestingly, as students progress through their degree, they are able to identify which learning resources better met their learning needs (i.e., had *task value).* Here, qualitative results, from interview analysis and analysis of the open-ended survey statements/questions, suggest that student engagement with learning resources either remained the same or increased from one year to the next. Reasons for the increase relate to an increase in the level of difficulty in course content, and an expectation that students have a better grasp of knowledge and are better able to apply such knowledge in the later years of their degree. Examples that students valued include the use of case studies in management accounting, and the use of practice questions

and solutions in financial accounting. Thus, whilst the provision of learning resources such as lecture slides, tutorial solutions and past exam questions and solutions are considered useful regardless of the stream of accounting, specific types of learning resources may be better suited to specific streams of accounting.

The next section provides the implications of the findings of this study to practice, specifically accounting educators and the profession.

10.3 Implications for practice

Findings from this study suggest that accounting educators should continue to provide learning resources through a LMS, as students are both intrinsically and extrinsically motivated to engage with these. This is reinforced by students' acknowledgement that engagement with the learning resources aids understanding of the content. Whilst acknowledging that students will switch between a surface or deep approach when engaging with learning resources, findings indicate that educators should provide learning resources that push students to engage in higher-order learning strategies such as *elaboration* and *critical thinking*.

In this regard, the most utilised resources were lecture slides, tutorial solutions and past exam questions and solutions. As a common motivator for engaging with them is extrinsic motivation, the nexus between these learning resources and assessments is acknowledged. However, given that accounting graduates are required to commit to lifelong learning, it is incumbent on academics to provide different types of learning resources that utilise available technological advancements.

Of the resources, that provide students with opportunities to gain understanding of the profession and the world into which they will enter as professionals, findings show that additional readings and refereed journal articles are better suited to *third year students*. Thus, academics are encouraged to scaffold use of applicable real life or business type articles with a progression from short newspaper articles at first year, to professional articles (such as those found in Charter and In the Black[96]) at second year, and finally to refereed journal articles in third year.

Of the other resources, students make active use of the unit guide and tutorial programs as these assist in self-management, planning and goal setting. Thus, academics are encouraged to supply these, and additional planning tools, to foster student development of these important

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[96] Charter and In the Black are the professional journals provided to members of CAANZ and CPA Australia respectively.

attributes. Regarding the discussion board, students utilise it more actively when it is broken down by topic area and includes frequently asked questions and answers. Thus, it is recommended that where feasible, academics set up discussion boards on a topic-by-topic basis. Whilst this approach initially requires additional academic effort, it should encourage students to proactively search for answers to their content queries, thereby allowing them to be more self-sufficient.

Finally, both *first year* and *final year* accounting students believe in the importance of lifelong learning – a finding which contradicts O'Connell et al. (2015) who found that employers and academics both felt that students believed learning ended with the bachelor degree qualification. Conversely, this study has identified that students throughout their course reflect upon their learning needs and target learning resources to fill their gaps. This is encouraging as it suggests that graduates have the motivation required to engage in the process of discovering new knowledge and to build on existing knowledge and skills. As the world is continually changing, an accountant's role will continue to evolve and should be encouraged by the accounting professional bodies, who provide face-to-face and e-learning CPD.

In contrast to the study's first and third year counterparts, *second year* accounting students do not seem to place great emphasis on lifelong learning. This aligns with Zaitseva, Milsom and Stewart (2013) who reported a shift in student perspectives from first year to second year as *second year students* find a significant step up both in the level of difficulty and workload, making them more focused on academic performance to ensure they complete the year successfully. Whilst this study found that students' motivation to engage with resources remained the same in second year as first year, second year students acknowledged the substantially increased level of difficulty, and focussed on ensuring that they meet the increased academic demands. Thus, they may be less focused on lifelong learning given that graduation is still at least a year away. One means to address this issue is to connect the second year subject materials to the world of work through inviting guest lecturers from industry to foster an understanding of the relevance of course materials to the workplace. Moreover, academics could encourage second year students to engage with activities run by professional bodies, which are available to student members so that they become exposed to the profession.

10.4 Summary of the contributions arising from this study

In this section, the three key contributions from this study are now summarised.

1. Deeper understanding of the motivations and SRL strategies accounting students apply when engaging with learning resources in a blended learning environment; and an understanding of how these change over time.

These accounting students are intrinsically and extrinsically motivated to engage with learning resources and exhibit *intrinsic goal orientation* to enhance their understanding so that they can later apply that knowledge when they are employed in the profession. The motivation to engage with learning resources increases for third year students as they are aware of their need to ensure that their knowledge and skills remain up-to-date given they will soon be entering the workforce.

Rehearsal, elaboration, metacognitive self-regulation, goal setting are important SRL strategies adopted by students whilst engaging with the learning resources provided to them in a blended learning environment. In their engagement with a variety of learning resources, students use *rehearsal* and *elaboration* strategies concurrently. These accounting students develop higher-order cognitive skills and exhibit advanced CoLs. Interestingly, *third year students* are more adept at utilising *rehearsal* and *elaboration* than their first and second year counterparts, and are better able to set goals and reflect on their learning. Further, as students progress through their degree, there are notable differences in the level of their understanding, which suggests that students adopt a deeper approach to learning as time passes.

2. Insights for academics regarding the learning resources with which students are more inclined to engage and why.

As mentioned, students are exhibiting *rehearsal* and *elaboration* strategies when engaging with the learning resources provided to them on the LMS. The most accessed included: lecture slides, tutorial questions and solutions, past exam questions and solutions, discussion board and to a lesser extent the unit guide and journal articles. Continuing to provide these resources is warranted if the teaching and learning environment continues to reflect the lecture and tutorial mode, with emphasis on the current form of final summative assessment i.e., end of semester examination. Further, some learning resources allow students to grasp new knowledge (e.g., lecture slides and readings), whilst others allow students to revise, practice and make connections between concepts (e.g., tutorial questions and solutions, quizzes and past exam questions and solutions). However, given the impact of artificial intelligence, big data and globalisation on the future of accounting, which requires graduates to be equipped with critical and strategic thinking skills and communication skills, consideration should be given to providing learning resources that foster development of these skills and higher-order cognitive

skills. This includes considering configuring discussion boards to facilitate ease of use by students, whilst scaffolding and transitioning the provision of articles and readings across year levels.

3. Contribution to the accounting profession through the provision of insights regarding what and how members may access and engage with learning resources as they continue on their lifelong learning journey.

As professional bodies' current CPD offerings are delivered through an online medium, knowing that students are intrinsically motivated to engage with the learning resources should be reassuring for them. More importantly, the accounting profession should be heartened by evidence that at least first and third year accounting students acknowledge the importance on lifelong learning.

From an educator's perspective, in relation to second year students where lifelong learning is not top of mind, academics would advantage their students by incorporating activities that directly connect to the profession i.e., invite guest speakers into their classrooms. This may encourage students to internalise professional values and attitudes, which may translate into an understanding of what is required once they enter the workplace, including the requirement to continually update their skills and knowledge.

10.5 Conclusion

This chapter discussed and identified the theoretical contributions related to the SRL strategies students adopted when engaging with learning resources in a blended learning environment. In doing so, the study contributes to calls from Apostolou, Dorminey, Hassell and Rebele (2017) and Virtanen and Nevgi (2010) for more studies that contribute knowledge about the cognitive processes and SRL strategies adopted by students in the context of different instructional approaches. Further, findings provide practical insights relevant to accounting educators and the accounting profession. The next chapter concludes the thesis.

11: Conclusion

11.1　Overview of the chapter

The previous chapter discussed findings related to accounting students' motivation to engage with the learning resources, summarised the theoretical contributions to the SRL literature and outlined the contributions to practice. This chapter concludes the thesis. It commences by restating the aims of the study and then recaps the three research questions. Next, key contributions and findings related to the questions are provided. Following this, limitations of the study related to data collection, issues with the instrument and context/setting are presented, after which the chapter is drawn to a close with suggestions of opportunities for future research.

11.2　Aim of this study

The aim of this research was to advance understanding of what motivates accounting students to engage with the various formative learning resources provided to them in a blended learning environment, and what learning strategies they adopt in this environment. In this regard, all data collection (questionnaire, interviews and learning analytics data) for the study were conducted prior to COVID-19, where a sharp and complete transition to online delivery of materials was necessitated. Thus, findings are not confounded by this change in circumstance. Equally, findings are timely, given the study's focus on student engagement with online learning resources, which will continue to be of significant importance to students until COVID-19 and its restrictions disappear.

A further aim was to determine whether students' engagement with these strategies and their motivations change over time i.e., as they progress through their degree. University students are required to regulate their own learning as the learning environment is less directed and controlled than in secondary education, and further it is characterised as an environment with limited external support. Moreover, students are provided with many learning resources, often with little direction from academic staff on when and how to engage with the provided resources. As such, this study sought to determine whether considerable self-motivation and self-regulation (which is certainly required in an online environment imposed as a result of the COVID-19 restrictions) holds true in a blended learning environment. Additionally, as students have a choice as to the resources they access and how they use these resources, this study

sought to determine whether this provided opportunities for students to apply and or develop SRL strategies differently.

Given that accounting graduates are required to continually update their skills and knowledge through continuous learning, insight into how students learn in a university environment provides valuable information about how they may learn in the future i.e., commit to lifelong learning when employed as an accountant. In so doing, students need to demonstrate application of knowledge and skills with responsibility and accountability for their own learning, and this needs to continue throughout their career. Herein, lifelong learning activities can be undertaken online or face-to-face through professional bodies and other providers, with the former being more prominent. Consequently, self-management is an accounting learning standard of particular importance, which accounting students are required to exhibit whilst completing their degree. This capacity to reflect on performance feedback in order to identify and action learning opportunities and self-improvement is considered to be consistent with lifelong learning, and is an important requirement for SRL.

Moreover, this study sought to better understand why students are motivated to engage with the learning resources provided to them, which is important because if academics are aware of this, it may help to shape the learning resources provided and future curriculum design – an issue of significant relevance, given COVID-19. However, it is acknowledged that as a result of COVID-19, which necessitated a rapid shift to online teaching and more pervasive online interactivity, coupled with improved technological advancements, a question that comes to mind is whether the inclusion of learning resources on the LMS can indeed be viewed as blended learning. Whilst acknowledged as a limitation in this study, it should be noted that at the time of data collection, the provision of learning resources on the LMS was considered to fit within the definition of blended learning utilised in this study.

11.3 Research questions

In order to meet the stated aims, the following research questions were answered:

RQ1: What, when and how often do accounting students engage with the different learning resources provided to them in a blended learning environment?

RQ2: How do motivational beliefs and self-regulated learning strategies impact how and why accounting students engage with the learning resources provided to them in a blended learning environment?

RQ3: As undergraduate accounting students progress through their degree, how do their motivational beliefs and self-regulated learning strategies change in a blended learning environment?

11.4 Findings

In response to RQ1, this study reveals that across all three year levels accounting students are engaging (to varying degrees) with a variety of learning resources to facilitate their study. These include: lecture slides, tutorial questions and solutions, practice/revision questions and solutions, YouTube videos, readings, online quizzes, and the discussion board, all of which are accessible through the LMS. Those most heavily accessed include the lecture slides, tutorial questions and solutions and the discussion board, and to a lesser extent the unit guide and journal articles/readings, with students accessing them, on average, two-to-three times a week. Unsurprisingly, students make extensive use of the majority of these resource in the final weeks of the semester and the SWOT Vac period i.e., in the lead up to the examination. In this latter period, students also heavily access past exam questions and solutions.

Results show that students are both intrinsically and extrinsically motivated to engage with learning resources, and engage with them to further their understanding. Third year students are particularly motivated to consolidate their understanding of requisite accounting skills and knowledge.

In response to RQ2, the SRL strategies students adopt whilst engaging with learning resources provided in a blended learning environment include *rehearsal, elaboration, metacognitive self-regulation* and *goal setting.* Herein students use and re-use learning resources, such as tutorial questions and solutions, and online quizzes amongst others, to assist them in remembering content (*rehearsal*), make connections between what they already know, use the resources to gain new knowledge (*elaboration*) and, finally to ensure that the knowledge gained from engaging with the various learning resources fits together. In addition, students plan, monitor and regulate their learning. They set goals, and monitor and reflect on their understanding to ensure concepts are clearly understood. Further, students actively utilise the unit guide to assist in their goal setting process.

Findings also contribute to knowledge regarding whether students' motivation and SRL strategies change over time, which addresses RQ3. This understanding is critical given the requirement for accounting graduates to continually engage, throughout their professional careers, in SRL behaviours. Results reveal that as students progress through their degree, they

adopt a deeper approach to learning. Further, in third year they are more adept at utilising *rehearsal* and *elaboration* strategies than their first and second year counterparts, and are more *intrinsically goal oriented* and more cognisant of the importance of lifelong learning. This latter finding should be viewed positively by the accounting profession given the requirement for accounting professionals to continually update their skills and knowledge. Overwhelmingly evidence suggests that over time student motivation increases due to: an increase in the level of difficulty in the content from one year to the next, which requires an increase in engagement to ensure that new knowledge is gained; and an increase in motivation due to an overwhelming sense of needing to remain up-to-date with new concepts. Further, a difference was noted with regards to specific resources such as the discussion board, where increased usage of the management accounting discussion board was recorded given it was setup on a topic-by-topic basis.

11.5 Contributions

The key contributions from this study include deeper understanding of what motivates students to engage with the formative learning resources provided in a blended learning environment, and the strategies adopted by students whilst engaging with them. Through combining data acquired from interviews, with that acquired through a questionnaire supplemented with learning analytics data, a rich understanding was acquired about what students are doing whilst undertaking their accounting studies. These insights offer potential in terms of leading to change in what and how learning resources are provided, meaning that future offerings may be enriched and students' learning experiences enhanced.

Since it is imperative that accounting students become a member of a professional body in order to facilitate professional employment and shape a successful career, and that such membership commands them to continually update their knowledge through lifelong learning, acquisition of the aforementioned knowledge also contributes to professional practice. As professional bodies provide additional educational and training materials to their members, having an understanding of the motivational and SRL strategies members adopt offers the potential to provide insight into what and how members may access certain learning resources whilst in the profession.

Specifically, the contributions from this study are as follows:

- *Deeper understanding about the motivations and SRL strategies accounting students apply when engaging with learning resources in a blended learning environment, and enriched insight as to how these change over time.*

Herein findings from the study both augment and differ from prior research. Firstly, motivation to engage with the learning resources to enhance their understanding is consistently evident across all three year levels, with students becoming more goal directed and critically reflective as they progressed as students. In addition, third year students are more intrinsically motivated and exhibit greater *intrinsic goal orientations* to engage with learning resources. This is due to their awareness that they require up-to-date knowledge and skills given their imminent entry into the workforce and that as the level of difficulty increases, studying accounting becomes more challenging and stimulating, which requires them to draw on prior knowledge in order to consolidate their understanding.

As students progress through their degree, they are more adept at being able to reflect on their current level of understanding, which in turn directs and guides them in relation to the learning resources they engage with. In addition, this leads to students revising prior content earlier in the semester through re-engaging with learning resources and making linkages between topics, which facilitates them moving to the higher-order *elaboration* strategy.

Findings contrast with Broadbent and Poon (2015) who reported that lesser academic outcomes are associated with *rehearsal, elaboration* and *organization*, and higher ones from *time management, effort regulation, critical thinking* and *metacognitive strategies*. Results from this study show that the learning strategies adopted by students in a blended learning environment include new aspects (*goal setting* and *metacognitive self-regulation)*, and to a lesser extent *critical thinking*), together with what was previously seen as less significant (*rehearsal* and *elaboration*).

Hood (2013) found that students who placed a greater reliance on *rehearsal* were more likely to engage with online lectures, in contrast, this study finds that accounting students also employ *elaboration* techniques when engaging with online learning resources. Further, students, through engagement with a variety of learning resources, use *rehearsal* and *elaboration* strategies concurrently, with third year students being more adept at utilising *rehearsal* and *elaboration* than their first and second year counterparts.

Metacognitive self-regulation is shown to be a common strategy utilised across all three year levels but more prominent in third year students. When combined with findings of the role of intrinsic motivation, this finding extends findings from an early study of students of

mathematics, english and social science (i.e., Wolters and Pintrich, 1998) to accounting students.

Prior studies looking at prior experience find that students over time in web-based and online environments adapt planning, *organization*, *help-seeking* and reflection strategies, and utilise *task value, time management, metacognition* and *critical thinking* more effectively (Whipp and Chiarelli, 2004; Wang et al., 2013). In contrast, this study shows that this varies with student experience as third year students are more adept at utilising *rehearsal* and *elaboration* than their first and second year counterparts, and that they are more *intrinsically goal oriented* and able to *set goals* and *reflect* on their own learning. In addition, these findings extend Samruayruen et al.'s (2013) study which showed that students with higher levels of *self-efficacy* are more adept at engaging in these cognitive strategies of *rehearsal* and *elaboration.*

- *Information regarding the learning resources students are more inclined to engage with and why.*

As mentioned, students engage with a variety of learning resources provided to them and in doing so exhibit *rehearsal* and *elaboration* strategies as they develop higher-order cognitive skills. Thus, academics are encouraged to continue to provide learning resources that foster further development of higher-order cognitive skills such as *elaboration* and *critical thinking*. Further, students in later years appreciate learning resources that establish linkages to real life scenarios. As such, academics should continue to provide learning resources such as readings to facilitate this. Academics are encouraged to setup the discussion board in their unit on a topic-by-topic basis, as students are more likely to more effectively engage with this resource.

- *Insights for the accounting profession regarding what and how members may access and engage with learning resources as they continue on their lifelong learning journey.*

Of particular interest is that both first year and final year accounting students believe in the importance of lifelong learning – a finding which differs from O'Connell et al. (2015) who found that employers and academics both felt that students believed learning ended with the bachelor degree qualification. This should reassure professional bodies regarding the commitment accounting graduates will make to continuous learning and reaffirm the need for professional bodies to continue to offer similar types of learning resources in order to meet the needs of the profession.

Findings suggests that through engaging with the unit guide, students across all year levels are able to take control of their learning, prepare and carry out the steps required to effectively plan their learning. This finding should be viewed positively by the accounting profession, who

require accounting graduates to develop independent learning skills and self-manage their understanding of what needs to be learned and how to learn it.

Through engagement with various resources, this study shows that there is a conscious effort by students throughout their course to reflect upon their learning needs and target learning resources to meet these needs, which they should be able to continue to do when engaging in lifelong learning.

11.6 Limitations of the study

The limitations associated with this study principally involve: (1) data collection; (2) issues with the questionnaire and student interviews; and (3) the context or setting. Each will now be discussed.

11.6.1 Limitations with the data collection

The learning analytics data that was captured was rudimentary. Originally it was envisaged that the data captured could include, for example, the time spent on each resource per student. Unfortunately, this could not be captured in the LMS. This limited the analysis regarding student usage of the learning resources. Further, and unforeseen when the study was being scoped, the learning analytics data was collected when a policy change was made, which resulted in the use of a single site for the same unit delivered across two campuses. This created some issues as the study is limited to students studying only at one of the campuses. This data, related to the second campus, was not removed as the student cohorts were not seen to be markedly different. Irrespective of this and the somewhat rudimentary data collected, it is important to note that this data was collected purely to corroborate student recollection of learning resources as they engaged with them and corroborate what they advised through their interviews.

A further limitation relates to the timing of the analysis of the learning analytics data. As the data spanned the entire semester, analysis was undertaken once the semester ended. If partial analysis was undertaken, it may have ensured more probing in the interviews, and thus elicited more in-depth responses from students.

Additionally, this study captures information and therefore analysis regarding the learning resources provided within the LMS. However, students may have engaged with learning resources outside of the LMS, such as, for example, YouTube videos or downloaded items directly from the Internet. Furthermore, akin to this issue, is the possibility that when students

engaged with the learning resources through the LMS, rather than engaging online with items such as the lecture slides and tutorial solutions, they downloaded or printed them, signifying that they view the LMS as purely an information hub, which supports conclusions espoused by Wells et al. (2008).

Given that in most units past exam questions and solutions were loaded on to the LMS after the student interviews were conducted, students failed to mention these as learning resources. Consequently, there is potential that the usage of these valuable resources are under-reported by students.

Another issue relates to students' participation in the study in the subsequent semester. If students were successful in their studies, they would have progressed to one of the other foci accounting units and been a participant in the subsequent semester. For example, a first year student who successfully completed ACF1100 would progress in the subsequent semester to ACF2100 or ACF2200 or both. Here students were advised that each questionnaire should be treated separately and pertain solely to the learning resources for a particular accounting unit at hand, and that having completed it for one unit did not preclude them from further participation. However, having completed the questionnaire once, a student may have been reluctant to continue to participate for a number of reasons, including: (1) a belief that they had not changed their cognitive behaviour or motivation in terms of engaging with the resources; (2) fatigue or lack of interest in completing the requirements of this study in the subsequent semester; or (3) a belief that there was little change in the learning resources across different accounting units so felt they had nothing further to add to the study. This led to low completion rates, in particular amongst third year students.

When separated out on a year-by-year basis, the low student participation rates resulted in particularly low numbers affecting aspects of data analysis. Factor analysis shows that an important strategy applied by students when engaging with the learning resources provided is *rehearsal* (a surface level approach) combined with *elaboration* (a deep level approach). These two strategies came together as one factor, with it being difficult to determine: (1) which SRL strategy, if at all, is more prominent in this study; and (2) whether a learning resource fosters one strategy over the other. Had additional students participated, clearer insights should have been evident.

This low participation was also evident in the one-on-one student interviews. However, as a result of considerable effort to encourage participation, the number of participating students is within the ranges reported in prior research involving voluntary studies (i.e., Venema and Lodge, 2013; Osgerby, 2013; and So and Brush, 2008). Further, as students self-selected into

the study, some limitations arise regarding whether participating students are fully representative of their fellow students, and whether they engage in similar SRL strategies to non-participants.

Finally, students did not need to provide any personal details such as name or student identification when completing the questionnaire. This lack of student identification prohibits the study from being a longitudinal study i.e., prohibits the ability to capture and analyse motivational and learning strategies for the same set of students across later collection points.

11.6.2 Limitations arising from the questionnaire and student interviews

The MSLQ contains 81 statements. Given the research questions, a shortened version was administered, with a number of statements being removed (see Section 3.6.1). Analysis of the student interviews identified *critical thinking* as a SRL strategy students applied when engaging with the learning resources provided. However, as there was only one statement on the questionnaire pertaining to this strategy, this finding could not be cross-referenced or corroborated with the questionnaire data. This inability limits investigation about whether students adopt the *critical thinking* strategy when engaging with the learning resources provided.

Whilst conditions required to pool the data were met, the low student numbers did not allow for more granular analysis of the SRL strategies students adopt by year level.

In addition, three of the statements/questions included in the questionnaire were framed quite broadly e.g., use of 'motivation to learn' rather than 'motivation to engage with the learning resources'. This resulted in a missed opportunity to capture the motivational and learning strategies adopted by the students who completed the questionnaire.

With respect to the interviews, one issue concerned the ability of students to recollect which learning resources they specifically engaged with. As such, during the interviews, students may have focused on the learning resources with which they had most recently engaged, and not report all of the learning resources they had engaged with.

Further, students needed to explain how they engaged with the learning resources, which they may have found difficult to verbalise. Students were not informed of the SRL strategies as espoused in the Pintrich (2000) model in order to avoid interviewer bias on findings. Given this, when analysing the student responses, this research adopted a constructivist (or interpretive) approach. As such reality was co-created by producing knowledge that is reflective of the students' reality (see Section 3.2). This process required matching student

responses to the SRL strategies detailed in the Pintrich (2000) model, which is a subjective process, especially as coding was made by a single researcher.

Finally, while factor analysis revealed that students engage in goal setting this could not be corroborated through qualitative data from student interviews as a direct question regarding this was not posed to students.

11.6.3 Limitations related to the context

This study is limited to undergraduate accounting students studying at one university. This limits the generalisability of findings as factors such as age, level of ability and/or ethnicity of the student cohort cannot be assumed as representative of the cohort of accounting students at other universities.

11.7 Future research opportunities

As noted in the limitations section, findings from this study reveal that students apply both *rehearsal* and *elaboration* when engaging with learning resources. In the future it would be useful to delve further into this to acquire a better understanding regarding which resources, if any, promote one learning strategy over the other. Further, given that the accounting profession seek students who exhibit higher-order thinking skills such as *critical thinking,* additional statements pertaining to this strategy should be included in a future study to improve understanding of how students engage in *critical thinking* whilst utilising learning resources. Given these are important strategies that perhaps third year students can better exhibit, a smaller scaled study that targets these students could be undertaken with an updated questionnaire that focuses on these three learning strategies.

Given the CFA results, future analysis could be undertaken with the removal of the two statements relating to *task value* and *intrinsic goal orientation* to determine if this impacts the reported results. As explained in Section 8.5, these statements were retained given their importance to the research questions.

To counteract the issue of student recall, a similar study could be undertaken where think aloud protocols are administered. For example, a small pool of students could be monitored and asked questions as they engage with the learning resources. This could occur in selected periods throughout the semester and be conducted in a behavioural laboratory. This approach may lead to better understanding about the SRL strategies adopted by students whilst engaging with the learning resources provided. Further, an intervention study could be undertaken

whereby students are initially provided with definitions of the SRL constructs and then with these definitions in mind, are asked to discuss the way they interact and engage with the learning resources. This could lead to richer understanding of the learning strategies students apply when engaging with the learning resources.

Finally, another extension to this study could be to incorporate the questionnaire, student interviews, and links to academic performance.

11.8 Concluding remarks

This bounded case study of undergraduate accounting students, at one Australian university, conveys an understanding of what motivates these students to engage with the formative learning resources provided through a LMS, the SRL strategies that they adopt, and how these strategies change as they progress through their degree. By highlighting their intrinsic and extrinsic motivation and their adaptive use of the self-regulated learning strategies of *rehearsal, elaboration, metacognitive self-regulation* and *goal setting*, the study demonstrates how students' *goal orientations* and *strategies* are purposefully directed to progress their studies.

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Appendices

Appendix A: Empirical research – learning analytics

Authors / applications /sample	Description	Relevance to the current study
What students are doing/Student usage		
Andergassen, Neumann and Modritscher (2013) Identify online learning activities between various seasons during the semester. 79 Variables from LMS including: Exercise problems viewed, scored, forum post, forum read, personal portal read, news/FAQ/syllabus/calendar/WIKI/glossary/lecturecast look, news/FAQ/syllabus/calendar/glossary/lecturecast read. Analysed data (264,837 log files) (no. of pages viewed, no. of sessions, average frequency) over the 4 week period. Completed PCA which resulted in 10 learning activity categories	Examined usage on an LMS over a 4 week period (what the author's term 'seasonal') in one semester. 4 periods being: • Easter holiday • week before mid-term exam • mid-term exam week, and • week after mid-term exam 'consider this the usual week' Split the time period into the 4 periods to determine whether student learning activity varies according to the different weekly period.	Relevant to RQ1 in terms of student usage.
Phillips, Maor, Cumming-Potvin, Roberts, Herrington, Preston, Moore and Perry (2011) Mixed methods – analytics data from Lectopia access, attempted to use the Social Network Analysis (Dawson, 2010) for discussion forum usage (however, numbers were too small), LMS usage reports, assessment results, interviews with unit coordinators, semi-structured interviews with 4 students 109 3rd year sociology of education students	Investigated, in a pilot study, how students engage with recorded lectures. Can this assist in determining student patterns of behaviour?	Relevant to RQ1 in terms of student usage.
Dawson, McWilliam and Tan (2008) Presented examples of data derived from an institution-wide LMS so that the authors can demonstrate the usefulness of applying such academic analytics. Looked at discussion forum, content page and assessment page. Data extracted from Blackboard Vista over a 19 week period in second semester in 2007 with approx. 800 teaching units evaluated at the enterprise level. Examined the trends of a large first-year science class – 1026 students – analysis was undertaken with a view to identifying potential differences between high performing and students at risk	Provided a discussion of the range of applications that universities can make of LMS data to assist decision makers to improve learning and teaching. An exploratory study which reveals that the dominant tools used by students are the home page, content pages and discussion forums. Identified that the peak times are prior to assignment submission and examinations.	Relevant to RQ1 in terms of student usage.

Wells, De Lange and Fieger (2008) Study reported on the use of Blackboard as a tool. Student usage recorded (although not noted as learning analytics) in terms of total hits to the VLE site, percentage of hits re the content area, discussion board and announcements. Survey conducted to determine student perception of the VLE in terms of 5 learning resources: lecture notes; discussion forums; self-tests; announcements and other tools which included web links and email contact. 166 second year accounting student responses to the survey in Semester 2, 2003 and Semesters 1 and 2, 2004. Data for 59 of 69 students were monitored in Semester 1 2003 to determine hits to the VLE.	Monitoring of student usage across one semester only. Provided results in terms of total hits, percentage of hits re content area, discussion board and announcements. More access noted across the week with access declining by more than 50% during the weekends. Provided data on hits per day and across most popular times. Authors commented that usage statistics for Semester 2 2004 were similar to that noted in Semester 2 2003.	Relevant to RQ1in terms of extent of usage.
Phillips (2006) WebCT data usage logs which are averaged out firstly for Murdoch University. These are then compared to 4 other universities - 3 Australian and 1 US Provides data such as - average use per student	Seeks to investigate the extent of use of LMS tools at 5 universities which use WebCT Two tools are used extensively: Content pages and discussion forum; with discussion forums used overwhelmingly by students to read information posted by their lecturers	Relevant to RQ1in terms of extent of usage.
Lust, Elen and Clarebout (2013) Investigated how students used tools in an LMS. Tools were split between basic information content (course outline, web lectures); communication tools (discussion board); scaffolding (preparation on learning sessions; planning; study and learning support); knowledge modelling (quizzes and exercises) and elaborated information tools (web links). Logged information gathered and compared to face-to-face, ability and performance. 179 participants from a first year undergraduate Educational Sciences course	Monitoring of student usage across two phases in an 18 week course. Phase 1 first 6 weeks with phase 2 being the last 6 weeks. Results revealed that most tools were rarely used within the course with the frequency being below 1 and duration below 200 seconds. Course outlines and web lectures were accessed more frequently than quizzes, web links, planning and support tools and the discussion board. Course outlines and web lectures were accessed mostly in phase 1. Usage in phase 2 was very low, students utilised most of the tools (e.g., web links and quizzes) as they specifically induced higher-order strategies.	Relevant to RQ1 and RQ2.
Link to motivation		
Fritz (2011) Study determined whether providing students with a tool which compares their online activity to other student usage in prior	Introduced a "Check my activity" tool to change student study behaviour.	Relevant to RQ3: if students can compare usage over time will it impact their motivation and behaviour regarding different usage of tools.

semesters; and comparing to results, will motivate students to use more tools on the LMS. Used data and a questionnaire. Used 131 courses since Fall of 2007 until Spring 2010. No actual student numbers provided – although only 41 students completed a questionnaire about the tool	Students able to compare their usage of online tools against an anonymous summary of prior student activity.	
Dawson, Macfayden and Lockyer (2009) Data extraction including time online, forum postings, content and files viewed 76 postgraduate medical students – blended approach (placement at hospitals and use of LMS)	Investigated the relationship between students learner goal or performance goal (student orientation achievement) and patterns of online behaviour	Relevant to RQ1 in terms of extent of usage.
Link to SRL and learning strategies		
Pardo, Han and Ellis (2017) Data logs regarding Resource view, Collapse and expand section, Video, Video MCQs, MCQs, Exercise sequences, Dashboard views 145 first year undergraduate engineering students enrolled in "Introduction to computer systems" course offered in blended mode	Study examines the interrelationships amongst SRL, students' interaction with online learning events, and students' academic performance in a first year engineering course. Data sources: learning analytics; Subset of the MSLQ administered: 31 items to focus in four of the five scales in the questionnaire, namely: self-efficacy (9 items), intrinsic value (9 items), test anxiety (4 items), and self-regulation (9 items); Final marks obtained by students in the course.	Relevant to RQ1 in terms of extent of usage; and RQs2 and 3 re motivation to engage.
Gasevic, Jovanovic, Pardo and Dawson (2017) Data logs relating to preparatory learning activities focusing on lecture preparation activities 146 students in a first year engineering course in flipped classroom mode	Examine association between learning strategies extracted from trace data and responses to self-report instruments and performance scores. Data sources: Learning analytics; Completion of Study Process Questionnaire Student assessment results – mid-term and final exam results	Relevant to RQ1 in terms of extent of usage; and RQ2 and 3 re deep versus surface approaches to learning.

Appendix B: Empirical research – SRL

Author/year/journal	SRL strategies tested	Sample	Data collection	Result
Torenbeek, Jansen & Suhre (2013) Studies in Higher Education	Intrinsic motivation; self-control and time management	200 second and third year bachelor students across 4 degree programs: pedagogy, biology, industrial engineering and management; and environment and infrastructure planning in the Netherlands.	General self-report questionnaire completed by students at week 2 of an 11 week period (includes exam weeks) – 9 questions on motivation; 5 on time management; and 9 on self-discipline. Used a 5-point scale. Daily logs sent electronically at the end of every day over 4 weeks – weeks 5 and 6; weeks 8 and 9 (just before exams) – students recorded time spent studying and attendance at lectures and practicals. Other data from administration: gender, high school GPA and indicators of academic performance at university	Time management unrelated therefore omitted from the model. Time spent on self-study was unrelated to academic achievement in the second semester. Self-study is dependent on the number of scheduled practicals. More practicals less time spent on self-study. Class attendance (at lectures and practicals) was a significant predictor in semester credits and GPA. Effects of student and curriculum variables to academic achievement were stronger than the effects of motivation and self-discipline.
Wang, Shannon and Ross (2013) Distance Education	Motivation – task value, self-efficacy, test anxiety- 19 items Learning strategies – elaboration, critical thinking, metacognitive self-regulation, and time and study environmental management – 31 items	256 students (graduate and undergraduate)	Online survey – modified MSLQ for online environment Online technology self-efficacy scale Likert scale – 7 point	Using more effective learning strategies leads to increases in motivation levels, and this increase leads to higher levels of course satisfaction and better performance.
Ning and Downing (2012) British Educational Research Journal	Time management Self-testing Study aids Information processing Selecting main ideas Test strategies Concentration	384 undergraduate students at a Hong Kong university	LASSI – Learning and study strategies inventory – 8 items in each scale; Likert scale 1-5.	Learning experience does not exert direct influence on academic achievement, but does so through a mediator effect of students' motivation and self-regulation. Both motivation and self-

	Attitude Motivation			regulation moderated the effects of learning experience on academic performance.
Puzziferro (2008) American Journal of Distance Education	Rehearsal Elaboration Organization Critical thinking Metacognitive self-regulation Time and study environment Effort regulation Peer learning Help-seeking	815 community college students in online undergraduate liberal arts courses	MSLQ Motivation section – 31 questions Cognitive learning strategies section – 50 questions	Time and study environment and effort regulation were significantly related to performance. Rehearsal, elaboration, metacognitive self-regulation, and time and study environment were significantly positively correlated with satisfaction.
Yukselturk and Bulut (2007) Educational Technology and Society	Motivational beliefs - Expectancy-value model of motivation (Pintrich 2000) (intrinsic goal orientation, extrinsic goal orientation, control beliefs, task value, self-efficacy and test anxiety) Self-regulated learning components – cognitive strategy use and self-regulation	80 students in an online course in 2005 and 2006	Adapted MSLQ distributed in class - provided at end of the course	Self-regulated variable on students' success was statistically significant
Nota, Soresi and Zimmerman (2004) International Journal of Educational Research	Self-regulated learning interview schedule 14 categories of strategies: Self-evaluation Organising and transforming Goal setting and planning Seeking information Keeping records and monitoring Environmental structuring Self-consequences Rehearsing and memorising Seeking social assistance (peers/teachers/adults) Reviewing records (tests/notes/textbooks) Other	Data collected over 2 phases: Phase 1: last year of high school – 81 participants in Padua Phase 2: 2nd year of university – same students as phase 1 – 49 students	Phase 1 and 2: SRLIS (Zimmerman and Martinez-Pons 1986, 1988)	Cognitive self-regulation strategy of organizing and transforming was a significant predictor of students' grades in italian, maths and technical subjects. Self-consequences (motivational strategy) was a significant predictor of students' high school grades and their intention to continue with university study.

VanderStoep, Pintrich and Fagerlin (1996) Contemporary Educational Psychology	Cognitive strategies – rehearsal, elaboration, organizational strategies Metacognitive strategies – planning, monitoring, regulating Motivational beliefs – intrinsic orientation, self-efficacy and task value Knowledge base – organization and similarity	380 US college students in introductory level course in english, biology and psychology	MSLQ questionnaire – self-report	Students who did well in the course were more likely to have adaptive motivational beliefs and particularly high efficacy and task value beliefs, as well as report more use of cognitive and metacognitive strategies. The greatest number of significant differences in motivation and strategy use by performance level occurred for students in the natural science courses. Results suggest that, in humanities courses, the models and methods need to be adjusted to better represent the nature of learning and instruction.
Broadbent and Poon (2015) Internet and Higher Education	Review of SRL studies published between 2004 and 2014 examining SRL strategies as correlates of academic achievement in online higher education settings.	Various – 12 studies reviewed.	Various – most popular was the MSLQ (9 studies); Learning management system logs (3 studies); LASSI (1 study) and Tuckman procrastination scale (1 study).	Strategies of time management, metacognition, effort regulation, and critical thinking were positively correlated with academic outcomes, whereas rehearsal, elaboration and organization had the least empirical support. Peer learning had a moderate positive effect.
Virtanen and Nevgi (2010) Educational Psychology	Definition of SRL based on Pintrich and Zimmerman theories of SRL. 10 subscales of IQ Learn self-assessment instrument: expectation of success, performance anxiety, self-efficacy beliefs, intrinsic interest, utility value, time management, self-management, persistence, help-seeking	1248 undergraduate first year students at several Finnish universities who used an interactive online system IQ Learn. Six disciplines: - economic sciences - technology and architecture	Modified MSLQ instrument.	Female students scored moderately higher on help-seeking strategies, utility value and performance anxiety. Among all disciplines, minor mean differences emerged on all sub-dimensions of SRL though no discipline stood out. Male and female of behavioural sciences and female science students scored consistently

		• behavioural sciences • biosciences and medicine • science • arts		higher and male students in technology scored lowest on the sub-dimensions of SRL.
Kesici, Baloglu and Deniz (2011) Learning and Individual Differences	SRL strategies: rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, time and study environment management, effort regulation, peer learning, help-seeking	320 college students who had not previously undertaken a statistics unit	MSLQ and Statistical Anxiety Rating Scale	Significant relationships between learning strategies and statistical anxiety. Students who used more rehearsal, elaboration, organization, critical thinking, metacognitive SR, time and study management environment and effort regulation strategies experienced lower computational anxiety and had more positive attitudes towards statistics.
Becker (2013) Issues in Accounting Education	Learning strategy: Rehearsal, elaboration, organization, critical thinking, metacognition, effort regulation, peer learning, time and study environment	First year introductory accounting students: 121 control group 123 treatment group	Quasi-experimental design where treatment group received SRL interventions based on Zimmerman model with the MSLQ administered in first week of class.	Regression results revealed that students' acquisition of technical knowledge was not compromised when class time was spent on SRL interventions and content instruction. Immediate benefits on exam scores were not noted on the treatment group, however the treatment group did outperform the control group on exams administered at the end of the course.
Opdecam, Everaert, Van Keer and Buysschaert (2014) Research in Higher Education	Motivational beliefs: intrinsic goal orientation, extrinsic goal orientation, control of learning beliefs, self-efficacy for learning and performance, test anxiety	156 first year accounting students split between lecture based (face-to-face) and team learning	MSLQ	Females had a higher preference for team learning than male students. Students with a preference for team learning were more intrinsically motivated, had less control of

	Learning strategy: elaboration, organization, critical thinking, metacognitive self-regulation, time and study environment management, effort regulation, peer learning, help-seeking			their learning beliefs, were more help-seeking, and more willing to share their knowledge with their peers.
Everaert, Opdecam and Maussen (2017) Accounting Education	Intrinsic goal orientation and extrinsic motivation	First year undergraduate accounting students – 388 students	MSLQ – intrinsic goal orientation and extrinsic goal orientation motivation scales	High intrinsic and extrinsic motivation have a significant positive influence on deep learning. Deep learning leads to higher academic performance and this result holds when controlled for time spent, gender and ability.
Dabbagh and Kitsantas (2005) Instructional Science	Rehearsal Elaboration Organization Critical thinking Metacognitive self-regulation Time and study environment Effort regulation Help-seeking	65 college students using WebCT	MSLQ Web supported Self-regulation Questionnaire (WSSRQ) – checking 4 categories – content creation and delivery tools; collaborative and communication tools, administrative tools and assessment tools – whether these supported the 6 processes of SRL – goal setting, use of task strategies, self-monitoring, self-evaluating, time planning and management, and help-seeking	Content creation and delivery tools supported goal setting, help-seeking, self- evaluation and task strategies Collaborative and communication tools supported goal setting, time planning and management and help-seeking Administrative tools supported self-monitoring, self-evaluation, time planning and management, and help-seeking Assessment tools supported task strategies, self-monitoring, and self-evaluation.
Hood (2013) Australasian Journal of Educational Technology	Rehearsal Elaboration Organization Critical thinking Metacognitive self-regulation Time and study environment Effort regulation Peer learning Help-seeking	113 undergraduate psychology students	MSLQ	Higher work commitments, greater reliance on rehearsal, higher self-regulation and higher critical thinking were important predictors of intentions to use online lectures. Intentions to access archived online tutorials were predicted by lower ability and higher extrinsic motivation.

| Muis and Duffy (2013) Journal of Educational Psychology | Motivational scale: Self-efficacy Learning strategies: Rehearsal Elaboration Critical thinking | 63 students in their 2nd year of a graduate degree: Control group:32 students Intervention group: 31 students

Students studying a graduate level introductory social science statistics class

Students came from: 24: education – 14 in intervention group 19: nursing – 9 in intervention group 5: health promotion – 3 in intervention group 4: psychology – 1 intervention group 11: from other areas such as maths, accounting, kinesiology, biology or some other science | MSLQ to both groups administered 5 times – 4 times throughout the semester (weeks 2, 4, 8 and 12) with the last one administered 3 weeks after the end of semester (after completing the final exam but before receiving final results) | Critical thinking and elaboration strategies significantly increased midway through the semester for the intervention group. Level of self-efficacy for learning statistics also increased for this group. Students in the control group maintained a consistent level of strategy use and self-efficacy. Both groups showed no change over the semester for the use of rehearsal strategies. |
| Endedijk, Vermunt, Meijer and Brekelmans (2013) Studies in Higher Education | Structured Learning Report to measure three phases of SRL – forethought (*goal orientation, self-efficacy and strategic planning*), performance (*learning strategy control and monitoring of learning results*) and self-reflection (*self-reflection on the learning outcome, self-evaluation of the learning experience and interferences for subsequent learning experiences*). 2-3 | 81 Post graduate teacher education program – longitudinal study – 3 measurement occasions | Self-report Questionnaire – learning orientations Regulation activities – measured by multiple structured question logs. One open-ended question followed by 7 MCQs – derived two dimensions ----Passiveness of regulation and Retrospectiveness of regulation | Both dynamic aspects of regulation of learning changed over time with student teachers becoming more passive in their regulation throughout the programme. Retrospectiveness of regulation peaked at T2. Student teachers do not use regulation to the same extent at the end of the programme – less motivated to use their active regulation skills over time – maybe as they become more |

	questions for each. Only 1 open ended question; remaining were MCQs			experienced they have less need to direct their learning. Retrospectiveness – planned their learning more in T1
Whipp and Chiarelli (2004) Educational Technology Research and Development	Zimmerman (2000) three phase model used *Forethought:* Goal setting and planning *Performance and self-observation:* Organising and transforming instructional materials Structuring the learning environment Help-seeking Self-monitoring and record-keeping *Self-reflection:* Self-judgment Self-reactions Motivational influences: *Forethought:* Self-efficacy Goal orientation Intrinsic interest *Performance:* Self-efficacy Environmental influences on SRL: Support from instructor	6 graduate students in USA – all practising teachers	3 interviews with each student Students' reflective journals	Students used many traditional SRL strategies, but they also adapted planning, organization, environmental structuring, help-seeking, monitoring, record keeping and self-reflection strategies
Samruayruen, Enriquez, Natakuatoong and Samruayruen (2013) Journal of Educational Computing Research	Intrinsic goal Self-efficacy Test anxiety awareness Cognitive strategy Self-regulation (Pintrich and De Groot, 1990)	88 online learners – graduates and undergraduates in Thailand	Adapted MLSQ – 44 questions to suit online environment Expectancy-value model of motivation	Students who had higher internet experience reported a significantly higher level of self-efficacy and cognitive strategy. Internet and hybrid course experiences were significant predictors of self-regulation.

Bergin, Reilly and Traynor (2005) Paper presented at ICER, Seattle	Motivations and learning strategies (cognitive, metacognitive and resource management strategies)	Undergraduate students in a computer programming module	Unknown	Students who perform well in programming use more metacognitive and resource management strategies than lower performing students. Students who have high levels of intrinsic motivation and task value perform better and use more metacognitive resource management strategies than those students with low levels of intrinsic motivation and task value.

Appendix C: Statements for questionnaire consideration

Note: Each statement is color-coded according to where the statement originated from: black represents the MSLQ statements as per Pintrich et al. (1991); red represents the statements as per Pintrich and De Groot (1990) as used in Samruayruen et al. (2013); and blue represent statements from the OSLQ as used in Barnard et al. (2009).

MSLQ Questions (Pintrich et al. 1991) Pintrich and De Groot (1990) used in Samruayruen et al. (2013) OSLQ Questions (Barnard et al., 2009)	Scale Motivation scales – purple Learning Strategies scales – green OSLQ - blue	Applicable Research question	Included Yes/No Amended –	Reason
1. In a class like this, I prefer course material that really challenges me so I can learn new things. 1. I prefer class work that is challenging so I can learn new things.	Intrinsic goal orientation	RQ2	Yes	If the content is challenging, then motivation to engage with content and/or learning resources may increase.
16. In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.		RQ2	Yes	Link to motivation – if the content/course material arouses curiosity would expect it to impact motivation to engage.
22. The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.		RQ2 – if unit RQ3 – if across the 5 units	Yes	'To understand' may encourage engagement with learning resources and thus have an impact on engagement with resources.
24. When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade.			No	This relates to assessment and performance and does not address the RQs therefore no need to include.
12. I often choose paper topics I will learn something from even if they require more work.		RQ2	No/Maybe	If 'paper topics' is replaced with the generic term 'online learning resource' could link this to engagement with the resources and motivation to utilise the available resource.
17. Even when I do poorly on a test I try to learn from my mistakes.			No	After the fact engagement so not really linked to the RQs.
7. Getting a good grade in this class is the most satisfying thing for me right now.	Extrinsic goal orientation	RQ2	No/Maybe	Question seems too generic but can see how students might be more motivated to engage with all or some learning resources if motivated by grades/results. However, given it relates to assessment will not be included.
11. The most important thing for me right now is improving my overall grade point average, so		RQ2	No/Maybe	'Main concern' getting a good grade may lead to increased motivation to engage therefore can see the

my main concern in this class is getting a good grade.		RQ3 – as grade point average is across units		need to perhaps include this question. However, as it relates to assessment it is not included.
13. If I can, I want to get better grades in this class than most other students.			No	Looks at intent by comparing their result to other students which is not relevant to the RQs.
30. I want to do well in this class because it is important to show my ability to my family, friends, employer or others.			No	Whilst this is important especially for employers, not really linked to engagement with learning resources. Might be more important for third year students looking to improve their GPA but again, cannot see link with learning resources.
4. I think I will be able to use what I learn in this course in other courses. 9. I think I will be able to use what I learn in this class in other classes.	Task value	RQ3	Yes	Important to consider this with regards to lifelong learning – that is, in relation to transferability of knowledge from one unit to the next.
10. It is important for me to learn the course material in this class. 5. It is important for me to learn what is being taught in this class.		RQ2	Yes	Linked this question with 23/18 and 27/25 below – only intend to use one of the questions as the intent of the questions is the same – i.e., based on importance and usefulness. Included the question as it links to intent to engage with resources – if it is important for them to learn the content then it might lead them to engage with the resources provided.
17. I am very interested in the content area of this course. 21. I think what we are learning in this class is interesting.		RQ2 – if one unit RQ3 – if across accounting units	Yes	Linked this question with 26/6 below – i.e., consider being interested and liking the subject matter as being similar therefore need to only use one of the questions. Interest should motivate students to engage.
23. I think the course material in this class is useful for me to learn. 18. I think that what I am learning in this class is useful for me to know.		RQ2	Yes	Linked this question with 10/5 above and 27/25 below – only intend to use one of the questions as the intent of the questions is the same – i.e., based on importance and usefulness. Included the question as it links to intent to engage with resources – if it is useful for the students to know then it should lead them to engage with the resources provided
26. I like the subject matter of this course. 6. I like what I am learning in this class.		RQ2 RQ3 – if across the 5	Yes	Linked this question with 17/21 above – i.e., consider being interested and liking the subject matter as being similar therefore need to only use one of the questions.

		accounting units		Liking the subject matter should encourage students to engage with the learning resources.
27. Understanding the subject matter of this course is very important to me. 25. Understanding this subject is important to me.		RQ 2 – if for one unit RQ3 – if across accounting units	Yes	Linked this question with 10/5 and 23/18 above – only intend to use one of the questions as the intent of the questions is the same – i.e., based on importance and usefulness. Included the question as it links to intent to engage with resources – if it is important for them to understand/learn the content then it might lead them to engage with the resources provided
2. If I study in appropriate ways, then I will be able to learn the material in this course.	Control of learning beliefs	RQ2 if one unit RQ3 if across the five units "course"	Yes	Included as could change 'study in appropriate ways' to 'engage in using learning resources.'
9. It is my own fault if I don't learn the material in this course.		RQ2 if one unit RQ3 if across the five units "course"	Yes	Intent of fault is not trying therefore not having motivation to use a resource – this is similar to question 25 below though but may need to include a couple of similar questions to ensure there is increased validity.
18. If I try hard enough, then I will understand the course material.		RQ2 if one unit RQ3 if across the five units "course"	Yes	Direct link to motivation - have included question 2 above as if students engage with the learning resources hopefully it assists in understanding the course content. Happy to have both these questions.
25. If I don't understand the course material, it is because I didn't try hard enough.		RQ2 if one unit RQ3 if across the five units "course"	Yes	If students do not try hard enough then maybe they won't engage with the learning resources provided – therefore leads to intent or motivation.
5. I believe I will receive an excellent grade in this class. 15. I think I will receive a good grade in this class.	Self-efficacy for learning and performance		No	This is a similar question to 21/10 below which has been included.
6. I'm certain I can understand the most difficult material presented in the readings for this course. 7. I'm certain I can understand the ideas taught in this course.		RQ2	Yes	Linked this question with 15/7 below – only intend to use one of the questions as the intent of the questions is the same – i.e., based on level of difficulty of material. If you believe content to be difficult you may apply yourself more and thus utilise more resources.
12. I'm confident I can understand the basic concepts taught in this course.		RQ2 if one unit RQ3 if across the five	Yes	If you believe the content to be basic it may impact your motivation to use or in this case perhaps not use the learning resources available.

7. I'm certain I can understand the ideas taught in this course.		accounting units		
15. I'm confident I can understand the most complex material presented by the instructor in this course. 7. I'm certain I can understand the ideas taught in this course.		RQ2	Yes	Linked this question with 6/7 above – only intend to use one of the questions as the intent of the questions is the same – i.e., based on level of difficulty of material. If you believe content to be difficult you may apply yourself more and thus utilise more resources.
20. I'm confident I can do an excellent job on the assignments and tests in this course. 13. I am sure I can do an excellent job on the problems and tasks assigned for this class.			No	Not interested in the achievement of specific end tasks such as assignments and tests.
21. I expect to do well in this class. 10. I expect to do very well in this class.		RQ2	Yes	If you believe you will do well it may motivate you to utilise learning resources and apply yourself to study.
29. I'm certain I can master the skills being taught in this class. 23. I know that I will be able to learn the material for this class.		RQ2	Yes	Don't like the reference to the terms 'the skills' as this can infer different things. However, believe question 23 should be included as it is not specific to "skills". Argument being if you know that you can learn this may impact your motivation or effort in engaging with the learning resources.
31. Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.			No	This is similar to question 21/10 above which has been suggested to be included in the study, so no need to include both. Chose not to include this one as not sure a student believes we as teachers have a direct impact on how well they perform.
2. Compared with other students in this class I expect to do well.			No	Realise this can impact how hard a student studies or not given how they perceive themselves with regard to others, however, have included question 21/10 above which is more appropriate given the study.
11. Compared with others in this class, I think I'm a good student.		RQ2	No/ Maybe	Can see that perhaps either question 11 or 20 should be included. Even though the suggestion for non-inclusion of question 2 above is noted, it is acknowledged that understanding where you fit in the cohort may have an impact on your level of motivation to engage. Have chosen to include question 20 as opposed to question 11. This is similar to question 23 below which has been chosen as it is similar in intent.
20. My study skills are excellent compared to others in this class.		RQ2	Yes	Can see that perhaps either question 11 or 20 should be included. Even though the suggestion for non-inclusion

				of question 2 above is noted, it is acknowledged that understanding where you fit in the cohort may have an impact on your level of motivation to engage. Have chosen to include question 20 as opposed to question 11. This is similar to question 23 below as once you communicate you may have a better appreciation of where you fit which has been chosen as it is similar in intent.
22. Compared with other students in this class I think I know a great deal about the subject.		RQ2	No/ Maybe	Again, having an understanding of where you fit with your peers may impact how engaged you are with the learning resources. This question can lead to thinking that if you already know a lot about the content that maybe you won't be as motivated to engage as others.
3. When I take a test I think about how poorly I am doing compared with other students. 27. When I take a test I think about how poorly I am doing.	Test anxiety		No	As the RQs are to do with motivation and strategies to engage with the learning resources, even though there is a link to the harder you work the better you perform, the link between thinking about how poorly you might do in a test is looking at it from the performance aspect which is outside the scope of this study.
8. When I take a test I think about items on other parts of the test I can't answer.			No	Focus is on performance – not the focus of this study.
14. When I take tests I think of the consequences of failing.			No	This question is to do with the repercussions regarding performance - not the focus of this study.
19/14. I have an uneasy, upset feeling when I take an exam.			No	Focus on performance – not the focus of the study.
28. I feel my heart beating fast when I take an exam.			No	Focus on performance – not the focus of the study.
3. I am so nervous during a test that I cannot remember facts I have learned.			No	Focus on performance – not the focus of the study.
24. I worry a great deal about tests.			No	Focus on performance – not the focus of the study.
39. When I study for this class, I practice saying the material to myself over and over. 42. When I study for a test I practice saying the important facts over and over to myself. 53. When I read materials for this class, I say the words over and over to myself to help me remember.	Rehearsal		No	Chosen question 46 below instead as can link it to how they may use or access the learning resources.

46. When studying for this class, I read my class notes and the course readings over and over again.		RQ2	Yes	If 'read my class notes and course readings' is changed to accessing or using the resources – would be more relevant to the intent of my study.
59. I memorise key words to remind me of important concepts in this class.		RQ2	Yes	Can see how this is a learning strategy and could be indicative of surface learning and may impact level of engagement students apply as they are engaged in the learning process.
72. I make lists of important terms for this course and memorise the lists.		RQ2	Yes	Can see how this may be a learning strategy and may be connected to surface learning therefore impact level of engagement.
39. When studying, I copy my notes over to help me remember material.			No	Can see how this is a learning strategy, but cannot make the connection to engaging with learning resources as it implies it is students own notes.
38. When I study for a test I try to remember as many facts as I can.			No	Focus on achievement on performance - not a focus of the study.
11. I read aloud instructional materials posted online to fight against distractions.			No	Decided not to include this – whilst instructional materials are still a learning resource it does not add to knowledge. Have an issue with the terms 'fight against distraction'.
53. When I study for this class, I pull together information from different sources, such as lectures, readings, and discussions. 30. When I study for a test, I try to put together the information from class and from the book.	Elaboration	RQ2 No	Yes	This attempts to connect the usage of a number of learning resources available in a blended learning environment. This is focusing on performance, therefore have opted for the wording in question 53.
62. I try to relate ideas in this subject to those in other courses whenever possible.		RQ3	Yes	Link to lifelong learning and ability to engage over time.
64. When reading for this class, I try to relate the material to what I already know. 56. When reading I try to connect the things I am reading about with what I already know.		RQ2	Yes	If the words 'reading for this class' is amended to something like 'engaging with the learning resources' then it provides information on how students engage with resources provided.
67. When I study for this course, I write brief summaries of the main ideas from the readings and the concepts from the lectures. 35. When I study I put important ideas into my own words. 10. I try to take more thorough notes for my online courses because notes are even more		RQ2 RQ3 if inference is to more than 1 unit	Yes	These 4 statements have been considered together as it relates to summarising and putting ideas into students own words to assist in their understanding. Have included questions 10 and 21 and amended the wording for a blended learning environment.

important for learning online that in a regular classroom. 21. I summarise my learning in online courses to examine my understanding of what I have learned.				
69. I try to understand the material in this class by making connections between the readings and the concepts from the lectures. 47. When I am studying a topic, I try to make everything fit together.		RQ2	Yes	How students try and learn concepts by making connections – have not included the reference to readings and lectures given the blended learning environment – feel the more generic statement will suffice. Like the use of 'making connections' though – consider weaving that in. Related to question 62.
81. I try to apply ideas from course readings in other class activities such as lecture and discussion.		RQ2	Yes	Included as tries to connect between different learning activities –consider amending the wording to different learning resources to see if students connect the various resources provided.
44. I use what I have learned from old homework assignments and the textbook to do new assignments.			No	This is connected to completion of a task and the use of prior assignments – whilst use of the textbook is important as a resource it does not fit in to the intent of the RQs.
32. When I study the readings for this course, I outline the material to help me organise my thoughts. 54. I outline the chapters in my book to help me study.	Organization		No	Opted for question 42 below although outlining material is slightly different to finding most important ideas but the intent is similar although can see that students can annotate electronically but don't think that can be captured.
42. When I study for this course, I go through the readings and my class notes and try to find the most important ideas.		RQ2	Yes	Chose this question as it is a learning strategy and the question can be posed to try and link the learning resources together. Could consider swapping this question with question 63 below.
49. I make simple charts, diagrams, or tables to help me organise course material.			No	Not directly related to the RQs.
63. When I study for this course, I go over my class notes and make an outline of important concepts.			No	Chosen question 42 above as the intent is similar, although could consider swapping question 42 with this question.
38. I often find myself questioning things I hear or read in this course to decide if I find them convincing.	Critical thinking		No	Not connected to engagement and learning strategies when applied to the use of learning resources provided. Cannot see the link between this question and how and why students might engage with the learning resources provided.

47. When a theory, interpretation, or conclusion is presented in class or in the readings, I try to decide if there is good supporting evidence.			No	Cannot see the link between this question and how and why students might engage with the learning resources provided.
51. I treat the course material as a starting point and try to develop my own ideas about it.		RQ2	No/ Maybe	Could include this question as once ideas are developed it may lead to further engagement with other learning resources provided – but perhaps the link is weak.
66. I try to play around with ideas of my own related to what I am learning in this course.			No	Not connected to engagement and learning strategies when applied to the use of learning resources provided.
71. Whenever I read or hear an assertion or conclusion in this class, I think about possible alternatives.			No	Cannot see the link between this question and how and why students might engage with the learning resources provided.
33. During class time I often miss important points because I'm thinking of other things. (REVERSED) 46. I find that when the teacher is talking I think of other things and don't really listen to what is being said.	Metacognitive self-regulation	RQ2	Yes	Can amend the 'class time' and/or 'when the teacher is talking' to 'learning resources' to help determine how engaged students are with the resources provided. Although, 'when the teacher is talking' could be elaborated on to 'when listening to online lectures'.
36. When reading for this course, I make up questions to help focus my reading. 22. I ask myself a lot of questions about the course material when studying for an online course.		RQ2 RQ3 if at the accounting course level	Yes	Included as it relates to how students are regulating the knowledge they are gaining as they engage with the resources provided.
52. When I'm reading I stop once in a while and go over what I have read.		RQ2	Yes	Could reframe to ask whether they refer back to learning resources – although this could be achieved with question 41 below. Not sure both are required – although this is not specific just due to level of understanding as the next question is.
41. When I become confused about something I'm reading for this class, I go back and try to figure it out.		RQ2	Yes	Question is to be reframed to 'refer back to learning resources' to help in gaining knowledge and understanding.
44. If course materials are difficult to understand, I change the way I read the material.			No	Unless specifically asked if they use a particular learning resource in a different way not much would be gained from this type of question.
54. Before I study new course material thoroughly, I often skim it to see how it is organised.		RQ2	Yes	Students may quickly skim through a learning resource before they fully commit to utilising it to their best advantage.

55. I ask myself questions to make sure I understand the material I have been studying in this class. 32. I ask myself questions to make sure I know the material I have been studying.			No	Have included question 36/22 above which is a similar question so no need to include both.
56. I try to change the way I study in order to fit the course requirements and instructor's teaching style.		RQ2	Yes	Consider amending the final part of the statement to: in order to fit the mode of learning resource provided. This refers to how they may change their learning strategies to accommodate the different learning resource.
57/45. I often find that I have been reading for class but don't know what it was all about. (REVERSED) 33. It is hard for me to decide what the main ideas are in what I read. (REVERSED)		RQ2	Yes	Opposite to question 36/22 and question 42 so may be useful for measuring reliability of previous answer.
61. I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying.			No	Chosen question 43 below as it appears to cover a similar concept.
43. Before I begin studying I think about the things I will need to do to learn.		RQ2	Yes	More holistic approach than question 61 above, and implies that if more thought is provided before commencing to engage with content the better regulatory processes are adopted.
76. When studying for this course I try to determine which concepts I don't understand well.		RQ2 RQ3 if across entire 5 accounting units	Yes	Included this as if the student thinks about what they do not know then it may motivate them to engage with learning resources provided.
78. When I study for this class, I set goals for myself in order to direct my activities in each study period.		RQ2	Yes	Setting goals should impact the level of engagement and learning strategies students adopt.
79. If I get confused taking notes in class, I make sure I sort it out afterwards.			No	Have included a question on contacting the instructor via email so that should cover this question as well. (see question 20 below).
31. When I do homework, I try to remember what the teacher said in class so I can answer the questions correctly.			No	It is not just what the teacher said that should impact the engagement with homework – it is the suite of learning resources provided. Could consider rephrasing to reflect that. Further, not specifically looking at impact on completion of a set task such as homework.

36. I always try to understand what the teacher is saying even if it doesn't always make sense.			No	Not relevant to the RQs as this is particularly pertinent to face-to-face.
12. I prepare my questions before joining in the chat room and discussion.		RQ2	Yes	Important as it may provide insight into how they engage with the discussion forums.
35. I usually study in a place where I can concentrate on my course work. 6. I choose the location where I study to avoid too much distraction. 8. I know where I can study most efficiently for online courses.	Time and study environment	RQ2	Yes	As the environment is blended where students study may impact the learning strategies they employ whilst engaging with the learning materials. These three have been reworded to come up with one question: I choose the location where I study to ensure I concentrate on my course work.
43. I make good use of my study time for this course. 9. I choose a time with few distractions for studying for my online courses.		RQ2 if for one unit RQ3 if over the entire 5 accounting course units	Yes	Given the environment is blended good use of time is important.
52. I find it hard to stick to a study schedule. (REVERSED)			No	Chosen question 70 below– the concept is similar but framed in the positive.
65. I have a regular place set aside for studying. 7. I find a comfortable place to study.		RQ2	Yes No	Having a regular as opposed to comfortable place set aside in a blended learning environment can be important – but question 35/6 above covers this aspect but decided to include both.
70. I make sure I keep up with the weekly readings and assignments for this course.		RQ2	Yes	This is important given that the blended learning environment requires students to be more self-directed.
73. I attend class regularly. 15. I try to schedule the same time every day or every week to study for my online course, and I observe the schedule.		RQ2	Yes	This is important given that the blended learning environment requires students to be more self-directed. Have chosen the wording in question 15.
16. Although we don't have to attend daily classes I still try and distribute my studying time evenly across days.		RQ2	Yes	This is important given that the blended learning environment requires students to be more self-directed.
77. I often find that I don't spend very much time on this course because of other activities. (REVERSED)			No	Chosen question 16 above as it is framed in the positive – intent is similar.
80. I rarely find time to review my notes or readings before an exam. (REVERSED)			No	This is connected to performance therefore not considered important to the study.

14. I allocate extra studying time for my online courses because I know it is time-demanding.		RQ2 if for one unit RQ3 if across all 5 units	Yes	Amended the wording from 'online' to 'blended' – this is an important concept given that the environment is less controlled and directed.
37. I often feel so lazy or bored when I study for this class that I quit before I finish what I planned to do. (REVERSED)	Effort regulation	RQ2	No/ Maybe	Chosen question 60/34 below – similar intent although it introduces the idea of the level of difficulty so could consider putting this question in as well.
48. I work hard to do well in this class even if I don't like what we are doing. 55. I work hard to get a good grade even when I don't like a class.		RQ2	Yes	Linked to motivation – even if they don't like what they are doing and they still engage could provide insight. Don't wish to link it to achievement of a grade though.
60. When course work is difficult, I give up or only study the easy parts. (REVERSED) 34. When work is hard I either give up or study only the easy parts. (REVERSED)		RQ2	Yes	Linked to intent and motivation of why they engage or in this case not engage with resources provided.
74. Even when course materials are dull and uninteresting, I manage to keep working until I finish. 41. Even when study materials are dull and uninteresting, I keep working until I finish.		RQ2	Yes	Linked to effort – captures students who persist with engaging with a learning resource even if it is presented in a dull or uninteresting way.
40. I work on practice exercises and answer end of chapter questions even when I don't have to. 13. I work extra problems in my online courses in addition to the assigned ones to master the course content.			No	Assumes there are additional questions or tasks provided by CEs – cannot be sure of that so have opted not to include this type of question.
34. When studying for this course, I often try to explain the material to a classmate or a friend.	Peer Learning		No	Not connected to the RQs.
45. I try to work with other students from this class to complete course assignments.			No	Not connected to the RQs – also this is more concerned with completion of an assessment task.
50. When studying for this course, I often set aside time to discuss the course material with a group of students from the class.			No	Not connected to the RQs.
40. Even if I have trouble learning the material in this class, I try to do the work on my own, without help from anyone. (REVERSED)	Help-seeking		No	Don't think this question is required as question 60/34 selected even though the focus is on help-seeking.
58. I ask the instructor to clarify concepts I don't understand well.		RQ2	Yes	This is using a resource to clarify content so am happy to include it in the form of question 20.

20. I am persistent in getting help from the instructor through email.				
68. When I can't understand the material in this course, I ask another student in this class for help. 18. I share my problems with my classmates online so we know what we are struggling with and how to solve our problems.		RQ2	No/ Maybe	Could frame the question as follows: When I can't understand the material provided in one type of learning resource in this course, I refer to an alternative learning resource to clarify content.
75. I try to identify students in this class whom I can ask for help if necessary. 17. I find someone who is knowledgeable in course content so that I can consult with him or her when I need help.			No	See no need for this question as students are not considered to be an alternative learning resource.
19. If needed, I try to meet my classmates face-to-face.			No	See no need for this question as students are not considered to be an alternative learning resource.
1.I set standards for my assignments in online courses.	Goal setting	RQ2	Yes	Would amend online courses with blended – this question is important as the environment is less controlled and directed so setting standards even for assignments may impact the level of engagement with learning resources provided.
2.I set short-term (daily or weekly) goals as well as long-term goals (monthly or for the semester).		RQ2	Yes	As the environment is less directed and controlled setting goals on a short term and long term basis may impact the motivation and level of engagement with resources provided.
3.I keep a high standard for my learning in online courses.		RQ2 if for one unit or RQ3 for across the 5 units	Yes	As the environment is less directed and controlled setting a high standard may impact the motivation and level of engagement with resources provided.
4.I set goals to help me manage studying time for my online courses.		RQ2 if for one unit or RQ3 for across the 5 units	Yes	As the environment is less directed and controlled setting goals with regard to time management is important as it may impact the motivation and level of engagement with resources provided.
5.I don't compromise the quality for my work because it is online.		RQ2 if for one unit or RQ3 for across the 5 units	Yes	Given the blended learning environment, trying to achieve a certain level of quality may impact the motivation and level of engagement with resources provided.

23. I communicate with my classmates to find out how I am doing in my online classes.	Self evaluation	RQ3	Yes	By knowing how you are fair against other students may impact the level of motivation. This is similar to question 11 above but have opted to include this one.
24. I communicate with my classmates to find out what I am learning that is different from what they are learning.		RQ2	Yes	By knowing what other students are doing may encourage a student to use a different learning resource.

Appendix D: Questionnaire – first draft

Project title: Exploration of motivation and self-regulated learning processes in a blended learning environment: An accounting perspective

Survey

Unit: ACFxxxx

My name is Lorena Mitrione. I am a PhD Student in the Department of Accounting at Monash University. Together with my supervisors, Professor Carla Wilkin and Dr. Matthew Butler, we are surveying accounting students with regards to their motivation and learning strategies when engaging with learning resources. We would like to ask you to participate in this research study. Your participation is voluntary and not related in any way to your result for this unit. This study, as explained in the Explanatory Statement, involves three elements: (1) completion of an online survey, (2) participation in a short interview at a mutually convenient time, and (3) access to data available through Moodle that details your interaction with learning resources provided. You may elect to take part in one, two or all three elements.

The following information relates to the online survey. You can:

- Complete none, all or part of the survey; and
- Complete the survey anonymously or you can provide your name and student ID which would only be used for the purposes of contacting you to invite you to participate in an interview or reviewing learning analytics data in Moodle.

If you have provided identifying details, you can withdraw from the survey and the research study at any time by contacting one of the researchers listed above without any repercussions. If you have undertaken the survey anonymously, we will be unable to remove your survey responses from the study.

The attached survey asks you about your motivation and learning strategies that you adopt whilst engaging with learning resources provided in this accounting unit. The survey comprises a mixture of check box and Likert scale responses. The Likert responses range from 1 "not at all true of me" to 7 "very true of me". Select the response that best reflects your attitude and behaviour for each of the statements provided. For example:

	Not at all true of me 1	2	3	4	5	6	Very true of me 7
1. When I am interested in a topic I review all the available learning resources							X

There are no right or wrong answers to this survey. We want you to respond to the survey as accurately as possible, reflecting your own attitudes and behaviours in this unit.

Thank you for your participation.

Lorena Mitrione (PhD student)

	Not at all true of me						Very true of me
	1	**2**	**3**	**4**	**5**	**6**	**7**
1. In ACFxxx, I prefer material that arouses my curiosity, even if the content is difficult to learn.							
2. I often choose learning resources I will learn something from even if they require more work.							
3. The most satisfying thing for me in this accounting major is trying to understand the content as thoroughly as possible.							
4. I think the material in ACFxxx is useful for me to learn.							
5. Understanding the content in ACFxxx is very important to me.							
6. I think I will be able to use what I learn in ACFxxx in other accounting units or in my professional role as an accountant.							
7. If I engage in using the learning resources in appropriate ways, then I will be able to learn the material in ACFxxx.							
8. If I don't understand the learning materials in ACFxxx, it is because I did not use the learning resources provided.							
9. If I try hard enough, then I will understand the ACFxxx unit materials.							
10. If I engage in using the learning resources in appropriate ways, then I will be able to learn the material in this accounting major.							
11. I'm certain I can understand the most difficult material presented in the learning resources provided for this ACFxxx unit.							
12. I'm confident I can understand the basic concepts taught in ACFxxx through the use of the learning resources provided.							
13. I'm confident I can understand the concepts taught in this accounting major through engagement with the learning resources provided.							
14. When studying for this ACFxxx unit, I re-use the learning resources provided over and over again.							
15. I memorise key words and important terms to remind me of important concepts in this unit.							
16. When engaging with the learning resources for ACFxxx, I try to relate the material to what I already know.							
17. When I am studying for ACFxxx, I try to make connections between the learning resources such that everything fits together.							

18. I try to relate ideas in this unit to those in other accounting units whenever possible.							
19. I use the learning resources provided as a starting point and try to develop my own ideas from that.							
20. When I become confused about content taught in this unit, I go back to the original learning resource and try to figure it out or I use an alternative learning resource, if available.							
21. When studying, I think of other things and don't really focus on what is contained in the learning resource.							
22. Before I begin studying I think about the learning resources that I will need to engage with in order to learn.							
23. When I study for ACFxxx, I set goals for myself in order to direct my activities and engagement with the learning resources provided.							
24. I prepare my questions before posting it on the discussion board.							
25. I choose the location where I study to ensure I concentrate on my course work.							
26. I choose a time with few distractions for studying.							
27. I make sure I keep up with the weekly requirements for ACFxxx by engaging with the learning resources available regularly.							
28. When the ACFxxx unit materials are difficult, I give up or only study the easy parts.							
29. Even when the AFCxxx learning materials are dull and uninteresting, I keep working until I finish.							
30. I work hard to do well in ACFxxx even if I don't like what we are doing.							
31. I am persistent in getting help from the lecturer/tutor through email.							
32. I keep a high standard for my learning in this accounting unit.							
33. I set goals to help me manage studying time for this accounting unit.							
34. I set short term (daily or weekly) goals as well as long-term goals (monthly or for the semester).							
35. I communicate with my classmates to find out what I am learning that is different from what they are learning.							
36. Learning is important for achieving specific goals.							
37. Learning is important for developing as a person.							
38. I am able to use different learning resources to retrieve and process information.							
39. I can identify when I need to learn something.							
40. I am aware of the ways I prefer to learn.							
41. I don't like doing something in a different way.							
42. I enjoy learning.							

43. I would like to keep my knowledge and skills updated throughout my professional life in order to advance my career.						

44. Reflecting back on prior semesters in your accounting studies, can you describe whether your motivation to study and your level of engagement with learning resources changed?

Demographic Information. (Where required, check the box that applies to you)

Student name:

Student ID:

Gender   □ Male   □ Female

Age (optional)

Are you a local Australian student or an overseas student?   □ Local   □ Overseas

Course enrolled in   □ BBus   □ BBus (accounting)   □ Other

Please state your major.   □Accounting   □ Other _____

How many units are you enrolled in in the current semester?   □ 1   □ 2   □ 3   □ 4   □ 5 or more

Did you complete an accounting unit prior to university (e.g. at high school (VCE, TAFE)?   □ Yes   □ No

Please provide your ATAR score (optional)

How many hours a week do you work for pay/remuneration?   □ 1-5   □ 6 – 10   □11 – 17.5   □> 18 hours

How many hours a week, on average, do you study for this unit?   □ 0-1   □ 2-3   □ 4-5   □ 6-7   □ 8-10   □ > 10

Do you provide consent for the research team to have access to your Moodle data for this unit?   □Yes   □No

Are you happy for the researcher to contact you to arrange an interview?   □ Yes   □ No

Appendix E: Lifelong learning statements

Propensity for Lifelong Learning (Bath and Smith, 2009)

Given the length of the modified MSLQ, the following 8 items denoted Yes were included in the questionnaire.

Items (abbreviated)	Include Yes / No	Reason
Knowledge is changing	No	
Learning is important for achieving specific goals	Yes	If learning is aligned with goals it may increase their motivation to refer to learning resources
Learning is important for developing as a person	Yes	The more motivated to learn grows the person which may indicate that greater inclination to refer to the learning resources provided
Examine the evidence to decide if a conclusion is justified	No	
Curious, inquisitive person	No	
Motivated to achieve, determined to do well	No	
Enjoy the process of learning	Yes	If you enjoy the process you might be more engaged with the materials and resources provided
Usually have lots of questions	No	
Communicate ideas and information clearly in oral form	No	
Open to new experiences, ideas, information and insights	No	
Ability to use different media to retrieve and process information	Yes	Link to engagement with learning resources
Advance career	No	
Keeping updated and competent in profession	No	
Learn throughout life	No	
Other's ideas often spark interest or new ideas in me	No	
Identify when I need to learn something	Yes	If students can identify when they need to learn something it might trigger them to utilise the resources provided
Aware of the ways I prefer to learn	Yes	If students are aware of how they prefer to learn may mean they are more inclined to use one resource over another
Ability to critically evaluate information	No	
Gathering, analysing, organising information	No	
Generating possible solutions to problems	No	
Aware of progress when learning something new	No	
Understand information in variety of forms	Yes	Having the need to understand information from a variety of forms means students may be more inclined to utilise many resources
Don't like doing something in a different way	Yes	A reverse type question to accessing different and varied resources
Communicate ideas and information clearly in written form	No	

Enough information to help solve a problem or achieve a goal	No	
Use information to inform decision-making	No	
Cope with changes in workplace or career	No	
Need others for motivation to achieve goals	No	

Appendix F: Comments from colleagues on the first questionnaire

Comments from colleagues re the survey instrument; and the response to those from the researcher dated 21 August 2015 (where comments dated 24/8/2015 includes discussion with supervisors and corresponding action taken)

No.	Colleague comment	Response
1	I thought for questionnaires, the explanatory statement was the first page of the questionnaire, especially for a web-based questionnaire. As such I am confused by the reference to the explanatory statement on page 1. If this is the case, you need to incorporate all the required info onto this page.	Maybe insert a link to the Explanatory Statement. Concern is that if students are re-directed to another page they may not come back to complete the survey. Students have been provided with the Explanatory statement in lectures – perhaps a link will suffice. If students wish to refer back to it they can. Have incorporated key points from the Explanatory statement – e.g. voluntary; 3 ways to participate; ways to withdraw. Happy to include more if necessary – not sure there is a need to add all the information from the Explanatory statement – length may be an issue. **24/8/2015** A link will suffice with wording such as: This study, as outlined in the Explanatory Statement (link which you may have received or viewed on your Moodle website), involves three elements
2	Page 1 last para, "Select the response that best reflects …" I think you should change the word "response" to "number", as this is what the student will be selecting.	OK – happy to change "response" with "number".
3	I think you need a sentence prior to the actual questions, similar to what you have on the cover page. As currently when students will click on the questions web page, they will just be faced with a series of statements, without any instructions. As such, I suggest something like, "The following questions ask about your …. Please select the number that best reflects …"	Agree. Incorporate the following statement: The following questions ask about your motivation and learning strategies that you adopt when you are engaging with learning resources. Learning resources consist of, for example, online lectures, You Tube videos, answers to tutorial questions, readings, links, MCQs, amongst others. Please select the number that best reflects your motivation and/or learning strategies adopted for each question.
4	I am not sure your scale of Not at all true of me (1) to Very true of me (7) make sense for all questions. A lot of questions appear to me to be statements of agreeance. As such I think a Likert scale going from Strongly disagree (1) to Strongly agree (7) may make more sense. For example, question 11, "I'm certain …" (and quite a few others) does not make sense to me using	**24/8/2015** Disagree. Supervisors and the researcher have discussed this and believe it is their motivation that we are after and that it is all about their personal views not generic general statements. Therefore, leave as is

	your current anchors. Were the anchors "Not at all true of me" and "Very true of me" used in the original instrument? Happy to discuss this further in person.	(further, need to leave them as they are as it is grounded in the literature per the Pintrich MSLQ). Will leave as: • Not true at all of me (1), and • Very true of me (7) The anchors were used in Pintrich et al. (1991). Might need a sentence in the thesis regarding the use of the anchors as we are interested in the individual student perceptions/ideas about their motivation and learning strategies. The anchors still apply to the additional questions from the Propensity for Lifelong Learning (Bath and Smith, 2009).
5	What is a "learning resource"? You use the term throughout but do not define it at any stage. Would a student be clear as to what you mean by this?	Addressed this issue in point 3 above. Noted it as follows: Learning resources consist of, for example, online lectures, You Tube videos, answers to tutorial questions, readings, links, MCQs, amongst others. Conscious of not saying too much to lead the students. Hopefully this is not saying too much. **24/8/2015** New wording: Learning resources are any resource that you use as part of the learning process in your studies. This may include but is not limited to, online lectures, You Tube videos, answers to tutorial questions, readings, links.
6	What does question 24 mean? "I prepare my questions …" What do you mean by prepare? I am not clear on this.	Not sure this is a big issue. It means that students have thought about what they wish to ask on the discussion board. Happy to re-phrase to: "I have considered my questions…." **24/8/2015**: Leave as 'prepare' as this has deeper meaning than consider. Include original wording.
7	Questions 25 and 26 ask about choosing a time and location. Shouldn't questions be amended to reflect that students do this most of the times. E.g., "Most of the time, I choose …" or "I always choose …." (I am not sure which one would be correct - I need to think a bit about this. As currently how does a student answer say question 25 if sometime they chose a location to ensure they can concentrate but at other times they do not? As such the question does need to be changed, but I'm not exactly sure of how.	Understand the point being made. Happy to insert "always" before the word choose in both questions 25 and 26. **24/8/2015**: Discussed this. Perhaps rather than always, change the wording to: Q25: I try to choose a location to study where I can concentrate on my coursework.

		Q26: I try to choose a time with few distractions for studying. Need to decide whether the word 'always' in either – supervisors not fussed one way or the other. Decided not to include the word "always" – just clutters the stems.
8	Question 31. Not sure of phrasing. What do you mean by persistent? once a day, once a week?? Also, how does a student answer this if they did not seek help because they did not require help? I think you need to modify the question to reflect that you are asking about help when needed. Also, why are you limiting it to email? What about the student who sees their tutor during consultation time?	Agreed. Happy to amend the question to: When required, I seek assistance from the lecturer/tutor. Removed the reference to email, making it more generic.
9	Question 32. How can you keep a high standard of learning? I am not sure about this question. It doesn't seem to sit right with me. At the very least I think the word keep should be changed to maintain. But even then …. Hmmmm. Maybe "I try to maintain a high standard of learning in this unit" ????	Like the suggested re-word, and have amended learning to engagement. Might be easier for the students to answer. Consider changing to: I try to maintain a high standard of engagement in this unit.
10	Question 32 and 33 - I think you can you remove the word "accounting" from both questions.	Agreed.
11	Questions 36 to 43 are noticeably different to the prior 35 questions. I would suggest having them on a separate page and having a separate introductory statement - e.g., "The following eight questions relate to your opinions on lifelong learning …" or something to that effect. Currently there is a big disconnect between question 35 and 36.	Agreed. Will insert the following before questions 36 to 43: The following eight questions relate to your opinions on lifelong learning **24/08/2015** The following eight questions relate to your views on lifelong learning. Question: Do I need to define lifelong learning? **24/8/2015** Need to make a reference to lifelong learning and the profession i.e., you will be joining a professional body and continue to engage in lifelong learning. This will alleviate the concern at point 18 as well.
12	Where do questions 36 to 43 come from? Is it a previously psychometrically validated questionnaire? I ask as the ordering of questions as they stand does not seem logical to me. Also some of the questions do not seem well phrased. If these questions have not been previously psychometrically validated can I suggest the following order and rephrasing: I enjoy learning I believe learning is important for developing as a person I can identify when I need to learn something I am aware of the ways in which I prefer to learn I am able to use different learning resources to retrieve and process information I would like to keep my knowledge and skills updated throughout my professional life in order to advance my career	Questions come from Propensity for Lifelong Learning (Bath and Smith, 2009). Need to check if these questions were psychometrically validated – believe I need to validate them anyway as I am not using the entire instrument. **24/08/2015** Factor analysis to be undertaken using SPSS. Happy to reorder the questions as per colleague's suggestions. Happy to remove current Q41. **24/08/2015:** After discussion with supervisors will keep this question in and re-phrase as follows:

	I am not sure what is being asked through the following: 1) "I don't like doing something in a different way." A different way to what? to how you have previously done something? and do you mean doing or learning? And if doing you need to be more specific as to what tasks you are referring (e.g., I am sure it is not mowing the lawn, but at the moment it could be given how broadly your question its stated) 2) "Learning is important for achieving specific goals" Not sure this makes sense, as doesn't it depend on the goals. E.G. if I want to lose 10kg, do I need to learn anything, or do I just need to go to the gym?	Q41: I don't like my learning environment to change to what I am comfortable with. Happy to remove current Q36. **24/08/2015** After discussion with supervisors will keep this question in but change it to: Q36: Learning is important for achieving my career goals. Have to consider these 8 questions in terms of order.
13	Related to the above point, if you have devolved these questions it will be extremely important to conduct an exploratory factor analysis on these questions to ensure you have a stable construct.	Agreed. **24/08/2015** Exploratory factor analysis to be undertaken using SPSS.
14	Going back to ideas of Ramsden and Biggs that students' study motivations and approaches relate to their perception of the teaching approach, perhaps you should control for that? i.e. by including questions about their perceptions of the online materials .. e.g. whether the materials are perceived to encourage memorisation and learning drills, or perceived to encourage critical thought?	Perhaps this could be included as an open ended question. **24/08/2015** Need to refer back to my library of questions to put in some (maybe 2) questions relating to deep v. surface learners.
15	Q4 "the material" in ACFxxx and Q5 "the content in ACFxxx": how are they different? What is likelihood students will find some content and some material useful or important and thus not know how to answer the question? How is "material" different from "concepts" in Qns 12 & 13?	See response to question 22. There is no difference between material and content but accept that question 4 needs to change to be consistent. Content is broader than concepts so will leave Q12 and 13 as they are. **24/08/2015** After discussion with supervisors: Q4 – change 'content' to learning resources Q5 – leave as is Q7 – leave as is, i.e., use 'content' Q8 – change learning materials to 'content' Q9 – change 'unit materials' to 'content' Q10 – leave as 'content' Q11 – leave as 'content' Q12/13 – leave as 'learning resources' Q16 – leave as content
16	Q12 & 13: "basic concepts" vs. "concepts", "use of" vs. "engagement with" learning resources … are students to understand the distinctions? Also Q27 'engage' not 'use'. Similarly with interview questions … they seem to assume a student 'engaging' is equivalent to a student 'using'. Is there a difference? (I think so). Should you allow for a difference in the interview?	Remove word "basic" in question 12 to make it consistent with Q13. Q12: Remove "the use" and replace with "engagement" to make it consistent with Q27.

		24/08/2015 Supervisors happy with the change of 'use' to 'engagement'. Learning analytics data will pick up usage so not sure we need to allow for that difference in the interview questions.
17	Q17 connections b/n resources or connections between ideas?	24/08/2015 Supervisors and the researcher agree with the current wording – no need to amend.
18	Not clear to me what is particularly accounting here.	Assessor had this issue at the Confirmation presentation. 24/08/2015 Add in some wording regarding the accounting profession and lifelong learning to make this more accounting.
19	How will I make contact – via email address?	Yes, contact can be made via email – details are provided in the explanatory statement. Perhaps need to also include it on the survey instrument. 24/8/2015 Need to have a way for students to provide their email address for contact for interview – have placed a request for email to be provided if they respond yes to being contacted for an interview.
20	Should we have "Not applicable" as well – for example; some students won't be planning to work as an accountant later on	Refer to response at number 4 – changing it to Strongly agree to strongly disagree may address this. Having not applicable is an easy pick. 24/08/2015 Not applicable only applies to a couple of questions so no need to place it in.
21	Q2 – will students know what "learning resources" mean?	Addressed in response to number 5 above.
22	Q4: - what does "material" mean?	Maybe change material to content. Refer response to comment 15.
23	Q44: Two issues in one question. Perhaps separate into two questions to ensure they respond to both aspects.	Agreed – happy to split into two as follows: Reflecting back on prior semesters in your accounting studies, can you describe whether your motivation to study changed? Further and reflecting back on prior semesters in your accounting studies, can you describe whether your level of engagement with the learning resources provided has changed from one semester to the next? 24/08/2015 Split it into two.
24	Why don't you ask a series of questions getting them to rate the learning resources used in the unit perhaps compared to other units in their course and for those in 2nd and 3rd year, compared	Interesting – although do not believe rating resources addresses the research questions.

	to other accounting units? Their responses may vary depending on how good they think the learning resources are.	**24/08/2015** No – the study is not about rating the learning resources nor the aesthetics of them.
25	Student name/student ID: Leave to the very end to ensure they answer all the other demographic questions that you'll need and then on the very last page highlight again that this information is voluntary and then ask if they are happy for you to contact them for an interview – then they can choose either or both – just in case some are happy for you to access their online activity but aren't motivated to do the interview. Also stress here how little of their time you'd need for the interview. Ok I see those questions at the end now.	After the following question: are you happy for the researcher to contact you to arrange an interview, state the following: It is expected that an interview will take no longer than 10 minutes. **24/08/2015** Email should be added here. Change wording to: Are you happy for the researcher to contact you to arrange a **brief** interview? If yes, please provide an email address.
26	Age: instead of optional just put in broad bands – 18-20, 21-22, etc. Feels less personal.	Happy to put in broad bands. **24/08/2015** Although most students will be in the 18-20 band, or for third year 21-23 band.
27	If overseas – aren't you interested from where?	Good point – perhaps suggest the additional question: If from overseas, state where. **24/08/2015** Agreed. Include the following: Are you a local student? If the answer is no, please state country of origin. This leaves it open for those students who wish to provide this information.
28	Interview questions? Where do they come from? Is there a theoretical framework overarching these questions?	Interview questions have been developed by the researcher in conjunction with supervisors given the literature in the area. Broad theoretical framework is SRL. **24/08/2015** To be discussed later as survey instrument is the priority at the moment.
29	Would it be useful, either here or later on to specify that you mean material on Moodle? You probably have this in the Explanatory Statement, but it might be worthwhile to repeat it her.	See points 3 and 5 above. Addressed this issue.
30	Q1: 'prefer' – Prefer to what? As opposed to what? Or would a better word here be 'like'?	Happy to amend to like. **24/08/2015** Prefer is better – so leave original wording.
31	Q2 – Define "work" maybe?	Maybe change "work" to effort? **24/08/2015** Change to effort.
32	Q3 – 'most' – Trying to understand the content thoroughly may be very important to students but it might not be the 'most satisfying thing'.	**24/08/2015** Change wording as follows: I find it satisfying to try and understand the content in this unit as thoroughly as possible.

		Further, remove the words 'accounting major' from Q3, and Q10 as it will be confusing for students as all questions relate to unit. We have the lifelong learning questions to pick up the longitudinal aspect. On reflection, have moved the questions relating to the accounting major to a separate section (3 questions in total).
33	Q4: 'useful' – This may be your intention, but you might end up capturing here just the extent to which students are satisfied/dissatisfied with a particular lecturer (in terms of what material they provide and how they provide it). This comment could relate to a number of your questions (Q13 for example). You might want to capture this, but if you don't, you might have a problem because a lot of your questions might lead students to answer them in the same way as they will answer the SETU questions?	This is not the intent of the study – not sure how the stem can be changed to address this issue? **24/08/2015** Supervisors happy with the word 'useful'. No need to change it.
34	Q20: Separate into two different questions?	Could change it to the following: When I become confused about content taught in this unit, I go back to the original learning resource and try to figure it out. When I become confused about content taught in this unit, I use an alternative learning resource, if available to try and figure it out. **24/08/2015** Do we need both aspects as they are two different things – all we are interested in is if they persist. Suggestion as follows: When I become confused about content taught in this unit, I try to locate alternative learning resources. Stating it this way removes the idea that it has to be the lecturer that provides the alternative resources – we are interested if they go elsewhere to find it.
35	Q41: I am not sure I fully understand what this question is asking…."something in a different way"	**24/08/2015** Have amended this question to (see response 12 above): Q41: I don't like my learning environment to change to what I am comfortable with.
36	It might be useful somewhere here to define learning resources, and provide examples so you can be assured they are all on the same page as you.	Done. Refer to response to comments 3 and 5.
37	Where can they find the explanatory statement? Are you going to attach a link to it at this stage in the survey?	Yes – a link will be added. Refer to response to comment 1.
38	"access to" - or viewing?	Leave as 'access to' to be consistent with explanatory statement.

39	"attached" – survey will not be attached. Attached to what? Would this introductory info also be in Qualtrics.	Not attached – it is online. Will need to check if the introductory information will also be in Qualtrics.
40	"your motivation and learning strategies that you adopt" – Need to fix the grammar here – your motivation and learning strategies adopted….or your motivation to do something, and learning strategies that you adopt whilst….	Corrected.
41	Likert scale response – I would state this in plain English – these students won't know what a likert scale is, just say something on a scale of…..	Ok – can amend to "…mixture of check box and responses on a scale. The scale responses range from 1 to 7.
42	Q7 – "learn the material in" - Or be successful in ACFxxxx. Are we encouraging students to rote learn? Seems to be the implication here.	Disagree – question is fine.
43	Q10 – "learn the material in" – same point here. Is "learning the material" what you are trying to get at?	Disagree – question is fine.
44	Q11 – ACFxxxx – do we need the ACFxxxx here?	This is to distinguish it from the accounting major questions.
45	Q14 – either unit code or this unit, don't think you need both.	It is consistent with other questions.
46	Q27 – "make sure I keep up with the" – think these style of questions may encourage students to give you what they think you want to hear, rather than the truth. Is there a way you can re-phrase?	Point taken, however, this may be true of all studies.
47	Q32 – "keep a high" – Or set a high standard for myself?	Fixed with re-word – "try to maintain".
48	Q33 – "studying time for" – My time studying?	Disagree – correct as currently worded.
49	Q34 – reword – I set short-term (daily or weekly) goals as well as long-term (monthly or for the semester) goals.	Amended.
50	Age – maybe put in age category ranges and ask them to check a box – rather than make it optional. This way you can use this – I would anticipate age/maturity might be an important factor, so would be concerned that its optional.	See response to comment 26. Will remove the optional – better to get the data.
51	Local Australian student or an overseas student? – Maybe add three categories, because local students can also include PRs who have only studied in Australia for a couple of years (VCE etc). Aust/NZ citizen, PR, studying on a student visa?	Made the change – see response to comment 27.
52	BBus Accounting – going forward this won't be an option, so may want to ask if studying BBus accounting major, BBus other major, other	Noted – important for future survey administering.
53	How many units enrolled in – Won't be more than 5, 5 is the max so can delete "or more"	Deleted "or more"
54	Hours of work - >18 hours – I would say 18 hours or more – don't have an option for exactly 18 hours currently	Agree – amended
55	Hours of study – same her – say 10 hours or more	Agree – amended
56	Do you need to ask them to provide best contact method here?	Yes – will add. See response to comment 19.

Appendix G: Questionnaire –pilot study S2 2015

Project title: Exploration of motivation and self-regulated learning processes in a blended learning environment: An accounting perspective

Unit: ACFxxxx

My name is Lorena Mitrione. I am a PhD Student in the Department of Accounting at Monash University. Together with my supervisors, Professor Carla Wilkin and Dr. Matthew Butler, we are surveying accounting students to better understand their motivation and learning strategies when engaging with learning resources. We are also interested in your views in relation to lifelong learning, an important attribute for accountants. We would like you to participate in this research study. Your participation is voluntary and not related in any way to your grade for this unit. This study, as explained in the Explanatory Statement (add link here) which you may have already read or viewed on the Moodle website for this unit, involves three elements: (1) completion of an online survey, (2) participation in a short interview at a mutually convenient time, and (3) access to data available through Moodle that details your interaction with learning resources provided. You may elect to take part in one, two or all three elements.

With respect to the online survey you may:

- Complete none, all or part of the survey; and
- Complete the survey anonymously or you can provide your name and student ID if you are happy to potentially participate in a brief interview or to allow me to access your learning analytics data in Moodle.

If you have provided your name and student ID, you can withdraw from the survey and the research study at any time by contacting one of the researchers listed above without any repercussions. If you have not provided your name and student ID, we will not be able to remove your survey responses from the research study.

The survey asks you about your motivation and the learning strategies that you adopt whilst engaging with the learning resources provided in this accounting unit. The survey comprises a mixture of check box and number scaled responses. The scale responses range from 1 "not at all true of me" to 7 "very true of me". Select the number that best reflects your attitude and behaviour for each of the statements provided. For example:

	Not at all true of me 1	2	3	4	5	6	Very true of me 7
1. When I am interested in a topic I review all the available learning resources							X

There are no right or wrong answers to this survey. We want you to respond to the survey as accurately as possible, reflecting your own attitudes and behaviours in this unit.

Thank you for your participation.

Lorena Mitrione (PhD student, Department of Accounting, Monash University)

Email: lorena.mitrione@monash.edu

The following questions ask about your motivation and the learning strategies that you adopt when you are engaging with learning resources. Learning resources are any resource that you use as part of the learning process in your studies. This may include, but is not limited to, online lectures, You Tube videos, answers to tutorial questions, readings, links etc. For each question, please select the number that best reflects your motivation and/or learning strategies adopted when engaging with learning resources in this accounting unit.

	Not at all true of me 1	2	3	4	5	6	Very true of me 7
1. In ACFxxx, I prefer material that arouses my curiosity, even if the content is difficult to learn.							
2. I often choose learning resources I will learn something from even if they require more effort.							
3. I find it satisfying to try and understand the content in this unit as thoroughly as possible.							
4. I think the learning resources in ACFxxx are useful for me to learn.							
5. Understanding the content in ACFxxx is very important to me.							
6. I think I will be able to use what I learn in ACFxxx in other accounting units or in my professional role as an accountant.							
7. If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in ACFxxx.							
8. If I don't understand the content in ACFxxx, it is because I did not use the learning resources provided.							
9. If I try hard enough, then I will understand the ACFxxx content.							
10. I'm certain I can understand the most difficult content presented in the learning resources provided for this ACFxxx unit.							
11. I'm confident I can understand the concepts taught in ACFxxx through engagement with learning resources provided.							
12. When studying for this ACFxxx unit, I re-use the learning resources provided over and over again.							
13. I memorise key words and important terms to remind me of important concepts in this unit.							
14. When studying, I re-use the learning resources to help me remember material.							
15. When engaging with the learning resources for ACFxxx, I try to relate the content to what I already know.							
16. When I am studying for ACFxxx, I try to make connections between the learning resources so that everything fits together.							

	Not at all true of me						Very true of me
17. I try to relate ideas in this unit to those in other accounting units whenever possible.							
18. I use the learning resources provided as a starting point and try to develop my own ideas from that.							
19. When I become confused about content taught in this unit, I try to locate alternative learning resources.							
20. When studying, I think of other things and don't really focus on what is contained in the learning resource.							
21. Before I begin studying I think about the learning resources that I will need to engage with in order to learn.							
22. When I study for ACFxxx, I set goals for myself in order to direct my activities and engagement with the learning resources provided.							
23. I try to think through ideas and concepts when engaging with the learning resources.							
24. I prepare my questions before posting them on the discussion board.							
25. I try to choose a location to study where I can concentrate on my course work.							
26. I try to choose a time with few distractions for studying.							
27. I make sure I keep up with the weekly requirements for ACFxxx by engaging with the learning resources available regularly.							
28. When the content in ACFxxx is difficult, I give up or only study the easy parts.							
29. Even when the ACFxxx learning resources are dull and uninteresting, I keep working until I finish.							
30. I work hard to do well in ACFxxx even if I don't like what we are doing.							
31. When required, I seek assistance from the lecturer/tutor.							
32. I try to maintain a high standard of engagement in this unit.							
33. I set goals to help me manage my studying time for this unit.							
34. I set short term (daily or weekly) goals as well as long-term (monthly or for the semester) goals.							
35. I communicate with my classmates to find out whether what I am learning is different from what they are learning.							

The following three questions require you to think about each question in terms of the accounting major.

	Not at all true of me					Very true of me

	1	2	3	4	5	6	7
36. I find it satisfying to try and understand the content in this accounting major as thoroughly as possible.							
37. If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in this accounting major.							
38. I'm confident I can understand the concepts taught in this accounting major through engagement with the learning resources provided.							

The following eight questions relate to your opinions on lifelong learning. Lifelong learning is an important attribute for many professions, including accounting. As a future accounting graduate you will be required to continually update your accounting knowledge and skills through continuous learning. As such, we are interested in your views in relation to lifelong learning.

	Not at all true of me 1	2	3	4	5	6	Very true of me 7
39. I enjoy learning.							
40. I believe learning is important for developing as a person.							
41. I can identify when I need to learn something.							
42. I am aware of the ways I prefer to learn.							
43. I am able to use different learning resources to retrieve and process information.							
44. I don't like my learning environment to change to what I am comfortable with.							
45. I plan to keep my knowledge and skills updated throughout my professional life in order to advance my career.							
46. Learning is important for achieving my career goals.							

The following are open-ended questions asking you to elaborate on your motivation and the learning strategies that you adopt whilst studying accounting.

Thinking about your accounting studies, can you describe what motivates you to learn?

Complete the following statement:

The ways I prefer to learn are…………………………………………………………………………………

Thinking about your accounting studies, can you describe the learning strategies that you apply?

Reflecting back on prior semesters, can you describe whether your motivation to study has changed?

Reflecting back on prior semesters, can you describe whether your level of engagement with learning resources changed?

Demographic Information. (Where required, please select the box that applies to you)

Student name:

Student ID:

Gender   □ Male   □ Female   □ Other

Age   □ 18-20 □ 21-22 □ 23-24   □ 25-30   □ > 30

Are you a local Australian student?   □ Yes   □ No……If the answer is no, please state country of origin………………..

What course are you currently enrolled in?   □ BBus   □ BBus (accounting)   □ Other

Please state your major.   □Accounting   □ Other _____

How many units are you enrolled in in the current semester?   □ 1   □ 2   □ 3   □ 4   □ 5

Did you complete an accounting unit prior to university (e.g. at high school (VCE, TAFE)?   □ Yes   □ No

Please provide your ATAR score (optional)

How many hours a week do you work for pay/remuneration?   □ 1-5   □ 6 – 10   □ 11 – 17.5 □ 18 hours or more

On average, how many hours a week do you study for this unit?   □ 0-1   □ 2-3   □ 4-5   □ 6-7   □ 8-9   □ 10 or more

Do you provide consent for the research team to have access to your data in Moodle data related to this unit?   □Yes   □No

Are you happy for the researcher to contact you to invite you to participate in a brief interview?   □ Yes – please provide an email address ……   □ No

Appendix H: Statements per scale – pilot study

Table of revised questionnaire noting number of respective question and categorised under relevant motivation, SRL and lifelong learning scale

Scale	Statement number	Total	RQ2	RQ3
Intrinsic goal orientation	1-3; 36	4	3	1
Extrinsic goal orientation		0		
Task value	4-6	3	2	1
Control of learning beliefs	7-9; 37	4	3	1
Self-efficacy for learning and performance	10-11; 38	3	2	1
Test anxiety		0		
Rehearsal	12-14	3	3	
Elaboration	15-17	3	2	1
Organization		0		
Critical thinking	18	1	1	
Metacognitive self-regulation	19-24	6	6	
Time and study environment	25-27	3	3	
Effort regulation	28-30	3	3	
Peer Learning		0		
Help-seeking	31	1	1	
Goal setting	32-34	3	3	
Self evaluation	35	1	1	
Lifelong learning beliefs	39-40; 43; 45-46	5	**5**	**5**
Lifelong learning attitudes	41-42; 44	3	**3**	**3**
Total		46*	41	13

*(the two column, i.e. 41 +13, adds to greater than 46 because the lifelong learning questions apply to both RQ2 and RQ3.

Legend: Purple -Motivation scales of MSLQ; Green – learning strategies scales of MSLQ; Blue – OSLQ scales; Black – Lifelong learning scales.

Appendix I: Questionnaire – main study

Screening

The following survey is for students enrolled in **ACF3100 Advanced Financial Accounting** at **Monash University**. Are you currently enrolled in this unit?

- ○ Yes
- ○ No

Motivation and Self-regulated Learning

PRIZE   PRIZE   PRIZE   PRIZE   PRIZE   PRIZE   PRIZE   PRIZE   PRIZE   PRIZE PRIZE

*Students who complete the online survey will have the option of being entered into a draw to win **one of two $100 Westfield gift vouchers.** The two winning students will be randomly selected from those who complete the survey for this unit. To be eligible to claim this prize, please enter your contact details on a separate page at the completion of the survey. Please note that your contact details will not be able to be linked to the responses you provide to the survey items - your responses to the survey will remain anonymous.*

My name is Lorena Mitrione. I am a PhD student in the Department of Accounting at Monash University. Together with my supervisors, Professor Carla Wilkin and Dr. Matthew Butler, we are surveying accounting students to better understand their motivation and learning strategies when engaging with learning resources. We are also interested in your views in relation to lifelong learning, an important attribute for accountants. We would like you to participate in this research study. Your participation is voluntary and not related in any way to your grade for this unit. This study, as explained in the Explanatory Statement Acf3100 explanatory statement which you may have already read or viewed on the Moodle website for this unit, involves three elements: (1) completion of an online survey, (2) participation in a short interview at a mutually convenient time, and (3) access to data available through Moodle that details your interaction with learning resources provided. You may elect to take part in one, two or all three elements.

With respect to the online survey you may:
- Complete none, all or part of the survey; and
- Complete the survey anonymously or you can provide your name and student ID if you are happy to potentially participate in a brief interview or to allow me to access your learning analytics data in Moodle.

If you have provided your name and student ID, you can withdraw from the survey and the research study at any time by contacting one of the researchers listed above without any repercussions. If you have not provided your name and student ID, we will not be able to remove your survey responses from the research study.

The survey asks you about your motivation and the learning strategies that you adopt whilst engaging with the learning resources provided in ACF3100. It will take approximately 15 minutes to complete. The survey comprises a mixture of check box and scaled responses. The scale responses range from "1 - not at all true of me" to "7 - very true of me". Select the response that best reflects your attitude and behaviour for each of the statements provided. There are no right or wrong answers to this survey. We want you to respond to the survey as accurately as possible, reflecting your own attitudes and behaviours in this unit.

Thank you for your participation.

Lorena Mitrione (PhD student, Department of Accounting, Monash University)
Email: lorena.mitrione@monash.edu

The following 28 statements ask about your motivation and the learning strategies that you adopt when you are engaging with learning resources. **Learning resources are any resource that you use as part of the learning process in your studies. This may include, but is not limited to, online lectures, YouTube videos, answers to tutorial questions, readings, links etc.**

For each statement, please select the response that best reflects your motivation and/or learning strategies adopted when engaging with learning resources in this accounting unit.

	Not at all true of me 1	2	3	4	5	6	Very true of me 7
In ACF3100, I prefer learning material that arouses my curiosity, even if the content is difficult to learn.	○	○	○	○	○	○	○
I often choose learning resources I will learn something from even if they require more effort.	○	○	○	○	○	○	○
I find it satisfying to try and understand the content in this unit as thoroughly as possible.	○	○	○	○	○	○	○
I think the learning resources in ACF3100 are useful for me to learn.	○	○	○	○	○	○	○
Understanding the content in ACF3100 is very important to me.	○	○	○	○	○	○	○
I think I will be able to use what I learn in ACF3100 in other accounting units or in my professional role as an accountant.	○	○	○	○	○	○	○
If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in ACF3100.	○	○	○	○	○	○	○
If I don't understand the content in ACF3100, it is because I did not use the learning resources provided.	○	○	○	○	○	○	○

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For each statement, please select the response that best reflects your motivation and/or learning strategies adopted when engaging with learning resources in this accounting unit.

	Not at all true of me 1	2	3	4	5	6	Very true of me 7
If I try hard enough, then I will understand the ACF3100 content.	○	○	○	○	○	○	○
I'm certain I can understand the most difficult content presented in the learning resources provided for this ACF3100 unit.	○	○	○	○	○	○	○
I'm confident I can understand the concepts taught in ACF3100 through engagement with the learning resources provided.	○	○	○	○	○	○	○
When studying for this ACF3100 unit, I re-use the learning resources provided over and over again.	○	○	○	○	○	○	○
When studying, I re-use the learning resources to help me remember material.	○	○	○	○	○	○	○
When engaging with the learning resources for ACF3100, I try to relate the content to what I already know.	○	○	○	○	○	○	○
When I am studying for ACF3100, I try to make connections between the learning resources so that everything fits together.	○	○	○	○	○	○	○
I try to relate ideas in this unit to those in other accounting units whenever possible.	○	○	○	○	○	○	○
I use the learning resouces provided as a starting point and try to develop my own ideas from that.	○	○	○	○	○	○	○

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For each statement, please select the response that best reflects your motivation and/or learning strategies adopted when engaging with learning resources in this accounting unit.

	Not at all true of me 1	2	3	4	5	6	Very true of me 7
When I become confused about content taught in this unit, I try to locate alternative learning resources.	○	○	○	○	○	○	○
Before I begin studying I think about the learning resources that I will need to engage with in order to learn.	○	○	○	○	○	○	○
When I study for ACF3100, I set goals for myself in order to direct my activities and engage with the learning resources provided.	○	○	○	○	○	○	○
I try to think through ideas and concepts when engaging with the learning resources.	○	○	○	○	○	○	○
I try to choose a location to study where I can concentrate on my course work.	○	○	○	○	○	○	○
I try to choose a time with few distractions for studying.	○	○	○	○	○	○	○
Even when the ACF3100 learning resources are dull and uninteresting, I keep working until I finish.	○	○	○	○	○	○	○
When required, I seek assistance from the lecturer/tutor.	○	○	○	○	○	○	○
I set goals to help me manage my studying time for this unit.	○	○	○	○	○	○	○

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For each statement, please select the response that best reflects your motivation and/or learning strategies adopted when engaging with learning resources in this accounting unit.

	Not at all true of me 1	2	3	4	5	6	Very true of me 7
I set short term (daily or weekly) goals as well as long-term (monthly or for the semester) goals.	○	○	○	○	○	○	○
I communicate with my classmates to find out whether what I am learning is different from what they are learning.	○	○	○	○	○	○	○

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Accounting Major

Please think about the following three statements in the context of your **accounting major.**

	Not at all true of me 1	2	3	4	5	6	Very true of me 7
I find it satisfying to try and understand the content in my accounting major as thoroughly as possible.	○	○	○	○	○	○	○
If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in my accounting major.	○	○	○	○	○	○	○
I'm confident I can understand the concepts taught in my accounting major through engagement with the learning resources provided.	○	○	○	○	○	○	○

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Lifelong Learning

The following seven statements relate to your opinions on **lifelong learning**. Lifelong learning is an important attribute for many professions, including accounting. As a future accounting graduate you will be required to continually update your accounting knowledge and skills through continuous learning. As such, we are interested in your views in relation to lifelong learning.

	Not at all true of me 1	2	3	4	5	6	Very true of me 7
I enjoy learning.	○	○	○	○	○	○	○
I believe learning is important for developing as a person.	○	○	○	○	○	○	○
I can identify when I need to learn something.	○	○	○	○	○	○	○
I am aware of the ways I prefer to learn.	○	○	○	○	○	○	○
I am able to use different learning resources to retrieve and process information.	○	○	○	○	○	○	○
I plan to keep my knowledge and skills updated throughout my professional life in order to advance my career.	○	○	○	○	○	○	○
Learning is important for achieving my career goals.	○	○	○	○	○	○	○

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Motivation and Self-regulated Learning: Your thoughts

We would like to ask you five open-ended questions to let you elaborate on your motivation and the learning strategies you adopt whilst studying accounting. If you're happy to answer these questions, select **Yes;** otherwise select **No,** which will take you to a final few demographic questions.

○ Yes

○ No

Thinking about your studies in accounting, can you describe what motivates you to learn?

Complete the following statement:

The ways I prefer to learn are.........

Thinking about your studies in accounting, can you describe the learning strategies that you apply?

Reflecting back on prior semesters, can you describe whether your motivation to study has changed?

Reflecting back on prior semesters, can you describe whether your level of engagement with learning resources has changed?

Demographic Information

Demographic Information. (Where required, please select the option that applies to you).

Please provide your name and/or student ID.

Student name

Student ID

Gender

- Male
- Female
- Other

Age

- 18-20
- 21-22
- 23-24
- 25-30
- Other

What is your residency status?

- Australian citizen
- Permanent resident
- International student
- Other (please specify)

What course are you currently enrolled in?

- BBus
- BBus (Accounting)
- Other

Please state your major.

- Accounting
- Other (please specify)

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How many units are you currently enrolled in?

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5

Did you complete an accounting unit prior to university (eg at high school VCE, TAFE)?

- ○ Yes
- ○ No

Please provide your ATAR score (optional)

How many hours a week do you work for pay/remuneration?

- ○ 1 - 5
- ○ 6 - 10
- ○ 11 - 17.5
- ○ 18 - 20
- ○ Other (please specify)

On average, how many hours a week outside of classtime do you study for this unit?

- ○ 0 - 1
- ○ 2 - 3
- ○ 4 - 5
- ○ 6 - 7
- ○ 8 - 9
- ○ 10 -12
- ○ Other (please specify)

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Do you provide consent for the research team to have access to your data in Moodle related to this unit?

○ Yes

○ No

Please provide your student ID.

Are you happy for the researcher to contact you to invite you to participate in a brief interview?

○ Yes

○ No

Please provide your email address.

Appendix J: Scales explanation and corresponding question on the questionnaire

Scales from MSLQ (Pintrich et al. 1991), OSLQ (Barnard et al. 2009) and Propensity for Lifelong Learning (Bath and Smith, 2009)

Motivation scales	Description	Relevant questionnaire statement	Code/(Label)
Intrinsic goal orientation	Goal orientation refers to the student's perception of the reasons why he/she is engaging with a learning task. Goal orientation refers to the student's general goals or orientation to the course as a whole. Intrinsic goal orientation concerns the degree to which the student perceives himself/herself to be participating in a task for reasons such as challenge, curiosity, mastery. Having an intrinsic goal orientation towards an academic task indicates that the student's participation in the task is an end all to itself, rather than participation being a means to an end (page 9.)	• In ACFxxxx, I prefer learning material that arouses my curiosity, even if the content is difficult to learn. • I often choose learning resources I will learn something from even if they require more effort. • I find it satisfying to try and understand the content in this unit as thoroughly as possible. • I find it satisfying to try and understand the content in my accounting major as thoroughly as possible.	MINTCURIO (MIntCuriosity) MINTEFFORT (MIntEffort) MINTSATUND (MIntSatisUnders) MINTSATUNDACCMAJOR (MIntSatUnderstandAccMajor)
Task value	Task value differs from goal orientation in that task value refers to the student's evaluation of how interesting, how important, and how useful the task is ("what do I think of this task?". Goal orientation refers to the reasons why the student is participating in the task (Why am I doing this?") High task value refers to the student's perceptions of the course material in terms of interest, importance, and utility (page 11).	• I think the learning resources in ACFxxxx are useful for me to learn. • Understanding the content in ACFxxxx is very important to me. • I think I will be able to use what I learn in ACFxxxx in other accounting units or in my professional role as an accountant.	MTASKUSEFUL (MTaskUseful) MTASKUND (MTaskUnders) MTASKUSE (MTaskUse)
Control of learning beliefs	Control of learning refers to students' beliefs that their efforts to learn will result in positive outcomes. It concerns the belief that outcomes are contingent on one's own effort, in contrast to external factors such as the teacher. If students believe that their efforts to study make a difference in their learning, they should be more likely to study more strategically and effectively. That is, if	• If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in ACFxxxx. • If I don't understand the content in ACFxxxx, it is because I did not use the learning resources provided. • If I try hard enough, then I will understand the ACFxxxx content.	MCONTROLLEARN (MControlLearn) MCONTROLNONUSE (MControlNonuse) MCONTROLEFFORT (MControlEffort)

	the student feels that he/she can control their academic performance, he/she is more likely to put forth what is needed strategically to effect the desired changes (page 12).	• If I engage in using the learning resources in appropriate ways, then I will be able to learn the content in my accounting major.	MCONTROLLEARNMAJOR (MControlLearnContentAccMajor)
Self-efficacy for learning and performance	The items comprising this scale assess two aspects of expectancy: expectancy for success and self-efficacy. Expectancy for success refers to performance expectations, and relates to task performance. Self-efficacy is a self-appraisal of one's ability to master a task. Self-efficacy includes judgements about one's ability to accomplish a task as well as one's confidence in one's skills to perform the task (page 13).	• I'm certain I can understand the most difficult content presented in the learning resources provided for this ACFxxxx unit. • I'm confident I can understand the concepts taught in ACFxxxx through engagement with the learning resources provided. • I'm confident I can understand the concepts taught in my accounting major through engagement with the learning resources provided.	MSELFEFFCERTAIN (MSelfefficacyCertain) MSELFEFFCONFIDENT (MSelfefficacyConfident) MSELFEFFCONFIDMAJOR (MSelfEfficacyConfidentAccMajor)
Learning strategies scales			
Rehearsal	Basic rehearsal strategies involve reciting or naming items from a list to be learned. These strategies are best used for simple tasks and activation of information in working memory rather than the acquisition of new information in long-term memory. These strategies are assumed to influence the attention and encoding processes, but they do not appear to help students construct internal connections among the information or integrate the information with prior knowledge (page 19).	• When studying for this ACFxxxx unit, I re-use the learning resources provided over and over again. • When studying, I re-use the learning resources to help me remember material.	LSREHUSEOVER (LSRehearsalReuseOver) LSREHREUSEMEM (LSRehearsalMemorise)
Elaboration	Elaboration strategies help students store information into long-term memory by building internal connections between items to be learned. Elaboration strategies include paraphrasing, summarizing, creating analogies, and generative note-taking. These help the learner integrate and connect new information with prior knowledge. (page 20)	• When engaging with the learning resources for ACFxxxx, I try to relate the content to what I already know. • When I am studying for ACFxxxx, I try to make connections between the learning resources so that everything fits together.	LSELABRELATE (LSElaborateRelate) LSELABCONNECT (LSElaborateConnect)

		• I try to relate ideas in this unit to those in other accounting units wherever possible.	LSELABRELOTHER (LSElaborateRelateOtherUnits)
Critical thinking	Critical thinking refers to the degree to which students report applying previous knowledge to new situations in order to solve problems, reach decisions, or make critical evaluations with respect to standards of excellence (page 22)	• I use the learning resources provided as a starting point and try to develop my own ideas from that.	LSCRITICALDEV (LSCrticalDevelopIdeas)
Metacognitive self-regulation	Metacognition refers to the awareness, knowledge, and control of cognition. We have focused on the control and self-regulation aspects of metacognition on the MSLQ, not on the knowledge aspect. There are three general processes that make up metacognitive self-regulatory activities: planning, monitoring, and regulating. Planning activities such as goal setting and task analysis help to activate, or prime, relevant aspects of prior knowledge that make organizing and comprehending the material easier. Monitoring activities include tracking of one's attention as one reads, and self-testing and questioning: these assist the learner in understanding the material and integrating it with prior knowledge. Regulating refers to the fine-tuning and continuous adjustment of one's cognitive activities. Regulating activities are assumed to improve performance by assisting learners in checking and correcting their behaviour as they proceed on a task. (page 23)	• When I become confused about the content taught in this unit, I try to locate alternative learning resources. • Before I begin studying I think about the learning resources that I will need to engage with in order to learn. • When I study for ACFxxxx, I set goals for myself in order to direct my activities and engage with the learning resources provided. • I try to think through ideas and concepts when engaging with the learning resources.	LSMETASRALTERNATE (LSMetaSRAlternativeRes) LSMETASRNEED (LSMetaSRNeedEngage) LSMETASRSETGOALS (LSMetaSRSetGoals) LSMETASRTHINKIDEAS (LSMetaSRThinkIdeas)
Time and study environment	Besides self-regulation of cognition, students must be able to manage and regulate their time and their study environments. Time management involves scheduling, planning and managing one's	• I try to choose a location to study where I can concentrate on my course work. • I try to choose a time with few distractions for studying.	LSTIMELOC (LSTimeChooseLocation) LSTIMEFEWDISSTRACT (LSTimeFewDistractions)

	study time. This includes not only setting aside blocks of time to study, but the effective use of that study time, and setting realistic goals. Time management varies in level, from an evening of studying to weekly and monthly scheduling. Study environment management refers to the setting where the student does his or her class work. Ideally, the learner's study environment should be organized, quiet, and relatively free of visual and auditory distractions. (page 25)		
Effort regulation	Self-regulation also includes students' ability to control their effort and attention in the face of distractions and uninteresting tasks. Effort management is self-management, and reflects a commitment to completing one's study goals, even when there are difficulties or distractions. Effort management is important to academic success because it not only signifies goal commitment, but also regulates the continued use of learning strategies. (page 27)	• Even when the ACFxxxx learning resources are dull and uninteresting, I keep working until I finish.	LSEFFORTPERSIST (LSEffortWorkUntilFinished)
Help-seeking	Another aspect of the environment that the student must learn to manage is the support of others. This includes both peers and instructors. Good students know when they don't know something and are able to identify someone to provide them with some assistance. There is a large body of research that indicates that peer help, peer tutoring, and individual teacher assistance facilitate student achievement (page 29).	• When required, I seek assistance from the lecturer/tutor.	LSHELPSEEKACAD (LSHelpSeekLectTutor)

OSLQ – Barnard et al, (2009)

Setting goals	As the blended learning environment is less directed and controlled, students need to set	• I set goals to help me manage my studying time for this unit.	OSLQGOALSETGOALS (OSLQGoalSetGoals)

	specific and challenging goals in order to contribute to higher and better performance.	• I set short term (daily or weekly) goals as well as long-term (monthly or for the semester) goals.	OSLQGOALSTLT (OSLQGoalSetSTermLTerm)
Communication	Students communicating with one another helps them feel connected and may confirm that they are on the right track in their learning.	• I communicate with my classmates to find out whether what I am learning is different to what they are learning.	OSLQEVALCOMM (OSLQEvalCommunicateStudents)

Lifelong learning scales – Propensity for lifelong learning (Bath and Smith, 2009)

Beliefs	Represents beliefs about learning and knowledge (page 181)	• I enjoy learning. • I believe learning is important for developing as a person. • I am able to use different learning resources to retrieve and process information. • I plan to keep my knowledge and skills updated throughout my professional life in order to advance my career. • Learning is important for achieving my career goals.	LLLENJOY (LLLEnjoyLearning) LLLDEVELOP (LLLDevelopPerson) LLLUSEDIFF (LLLUseDifferentResources) LLLUPDATESKILLS (LLLUpdateSkills) LLLCAREERGOALS (LLLImportantAchieveCareerGoals)
Attitudes	Represents an individual's abilities in relation to learning and development (page 181).	• I can identify when I need to learn something. • I am aware of the ways I prefer to learn.	LLLIDENTIFYNEED (LLLIdentifyNeed) LLLAWAREPREF (LLLAwarePreferLearn)

Appendix K: Explanatory statement - Student

EXPLANATORY STATEMENT

Student

Project title: Exploration of motivation and self-regulated learning processes in a blended learning environment: An accounting perspective

Chief Investigator's name   Professor Carla Wilkin
Department of Accounting
Phone: 9903 1438
email: Carla.wilkin@monash.edu

Student's name   Lorena Mitrione
Phone : 9903 2792
email: lorena.mitrione@monash.edu

Co-Investigator's name   Dr. Matthew Butler
Department of Information Technology
Phone: 9903 1311
email: matthew.bulter@monash.edu

You are invited to take part in this study. Please read this Explanatory Statement in full before deciding whether or not to participate in this research. If you would like further information regarding any aspect of this project, you are encouraged to contact the researchers via the phone numbers or email addresses listed above.

This information sheet is for you to keep.

Research Project:
My name is Lorena Mitrione. I am a PhD student in the Department of Accounting at Monash University. Together with my supervisors Professor Carla Wilkin and Dr. Matthew Butler, we are researching the motivational factors and learning strategies that accounting students adopt when engaging with learning content as part of their studies at university.

What does the research involve?
This research involves three elements: (1) completion of an online survey, (2) participation in a short interview at a mutually convenient time, and (3) access to data available through Moodle that details your interaction with learning resources provided as part of ACFxxx. You may elect to take part in one, two or all three elements.

To commence with you will be asked to complete an online survey that comprises a mixture of check box and Likert scaled responses. The survey takes approximately 15 minutes to complete. You can elect to return the survey anonymously or you can elect, by including your student ID and name, to participate in a short interview of approximately 10 minutes in duration. The interviews play an important role in the research as they allow us to better understand why you engage or don't engage with learning resources and what you value in them. Finally, you will be asked to provide consent for the researchers to access learning analytics data available through Moodle, which details your use of the system in the unit.

Why were you chosen for this research?
You have been invited to participate in this research because you are enrolled in an accounting major as part of your studies towards the Bachelor of Business or Bachelor of Business (Accounting) at Monash University. Given little research to date has examined students motivation and self-regulated learning processes across an extended period of time, we are interested in following students as they progress through their degree. Therefore, you may be invited to participate in this study in multiple semesters as you progress through your studies as part of your accounting major.

Consenting to participate in the project and withdrawing from the research
Participating in this study is voluntary. You are under no obligation to participate and may withdraw at any stage. With respect to the online survey, you are under no obligation to complete any or all of the survey questions that you do not wish to answer. Further you are not obliged to submit a completed survey. Concerning the interviews, if you elect to participate in an interview, you will be asked to complete and sign a written consent form that asks for your permission to audio tape the interview. Finally, through completion of a check box on the survey and/or interview consent form, you will be asked to allow the researchers to access your learning analytics data, which is available in the Moodle system.

If you wish to withdraw from the research at any point you may do so by contacting one of the researchers listed above. There will be no repercussions from withdrawing from the study and any data that can be identified as relating to you will be removed from the study.

Possible benefits and risks to participants

This research may help to provide greater understanding of how students engage and interact with learning resources provided to them as part of their university studies. Acquiring this understanding may facilitate shaping the form and substance of learning resources provided to students in the future and thus provide much needed input into curriculum design. There are no foreseeable risks from participating in this research. Moreover, no questions of an invasive or personal nature will be asked.

Confidentiality

You will be asked to include your student ID and/or name on the survey, and provide your student ID and/or name at the interview. With your consent, this information is being collected to allow the researchers to match data collected from the interviews with the survey and learning analytics data. No participant names or other identifying data will be used in the reporting of the results in either the PhD thesis or associated conference presentations or journal articles. Nor will the data, including your name and student ID, be given to other parties or used for other purposes. In the PhD thesis and any associated publications the data will be reported in aggregate form, with any quotes de-identified and reported using labels such as "Student A said…".

It is also important to note that your decision to participate (or not to participate) will not have any effect on your role as a student or on any of your results.

Storage of data

Storage of data collected will adhere to university regulations. Online data obtained via the surveys, learning analytics and interview transcripts will be kept securely on password protected computers, which will be accessible only by the researchers. Interview audio tapes will be kept on University premises in a locked cabinet for 5 years. The data will be destroyed 5 years after submission of the PhD thesis.

Use of data for other purposes

The data obtained as part of this research primarily relates to completion of the PhD where it will be reported in de-identified form i.e. "Student A said… "or "in general students in first year thought…". The de-identified data may also be used in research publications such as journal articles and conference papers. At no time will any individual be identifiable. All data will remain confidential and anonymous.

Results

If you would like to receive a summary of the research findings, please email Lorena Mitrione at lorena.mitrione@monash.edu. Results from this research project may be available within the next 5 years.

Complaints

Should you have any concerns or complaints about the conduct of the project, you are welcome to contact the Executive Officer, Monash University Human Research Ethics (MUHREC):

Executive Officer
Monash University Human Research Ethics Committee (MUHREC)
Room 111, Building 3e Research Office Monash University VIC 3800
Tel: +61 3 9905 2052   Email: muhrec@monash.edu   Fax:+61 3 9905 3831

Thank you,

Professor Carla Wilkin

Appendix L: Consent form – interviewed students

CONSENT FORM

Student

Project Title: **Exploration of motivation and self-regulated learning processes in a blended learning environment: An accounting perspective**

Chief Investigator: Professor Carla Wilkin

Co-Investigator: Dr. Matthew Butler

Student's name   Lorena Mitrione

I have been asked to take part in the Monash University research project specified above. I have read and understood the Explanatory Statement and I hereby consent to participate in this project.

I consent to the following:	Yes	No
Audio recording during the interview	☐	☐
Access to my learning analytics data available through Moodle.	☐	☐
The data that I provide, whilst participating in this research, may be used by the PhD student in de-identified form in their PhD thesis. Further, the data may also be used in de-identified form in associated research publications such as journal articles and conference papers.	☐	☐

Participant's student ID

Name of Participant

Participant Signature   **Date**

Appendix M: Consent form – interviewed CEs

CONSENT FORM

Chief Examiner

Project Title: **Exploration of motivation and self-regulated learning processes in a blended learning environment: An accounting perspective**

Chief Investigator: Professor Carla Wilkin

Co-Investigator: Dr. Matthew Butler

Student's name   Lorena Mitrione

I have been asked to take part in the Monash University research project specified above. I have read and understood the Explanatory Statement and I hereby consent to participate in this project.

I consent to the following:	Yes	No
Audio recording during the interview	☐	☐
Access to student learning analytics data available through my Moodle site	☐	☐
The data that I provide during this research may be used by the PhD student in de-identified form in their PhD thesis. Further, the data may also be used in de-identified form in associated research publications such as journal articles and conference papers.	☐	☐

Name of Participant _____

Participant Signature _____ **Date** _____

Appendix N: Explanatory statement – CE
EXPLANATORY STATEMENT

Chief Examiner

Project Title: Exploration of motivation and self-regulated learning processes in a blended learning environment: An accounting perspective

Chief Investigator's name Professor Carla Wilkin
Department of Accounting
Phone: 9903 1438
email: Carla.wilkin@monash.edu

Student's name Lorena Mitrione
Phone : 9903 2792
email: lorena.mitrione@monash.edu

Co-Investigator's name Dr. Matthew Butler
Department of Information Technology
Phone: 9903 1311
email: matthew.butler@monash.edu

You are invited to take part in this study. Please read this Explanatory Statement in full before deciding whether or not to participate in this research. If you would like further information regarding any aspect of this project, you are encouraged to contact the researchers via the phone numbers or email addresses listed above.

This information sheet is for you to keep.

Research Project:
My name is Lorena Mitrione. I am a PhD student in the Department of Accounting at Monash University. Together with my supervisors Professor Carla Wilkin and Dr. Matthew Butler, we are researching the motivational factors and learning strategies that accounting students adopt when engaging with learning content as part of their studies at university.

What does the research involve?
This research involves two elements. From the student's perspective, it involves completion of a survey, participation in an interview and/or access to learning analytics data available through Moodle. The survey and interview probes students to think about their motivation and self-regulated learning strategies adopted as they engage with the learning content in units that form the accounting major in the Bachelor of Business or Bachelor of Business (Accounting). From a Chief Examiner's (CEs) perspective it involves a semi-structured interview between yourself as the CE and the PhD researcher. The purpose of the interview is to familiarise the researcher with how the learning resources provided within the unit you are responsible for ties in to why students may access them. It is envisaged that the interview and brief tour of your unit site in Moodle will take between 30 minutes and an hour.

Why were you chosen for this research?
To date little research has examined student's motivation and self-regulated learning processes across an extended period of time. Therefore, we are interested in following students as they progress through the five core accounting units that comprise their major in the Bachelor of Business and Bachelor of Business (Accounting), namely:

> ACF1100 Introduction to financial accounting
> ACF2100 Financial Accounting
> ACF2200 Introduction to Management Accounting
> ACF3200 Management Accounting
> ACF3100 Advanced financial accounting.

As the CE of one of these nominated units, you have been chosen for this research.

Consenting to participate in the project and withdrawing from the research
Participating in this study is voluntary. You are under no obligation to participate and may withdraw at any stage. If you elect to participate in the interview you will be asked to complete and sign a written consent form. This consent form seeks your permission to audio tape the interview session. You will also be requested to provide consent for the PhD student to access learning analytics data from Moodle for students enrolled in your unit. (Note: Students are also being asked to provide their individual consent). You are entitled to withdraw from the

study at any stage with no repercussions. If you withdraw from the study any interview data collected from you will be removed from the data set and not used in any way.

Possible benefits and risks to participants

As an academic of a core unit the benefit to you from participating in this research is the ability to receive greater understanding about what motivates students to engage with particular learning resources and what learning strategies they adopt whilst engaging with these learning resources. Having this understanding may shape the form of the learning resources you provide in the future and may influence curriculum design. There are no foreseeable risks associated with this research. No questions of an invasive or personal nature will be asked. Participation is purely voluntary and you may choose to withdraw from the study at any time.

Confidentiality

The information you provide will remain confidential and shared only with members of the research team (i.e. the PhD student and her supervisors). No names or unit codes will be identified when reporting the results in either the PhD thesis or any associated research publications in conferences or journals. The data will be reported in de-identified form, i.e. "CE 1 said…..", "Student A said…..". or "in general students in first year thought….".

Storage of data

Storage of data collected will adhere to university regulations. Interview audio tapes will be kept on University premises in a locked cabinet for 5 years. Interview transcripts in electronic format and the learning analytics data will be kept securely on password protected computers, which will only be accessible by the researchers. The data will be destroyed 5 years after submission of the PhD thesis.

Use of data for other purposes

The data obtained as part of this research primarily relates to completion of the PhD where it will be reported in de-identified form i.e. "CE 1 said….." The de-identified data may also be used for research publications such as journal articles and conference papers. At no time will any individual be identifiable. All data will remain confidential and anonymous.

Results

If you would like to be receive a summary of the research findings, please email Lorena Mitrione at lorena.mitrione@monash.edu. Results from this research project may be available within the next 5 years.

Complaints

Should you have any concerns or complaints about the conduct of the project, you are welcome to contact the Executive Officer, Monash University Human Research Ethics (MUHREC):

Executive Officer
Monash University Human Research Ethics Committee (MUHREC)
Room 111, Building 3e Research Office Monash University VIC 3800
Tel: +61 3 9905 2052   Email: muhrec@monash.edu   Fax: +61 3 9905 3831

Thank you,

Professor Carla Wilkin

Appendix O: Item Analysis on questionnaire pilot study data
Semester 2, 2015 Data
Data Analysis 14 March 2016
Step 1: Test plan

Concept Measured	Source	No. of Items
Intrinsic goal orientation	MSLQ	4
Task Value	MSLQ	3
Control of learning beliefs	MSLQ	4
Self-efficacy for learning and performance	MSLQ	3
Rehearsal	MSLQ	3
Elaboration	MSLQ	3
Critical thinking	MSLQ	1
Metacognitive self-regulation	MSLQ	6
Time and study environment	MSLQ	3
Effort regulation	MSLQ	3
Help-seeking	MSLQ	1
Goal setting	OSLQ	3
Self-evaluation	OSLQ	1
Lifelong learning – beliefs about learning	PLLL	5
Lifelong learning – abilities in relation to learning	PLLL	3

Step 2:Item analysis on each concept measured.
Scale: Intrinsic goal orientation – MSLQ
4 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
MINTCURIO	62	5.42	6	1.095	2	7	0.694	0.553
MINTEFFORT	62	5.11	5	1.404	2	7	0.481	0.684
MINTSATUND	62	5.89	6	1.073	2	7	0.570	0.626
MINTSATUNDACCMAJOR	62	5.81	6	1.212	2	7	0.340	0.753

Cronbach alpha: 0.719 (As a comparison, Cronbach alpha Pintrich et . (1991) 0.74)

Variable highlighted in yellow, as the item correlation is low, consider removal. Removal of the variable will improve the Cronbach alpha for this scale. However, the statement specifically relates to RQ3 and given there are only 3 statements in total relating to this RQ the statement was retained. The Cronbach alpha is above 0.7 with the inclusion of this variable.

Frequencies

MINTCURIO MIntCuriosity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**2 Mostly not true of me**	2	1.5	2.6	2.6
	3 Somewhat not true of me	5	3.8	6.4	9.0
	4 Undecided	7	5.3	9.0	17.9
	5 Somewhat true of me	21	15.9	26.9	44.9
	6 Mostly true of me	34	25.8	43.6	88.5
	7 Very true of me	9	6.8	11.5	100.0
	Total	78	59.1	100.0	
Missing	**System**	54	40.9		
Total		132	100.0		

MINTEFFORT MIntEffort

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**2 Mostly not true of me**	5	3.8	6.4	6.4
	3 Somewhat not true of me	10	7.6	12.8	19.2
	4 Undecided	4	3.0	5.1	24.4
	5 Somewhat true of me	29	22.0	37.2	61.5
	6 Mostly true of me	18	13.6	23.1	84.6
	7 Very true of me	12	9.1	15.4	100.0
	Total	78	59.1	100.0	
Missing	**System**	54	40.9		
Total		132	100.0		

MINTSATUND MIntSatisUnders

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**2 Mostly not true of me**	4	3.0	5.1	5.1
	3 Somewhat not true of me	3	2.3	3.8	9.0
	4 Undecided	5	3.8	6.4	15.4
	5 Somewhat true of me	18	13.6	23.1	38.5
	6 Mostly true of me	28	21.2	35.9	74.4
	7 Very true of me	20	15.2	25.6	100.0
	Total	78	59.1	100.0	
Missing	**System**	54	40.9		
Total		132	100.0		

MINTSATUNDACCMAJOR MIntSatUnderstandAccMajor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 Mostly not true of me	3	2.3	4.8	4.8
	4 Undecided	3	2.3	4.8	9.7
	5 Somewhat true of me	13	9.8	21.0	30.6
	6 Mostly true of me	24	18.2	38.7	69.4
	7 Very true of me	19	14.4	30.6	100.0
	Total	62	47.0	100.0	
Missing	System	70	53.0		
Total		132	100.0		

Scale: Intrinsic goal orientation

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.719	.732	4

Inter-Item Correlation Matrix

	MINTCURIO MIntCuriosity	MINTEFFORT MIntEffort	MINTSATUND MIntSatisUnders	MINTSATUNDACCMAJOR MIntSatUnderstandAccMajor
MINTCURIO MIntCuriosity	1.000	.662	.530	.309
MINTEFFORT MIntEffort	.662	1.000	.357	.138
MINTSATUND MIntSatisUnders	.530	.357	1.000	.437
MINTSATUNDACCMAJOR MIntSatUnderstandAccMajor	.309	.138	.437	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.556	5.113	5.887	.774	1.151	.129	4
Item Variances	1.448	1.151	1.971	.820	1.712	.141	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MINTCURIO MIntCuriosity	16.81	7.273	.694	.546	.553
MINTEFFORT MIntEffort	17.11	7.020	.481	.444	.684
MINTSATUND MIntSatisUnders	16.34	7.965	.570	.364	.626
MINTSATUNDACC MAJOR MIntSatUnderstandAccMajor	16.42	8.674	.340	.208	.753

Scale: Task Value – MSLQ

3 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
MTASKUSEFUL	78	5.73	6	1.124	2	7	0.573	0.830
MTASKUND	78	6.10	6	1.223	1	7	0.742	0.655
MTASKUSE	78	6.05	6	1.043	1	7	0.687	0.723

Cronbach alpha: 0.812 (As a comparison, Cronbach alpha Pintrich et al. (1991) 0.90)

Cronbach alpha quite high and statistics for the variables are fine so no need to remove any of the statements.

Frequencies

MTASKUSEFUL MTaskUseful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 Mostly not true of me	1	.8	1.3	1.3
	3 Somewhat not true of me	2	1.5	2.6	3.8
	4 Undecided	8	6.1	10.3	14.1
	5 Somewhat true of me	16	12.1	20.5	34.6
	6 Mostly true of me	30	22.7	38.5	73.1
	7 Very true of me	21	15.9	26.9	100.0
	Total	78	59.1	100.0	
Missing	System	54	40.9		
Total		132	100.0		

MTASKUND MTaskUnders

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	1	.8	1.3	1.3
	2 Mostly not true of me	2	1.5	2.6	3.8
	4 Undecided	3	2.3	3.8	7.7
	5 Somewhat true of me	10	7.6	12.8	20.5
	6 Mostly true of me	25	18.9	32.1	52.6
	7 Very true of me	37	28.0	47.4	100.0
	Total	78	59.1	100.0	
Missing	System	54	40.9		
Total		132	100.0		

MTASKUSE MTaskUse

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	1	.8	1.3	1.3
	3 Somewhat not true of me	1	.8	1.3	2.6
	4 Undecided	4	3.0	5.1	7.7
	5 Somewhat true of me	7	5.3	9.0	16.7
	6 Mostly true of me	38	28.8	48.7	65.4
	7 Very true of me	27	20.5	34.6	100.0
	Total	78	59.1	100.0	
Missing	System	54	40.9		
Total		132	100.0		

Scale: Task value

Case Processing Summary

		N	%
Cases	Valid	78	59.1
	Excluded[a]	54	40.9
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.812	.813	3

Inter-Item Correlation Matrix

	MTASKUSEFUL MTaskUseful	MTASKUND MTaskUnders	MTASKUSE MTaskUse
MTASKUSEFUL MTaskUseful	1.000	.568	.488
MTASKUND MTaskUnders	.568	1.000	.719
MTASKUSE MTaskUse	.488	.719	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.962	5.731	6.103	.372	1.065	.041	3
Inter-Item Correlations	.592	.488	.719	.231	1.472	.011	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MTASKUSEFUL MTaskUseful	12.15	4.418	.573	.336	.830
MTASKUND MTaskUnders	11.78	3.497	.742	.578	.655
MTASKUSE MTaskUse	11.83	4.323	.687	.526	.723

Scale: Control of Learning beliefs – MSLQ
4 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
MCONTROLLEARN	62	6.03	6	0.905	1	7	0.560	0.688
MCONTROLNONUSE	62	4.47	5	1.596	1	7	0.445	0.804
MCONTROLEFFORT	62	6.03	6	1.071	2	7	0.588	0.662
MCONTROLLEARNMAJOR	62	5.90	6	0.953	2	7	0.711	0.613

Cronbach alpha: 0.745 (As a comparison, Cronbach alpha Pintrich et al. (1991) 0.68)

Consider removal of the highlighted statement (MCONTROLNONUSE), however, this statement is important as it relates to whether resources are referred to if students do not understand the content so statement was retained. The Cronbach alpha is above 0.7 with the inclusion of this statement.

Frequencies

MCONTROLLEARN MControlLearn

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	1	.8	1.3	1.3
	3 Somewhat not true of me	1	.8	1.3	2.6
	4 Undecided	6	4.5	7.7	10.3
	5 Somewhat true of me	7	5.3	9.0	19.2
	6 Mostly true of me	40	30.3	51.3	70.5
	7 Very true of me	23	17.4	29.5	100.0
	Total	78	59.1	100.0	
Missing	System	54	40.9		
Total		132	100.0		

MCONTROLNONUSE MControlNonuse

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	2	1.5	2.6	2.6
	2 Mostly not true of me	8	6.1	10.3	12.8
	3 Somewhat not true of me	16	12.1	20.5	33.3
	4 Undecided	10	7.6	12.8	46.2
	5 Somewhat true of me	20	15.2	25.6	71.8
	6 Mostly true of me	15	11.4	19.2	91.0
	7 Very true of me	7	5.3	9.0	100.0
	Total	78	59.1	100.0	
Missing	System	54	40.9		
Total		132	100.0		

MCONTROLEFFORT MControlEffort

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 Mostly not true of me	1	.8	1.4	1.4
	3 Somewhat not true of me	2	1.5	2.8	4.2
	4 Undecided	1	.8	1.4	5.6
	5 Somewhat true of me	12	9.1	16.7	22.2
	6 Mostly true of me	29	22.0	40.3	62.5
	7 Very true of me	27	20.5	37.5	100.0
	Total	72	54.5	100.0	
Missing	System	60	45.5		
Total		132	100.0		

MCONTROLLEARNMAJOR MControlLearnContentAccMajor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 Mostly not true of me	1	.8	1.6	1.6
	4 Undecided	3	2.3	4.8	6.5
	5 Somewhat true of me	12	9.1	19.4	25.8
	6 Mostly true of me	30	22.7	48.4	74.2
	7 Very true of me	16	12.1	25.8	100.0
	Total	62	47.0	100.0	
Missing	System	70	53.0		
Total		132	100.0		

Scale: Control of learning beliefs

Case Processing Summary

		N	%
Cases	Valid	62	47.0
	Excluded[a]	70	53.0
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.745	.787	4

Inter-Item Correlation Matrix

	MCONTROLLEARN MControlLearn	MCONTROLNONUSE MControlNonuse	MCONTROLEFFORT MControlEffort	MCONTROLLEARNMAJOR MControlLearnContentAccMajor
MCONTROLLEARN MControlLearn	1.000	.421	.388	.574
MCONTROLNONUSE MControlNonuse	.421	1.000	.336	.386
MCONTROLEFFORT MControlEffort	.388	.336	1.000	.774
MCONTROLLEARNMAJOR MControlLearnContentAccMajor	.574	.386	.774	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.609	4.468	6.032	1.565	1.350	.582	4
Inter-Item Correlations	.480	.336	.774	.438	2.302	.025	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MCONTROLLEARN MControlLearn	16.40	8.507	.560	.387	.688
MCONTROLNONUSE MControlNonuse	17.97	6.196	.445	.216	.804
MCONTROLEFFORT MControlEffort	16.40	7.654	.588	.608	.662
MCONTROLLEARNMAJOR MControlLearnContentAccMajor	16.53	7.630	.711	.689	.613

Scale: Self-efficacy for Learning and Performance – MSLQ
3 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
MSELFEFFCERTAIN	62	5.58	6	1.222	1	7	0.741	0.848
MSELFEFFCONFIDENT	62	5.65	6	1.147	1	7	0.792	0.798
MSELFEFFCONFIDMAJOR	62	5.79	6	1.073	1	7	0.759	0.830

Cronbach alpha: 0.876 (As a comparison, Cronbach alpha Pintrich et al. (1991) 0.93)

Cronbach alpha quite high and statistics for the variables are fine so no need to remove any statements.

Frequencies

MSELFEFFCERTAIN MSelfefficacyCertain

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1 Not at all true of me**	1	.8	1.4	1.4
	2 Mostly not true of me	2	1.5	2.8	4.2
	3 Somewhat not true of me	1	.8	1.4	5.6
	4 Undecided	4	3.0	5.6	11.1
	5 Somewhat true of me	19	14.4	26.4	37.5
	6 Mostly true of me	33	25.0	45.8	83.3
	7 Very true of me	12	9.1	16.7	100.0
	Total	72	54.5	100.0	
Missing	**System**	60	45.5		
Total		132	100.0		

MSELFEFFCONFIDENT MSelfefficacyConfident

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1 Not at all true of me**	1	.8	1.4	1.4
	3 Somewhat not true of me	2	1.5	2.8	4.2
	4 Undecided	9	6.8	12.5	16.7
	5 Somewhat true of me	11	8.3	15.3	31.9
	6 Mostly true of me	34	25.8	47.2	79.2
	7 Very true of me	15	11.4	20.8	100.0
	Total	72	54.5	100.0	
Missing	**System**	60	45.5		
Total		132	100.0		

MSELFEFFCONFIDMAJOR MSelfEfficacyConfidentAccMajor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	1	.8	1.6	1.6
	3 Somewhat not true of me	1	.8	1.6	3.2
	4 Undecided	5	3.8	8.1	11.3
	5 Somewhat true of me	7	5.3	11.3	22.6
	6 Mostly true of me	36	27.3	58.1	80.6
	7 Very true of me	12	9.1	19.4	100.0
	Total	62	47.0	100.0	
Missing	System	70	53.0		
Total		132	100.0		

Scale: Self-efficacy for learning and performance

Case Processing Summary

		N	%
Cases	Valid	62	47.0
	Excluded[a]	70	53.0
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.876	.878	3

Inter-Item Correlation Matrix

	MSELFEFFCERTAIN MSelfefficacyCertain	MSELFEFFCONFIDENT MSelfefficacyConfident	MSELFEFFCONFIDMAJOR MSelfEfficacyConfidentAccMajor
MSELFEFFCERTAIN MSelfefficacyCertain	1.000	.711	.669
MSELFEFFCONFIDENT MSelfefficacyConfident	.711	1.000	.738
MSELFEFFCONFIDMAJOR MSelfEfficacyConfidentAccMajor	.669	.738	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.672	5.581	5.790	.210	1.038	.012	3
Inter-Item Correlations	.706	.669	.738	.069	1.102	.001	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MSELFEFFCERTAIN MSelfefficacyCertain	11.44	4.283	.741	.552	.848
MSELFEFFCONFIDENT MSelfefficacyConfident	11.37	4.401	.792	.630	.798
MSELFEFFCONFIDMAJOR MSelfEfficacyConfidentAccMajor	11.23	4.801	.759	.587	.830

Scale: Rehearsal– MSLQ

3 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
LSREHREUSEOVER	72	5.42	6	1.253	1	7	0.587	0.457
LSREHMEMORISE	72	5.35	6	1.334	2	7	0.252	0.887
LSREHREUSEMEM	72	5.57	6	1.197	1	7	0.702	0.307

Cronbach alpha: 0.679 (As a comparison, Cronbach alpha Pintrich et al. (1991) 0.69)

As the item total correlation for the variable LSREHMEMORISE is very low (0.252) consideration was given to removal of the statement. Once removed the Cronbach alpha improved substantially.

Frequencies

LSREHREUSEOVER LSRehearsalReuseOver

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1 Not at all true of me**	1	.8	1.4	1.4
	2 Mostly not true of me	1	.8	1.4	2.8
	3 Somewhat not true of me	4	3.0	5.6	8.3
	4 Undecided	6	4.5	8.3	16.7
	5 Somewhat true of me	22	16.7	30.6	47.2
	6 Mostly true of me	25	18.9	34.7	81.9
	7 Very true of me	13	9.8	18.1	100.0
	Total	72	54.5	100.0	
Missing	**System**	60	45.5		
Total		132	100.0		

LSREHMEMORISE LSRehearsalMemorise

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**2 Mostly not true of me**	2	1.5	2.8	2.8
	3 Somewhat not true of me	8	6.1	11.1	13.9
	4 Undecided	5	3.8	6.9	20.8
	5 Somewhat true of me	19	14.4	26.4	47.2
	6 Mostly true of me	24	18.2	33.3	80.6
	7 Very true of me	14	10.6	19.4	100.0
	Total	72	54.5	100.0	
Missing	**System**	60	45.5		
Total		132	100.0		

LSREHREUSEMEM LSRehearsalReuseRemember

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	1	.8	1.4	1.4
	2 Mostly not true of me	1	.8	1.4	2.8
	3 Somewhat not true of me	2	1.5	2.8	5.6
	4 Undecided	6	4.5	8.3	13.9
	5 Somewhat true of me	18	13.6	25.0	38.9
	6 Mostly true of me	30	22.7	41.7	80.6
	7 Very true of me	14	10.6	19.4	100.0
	Total	72	54.5	100.0	
Missing	System	60	45.5		
Total		132	100.0		

Scale: Rehearsal

Case Processing Summary

		N	%
Cases	Valid	72	54.5
	Excluded[a]	60	45.5
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.679	.690	3

Inter-Item Correlation Matrix

	LSREHREUSEOVER LSRehearsalReuseOver	LSREHMEMORISE LSRehearsalMemorise	LSREHREUSEMEM LSRehearsalReuseRemember
LSREHREUSEOVER LSRehearsalReuseOver	1.000	.182	.798
LSREHMEMORISE LSRehearsalMemorise	.182	1.000	.298
LSREHREUSEMEM LSRehearsalReuseRemember	.798	.298	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.444	5.347	5.569	.222	1.042	.013	3
Inter-Item Correlations	.426	.182	.798	.616	4.386	.086	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LSREHREUSEOVER LSRehearsalReuseOver	10.92	4.162	.587	.640	.457
LSREHMEMORISE LSRehearsalMemorise	10.99	5.394	.252	.097	.887
LSREHREUSEMEM LSRehearsalReuseRemember	10.76	3.958	.702	.660	.307

Scale: Elaboration– MSLQ

3 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
LSELABRELATE	72	5.67	6	1.126	2	7	0.693	0.691
LSELABCONNECT	72	5.40	6	1.35	2	7	0.686	0.693
LSELABRELOTHER	72	5.69	6	1.194	2	7	0.580	0.797

Cronbach alpha: 0.802 (As a comparison, Cronbach alpha Pintrich et al. (1991) 0.76)

Cronbach alpha quite high and statistics for the variables are fine so no need to remove any of the statements.

Frequencies

LSELABRELATE LSElaborateRelate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**2 Mostly not true of me**	1	.8	1.4	1.4
	3 Somewhat not true of me	4	3.0	5.6	6.9
	4 Undecided	3	2.3	4.2	11.1
	5 Somewhat true of me	18	13.6	25.0	36.1
	6 Mostly true of me	30	22.7	41.7	77.8
	7 Very true of me	16	12.1	22.2	100.0
	Total	72	54.5	100.0	
Missing	**System**	60	45.5		
Total		132	100.0		

LSELABCONNECT LSElaborateConnect

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**2 Mostly not true of me**	1	.8	1.4	1.4
	3 Somewhat not true of me	9	6.8	12.5	13.9
	4 Undecided	6	4.5	8.3	22.2
	5 Somewhat true of me	17	12.9	23.6	45.8
	6 Mostly true of me	22	16.7	30.6	76.4
	7 Very true of me	17	12.9	23.6	100.0
	Total	72	54.5	100.0	
Missing	**System**	60	45.5		
Total		132	100.0		

LSELABRELOTHER LSElaborateRelateOtherUnits

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 Mostly not true of me	1	.8	1.4	1.4
	3 Somewhat not true of me	5	3.8	6.9	8.3
	4 Undecided	3	2.3	4.2	12.5
	5 Somewhat true of me	16	12.1	22.2	34.7
	6 Mostly true of me	28	21.2	38.9	73.6
	7 Very true of me	19	14.4	26.4	100.0
	Total	72	54.5	100.0	
Missing	System	60	45.5		
Total		132	100.0		

Scale: Elaboration

Case Processing Summary

		N	%
Cases	Valid	72	54.5
	Excluded[a]	60	45.5
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.802	.805	3

Inter-Item Correlation Matrix

	LSELABRELATE LSElaborateRelate	LSELABCONNECT LSElaborateConnect	LSELABRELOTHER LSElaborateRelateOtherUnits
LSELABRELATE LSElaborateRelate	1.000	.674	.531
LSELABCONNECT LSElaborateConnect	.674	1.000	.532
LSELABRELOTHER LSElaborateRelateOtherUnits	.531	.532	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.588	5.403	5.694	.292	1.054	.026	3
Inter-Item Correlations	.579	.531	.674	.143	1.269	.005	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LSELABRELATE LSElaborateRelate	11.10	4.962	.693	.495	.691
LSELABCONNECT LSElaborateConnect	11.36	4.121	.686	.496	.693
LSELABRELOTHER LSElaborateRelateOtherUnits	11.07	5.136	.580	.337	.797

Scale: Critical thinking– MSLQ
1 item

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
LSCRITICALDEV		5.18*	5	1.194*	2	7		

*Data from descriptives

Frequencies

LSCRITICALDEV LSCriticalDevelopIdeas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 Mostly not true of me	5	3.8	7.6	7.6
	3 Somewhat not true of me	3	2.3	4.5	12.1
	4 Undecided	7	5.3	10.6	22.7
	5 Somewhat true of me	21	15.9	31.8	54.5
	6 Mostly true of me	20	15.2	30.3	84.8
	7 Very true of me	10	7.6	15.2	100.0
	Total	66	50.0	100.0	
Missing	System	66	50.0		
Total		132	100.0		

Scale: Metacognitive self-regulation– MSLQ
6 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
LSMETASRALTERNATE	66	5.35	6	1.342	2	7	0.417	0.559
LSMETASRDISTRACT	66	4.38	5	1.586	1	7	-0.025	0.723
LSMETASRNEED	66	5.18	6	1.467	1	7	0.432	0.55
LSMETASRSETGOALS	66	5.24	5.5	1.313	1	7	0.510	0.527
LSMETASRTHINKIDEAS	66	5.33	6	1.232	1	7	0.568	0.512
LSMETASRPREPAREQU	66	4.67	5	1.916	1	7	0.390	0.571

Cronbach alpha: 0.624 (As a comparison, Cronbach alpha Pintrich et al. (1991) 0.79)

LSMETASRALTERNATE LSMetaSRAlternativeRes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 Mostly not true of me	3	2.3	4.5	4.5
	3 Somewhat not true of me	4	3.0	6.1	10.6
	4 Undecided	8	6.1	12.1	22.7
	5 Somewhat true of me	16	12.1	24.2	47.0
	6 Mostly true of me	22	16.7	33.3	80.3
	7 Very true of me	13	9.8	19.7	100.0
	Total	66	50.0	100.0	
Missing	System	66	50.0		
Total		132	100.0		

LSMETASRDISTRACT LSMetaSRDistracted

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	3	2.3	4.5	4.5
	2 Mostly not true of me	5	3.8	7.6	12.1
	3 Somewhat not true of me	13	9.8	19.7	31.8
	4 Undecided	11	8.3	16.7	48.5
	5 Somewhat true of me	16	12.1	24.2	72.7
	6 Mostly true of me	13	9.8	19.7	92.4
	7 Very true of me	5	3.8	7.6	100.0
	Total	66	50.0	100.0	
Missing	System	66	50.0		
Total		132	100.0		

LSMETASRNEED LSMetaSRNeedEngage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	3	2.3	4.5	4.5
	2 Mostly not true of me	1	.8	1.5	6.1
	3 Somewhat not true of me	3	2.3	4.5	10.6
	4 Undecided	11	8.3	16.7	27.3
	5 Somewhat true of me	13	9.8	19.7	47.0
	6 Mostly true of me	26	19.7	39.4	86.4
	7 Very true of me	9	6.8	13.6	100.0
	Total	66	50.0	100.0	
Missing	System	66	50.0		
Total		132	100.0		

LSMETASRSETGOALS LSMetaSRSetGoals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	1	.8	1.5	1.5
	2 Mostly not true of me	2	1.5	3.0	4.5
	3 Somewhat not true of me	5	3.8	7.6	12.1
	4 Undecided	5	3.8	7.6	19.7
	5 Somewhat true of me	20	15.2	30.3	50.0
	6 Mostly true of me	25	18.9	37.9	87.9
	7 Very true of me	8	6.1	12.1	100.0
	Total	66	50.0	100.0	
Missing	System	66	50.0		
Total		132	100.0		

LSMETASRTHINKIDEAS LSMetaSRThinkIdeas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	1	.8	1.5	1.5
	3 Somewhat not true of me	7	5.3	10.6	12.1
	4 Undecided	6	4.5	9.1	21.2
	5 Somewhat true of me	11	8.3	16.7	37.9
	6 Mostly true of me	36	27.3	54.5	92.4
	7 Very true of me	5	3.8	7.6	100.0
	Total	66	50.0	100.0	
Missing	System	66	50.0		
Total		132	100.0		

LSMETASRPREPAREQU LSMetaSRPrepareQues

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	7	5.3	10.6	10.6
	2 Mostly not true of me	6	4.5	9.1	19.7
	3 Somewhat not true of me	2	1.5	3.0	22.7
	4 Undecided	11	8.3	16.7	39.4
	5 Somewhat true of me	12	9.1	18.2	57.6
	6 Mostly true of me	17	12.9	25.8	83.3
	7 Very true of me	11	8.3	16.7	100.0
	Total	66	50.0	100.0	
Missing	System	66	50.0		
Total		132	100.0		

Scale: Metacognitive self-regulation

Case Processing Summary

		N	%
Cases	Valid	66	50.0
	Excluded[a]	66	50.0
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.624	.653	6

Inter-Item Correlation Matrix

	LSMETASRALTERNATE LSMetaSRAlternativeRes	LSMETASRDISTRACT LSMetaSRDistracted	LSMETASRNEED LSMetaSRNeedEngage	LSMETASRSETGOALS LSMetaSRSetGoals	LSMETASRTHINKIDEAS LSMetaSRThinkIdeas	LSMETASRPREPAREQU LSMetaSRPrepareQues
LSMETASRALTERNATE LSMetaSRAlternativeRes	1.000	-.092	.296	.379	.543	.237
LSMETASRDISTRACT LSMetaSRDistracted	-.092	1.000	-.063	-.045	-.089	.133
LSMETASRNEED LSMetaSRNeedEngage	.296	-.063	1.000	.528	.434	.213
LSMETASRSETGOALS LSMetaSRSetGoals	.379	-.045	.528	1.000	.463	.265
LSMETASRTHINKIDEAS LSMetaSRThinkIdeas	.543	-.089	.434	.463	1.000	.374
LSMETASRPREPAREQU LSMetaSRPrepareQues	.237	.133	.213	.265	.374	1.000

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Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.025	4.379	5.348	.970	1.221	.164	6
Inter-Item Correlations	.238	-.092	.543	.635	-5.908	.049	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LSMETASRALTERNATE LSMetaSRAlternativeRes	24.80	20.961	.417	.318	.559
LSMETASRDISTRACT LSMetaSRDistracted	25.77	25.778	-.025	.045	.723
LSMETASRNEED LSMetaSRNeedEngage	24.97	20.061	.432	.325	.550
LSMETASRSETGOALS LSMetaSRSetGoals	24.91	20.145	.510	.366	.527
LSMETASRTHINKIDEAS LSMetaSRThinkIdeas	24.82	20.090	.568	.443	.512
LSMETASRPREPAREQU LSMetaSRPrepareQues	25.48	17.884	.390	.180	.571

Given the negative item total correlation for LSMETASRDISTRACT and the negative statistics in the correlation matrix, reviewed the MSLQ questionnaire and found that this item should be reversed. A new variable LSMETASRDISTRACTR was created and the following information was derived when the item analysis was re-run.

6 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
LSMETASRALTERNATE	66	5.35	6	1.342	2	7	0.480	0.561
LSMETASRDISTRACTR	66	3.62	5	1.586	1	7	0.025	0.723
LSMETASRNEED	66	5.18	6	1.467	1	7	0.474	0.558
LSMETASRSETGOALS	66	5.24	5.5	1.313	1	7	0.536	0.542
LSMETASRTHINKIDEAS	66	5.33	6	1.232	1	7	0.630	0.516
LSMETASRPREPAREQU	66	4.67	5	1.916	1	7	0.272	0.653

Cronbach alpha: 0.641 (As a comparison, Cronbach alpha Pintrich et al. (1991) 0.79)

The item correlation for LSMETASRDISTRACTR and LSMETASRPREPAREQU are very low and the Cronbach alpha would improve substantially if these two statements were removed. Therefore, these two statements were removed.

Scale: Metacognitive self-regulation

Case Processing Summary

		N	%
Cases	Valid	66	50.0
	Excluded[a]	66	50.0
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach h's Alpha	Cronbach h's Alpha Based on Standardized Items	N of Items
.641	.677	6

Inter-Item Correlation Matrix

	LSMETASRALTERNATE LSMetaSRAlternativeRes	LSMETASRNEED LSMetaSRNeedEngage	LSMETASRSETGOALS LSMetaSRSetGoals	LSMETASRTHINKIDEAS LSMetaSRThinkIdeas	LSMETASRPREPAREQU LSMetaSRPrepareQues	LSMETADISTRACTR
LSMETASRALTERNATE LSMetaSRAlternativeRes	1.000	.296	.379	.543	.237	.092
LSMETASRNEED LSMetaSRNeedEngage	.296	1.000	.528	.434	.213	.063
LSMETASRSETGOALS LSMetaSRSetGoals	.379	.528	1.000	.463	.265	.045
LSMETASRTHINKIDEAS LSMetaSRThinkIdeas	.543	.434	.463	1.000	.374	.089
LSMETASRPREPAREQU LSMetaSRPrepareQues	.237	.213	.265	.374	1.000	-.133
LSMETADISTRACTR	.092	.063	.045	.089	-.133	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.899	3.621	5.348	1.727	1.477	.455	6
Item Variances	2.230	1.518	3.672	2.154	2.419	.623	6
Inter-Item Correlations	.259	-.133	.543	.676	-4.073	.038	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LSMETASRALTERNATE LSMetaSRAlternativeRes	24.05	20.998	.480	.318	.561
LSMETASRNEED LSMetaSRNeedEngage	24.21	20.293	.474	.325	.558
LSMETASRSETGOALS LSMetaSRSetGoals	24.15	20.592	.536	.366	.542
LSMETASRTHINKIDEAS LSMetaSRThinkIdeas	24.06	20.212	.630	.443	.516
LSMETASRPREPAREQU LSMetaSRPrepareQues	24.73	20.324	.272	.180	.653
LSMETADISTRACTR	25.77	25.778	.025	.045	.723

Scale: Time and study environment– MSLQ

3 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
LSTIMELOC	64	5.75	6	1.48	1	7	0.458	0.302
LSTIMEFEWDISTRACT	64	5.67	6	1.346	1	7	0.54	0.184
LSTIMEWEEKREG	64	5.58	6	1.401	1	7	0.154	0.757

Cronbach alpha: 0.558 (As a comparison, Cronbach alpha Pintrich et al. (1991) 0.76)

As the item total correlation for the variable LSRTIMEWEEKREG is very low (0.154) and the Cronbach alpha improves substantially upon removal of this statement, the statement was removed.

Frequencies

LSTIMELOC LSTimeChooseLocation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	3	2.3	4.5	4.5
	3 Somewhat not true of me	2	1.5	3.0	7.6
	4 Undecided	5	3.8	7.6	15.2
	5 Somewhat true of me	7	5.3	10.6	25.8
	6 Mostly true of me	25	18.9	37.9	63.6
	7 Very true of me	24	18.2	36.4	100.0
	Total	66	50.0	100.0	
Missing	System	66	50.0		
Total		132	100.0		

LSTIMEFEWDISTRACT LSTimeFewDistractions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	2	1.5	3.0	3.0
	2 Mostly not true of me	1	.8	1.5	4.5
	4 Undecided	4	3.0	6.1	10.6
	5 Somewhat true of me	19	14.4	28.8	39.4
	6 Mostly true of me	18	13.6	27.3	66.7
	7 Very true of me	22	16.7	33.3	100.0
	Total	66	50.0	100.0	
Missing	System	66	50.0		
Total		132	100.0		

LSTIMEWEEKREG LSTimeWeeklyRegularly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	1	.8	1.6	1.6
	2 Mostly not true of me	1	.8	1.6	3.1
	3 Somewhat not true of me	5	3.8	7.8	10.9
	4 Undecided	3	2.3	4.7	15.6
	5 Somewhat true of me	17	12.9	26.6	42.2
	6 Mostly true of me	17	12.9	26.6	68.8
	7 Very true of me	20	15.2	31.3	100.0
	Total	64	48.5	100.0	
Missing	System	68	51.5		
Total		132	100.0		

Scale: Time and study environment

Case Processing Summary

		N	%
Cases	Valid	64	48.5
	Excluded[a]	68	51.5
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.558	.559	3

Inter-Item Correlation Matrix

	LSTIMELOC LSTimeChooseLocation	LSTIMEFEWDISTRACT LSTimeFewDistractions	LSTIMEWEEKREG LSTimeWeeklyRegularly
LSTIMELOC LSTimeChooseLocation	1.000	.612	.101
LSTIMEFEWDISTRACT LSTimeFewDistractions	.612	1.000	.178
LSTIMEWEEKREG LSTimeWeeklyRegularly	.101	.178	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.667	5.578	5.750	.172	1.031	.007	3
Inter-Item Correlations	.297	.101	.612	.510	6.029	.061	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LSTIMELOC LSTimeChooseLocation	11.25	4.444	.458	.374	.302
LSTIMEFEWDISTRACT LSTimeFewDistractions	11.33	4.573	.540	.388	.184
LSTIMEWEEKREG LSTimeWeeklyRegularly	11.42	6.438	.154	.032	.757

Scale: Effort regulation- MSLQ

3 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
LSEFFORTEASYPARTS	64	3.25	3	1.834	1	7	-0.170	0.642
LSEFFORTPERSIST	64	5.63	6	1.327	1	7	0.170	-0.313
LSEFFORTHARDWORK	64	5.63	6	1.339	1	7	0.175	-0.332

Cronbach alpha: 0.053 (As a comparison, Cronbach alpha Pintrich et al. (1991) 0.69)

Frequencies

LSEFFORTEASYPARTS LSEffortGiveUpEasyParts

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	11	8.3	17.2	17.2
	2 Mostly not true of me	19	14.4	29.7	46.9
	3 Somewhat not true of me	10	7.6	15.6	62.5
	4 Undecided	5	3.8	7.8	70.3
	5 Somewhat true of me	6	4.5	9.4	79.7
	6 Mostly true of me	12	9.1	18.8	98.4
	7 Very true of me	1	.8	1.6	100.0
	Total	64	48.5	100.0	
Missing	System	68	51.5		
Total		132	100.0		

LSEFFORTPERSIST LSEffortWorkUntilFinished

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	1	.8	1.6	1.6
	3 Somewhat not true of me	6	4.5	9.4	10.9
	4 Undecided	3	2.3	4.7	15.6
	5 Somewhat true of me	12	9.1	18.8	34.4
	6 Mostly true of me	25	18.9	39.1	73.4
	7 Very true of me	17	12.9	26.6	100.0
	Total	64	48.5	100.0	
Missing	System	68	51.5		
Total		132	100.0		

LSEFFORTHARDWORK LSEffortWorkHardUninterested

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	1	.8	1.6	1.6
	2 Mostly not true of me	1	.8	1.6	3.1
	3 Somewhat not true of me	3	2.3	4.7	7.8
	4 Undecided	6	4.5	9.4	17.2
	5 Somewhat true of me	12	9.1	18.8	35.9
	6 Mostly true of me	23	17.4	35.9	71.9
	7 Very true of me	18	13.6	28.1	100.0
	Total	64	48.5	100.0	
Missing	System	68	51.5		
Total		132	100.0		

Scale: Effort regulation

Case Processing Summary

		N	%
Cases	Valid	64	48.5
	Excluded[a]	68	51.5
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

412

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.053	.162	3

Inter-Item Correlation Matrix

	LSEFFORTEASYPARTS LSEffortGiveUpEasyParts	LSEFFORTPERSIST LSEffortWorkUntilFinished	LSEFFORTHARDWORK LSEffortWorkHardUninterested
LSEFFORTEASYPARTS LSEffortGiveUpEasyParts	1.000	-.150	-.142
LSEFFORTPERSIST LSEffortWorkUntilFinished	-.150	1.000	.473
LSEFFORTHARDWORK LSEffortWorkHardUninterested	-.142	.473	1.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LSEFFORTEASYPARTS LSEffortGiveUpEasyParts	11.25	5.238	-.170	.029	.642
LSEFFORTPERSIST LSEffortWorkUntilFinished	8.88	4.460	.170	.231	-.313[a]
LSEFFORTHARDWORK LSEffortWorkHardUninterested	8.88	4.397	.175	.229	-.332[a]

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

413

Alternative 1: Negative variable reversed

Given the negative item total correlation for LSEFFORTEASYPARTS and the negative statistics in the correlation matrix, reviewed the MSLQ questionnaire and found that this item should be reversed. A new variable LSEFFORTEASYPARTSR was created and the following information was derived when the item analysis for this scale was re-run.

3 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
LSEFFORTEASYPARTSR	64	4.75	3	1.834	1	7	0.170	0.642
LSEFFORTPERSIST	64	5.63	6	1.327	1	7	0.376	0.238
LSEFFORTHARDWORK	64	5.63	6	1.339	1	7	0.367	0.249

Cronbach alpha: 0.465 (As a comparison, Cronbach alpha Pintrich et a.l (1991) 0.69)

The item correlation for LSEFFORTEASYPARTSR is very low (0.170) and upon removal of the statement the Cronbach alpha improved. Given the low item correlation on the remaining two statements for this scale the following statement has also been removed: LSEFFORTHARDWORK. In discussion with supervisors it was determined that LSEFFORTPERSIST should be retained given the research questions (in particular RQ2) for this study.

Scale: Effort regulation

Case Processing Summary

		N	%
Cases	Valid	64	48.5
	Excluded[a]	68	51.5
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.465	.507	3

Inter-Item Correlation Matrix

	LSEFFORTPERSIST LSEffortWorkUntilFinished	LSEFFORTHARDWORK LSEffortWorkHardUninterested	LSEFFORTEASYPARTSR
LSEFFORTPERSIST LSEffortWorkUntilFinished	1.000	.473	.150
LSEFFORTHARDWORK LSEffortWorkHardUninterested	.473	1.000	.142
LSEFFORTEASYPARTSR	.150	.142	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.333	4.750	5.625	.875	1.184	.255	3
Item Variances	2.307	1.762	3.365	1.603	1.910	.840	3
Inter-Item Correlations	.255	.142	.473	.331	3.329	.029	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LSEFFORTPERSIST LSEffortWorkUntilFinished	10.38	5.857	.376	.231	.238
LSEFFORTHARDWORK LSEffortWorkHardUninterested	10.38	5.857	.367	.229	.249
LSEFFORTEASYPARTSR	11.25	5.238	.170	.029	.642

Scale: Help-seeking– MSLQ
1 item

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
LSHELPSEEKACAD		5.25*	6	1.543*	1	7		

*data is from descriptives

Frequencies

LSHELPSEEKACAD LSHelpSeekLectTutor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	2	1.5	3.1	3.1
	2 Mostly not true of me	3	2.3	4.7	7.8
	3 Somewhat not true of me	4	3.0	6.3	14.1
	4 Undecided	6	4.5	9.4	23.4
	5 Somewhat true of me	15	11.4	23.4	46.9
	6 Mostly true of me	21	15.9	32.8	79.7
	7 Very true of me	13	9.8	20.3	100.0
	Total	64	48.5	100.0	
Missing	System	68	51.5		
Total		132	100.0		

Scale: Goal setting - OSLQ
3 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
OSLQHIGHSTDENGAGE	64	5.75	6	1.069	3	7	0.277	0.843
OSLQGOALSSETGOALS	64	5.48	6	1.297	2	7	0.685	0.354
OSLQGOALSTLT	64	5.33	6	1.358	1	7	0.619	0.449

Cronbach alpha: 0.695

As the item total correlation for the variable OSLQHIGHSTDENGAGA is very low (0.277) removal of statement resulted in an improved Cronbach alpha.

Frequencies

OSLQHIGHSTDENGAGE OSLQHighStandardEngagement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**3 Somewhat not true of me**	3	2.3	4.7	4.7
	4 Undecided	3	2.3	4.7	9.4
	5 Somewhat true of me	19	14.4	29.7	39.1
	6 Mostly true of me	21	15.9	32.8	71.9
	7 Very true of me	18	13.6	28.1	100.0
	Total	64	48.5	100.0	
Missing	**System**	68	51.5		
Total		132	100.0		

OSLQGOALSETGOALS OSLQGoalSetGoals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**2 Mostly not true of me**	3	2.3	4.7	4.7
	3 Somewhat not true of me	4	3.0	6.3	10.9
	4 Undecided	1	.8	1.6	12.5
	5 Somewhat true of me	21	15.9	32.8	45.3
	6 Mostly true of me	21	15.9	32.8	78.1
	7 Very true of me	14	10.6	21.9	100.0
	Total	64	48.5	100.0	
Missing	**System**	68	51.5		
Total		132	100.0		

OSLQGOALSTLT OSLQGoalSetSTermLTerm

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1 Not at all true of me**	1	.8	1.6	1.6
	2 Mostly not true of me	2	1.5	3.1	4.7
	3 Somewhat not true of me	5	3.8	7.8	12.5
	4 Undecided	5	3.8	7.8	20.3
	5 Somewhat true of me	14	10.6	21.9	42.2
	6 Mostly true of me	28	21.2	43.8	85.9
	7 Very true of me	9	6.8	14.1	100.0
	Total	64	48.5	100.0	
Missing	**System**	68	51.5		
Total		132	100.0		

Scale: Goal setting

Case Processing Summary

		N	%
Cases	Valid	64	48.5
	Excluded[a]	68	51.5
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.695	.680	3

Inter-Item Correlation Matrix

	OSLQHIGHSTDENGAGE OSLQHighStandardEngagement	OSLQGOALSETGOALS OSLQGoalSetGoals	OSLQGOALSTLT OSLQGoalSetSTermLTerm
OSLQHIGHSTDENGAGE OSLQHighStandardEngagement	1.000	.295	.221
OSLQGOALSETGOALS OSLQGoalSetGoals	.295	1.000	.729
OSLQGOALSTLT OSLQGoalSetSTermLTerm	.221	.729	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.521	5.328	5.750	.422	1.079	.045	3
Inter-Item Correlations	.415	.221	.729	.507	3.290	.060	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OSLQHIGHSTDENGAGE OSLQHighStandardEngagement	10.81	6.091	.277	.087	.843
OSLQGOALSETGOALS OSLQGoalSetGoals	11.08	3.629	.685	.550	.354
OSLQGOALSTLT OSLQGoalSetSTermLTerm	11.23	3.643	.619	.531	.449

Scale: Self-evaluation– OSLQ
1 item

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
OSLQEVALCOMM		4.63*	5	2.20*	1	7		

*Data obtained from descriptives

OSLQEVALCOMM OSLQEvalCommunicateStudents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	8	6.1	12.5	12.5
	2 Mostly not true of me	4	3.0	6.3	18.8
	3 Somewhat not true of me	8	6.1	12.5	31.3
	4 Undecided	5	3.8	7.8	39.1
	5 Somewhat true of me	10	7.6	15.6	54.7
	6 Mostly true of me	17	12.9	26.6	81.3
	7 Very true of me	12	9.1	18.8	100.0
	Total	64	48.5	100.0	
Missing	System	68	51.5		
Total		132	100.0		

Scale: Lifelong learning

8 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
LLLENJOY	61	5.70	6	1.269	2	7	0.557	0.641
LLLDEVELOP	61	6.15	6	0.813	4	7	0.535	0.662
LLLIDENTIFYNEED	61	5.84	6	0.840	4	7	0.621	0.646
LLLAWAREPREF	61	5.92	6	0.971	4	7	0.576	0.646
LLLUSEDIFF	61	5.79	6	0.985	3	7	0.622	0.636
LLLSTATUSQUO	61	5.13	5	1.678	1	7	-0.085	0.836
LLLUPDATESKILLS	61	5.79	6	1.112	1	7	0.395	0.681
LLLCAREERGOALS	61	6.41	7	0.739	4	7	0.567	0.661

Cronbach alpha: 0.709

Variable LLLSTATUSQUO is not a variable that can be reversed, therefore needs to be removed from the survey instrument as it has a negative item total correlation. Cronbach alpha improved once this was removed.

Frequencies

LLLENJOY LLLEnjoyLearning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 Mostly not true of me	2	1.5	3.3	3.3
	3 Somewhat not true of me	2	1.5	3.3	6.6
	4 Undecided	5	3.8	8.2	14.8
	5 Somewhat true of me	13	9.8	21.3	36.1
	6 Mostly true of me	20	15.2	32.8	68.9
	7 Very true of me	19	14.4	31.1	100.0
	Total	61	46.2	100.0	
Missing	System	71	53.8		
Total		132	100.0		

LLLDEVELOP LLLDevelopPerson

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4 Undecided	2	1.5	3.3	3.3
	5 Somewhat true of me	10	7.6	16.4	19.7
	6 Mostly true of me	26	19.7	42.6	62.3
	7 Very true of me	23	17.4	37.7	100.0
	Total	61	46.2	100.0	
Missing	System	71	53.8		
Total		132	100.0		

LLLIDENTIFYNEED LLLIdentifyNeed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4 Undecided	4	3.0	6.6	6.6
	5 Somewhat true of me	15	11.4	24.6	31.1
	6 Mostly true of me	29	22.0	47.5	78.7
	7 Very true of me	13	9.8	21.3	100.0
	Total	61	46.2	100.0	
Missing	System	71	53.8		
Total		132	100.0		

LLLAWAREPREF LLLAwarePreferLearn

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4 Undecided	6	4.5	9.8	9.8
	5 Somewhat true of me	13	9.8	21.3	31.1
	6 Mostly true of me	22	16.7	36.1	67.2
	7 Very true of me	20	15.2	32.8	100.0
	Total	61	46.2	100.0	
Missing	System	71	53.8		
Total		132	100.0		

LLLUSEDIFF LLLUseDifferentResources

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3 Somewhat not true of me	3	2.3	4.9	4.9
	4 Undecided	2	1.5	3.3	8.2
	5 Somewhat true of me	13	9.8	21.3	29.5
	6 Mostly true of me	30	22.7	49.2	78.7
	7 Very true of me	13	9.8	21.3	100.0
	Total	61	46.2	100.0	
Missing	System	71	53.8		
Total		132	100.0		

LLLSTATUSQUO LLLDontLikeEnvToChange

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	4	3.0	6.6	6.6
	2 Mostly not true of me	2	1.5	3.3	9.8
	3 Somewhat not true of me	2	1.5	3.3	13.1
	4 Undecided	8	6.1	13.1	26.2
	5 Somewhat true of me	18	13.6	29.5	55.7
	6 Mostly true of me	12	9.1	19.7	75.4
	7 Very true of me	15	11.4	24.6	100.0
	Total	61	46.2	100.0	
Missing	System	71	53.8		
Total		132	100.0		

LLLUPDATESKILLS LLLUpdateSkills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Not at all true of me	1	.8	1.6	1.6
	3 Somewhat not true of me	1	.8	1.6	3.3
	4 Undecided	4	3.0	6.6	9.8
	5 Somewhat true of me	12	9.1	19.7	29.5
	6 Mostly true of me	28	21.2	45.9	75.4
	7 Very true of me	15	11.4	24.6	100.0
	Total	61	46.2	100.0	
Missing	System	71	53.8		
Total		132	100.0		

LLLCAREERGOALS LLLImportantAchieveCareerGoals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4 Undecided	1	.8	1.6	1.6
	5 Somewhat true of me	6	4.5	9.8	11.5
	6 Mostly true of me	21	15.9	34.4	45.9
	7 Very true of me	33	25.0	54.1	100.0
	Total	61	46.2	100.0	
Missing	System	71	53.8		
Total		132	100.0		

Scale: Lifelong learning

Case Processing Summary

		N	%
Cases	Valid	61	46.2
	Excluded[a]	71	53.8
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.709	.788	8

Inter-Item Correlation Matrix

	LLLENJOY LLLEnjoy Learning	LLLDEVELOP LLLDevelopPerson	LLLIDENTIFYNEED LLLIdentifyNeed	LLLAWAREPREF LLLAwarePreferLearn	LLLUSEDIFF LLLUseDifferentResources	LLLSTATUSQUO LLLDontLikeEnvToChange	LLLUPDATESKILLS LLLUpdateSkills	LLLCAREERGOALS LLLImportantAchieveCareerGoals
LLLENJOY LLLEnjoyLearning	1.000	.624	.407	.399	.535	.018	.214	.398
LLLDEVELOP LLLDevelopPerson	.624	1.000	.548	.227	.310	-.149	.441	.536
LLLIDENTIFYNEED LLLIdentifyNeed	.407	.548	1.000	.535	.662	-.245	.586	.513
LLLAWAREPREF LLLAwarePreferLearn	.399	.227	.535	1.000	.521	.160	.308	.350
LLLUSEDIFF LLLUseDifferentResources	.535	.310	.662	.521	1.000	-.003	.384	.374
LLLSTATUSQUO LLLDontLikeEnvToChange	.018	-.149	-.245	.160	-.003	1.000	-.226	-.017
LLLUPDATESKILLS LLLUpdateSkills	.214	.441	.586	.308	.384	-.226	1.000	.473
LLLCAREERGOALS LLLImportantAchieveCareerGoals	.398	.536	.513	.350	.374	-.017	.473	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.840	5.131	6.410	1.279	1.249	.136	8
Inter-Item Correlations	.317	-.245	.662	.906	-2.706	.066	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LLLENJOY LLLEnjoyLearning	41.02	17.483	.557	.595	.641
LLLDEVELOP LLLDevelopPerson	40.57	20.415	.535	.632	.662
LLLIDENTIFYNEED LLLIdentifyNeed	40.89	19.670	.621	.714	.646
LLLAWAREPREF LLLAwarePreferLearn	40.80	19.161	.576	.447	.646
LLLUSEDIFF LLLUseDifferentResources	40.93	18.729	.622	.603	.636
LLLSTATUSQUO LLLDontLikeEnvToChange	41.59	23.579	-.085	.218	.836
LLLUPDATESKILLS LLLUpdateSkills	40.93	19.829	.398	.424	.681
LLLCAREERGOALS LLLImportantAchieveCareerGoals	40.31	20.651	.567	.407	.661

REMOVAL OF LLLSTATUSQUO

7 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
LLLENJOY	61	5.70	6	1.269	2	7	0.572	0.823
LLLDEVELOP	61	6.15	6	0.813	4	7	0.618	0.812
LLLIDENTIFYNEED	61	5.84	6	0.840	4	7	0.755	0.792
LLLAWAREPREF	61	5.92	6	0.971	4	7	0.528	0.823
LLLUSEDIFF	61	5.79	6	0.985	3	7	0.649	0.804
LLLUPDATESKILLS	61	5.79	6	1.112	1	7	0.513	0.828
LLLCAREERGOALS	61	6.41	7	0.739	4	7	0.595	0.817

Cronbach alpha: 0.836

Scale: Lifelong learning – 7 statements

Case Processing Summary

		N	%
Cases	Valid	61	46.2
	Excluded[a]	71	53.8
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.836	.849	7

Inter-Item Correlation Matrix

	LLLENJOY LLLEnjoy Learning	LLLDEVELOP LLLDevelopPerson	LLLIDENTIFYNEED LLLIdentifyNeed	LLLAWAREPREF LLLAwarePreferLearn	LLLUSEDIFF LLLUseDifferentResources	LLLUPDATESKILLS LLLUpdateSkills	LLLCAREERGOALS LLLImportantAchieveCareerGoals
LLLENJOY LLLEnjoyLearning	1.000	.624	.407	.399	.535	.214	.398
LLLDEVELOP LLLDevelopPerson	.624	1.000	.548	.227	.310	.441	.536
LLLIDENTIFYNEED LLLIdentifyNeed	.407	.548	1.000	.535	.662	.586	.513
LLLAWAREPREF LLLAwarePreferLearn	.399	.227	.535	1.000	.521	.308	.350
LLLUSEDIFF LLLUseDifferentResources	.535	.310	.662	.521	1.000	.384	.374
LLLUPDATESKILLS LLLUpdateSkills	.214	.441	.586	.308	.384	1.000	.473
LLLCAREERGOALS LLLImportantAchieveCareerGoals	.398	.536	.513	.350	.374	.473	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.941	5.705	6.410	.705	1.124	.063	7
Inter-Item Correlations	.445	.214	.662	.447	3.087	.015	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LLLENJOY LLLEnjoyLearning	35.89	16.137	.572	.594	.823
LLLDEVELOP LLLDevelopPerson	35.44	18.584	.618	.632	.812
LLLIDENTIFYNEED LLLIdentifyNeed	35.75	17.555	.755	.680	.792
LLLAWAREPREF LLLAwarePreferLearn	35.67	18.257	.528	.390	.823
LLLUSEDIFF LLLUseDifferentResources	35.80	17.294	.649	.596	.804
LLLUPDATESKILLS LLLUpdateSkills	35.80	17.561	.513	.412	.828
LLLCAREERGOALS LLLImportantAchieveCareerGoals	35.18	19.184	.595	.398	.817

Alternative scale approach LLL:

On reviewing the article by Bath and Smith (2009) 2 factors were identified. Splitting the LLL statements into the 2 factors as per Bath and Smith (2009), data is as follows:

Factor 1: Beliefs

5 items Scale: Lifelong learning –factor 1 Beliefs 5 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
LLLENJOY	61	5.70	6	1.269	2	7	0.572	0.728
LLLDEVELOP	61	6.15	6	0.813	4	7	0.654	0.702
LLLUSEDIFF	61	5.79	6	0.985	3	7	0.548	0.727
LLLUPDATESKILLS	61	5.79	6	1.112	1	7	0.457	0.762
LLLCAREERGOALS	61	6.41	7	0.739	4	7	0.585	0.727

Cronbach alpha: 0.771

Given the item correlation and the Cronbach alpha all statements in this factor will be retained.

Scale: LLL beliefs

Case Processing Summary

		N	%
Cases	Valid	61	46.2
	Excluded[a]	71	53.8
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.771	.790	5

Inter-Item Correlation Matrix

	LLLENJOY LLLEnjoyLearning	LLLDEVELOP LLLDevelopPerson	LLLUSEDIFF LLLUseDifferentResources	LLLUPDATESKILLS LLLUpdateSkills	LLLCAREERGOALS LLLImportantAchieveCareerGoals
LLLENJOY LLLEnjoyLearning	1.000	.624	.535	.214	.398
LLLDEVELOP LLLDevelopPerson	.624	1.000	.310	.441	.536
LLLUSEDIFF LLLUseDifferentResources	.535	.310	1.000	.384	.374
LLLUPDATESKILLS LLLUpdateSkills	.214	.441	.384	1.000	.473
LLLCAREERGOALS LLLImportantAchieveCareerGoals	.398	.536	.374	.473	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.967	5.705	6.410	.705	1.124	.091	5
Inter-Item Correlations	.429	.214	.624	.410	2.911	.014	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LLLENJOY LLLEnjoyLearning	24.13	7.516	.572	.552	.728
LLLDEVELOP LLLDevelopPerson	23.69	9.218	.654	.551	.702
LLLUSEDIFF LLLUseDifferentResources	24.05	8.914	.548	.398	.727
LLLUPDATESKILLS LLLUpdateSkills	24.05	8.848	.457	.357	.762
LLLCAREERGOALS LLLImportantAchieveCareerGoals	23.43	9.849	.585	.380	.727

Factor 2: Attitudes

Scale: Lifelong learning –factor 2 Attitudes
3 items

Item	N	Mean	Median	SD	Min	Max	Item total correlation	Cronbach if item deleted
LLLIDENTIFYNEED	61	5.84	6	0.640	4	7	0.053	0.244
LLLAWAREPREF	61	5.92	6	0.971	4	7	0.427	-0.487
LLLSTATUSQUO	61	5.13	5	1.678	1	7	-0.031	0.692

Cronbach alpha: 0.205

Given the low item correlation and the low Cronbach alpha consider removing these three statements.

Scale: LLL attitudes

Case Processing Summary

		N	%
Cases	Valid	61	46.2
	Excluded[a]	71	53.8
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.205	.346	3

Inter-Item Correlation Matrix

	LLLIDENTIFYNEED LLLIdentifyNeed	LLLAWAREPREF LLLAwarePreferLearn	LLLSTATUSQUO LLLDontLikeEnvToChange
LLLIDENTIFYNEED LLLIdentifyNeed	1.000	.535	-.245
LLLAWAREPREF LLLAwarePreferLearn	.535	1.000	.160
LLLSTATUSQUO LLLDontLikeEnvToChange	-.245	.160	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.628	5.131	5.918	.787	1.153	.187	3
Inter-Item Correlations	.150	-.245	.535	.779	-2.187	.122	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LLLIDENTIFYNEED LLLIdentifyNeed	11.05	4.281	.053	.398	.244
LLLAWAREPREF LLLAwarePreferLearn	10.97	2.832	.427	.376	-.487[a]
LLLSTATUSQUO LLLDontLikeEnvToChange	11.75	2.522	-.031	.178	.692

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

Alternative to Factor 2:

Consider removal of LLLSTATUSQUO **only** as it has a negative correlation, Cronbach alpha improves. Therefore, only this statement was removed. The following statistics were derived:

Case Processing Summary

		N	%
Cases	Valid	61	46.2
	Excluded[a]	71	53.8
	Total	132	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.692	.697	2

Item Statistics

	Mean	Std. Deviation	N
LLLIDENTIFYNEED LLLIdentifyNeed	5.84	.840	61
LLLAWAREPREF LLLAwarePreferLearn	5.92	.971	61

Inter-Item Correlation Matrix

	LLLIDENTIFYNEED LLLIdentifyNeed	LLLAWAREPREF LLLAwarePreferLearn
LLLIDENTIFYNEED LLLIdentifyNeed	1.000	.535
LLLAWAREPREF LLLAwarePreferLearn	.535	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.877	5.836	5.918	.082	1.014	.003	2
Item Variances	.825	.706	.943	.237	1.336	.028	2
Inter-Item Correlations	.535	.535	.535	.000	1.000	.000	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LLLIDENTIFYNEED **LLLIdentifyNeed**	5.92	.943	.535	.286	.
LLLAWAREPREF **LLLAwarePreferLearn**	5.84	.706	.535	.286	.

Step 3:
Calculate the total score for the 'surviving' items for each Subscale.

New variable	Items added
TMINTACCMAJOR	MINTCURIO + MINTEFFORT + MINTSATUND + MINTSATUNDACCMAJOR
TMTASK	MTASKUSEFUL + MTASKUND + MTASKUSE
TCONTROLLEARNBELIEFS2	MCONTROLLEARN + MCONTROLNONUSE + MCONTROLEFFORT + MCONTROLLEARNMAJOR
TSELFEFFLEARN	MSELFEFFCERTAIN + MSELFEFFCONFIDENT + MSELFEFFCONFIDMAJOR
TREHEARSAL	LSREHREUSEOVER + LSREHREUSEMEM
TELABORATE	LSELABRELATE + LSELABCONNECT + LSELABRELOTHER
TMETACOGNITIVESELFR	LSMETASRALTERNATE + LSMETASRNEED + LSMETASRSETGOALS + LSMETASRTHINKIDEAS
TLSTIME	LSTIMELOC + LSTIMEFEWDISTRACT
TGOALSETTING	OSLQGOALSETGOALS + OSLQGOALSTLT
LLLBELIEFS	LLLENJOY + LLLDEVELOP + LLLUSEDIFF + LLLUPDATESKILLS + LLLCAREERGOALS

Step 4:
Correlation amongst subscales using total scores

Correlations

Descriptive Statistics

	Mean	Std. Deviation	N
TMINTACCMAJOR Total intrinsic motivation	22.20	3.568	61
TMTASK Total task value	18.31	2.328	61
TCONTROLLEARNBELIEFS2 Total control of learning beliefs 4	22.41	3.528	61
TSELFEFFLEARN Total self-efficacy for learning and performance	17.00	3.109	61
TREHEARSAL Total Rehearsal	11.16	2.267	61
TELABORATE Total Elaboration	17.08	3.143	61
TMETACOGNITIVESELFR Total Metacognitive self regulation	20.98	4.133	61
TLSTIME Total time and study environment	11.41	2.597	61
TGOALSETTING Total goal setting OSLQ	10.79	2.517	61
TLLLBELIEFS Total lifelong learning beliefs	29.84	3.620	61

Correlations[c]

		TMINTACCMAJOR Total intrinsic motivation	TMTASK Total task value	TCONTROLLEARNBELIEFS2 Total control of learning beliefs 4	TSELFEFFLEARN Total self-efficacy for learning and performance	TREHEARSAL Total Rehearsal	TELABORATE Total Elaboration	TMETACOGNITIVESELFR Total Metacognitive self regulation	TLSTIME Total time and study environment	TGOALSETTING Total goal setting OSLQ	TLLLBELIEFS Total lifelong learning beliefs
TMINTACCMAJOR Total intrinsic motivation	Pearson Correlation	1	.540**	.560**	.681**	.223	.694**	.621**	.040	.419**	.538**
	Sig. (2-tailed)		.000	.000	.000	.085	.000	.000	.761	.001	.000
TMTASK Total task value	Pearson Correlation	.540**	1	.546**	.643**	.423**	.607**	.422**	.122	.185	.511**
	Sig. (2-tailed)	.000		.000	.000	.001	.000	.001	.349	.153	.000
TCONTROLLEARNBELIEFS2 Total control of learning beliefs 4	Pearson Correlation	.560**	.546**	1	.704**	.389**	.609**	.615**	.261*	.252	.646**
	Sig. (2-tailed)	.000	.000		.000	.002	.000	.000	.042	.050	.000
TSELFEFFLEARN Total self-efficacy for learning and performance	Pearson Correlation	.681**	.643**	.704**	1	.232	.757**	.651**	-.035	.315*	.696**
	Sig. (2-tailed)	.000	.000	.000		.072	.000	.000	.788	.013	.000
TREHEARSAL Total Rehearsal	Pearson Correlation	.223	.423**	.389**	.232	1	.326*	.383**	.337**	.184	.208
	Sig. (2-tailed)	.085	.001	.002	.072		.010	.002	.008	.155	.107
TELABORATE Total Elaboration	Pearson Correlation	.694**	.607**	.609**	.757**	.326*	1	.689**	.045	.362**	.668**
	Sig. (2-tailed)	.000	.000	.000	.000	.010		.000	.732	.004	.000
TMETACOGNITIVESELFR Total Metacognitive self regulation	Pearson Correlation	.621**	.422**	.615**	.651**	.383**	.689**	1	.288*	.506**	.630**
	Sig. (2-tailed)	.000	.001	.000	.000	.002	.000		.024	.000	.000
TLSTIME Total time and study environment	Pearson Correlation	.040	.122	.261*	-.035	.337**	.045	.288*	1	-.065	.046
	Sig. (2-tailed)	.761	.349	.042	.788	.008	.732	.024		.616	.723
TGOALSETTING Total goal setting OSLQ	Pearson Correlation	.419**	.185	.252	.315*	.184	.362**	.506**	-.065	1	.375**
	Sig. (2-tailed)	.001	.153	.050	.013	.155	.004	.000	.616		.003
TLLLBELIEFS Total lifelong learning beliefs	Pearson Correlation	.538**	.511**	.646**	.696**	.208	.668**	.630**	.046	.375**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.107	.000	.000	.723	.003	

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
c. Listwise N=61

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Appendix P: Levene's test of equality of variances for the five foci accounting units

ACF1100 Semester 1 v. Semester 2

<div align="center">Independent Samples Test</div>

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
MIntCuriosity	Equal variances assumed	2.272	0.136	2.350	74	0.021	0.707	0.301	0.107	1.306
	Equal variances not assumed			2.068	23.867	0.050	0.707	0.342	0.001	1.412
MIntEffort	Equal variances assumed	0.225	0.637	0.223	74	0.825	0.065	0.293	-0.518	0.648
	Equal variances not assumed			0.206	25.344	0.839	0.065	0.317	-0.587	0.717
MIntSatisUnders	Equal variances assumed	0.077	0.783	1.695	74	0.094	0.473	0.279	-0.083	1.029
	Equal variances not assumed			1.632	26.792	0.114	0.473	0.290	-0.122	1.068
MTaskUseful	Equal variances assumed	4.982	0.029	2.013	74	0.048	0.590	0.293	0.006	1.174
	Equal variances not assumed			2.432	40.974	0.019	0.590	0.243	0.100	1.080
MTaskUnders	Equal variances assumed	0.468	0.496	-1.240	74	0.219	-0.337	0.272	-0.879	0.205
	Equal variances not assumed			-1.322	31.590	0.196	-0.337	0.255	-0.857	0.183
MTaskUse	Equal variances assumed	0.152	0.697	0.482	74	0.631	0.157	0.326	-0.492	0.806
	Equal variances not assumed			0.453	25.860	0.655	0.157	0.347	-0.556	0.871
MControlLearn	Equal variances assumed	0.005	0.946	2.121	74	0.037	0.602	0.284	0.036	1.167
	Equal variances not assumed			2.168	29.400	0.038	0.602	0.277	0.034	1.169
MControlEffort	Equal variances assumed	1.921	0.170	1.258	74	0.212	0.351	0.279	-0.205	0.906
	Equal variances not assumed			1.174	25.688	0.251	0.351	0.299	-0.263	0.965
MSelfEfficacyCertain	Equal variances assumed	0.492	0.485	0.555	74	0.581	0.190	0.342	-0.492	0.871
	Equal variances not assumed			0.482	23.541	0.634	0.190	0.393	-0.623	1.002

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
MSelfEfficacyConfident	Equal variances assumed	0.523	0.472	0.220	74	0.827	0.080	0.366	-0.649	0.809
	Equal variances not assumed			0.198	24.465	0.845	0.080	0.407	-0.759	0.920
LSRehearsalReuseOver	Equal variances assumed	0.549	0.461	-1.118	74	0.267	-0.397	0.355	-1.103	0.310
	Equal variances not assumed			-1.297	37.360	0.203	-0.397	0.306	-1.016	0.223
LSRehearsalReuseRemember	Equal variances assumed	0.493	0.485	-0.500	74	0.618	-0.176	0.352	-0.878	0.526
	Equal variances not assumed			-0.578	37.100	0.566	-0.176	0.305	-0.794	0.441
LSElaborateRelate	Equal variances assumed	0.144	0.705	0.259	74	0.796	0.086	0.333	-0.577	0.749
	Equal variances not assumed			0.289	34.489	0.774	0.086	0.298	-0.519	0.692
LSElaborateConnect	Equal variances assumed	0.118	0.732	0.185	74	0.854	0.059	0.321	-0.580	0.699
	Equal variances not assumed			0.190	29.589	0.851	0.059	0.313	-0.579	0.698
LSElaborateRelateOtherUnits	Equal variances assumed	4.034	0.048	2.605	74	0.011	0.897	0.344	0.211	1.582
	Equal variances not assumed			2.185	22.622	0.040	0.897	0.410	0.047	1.746
LSCriticalDevelopIdeas	Equal variances assumed	2.462	0.121	0.035	74	0.972	0.013	0.380	-0.743	0.770
	Equal variances not assumed			0.032	24.547	0.975	0.013	0.421	-0.855	0.882
LSMetaSRAlternativeRes	Equal variances assumed	0.083	0.774	0.730	74	0.468	0.247	0.339	-0.428	0.922
	Equal variances not assumed			0.732	28.536	0.470	0.247	0.337	-0.443	0.938
LSMetaSRNeedEngage	Equal variances assumed	0.000	0.984	1.760	74	0.083	0.600	0.341	-0.079	1.279
	Equal variances not assumed			1.775	28.767	0.086	0.600	0.338	-0.092	1.291
LSMetaSRSetGoals	Equal variances assumed	0.000	0.993	1.798	74	0.076	0.732	0.407	-0.079	1.543
	Equal variances not assumed			1.743	27.071	0.093	0.732	0.420	-0.130	1.593
LSMetaSRThinkIdeas	Equal variances assumed	0.891	0.348	2.763	74	0.007	0.791	0.286	0.221	1.362
	Equal variances not assumed			2.506	24.740	0.019	0.791	0.316	0.141	1.442
LSTimeChooseLocation	Equal variances assumed	1.055	0.308	1.969	74	0.053	0.753	0.382	-0.009	1.515
	Equal variances not assumed			1.733	23.854	0.096	0.753	0.434	-0.144	1.650

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
LSTimeFewDistractions	Equal variances assumed	0.952	0.332	-0.515	74	0.608	-0.180	0.350	-0.877	0.517
	Equal variances not assumed			-0.559	32.745	0.580	-0.180	0.322	-0.836	0.475
LSEffortWorkUntilFinished	Equal variances assumed	0.080	0.778	1.566	74	0.122	0.533	0.340	-0.145	1.210
	Equal variances not assumed			1.564	28.310	0.129	0.533	0.341	-0.165	1.230
LSHelpSeekLectTutor	Equal variances assumed	2.237	0.139	-0.790	74	0.432	-0.352	0.446	-1.242	0.537
	Equal variances not assumed			-0.894	35.482	0.377	-0.352	0.394	-1.153	0.448
OSLQGoalSetGoals	Equal variances assumed	3.069	0.084	1.720	74	0.090	0.617	0.359	-0.098	1.331
	Equal variances not assumed			1.517	23.911	0.142	0.617	0.407	-0.223	1.456
OSLQGoalSetSTermLTerm	Equal variances assumed	0.183	0.670	2.974	74	0.004	1.153	0.388	0.381	1.926
	Equal variances not assumed			2.974	28.374	0.006	1.153	0.388	0.359	1.947
OSLQEvalCommunicateStudents	Equal variances assumed	0.170	0.681	1.176	74	0.244	0.487	0.414	-0.338	1.311
	Equal variances not assumed			1.171	28.209	0.251	0.487	0.415	-0.364	1.337
MIntSatUnderstandAccMajor	Equal variances assumed	0.392	0.533	-0.133	74	0.895	-0.048	0.361	-0.767	0.671
	Equal variances not assumed			-0.139	30.678	0.890	-0.048	0.344	-0.750	0.654
MControlLearnContentAccMajor	Equal variances assumed	1.580	0.213	1.086	74	0.281	0.299	0.275	-0.249	0.847
	Equal variances not assumed			1.217	34.733	0.232	0.299	0.246	-0.200	0.798
MSelfEfficacyConfidentAccMajor	Equal variances assumed	0.360	0.550	1.245	74	0.217	0.418	0.335	-0.251	1.086
	Equal variances not assumed			1.175	26.056	0.251	0.418	0.355	-0.313	1.148
LLLEnjoyLearning	Equal variances assumed	1.110	0.296	3.163	74	0.002	1.008	0.319	0.373	1.642
	Equal variances not assumed			2.609	22.240	0.016	1.008	0.386	0.207	1.808
LLLDevelopPerson	Equal variances assumed	1.532	0.220	1.565	74	0.122	0.404	0.258	-0.110	0.919
	Equal variances not assumed			1.340	23.122	0.193	0.404	0.302	-0.220	1.028
LLLIdentifyNeed	Equal variances assumed	4.921	0.030	2.526	74	0.014	0.782	0.309	0.165	1.398
	Equal variances not assumed			2.106	22.491	0.047	0.782	0.371	0.013	1.550

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		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
LLLAwarePreferLearn	Equal variances assumed	0.878	0.352	3.257	74	0.002	1.029	0.316	0.399	1.658
	Equal variances not assumed			2.956	24.760	0.007	1.029	0.348	0.312	1.746
LLLUseDifferentResources	Equal variances assumed	0.815	0.370	3.838	74	0.000	1.249	0.325	0.601	1.898
	Equal variances not assumed			3.571	25.569	0.001	1.249	0.350	0.529	1.969
LLLUpdateSkills	Equal variances assumed	0.016	0.900	1.880	74	0.064	0.605	0.322	-0.036	1.247
	Equal variances not assumed			1.856	27.822	0.074	0.605	0.326	-0.063	1.274
LLLImportantAchieveCareerGoals	Equal variances assumed	5.390	0.023	2.652	74	0.010	0.699	0.264	0.174	1.225
	Equal variances not assumed			2.219	22.570	0.037	0.699	0.315	0.047	1.352

ACF2100 Semester 1 v. Semester 2

<center>Independent Samples Test</center>

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
MIntCuriosity	Equal variances assumed	0.027	0.871	-1.459	42	0.152	-0.500	0.343	-1.192	0.192
	Equal variances not assumed			-1.476	32.458	0.150	-0.500	0.339	-1.190	0.190
MIntEffort	Equal variances assumed	0.223	0.640	-1.537	42	0.132	-0.571	0.372	-1.322	0.179
	Equal variances not assumed			-1.572	33.486	0.125	-0.571	0.364	-1.311	0.168
MIntSatisUnders	Equal variances assumed	5.630	0.022	-2.119	42	0.040	-0.741	0.350	-1.447	-0.035
	Equal variances not assumed			-1.895	22.545	0.071	-0.741	0.391	-1.551	0.069
MTaskUseful	Equal variances assumed	3.070	0.087	0.178	42	0.860	0.071	0.402	-0.740	0.883
	Equal variances not assumed			0.161	23.416	0.873	0.071	0.443	-0.845	0.988
MTaskUnders	Equal variances assumed	0.413	0.524	-2.096	42	0.042	-0.545	0.260	-1.069	-0.020
	Equal variances not assumed			-2.008	27.528	0.055	-0.545	0.271	-1.101	0.011
MTaskUse	Equal variances assumed	1.008	0.321	-0.396	42	0.694	-0.161	0.406	-0.980	0.658
	Equal variances not assumed			-0.375	26.643	0.710	-0.161	0.428	-1.040	0.719
MControlLearn	Equal variances assumed	0.076	0.784	-0.654	42	0.517	-0.214	0.328	-0.876	0.447
	Equal variances not assumed			-0.649	30.636	0.521	-0.214	0.330	-0.888	0.460
MControlEffort	Equal variances assumed	0.144	0.707	-0.850	42	0.400	-0.250	0.294	-0.844	0.344
	Equal variances not assumed			-0.853	31.688	0.400	-0.250	0.293	-0.847	0.347
MSelfEfficacyCertain	Equal variances assumed	0.599	0.443	-0.529	42	0.599	-0.205	0.388	-0.988	0.578

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
	Equal variances not assumed			-0.520	29.683	0.607	-0.205	0.395	-1.013	0.602
MSelfEfficacyConfident	Equal variances assumed	0.237	0.629	-1.570	42	0.124	-0.527	0.336	-1.204	0.150
	Equal variances not assumed			-1.527	28.844	0.138	-0.527	0.345	-1.232	0.179
LSRehearsalReuseOver	Equal variances assumed	0.444	0.509	-1.074	42	0.289	-0.571	0.532	-1.645	0.503
	Equal variances not assumed			-1.034	27.987	0.310	-0.571	0.552	-1.703	0.560
LSRehearsalReuseRemember	Equal variances assumed	0.022	0.883	-0.345	42	0.732	-0.188	0.543	-1.284	0.909
	Equal variances not assumed			-0.345	31.412	0.732	-0.188	0.543	-1.294	0.919
LSElaborateRelate	Equal variances assumed	0.029	0.866	-0.799	42	0.429	-0.313	0.391	-1.102	0.477
	Equal variances not assumed			-0.822	34.055	0.417	-0.313	0.380	-1.085	0.460
LSElaborateConnect	Equal variances assumed	1.446	0.236	-1.647	42	0.107	-0.589	0.358	-1.311	0.133
	Equal variances not assumed			-1.515	24.392	0.143	-0.589	0.389	-1.391	0.213
LSElaborateRelateOtherUnits	Equal variances assumed	0.192	0.663	-0.466	42	0.643	-0.196	0.421	-1.046	0.654
	Equal variances not assumed			-0.497	37.370	0.622	-0.196	0.396	-0.998	0.605
LSCriticalDevelopIdeas	Equal variances assumed	0.715	0.403	0.514	42	0.610	0.205	0.400	-0.602	1.012
	Equal variances not assumed			0.541	36.308	0.592	0.205	0.380	-0.565	0.976
LSMetaSRAlternativeRes	Equal variances assumed	0.000	0.996	-0.981	42	0.332	-0.464	0.473	-1.419	0.490
	Equal variances not assumed			-0.989	32.073	0.330	-0.464	0.470	-1.421	0.492
LSMetaSRNeedEngage	Equal variances assumed	1.515	0.225	-1.318	42	0.195	-0.563	0.427	-1.424	0.299
	Equal variances not assumed			-1.489	41.552	0.144	-0.563	0.378	-1.325	0.200
LSMetaSRSetGoals	Equal variances assumed	0.573	0.453	-0.711	42	0.481	-0.304	0.427	-1.165	0.558
	Equal variances not assumed			-0.761	37.791	0.451	-0.304	0.399	-1.111	0.504
LSMetaSRThinkIdeas	Equal variances assumed	1.545	0.221	-1.419	42	0.163	-0.527	0.371	-1.276	0.222
	Equal variances not assumed			-1.328	25.649	0.196	-0.527	0.397	-1.343	0.289
LSTimeChooseLocation	Equal variances assumed	0.226	0.637	-0.980	42	0.333	-0.393	0.401	-1.202	0.416

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
	Equal variances not assumed			-0.985	31.799	0.332	-0.393	0.399	-1.206	0.420
LSTimeFewDistractions	Equal variances assumed	0.031	0.860	-0.882	42	0.383	-0.429	0.486	-1.409	0.551
	Equal variances not assumed			-0.883	31.365	0.384	-0.429	0.486	-1.418	0.561
LSEffortWorkUntilFinished	Equal variances assumed	0.301	0.586	0.279	42	0.782	0.134	0.481	-0.836	1.104
	Equal variances not assumed			0.286	34.003	0.776	0.134	0.468	-0.816	1.084
LSHelpSeekLectTutor	Equal variances assumed	0.508	0.480	-0.212	42	0.833	-0.125	0.590	-1.316	1.066
	Equal variances not assumed			-0.220	35.241	0.827	-0.125	0.567	-1.276	1.026
OSLQGoalSetGoals	Equal variances assumed	4.098	0.049	-0.250	42	0.804	-0.134	0.536	-1.215	0.947
	Equal variances not assumed			-0.279	40.981	0.782	-0.134	0.480	-1.104	0.836
OSLQGoalSetSTermLTerm	Equal variances assumed	0.553	0.461	-0.690	42	0.494	-0.393	0.569	-1.542	0.756
	Equal variances not assumed			-0.728	36.499	0.471	-0.393	0.540	-1.487	0.702
OSLQEvalCommunicateStudents	Equal variances assumed	0.000	0.995	0.664	42	0.510	0.357	0.538	-0.728	1.442
	Equal variances not assumed			0.675	32.869	0.505	0.357	0.529	-0.720	1.434
MIntSatUnderstandAccMajor	Equal variances assumed	0.001	0.980	-0.445	42	0.659	-0.134	0.301	-0.742	0.474
	Equal variances not assumed			-0.444	31.232	0.660	-0.134	0.302	-0.749	0.481
MControlLearnContentAccMajor	Equal variances assumed	2.844	0.099	-1.787	42	0.081	-0.598	0.335	-1.274	0.077
	Equal variances not assumed			-1.668	25.467	0.108	-0.598	0.359	-1.336	0.140
MSelfEfficacyConfidentAccMajor	Equal variances assumed	1.379	0.247	-0.777	42	0.442	-0.232	0.299	-0.835	0.371
	Equal variances not assumed			-0.711	24.031	0.484	-0.232	0.327	-0.906	0.442
LLLEnjoyLearning	Equal variances assumed	0.461	0.501	0.241	42	0.811	0.107	0.445	-0.791	1.005
	Equal variances not assumed			0.235	28.953	0.816	0.107	0.457	-0.827	1.042
LLLDevelopPerson	Equal variances assumed	0.021	0.886	-0.589	42	0.559	-0.196	0.334	-0.870	0.477
	Equal variances not assumed			-0.583	30.470	0.564	-0.196	0.337	-0.884	0.491
LLLIdentifyNeed	Equal variances assumed	0.383	0.539	-0.791	42	0.434	-0.295	0.373	-1.047	0.457

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
	Equal variances not assumed			-0.801	32.607	0.429	-0.295	0.368	-1.043	0.454
LLLAwarePreferLearn	Equal variances assumed	1.391	0.245	-0.236	42	0.815	-0.089	0.379	-0.854	0.676
	Equal variances not assumed			-0.216	24.057	0.831	-0.089	0.414	-0.944	0.766
LLLUseDifferentResources	Equal variances assumed	1.270	0.266	-0.627	42	0.534	-0.277	0.442	-1.168	0.614
	Equal variances not assumed			-0.569	23.501	0.575	-0.277	0.487	-1.282	0.728
LLLUpdateSkills	Equal variances assumed	0.365	0.549	-0.095	42	0.925	-0.045	0.470	-0.994	0.905
	Equal variances not assumed			-0.095	31.265	0.925	-0.045	0.471	-1.005	0.915
LLLImportantAchieveCareerGoals	Equal variances assumed	0.757	0.389	-0.829	42	0.412	-0.277	0.334	-0.950	0.397
	Equal variances not assumed			-0.810	29.162	0.425	-0.277	0.342	-0.976	0.422

ACF2200 Semester 1 v. Semester 2

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
MIntCuriosity	Equal variances assumed	5.242	0.026	-0.862	48	0.393	-0.281	0.326	-0.936	0.374
	Equal variances not assumed			-0.920	47.619	0.362	-0.281	0.305	-0.894	0.333
MIntEffort	Equal variances assumed	0.650	0.424	-0.415	48	0.680	-0.164	0.396	-0.960	0.632
	Equal variances not assumed			-0.422	45.573	0.675	-0.164	0.390	-0.949	0.620
MIntSatisUnders	Equal variances assumed	0.245	0.623	0.444	48	0.659	0.143	0.322	-0.504	0.790
	Equal variances not assumed			0.445	43.822	0.658	0.143	0.321	-0.504	0.789
MTaskUseful	Equal variances assumed	0.270	0.606	-0.722	48	0.474	-0.197	0.273	-0.746	0.352
	Equal variances not assumed			-0.733	45.338	0.468	-0.197	0.269	-0.739	0.344
MTaskUnders	Equal variances assumed	0.093	0.762	-0.296	48	0.769	-0.074	0.250	-0.576	0.428
	Equal variances not assumed			-0.298	44.111	0.767	-0.074	0.248	-0.574	0.426
MTaskUse	Equal variances assumed	4.005	0.051	1.404	48	0.167	0.353	0.252	-0.153	0.859
	Equal variances not assumed			1.481	47.994	0.145	0.353	0.238	-0.126	0.832
MControlLearn	Equal variances assumed	0.175	0.677	-1.970	48	0.055	-0.529	0.268	-1.068	0.011
	Equal variances not assumed			-1.984	44.320	0.053	-0.529	0.267	-1.066	0.008
MControlEffort	Equal variances assumed	0.890	0.350	-0.396	48	0.694	-0.122	0.307	-0.739	0.496
	Equal variances not assumed			-0.405	46.370	0.687	-0.122	0.300	-0.725	0.482
MSelfEfficacyCertain	Equal variances assumed	0.088	0.768	-0.870	48	0.389	-0.302	0.347	-1.001	0.396
	Equal variances not assumed			-0.852	39.824	0.399	-0.302	0.355	-1.019	0.415
MSelfEfficacyConfident	Equal variances assumed	0.790	0.378	-1.275	48	0.208	-0.383	0.300	-0.986	0.221

	Equal variances not assumed			-1.293	45.239	0.203	-0.383	0.296	-0.979	0.213
LSRehearsalReuseOver	Equal variances assumed	0.222	0.640	-2.337	48	0.024	-0.885	0.379	-1.646	-0.124
	Equal variances not assumed			-2.321	42.144	0.025	-0.885	0.381	-1.654	-0.116
LSRehearsalReuseRemember	Equal variances assumed	1.825	0.183	-2.186	48	0.034	-0.690	0.316	-1.324	-0.055
	Equal variances not assumed			-2.215	45.165	0.032	-0.690	0.311	-1.317	-0.063
LSElaborateRelate	Equal variances assumed	4.240	0.045	-3.099	48	0.003	-0.936	0.302	-1.543	-0.329
	Equal variances not assumed			-2.883	31.054	0.007	-0.936	0.325	-1.598	-0.274
LSElaborateConnect	Equal variances assumed	1.021	0.317	-1.672	48	0.101	-0.626	0.374	-1.378	0.127
	Equal variances not assumed			-1.593	34.901	0.120	-0.626	0.393	-1.423	0.172
LSElaborateRelateOtherUnits	Equal variances assumed	0.734	0.396	-1.014	48	0.315	-0.348	0.343	-1.038	0.342
	Equal variances not assumed			-1.019	43.909	0.314	-0.348	0.342	-1.037	0.341
LSCriticalDevelopIdeas	Equal variances assumed	6.671	0.013	-0.471	48	0.640	-0.156	0.331	-0.822	0.510
	Equal variances not assumed			-0.514	45.067	0.610	-0.156	0.303	-0.767	0.455
LSMetaSRAlternativeRes	Equal variances assumed	0.458	0.502	-1.440	48	0.156	-0.532	0.370	-1.275	0.211
	Equal variances not assumed			-1.417	40.599	0.164	-0.532	0.376	-1.291	0.227
LSMetaSRNeedEngage	Equal variances assumed	0.256	0.615	-1.320	48	0.193	-0.519	0.393	-1.310	0.272
	Equal variances not assumed			-1.294	40.046	0.203	-0.519	0.401	-1.329	0.291
LSMetaSRSetGoals	Equal variances assumed	0.056	0.814	-0.507	48	0.615	-0.209	0.412	-1.036	0.619
	Equal variances not assumed			-0.511	44.450	0.612	-0.209	0.408	-1.031	0.614
LSMetaSRThinkIdeas	Equal variances assumed	0.193	0.663	-0.547	48	0.587	-0.177	0.324	-0.830	0.475
	Equal variances not assumed			-0.550	44.144	0.585	-0.177	0.323	-0.827	0.473
LSTimeChooseLocation	Equal variances assumed	0.032	0.859	-1.151	48	0.256	-0.452	0.392	-1.241	0.337
	Equal variances not assumed			-1.141	41.876	0.260	-0.452	0.396	-1.250	0.347
LSTimeFewDistractions	Equal variances assumed	0.513	0.477	-2.505	48	0.016	-0.893	0.357	-1.610	-0.176

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
	Equal variances not assumed			-2.410	36.704	0.021	-0.893	0.371	-1.644	-0.142
LSEffortWorkUntilFinished	Equal variances assumed	2.430	0.126	0.996	48	0.324	0.355	0.356	-0.361	1.071
	Equal variances not assumed			1.048	47.996	0.300	0.355	0.339	-0.326	1.035
LSHelpSeekLectTutor	Equal variances assumed	0.019	0.891	-0.891	48	0.377	-0.368	0.413	-1.198	0.462
	Equal variances not assumed			-0.888	42.637	0.380	-0.368	0.414	-1.204	0.468
OSLQGoalSetGoals	Equal variances assumed	0.144	0.706	-0.672	48	0.504	-0.296	0.440	-1.179	0.588
	Equal variances not assumed			-0.661	40.303	0.513	-0.296	0.447	-1.200	0.608
OSLQGoalSetSTermLTerm	Equal variances assumed	1.433	0.237	-1.641	48	0.107	-0.649	0.395	-1.443	0.146
	Equal variances not assumed			-1.588	37.712	0.121	-0.649	0.408	-1.476	0.178
OSLQEvalCommunicateStudents	Equal variances assumed	0.782	0.381	0.007	48	0.995	0.003	0.505	-1.012	1.019
	Equal variances not assumed			0.006	39.686	0.995	0.003	0.516	-1.040	1.046
MIntSatUnderstandAccMajor	Equal variances assumed	0.149	0.701	0.545	48	0.588	0.149	0.274	-0.402	0.700
	Equal variances not assumed			0.552	45.091	0.584	0.149	0.271	-0.396	0.694
MControlLearnContentAccMajor	Equal variances assumed	0.088	0.768	0.573	48	0.569	0.158	0.275	-0.395	0.710
	Equal variances not assumed			0.579	44.694	0.565	0.158	0.272	-0.391	0.706
MSelfEfficacyConfidentAccMajor	Equal variances assumed	0.848	0.362	0.108	48	0.915	0.036	0.335	-0.637	0.709
	Equal variances not assumed			0.110	46.322	0.913	0.036	0.327	-0.622	0.695
LLLEnjoyLearning	Equal variances assumed	0.032	0.859	1.772	48	0.083	0.598	0.337	-0.081	1.276
	Equal variances not assumed			1.800	45.488	0.079	0.598	0.332	-0.071	1.266
LLLDevelopPerson	Equal variances assumed	0.705	0.405	1.004	48	0.320	0.264	0.263	-0.265	0.794
	Equal variances not assumed			0.990	40.860	0.328	0.264	0.267	-0.275	0.804
LLLIdentifyNeed	Equal variances assumed	0.012	0.912	0.621	48	0.538	0.189	0.304	-0.423	0.800
	Equal variances not assumed			0.597	36.410	0.554	0.189	0.317	-0.453	0.831
LLLAwarePreferLearn	Equal variances assumed	0.023	0.881	0.480	48	0.634	0.184	0.383	-0.587	0.955

	Equal variances not assumed			0.486	45.060	0.630	0.184	0.379	-0.579	0.946
LLLUseDifferentResources	Equal variances assumed	0.639	0.428	-0.548	48	0.586	-0.163	0.297	-0.759	0.434
	Equal variances not assumed			-0.567	47.395	0.573	-0.163	0.287	-0.739	0.414
LLLUpdateSkills	Equal variances assumed	0.757	0.388	-0.287	48	0.775	-0.092	0.320	-0.736	0.552
	Equal variances not assumed			-0.275	36.202	0.785	-0.092	0.334	-0.769	0.585
LLLImportantAchieveCareerGoals	Equal variances assumed	1.018	0.318	0.935	48	0.355	0.230	0.246	-0.265	0.724
	Equal variances not assumed			0.954	46.015	0.345	0.230	0.241	-0.255	0.715

ACF3100 Semester 1 v. Semester 2

<div align="center">Independent Samples Test</div>

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
MIntCuriosity	Equal variances assumed	0.256	0.616	0.367	40	0.716	0.144	0.393	-0.650	0.938
	Equal variances not assumed			0.356	32.437	0.724	0.144	0.405	-0.679	0.968
MIntEffort	Equal variances assumed	0.583	0.449	0.179	40	0.859	0.069	0.383	-0.706	0.843
	Equal variances not assumed			0.184	39.801	0.855	0.069	0.373	-0.686	0.824
MIntSatisUnders	Equal variances assumed	3.335	0.075	0.693	40	0.492	0.238	0.343	-0.456	0.932
	Equal variances not assumed			0.666	29.709	0.510	0.238	0.357	-0.492	0.968
MTaskUseful	Equal variances assumed	1.648	0.207	-1.129	40	0.266	-0.371	0.328	-1.034	0.293
	Equal variances not assumed			-1.159	39.770	0.253	-0.371	0.320	-1.017	0.276
MTaskUnders	Equal variances assumed	0.206	0.652	-0.548	40	0.587	-0.158	0.288	-0.740	0.424
	Equal variances not assumed			-0.551	39.267	0.584	-0.158	0.286	-0.737	0.421
MTaskUse	Equal variances assumed	1.048	0.312	-0.305	40	0.762	-0.087	0.285	-0.663	0.489
	Equal variances not assumed			-0.307	39.409	0.760	-0.087	0.283	-0.659	0.485
MControlLearn	Equal variances assumed	4.333	0.044	-1.419	40	0.164	-0.410	0.289	-0.993	0.174
	Equal variances not assumed			-1.469	38.943	0.150	-0.410	0.279	-0.974	0.155
MControlEffort	Equal variances assumed	0.188	0.667	-0.196	40	0.846	-0.069	0.350	-0.777	0.639
	Equal variances not assumed			-0.202	39.571	0.841	-0.069	0.340	-0.757	0.620
MSelfEfficacyCertain	Equal variances assumed	3.940	0.054	-1.401	40	0.169	-0.588	0.420	-1.437	0.261
	Equal variances not assumed			-1.468	36.626	0.151	-0.588	0.401	-1.400	0.224
MSelfEfficacyConfident	Equal variances assumed	3.827	0.057	-0.228	40	0.821	-0.082	0.361	-0.812	0.647

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
	Equal variances not assumed			-0.239	37.157	0.813	-0.082	0.345	-0.782	0.617
LSRehearsalReuseOver	Equal variances assumed	0.230	0.634	-0.973	40	0.337	-0.348	0.358	-1.071	0.375
	Equal variances not assumed			-0.973	38.488	0.337	-0.348	0.358	-1.072	0.376
LSRehearsalReuseRemember	Equal variances assumed	0.186	0.669	-1.480	40	0.147	-0.453	0.306	-1.072	0.166
	Equal variances not assumed			-1.493	39.575	0.143	-0.453	0.303	-1.066	0.160
LSElaborateRelate	Equal variances assumed	0.644	0.427	0.576	40	0.568	0.178	0.310	-0.448	0.805
	Equal variances not assumed			0.586	39.970	0.561	0.178	0.305	-0.438	0.795
LSElaborateConnect	Equal variances assumed	0.352	0.556	0.013	40	0.989	0.005	0.341	-0.685	0.694
	Equal variances not assumed			0.013	39.107	0.989	0.005	0.340	-0.683	0.692
LSElaborateRelateOtherUnits	Equal variances assumed	0.632	0.431	2.544	40	0.015	0.835	0.328	0.172	1.499
	Equal variances not assumed			2.558	39.231	0.015	0.835	0.327	0.175	1.496
LSCriticalDevelopIdeas	Equal variances assumed	1.390	0.245	0.179	40	0.859	0.069	0.383	-0.706	0.843
	Equal variances not assumed			0.184	39.801	0.855	0.069	0.373	-0.686	0.824
LSMetaSRAlternativeRes	Equal variances assumed	0.484	0.490	0.812	40	0.422	0.339	0.417	-0.504	1.182
	Equal variances not assumed			0.829	39.974	0.412	0.339	0.408	-0.487	1.164
LSMetaSRNeedEngage	Equal variances assumed	0.450	0.506	-0.108	40	0.914	-0.043	0.401	-0.854	0.767
	Equal variances not assumed			-0.111	39.855	0.912	-0.043	0.391	-0.835	0.748
LSMetaSRSetGoals	Equal variances assumed	1.934	0.172	-0.457	40	0.650	-0.192	0.421	-1.042	0.658
	Equal variances not assumed			-0.447	33.942	0.658	-0.192	0.430	-1.067	0.682
LSMetaSRThinkIdeas	Equal variances assumed	0.286	0.596	-0.229	40	0.820	-0.089	0.389	-0.876	0.697
	Equal variances not assumed			-0.228	37.845	0.821	-0.089	0.391	-0.880	0.702
LSTimeChooseLocation	Equal variances assumed	4.208	0.047	-2.097	40	0.042	-0.689	0.328	-1.353	-0.025
	Equal variances not assumed			-2.186	37.750	0.035	-0.689	0.315	-1.327	-0.051
LSTimeFewDistractions	Equal variances assumed	1.749	0.194	-2.344	40	0.024	-0.897	0.383	-1.671	-0.124

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
	Equal variances not assumed			-2.448	37.309	0.019	-0.897	0.366	-1.639	-0.155
LSEffortWorkUntilFinished	Equal variances assumed	0.030	0.863	-0.914	40	0.366	-0.387	0.423	-1.242	0.469
	Equal variances not assumed			-0.916	38.823	0.366	-0.387	0.422	-1.241	0.468
LSHelpSeekLectTutor	Equal variances assumed	0.618	0.437	-0.661	40	0.513	-0.359	0.544	-1.458	0.740
	Equal variances not assumed			-0.669	39.779	0.508	-0.359	0.537	-1.446	0.727
OSLQGoalSetGoals	Equal variances assumed	0.001	0.980	-0.447	40	0.658	-0.204	0.456	-1.125	0.718
	Equal variances not assumed			-0.449	39.211	0.656	-0.204	0.454	-1.121	0.714
OSLQGoalSetSTermLTerm	Equal variances assumed	0.343	0.561	-0.499	40	0.621	-0.304	0.610	-1.537	0.929
	Equal variances not assumed			-0.501	39.145	0.619	-0.304	0.607	-1.532	0.924
OSLQEvalCommunicateStudents	Equal variances assumed	0.924	0.342	0.188	40	0.852	0.092	0.486	-0.891	1.074
	Equal variances not assumed			0.193	39.896	0.848	0.092	0.475	-0.868	1.051
MIntSatUnderstandAccMajor	Equal variances assumed	0.052	0.820	-0.010	40	0.992	-0.005	0.451	-0.915	0.906
	Equal variances not assumed			-0.010	36.570	0.992	-0.005	0.455	-0.928	0.919
MControlLearnContentAccMajor	Equal variances assumed	6.876	0.012	-1.688	40	0.099	-0.522	0.309	-1.146	0.103
	Equal variances not assumed			-1.778	35.444	0.084	-0.522	0.293	-1.117	0.074
MSelfEfficacyConfidentAccMajor	Equal variances assumed	2.464	0.124	-0.479	40	0.634	-0.162	0.339	-0.848	0.523
	Equal variances not assumed			-0.499	37.932	0.621	-0.162	0.326	-0.822	0.497
LLLEnjoyLearning	Equal variances assumed	0.735	0.396	0.061	40	0.952	0.018	0.301	-0.589	0.626
	Equal variances not assumed			0.063	39.648	0.950	0.018	0.292	-0.573	0.609
LLLDevelopPerson	Equal variances assumed	0.000	0.996	0.636	40	0.528	0.153	0.241	-0.334	0.640
	Equal variances not assumed			0.639	39.021	0.527	0.153	0.240	-0.332	0.639
LLLIdentifyNeed	Equal variances assumed	0.610	0.440	-0.218	40	0.828	-0.069	0.314	-0.704	0.566
	Equal variances not assumed			-0.221	39.855	0.826	-0.069	0.310	-0.696	0.558
LLLAwarePreferLearn	Equal variances assumed	0.646	0.426	-0.301	40	0.765	-0.112	0.372	-0.865	0.640

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		Levene's F	Levene's Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
	Equal variances not assumed			-0.306	39.914	0.762	-0.112	0.367	-0.854	0.630
LLLUseDifferentResources	Equal variances assumed	1.618	0.211	0.067	40	0.947	0.021	0.309	-0.603	0.644
	Equal variances not assumed			0.070	36.047	0.945	0.021	0.294	-0.575	0.616
LLLUpdateSkills	Equal variances assumed	0.088	0.768	0.245	40	0.807	0.096	0.392	-0.696	0.888
	Equal variances not assumed			0.250	39.998	0.804	0.096	0.385	-0.682	0.874
LLLImportantAchieveCareerGoals	Equal variances assumed	1.910	0.175	1.099	40	0.279	0.293	0.267	-0.246	0.832
	Equal variances not assumed			1.079	34.968	0.288	0.293	0.272	-0.258	0.844

ACF3200 Semester 1 v. Semester 2

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
MIntCuriosity	Equal variances assumed	0.090	0.766	0.064	32	0.950	0.042	0.666	-1.315	1.399
	Equal variances not assumed			0.063	9.352	0.951	0.042	0.667	-1.458	1.543
MIntEffort	Equal variances assumed	0.010	0.923	-0.766	32	0.450	-0.540	0.705	-1.975	0.896
	Equal variances not assumed			-0.820	10.293	0.431	-0.540	0.658	-2.000	0.921
MIntSatisUnders	Equal variances assumed	0.256	0.617	0.047	32	0.963	0.021	0.451	-0.898	0.940
	Equal variances not assumed			0.050	10.206	0.961	0.021	0.424	-0.920	0.963
MTaskUseful	Equal variances assumed	0.598	0.445	-0.460	32	0.648	-0.196	0.425	-1.062	0.670
	Equal variances not assumed			-0.479	9.860	0.643	-0.196	0.409	-1.109	0.717
MTaskUnders	Equal variances assumed	0.864	0.360	1.846	32	0.074	0.862	0.467	-0.089	1.814
	Equal variances not assumed			2.373	14.433	0.032	0.862	0.363	0.085	1.640
MTaskUse	Equal variances assumed	2.870	0.100	0.297	32	0.769	0.132	0.446	-0.776	1.040
	Equal variances not assumed			0.444	21.511	0.661	0.132	0.298	-0.486	0.751
MControlLearn	Equal variances assumed	0.617	0.438	0.944	32	0.352	0.386	0.409	-0.447	1.220
	Equal variances not assumed			0.833	8.175	0.429	0.386	0.464	-0.679	1.452
MControlEffort	Equal variances assumed	0.044	0.834	0.306	32	0.762	0.175	0.571	-0.989	1.339
	Equal variances not assumed			0.350	11.456	0.733	0.175	0.499	-0.918	1.268
MSelfEfficacyCertain	Equal variances assumed	1.689	0.203	-1.326	32	0.194	-0.677	0.511	-1.717	0.363

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
	Equal variances not assumed			-1.792	16.260	0.092	-0.677	0.378	-1.477	0.123
MSelfEfficacyConfident	Equal variances assumed	0.895	0.351	-0.904	32	0.373	-0.344	0.380	-1.119	0.431
	Equal variances not assumed			-0.763	7.859	0.467	-0.344	0.450	-1.386	0.698
LSRehearsalReuseOver	Equal variances assumed	2.321	0.137	-0.354	32	0.726	-0.164	0.464	-1.108	0.780
	Equal variances not assumed			-0.273	7.333	0.793	-0.164	0.601	-1.573	1.245
LSRehearsalReuseRemember	Equal variances assumed	0.023	0.880	-1.226	32	0.229	-0.476	0.389	-1.268	0.315
	Equal variances not assumed			-1.242	9.531	0.244	-0.476	0.383	-1.336	0.384
LSElaborateRelate	Equal variances assumed	0.105	0.748	-0.163	32	0.872	-0.090	0.553	-1.217	1.037
	Equal variances not assumed			-0.166	9.594	0.872	-0.090	0.543	-1.307	1.127
LSElaborateConnect	Equal variances assumed	0.626	0.434	-0.660	32	0.514	-0.413	0.625	-1.686	0.861
	Equal variances not assumed			-0.821	13.429	0.426	-0.413	0.503	-1.495	0.669
LSElaborateRelateOtherUnits	Equal variances assumed	0.012	0.912	-1.184	32	0.245	-0.529	0.447	-1.439	0.381
	Equal variances not assumed			-1.136	8.915	0.286	-0.529	0.466	-1.584	0.526
LSCriticalDevelopIdeas	Equal variances assumed	0.009	0.924	-0.507	32	0.616	-0.201	0.397	-1.009	0.607
	Equal variances not assumed			-0.491	9.015	0.635	-0.201	0.410	-1.128	0.725
LSMetaSRAlternativeRes	Equal variances assumed	4.461	0.043	-1.055	32	0.299	-0.603	0.571	-1.767	0.561
	Equal variances not assumed			-1.781	29.687	0.085	-0.603	0.339	-1.295	0.089
LSMetaSRNeedEngage	Equal variances assumed	0.021	0.887	-0.521	32	0.606	-0.323	0.620	-1.586	0.940
	Equal variances not assumed			-0.512	9.171	0.621	-0.323	0.631	-1.746	1.100
LSMetaSRSetGoals	Equal variances assumed	0.303	0.586	-0.888	32	0.381	-0.571	0.644	-1.883	0.740
	Equal variances not assumed			-1.006	11.259	0.335	-0.571	0.568	-1.818	0.675
LSMetaSRThinkIdeas	Equal variances assumed	0.797	0.379	0.033	32	0.974	0.016	0.476	-0.955	0.986
	Equal variances not assumed			0.028	7.847	0.978	0.016	0.565	-1.293	1.324
LSTimeChooseLocation	Equal variances assumed	0.024	0.878	0.740	32	0.465	0.429	0.579	-0.752	1.609

Variable		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
	Equal variances not assumed			0.727	9.175	0.485	0.429	0.589	-0.901	1.758
LSTimeFewDistractions	Equal variances assumed	0.929	0.342	0.297	32	0.769	0.132	0.446	-0.776	1.040
	Equal variances not assumed			0.362	12.899	0.723	0.132	0.365	-0.658	0.922
LSEffortWorkUntilFinished	Equal variances assumed	0.848	0.364	0.617	32	0.542	0.333	0.541	-0.768	1.435
	Equal variances not assumed			0.730	12.175	0.479	0.333	0.456	-0.660	1.326
LSHelpSeekLectTutor	Equal variances assumed	7.469	0.010	-1.282	32	0.209	-0.899	0.701	-2.328	0.529
	Equal variances not assumed			-2.273	31.816	0.030	-0.899	0.396	-1.706	-0.093
OSLQGoalSetGoals	Equal variances assumed	3.437	0.073	-1.147	32	0.260	-0.825	0.720	-2.291	0.640
	Equal variances not assumed			-1.642	18.947	0.117	-0.825	0.503	-1.878	0.227
OSLQGoalSetSTermLTerm	Equal variances assumed	3.660	0.065	-1.031	32	0.310	-0.714	0.693	-2.126	0.697
	Equal variances not assumed			-1.448	18.013	0.165	-0.714	0.493	-1.750	0.322
OSLQEvalCommunicateStudents	Equal variances assumed	4.355	0.045	-1.635	32	0.112	-1.132	0.693	-2.543	0.279
	Equal variances not assumed			-2.267	17.386	0.036	-1.132	0.499	-2.184	-0.080
MIntSatUnderstandAccMajor	Equal variances assumed	0.040	0.842	0.558	32	0.580	0.243	0.436	-0.644	1.131
	Equal variances not assumed			0.580	9.849	0.575	0.243	0.420	-0.693	1.180
MControlLearnContentAccMajor	Equal variances assumed	2.927	0.097	-0.363	32	0.719	-0.122	0.335	-0.804	0.560
	Equal variances not assumed			-0.495	16.610	0.627	-0.122	0.246	-0.641	0.398
MSelfEfficacyConfidentAccMajor	Equal variances assumed	1.093	0.304	0.318	32	0.753	0.127	0.399	-0.687	0.941
	Equal variances not assumed			0.275	8.030	0.790	0.127	0.462	-0.937	1.191
LLLEnjoyLearning	Equal variances assumed	0.259	0.614	-0.154	32	0.879	-0.085	0.550	-1.204	1.035
	Equal variances not assumed			-0.172	10.957	0.867	-0.085	0.493	-1.170	1.000
LLLDevelopPerson	Equal variances assumed	0.045	0.834	-0.273	32	0.787	-0.095	0.349	-0.807	0.616
	Equal variances not assumed			-0.282	9.794	0.784	-0.095	0.338	-0.850	0.659
LLLIdentifyNeed	Equal variances assumed	1.994	0.168	-0.416	32	0.680	-0.222	0.534	-1.309	0.865

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
	Equal variances not assumed			-0.553	15.551	0.588	-0.222	0.402	-1.077	0.632
LLLAwarePreferLearn	Equal variances assumed	0.688	0.413	-0.808	32	0.425	-0.439	0.543	-1.546	0.667
	Equal variances not assumed			-1.025	13.994	0.323	-0.439	0.428	-1.358	0.480
LLLUseDifferentResources	Equal variances assumed	1.304	0.262	-0.194	32	0.847	-0.085	0.435	-0.972	0.802
	Equal variances not assumed			-0.240	13.172	0.814	-0.085	0.353	-0.847	0.677
LLLUpdateSkills	Equal variances assumed	1.517	0.227	-0.400	32	0.692	-0.185	0.463	-1.128	0.757
	Equal variances not assumed			-0.351	8.132	0.734	-0.185	0.527	-1.398	1.027
LLLImportantAchieveCareerGoals	Equal variances assumed	0.452	0.506	-0.261	32	0.796	-0.095	0.365	-0.839	0.648
	Equal variances not assumed			-0.237	8.406	0.818	-0.095	0.402	-1.015	0.824

Appendix Q: Demographic analysis unit-by-unit

The following analysis supplements the discussion in Section 6.6, with Tables A6.1 to A6.10 summarising the demographic information by unit about the students who completed this section of the questionnaire. In addition, comparisons are made with respect to gender and residency between students who participated in the main study and total enrolments on a unit-by-unit basis.

Unit		Total Student Enrolments S1 and S2		Total student Enrolments Semester 1		Survey Participation Semester 1		Total student Enrolments Semester 2		Survey Participation Semester 2		Total survey Participation S1 and S2	
						1		2		2			
		No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
ACF1100	Male	593	48.9	417	50.0	17	29.3	176	46.6	5	27.8	22	28.9
	Female	619	51.1	417	50.0	41	70.7	202	53.4	13	72.2	54	71.1
		1212	100.0	834	100.0	58	100.0	378	100.0	18	100.0	76	100.0
Response rate							7.0				4.8		
ACF2100	Male	391	44.1	180	43.1	6	37.5	211	45.1	11	39.3	17	38.6
	Female	495	55.9	238	56.9	10	62.5	257	54.9	17	60.7	27	61.4
		886	100.0	418	100.0	16	100.0	468	100.0	28	100.0	44	100.0
Response rate							3.8				6.0		
ACF2200	Male	394	43.0	222	45.4	7	33.3	172	40.3	10	34.5	17	34
	Female	522	57.0	267	54.6	14	66.7	255	59.7	19	65.5	33	66
		916	100.00	489	100.0	21	100.0	427	100.0	29	100.0	50	100
Response rate							4.3				6.8		
ACF3100	Male	338	43.5	172	45.9	7	30.4	166	41.3	2	10.5	9	21.4
	Female	439	56.5	203	54.1	16	69.6	236	58.7	17	89.5	33	78.6
		777	100.0	375	100.0	23	100.0	402	100.0	19	100.0	42	100.0
Response rate							6.1				4.7		
ACF3200	Male	295	43.1	136	44.4	5	18.5	159	42.1	2	28.6	7	20.6
	Female	389	56.9	170	55.6	22	81.5	219	57.9	5	71.4	27	79.4
		684	100.0	306	100.0	27	100.0	378	100.0	7	100.0	34	100.0
Response rate							8.8				1.9		

Table A6.1: Breakdown by unit and gender of students who completed the demographic statements (Note: data on total enrolments was sourced from the Business Intelligence System).

As shown in Table A6.1 above, across both semesters, more females than males completed the questionnaire. On average, 71% were females, with the percentage of male students ranging from 10.5% in ACF3100 (Semester 2 2016) to 39.3% in ACF2100 (Semester 2 2016). The highest percentage of female students (89.5%) was recorded in ACF3100 (Semester 2, 2016) and the lowest (60.7%) in ACF2100 in Semester 2, 2016. Total enrolments across the accounting units is split, with on average 55% being female and 45% male. Overall, females are over-represented across all three year levels: 71.1% on average in first year; 61.4% (ACF2100) and 66% (ACF2200) in second year; and 78.6% (ACF3100) and 79.4% (ACF3200) in third year. Equally, males are under-represented in this study: 28.9% on average in first year; 38.6% (ACF2100) and 34% (ACF2200) in second year; and 21.4% and 20.6% across the two third year accounting units respectively. This over (under)-representation across the three year levels will limit the generalisability of the finding to a broader population of accounting

students. However, given the data is being supplemented with in-depth interviews, there is an "opportunity for intensive study" and an "opportunity to learn" from the students who participate in the study (Stake, 2005, p. 451). Further, it will be possible to focus on a "few key themes" (Creswell, 2013, p. 101) pertinent to motivation and SRL in a blended learning environment.

Table A6.2 (below) provides a breakdown of the age range of students who completed the questionnaire. Given that ACF1100 is a first year accounting unit, typically completed by students within their first year of university, it is not surprising that the age of these students ranged between "18 to 20" years of age. This is reflective of students who commence a university degree directly following completion of secondary school or within one year (allowing for a gap year). Given the recommended course progression, it is not surprising that the proportion of students in second and third year increases in the "21-22" age range in the second year units, (range was 24.1% in ACF2200 in Semester 2 to 43.8% in ACF2100 in Semester 1), with an additional increase in the "23-24" age range in the third year units (range was 5.3% in ACF3100 in Semester 2 to 14.3 % in ACF3200 in the same semester). Four percent of students make up the "above 25" age group. Those ranges are reflective of the age range of total enrolments across the 5 foci accounting units (see Table A6.3 below) which shows that approximately 97% of students enrolled in the five foci accounting units are within the age ranges of "Under 19" and "20-24".

Unit	Semester	1 No.	1 Percent	2 No.	2 Percent
ACF1100	18-20	54	93.1	18	100.0
	21-22	2	3.4	0	0.0
	23-24	1	1.7	0	0.0
	25-30	0	0.0	0	0.0
	Other	1	1.7	0	0.0
		58	**100**	**18**	**100**
ACF2100	18-20	8	50.0	18	64.3
	21-22	7	43.8	8	28.6
	23-24	1	6.3	1	3.6
	25-30	0	0.0	1	3.6
	Other	0	0.0	0	0.0
		16	**100**	**28**	**100.0**
ACF2200	18-20	15	71.4	19	65.5
	21-22	6	28.6	7	24.1
	23-24	0	0.0	2	6.9
	25-30	0	0.0	1	3.4
	Other	0	0.0	0	0.0
		21	**100**	**29**	**100**
ACF3100	18-20	7	30.4	6	31.6
	21-22	11	47.8	11	57.9
	23-24	3	13.0	1	5.3
	25-30	1	4.3	1	5.3
	Other	1	4.3	0	0.0
		23	**100**	**19**	**100**
ACF3200	18-20	8	29.6	3	42.9
	21-22	16	59.3	3	42.9
	23-24	2	7.4	1	14.3
	25-30	0	0.0	0	0.0
	Other	1	3.7	0	0.0
		27	**100**	**7**	**100**

Table A6.2 Breakdown by age and unit of students who completed the questionnaire in Semesters 1 and 2, 2016

Unit	Semester	1 No.	Percent	% for 2 age groups	2 No.	Percent	% for 2 age groups
ACF1100	Under 19	583	69.99		276	73.21	
	20-24	240	28.81	98.8	96	25.46	98.67
	25-29	7	0.84		3	0.80	
	30-39	3	0.36		2	0.53	
		833	100		377	100	
ACF2100	Under 19	173	41.19		171	44.42	
	20-24	243	57.86	99.05	204	52.99	97.40
	25-29	3	0.71		9	2.34	
	30-39	1	0.24		1	0.26	
		420	100		385	100	
ACF2200	Under 19	208	42.80		224	52.46	
	20-24	274	56.38	99.18	198	46.37	98.83
	25-29	3	0.62		5	1.17	
	30-39	1	0.21		0	0.00	
		486	100		427	100	
ACF3100	Under 19	40	11.08		85	21.14	
	20-24	319	88.37	99.45	311	77.36	98.51
	25-29	0	0.00		6	1.49	
	30-39	2	0.55		0	0.00	
		361	100		402	100	
ACF3200	Under 19	30	9.84		86	22.75	
	20-24	267	87.54	97.38	282	74.60	97.35
	25-29	7	2.30		9	2.38	
	30-39	1	0.33		1	0.26	
		305	100		378	100	

Table A6.3 Breakdown by age of total enrolments in the 5 foci accounting units (Source: Business Intelligence System).

As Table A6.4 (below) shows, a small minority of respondents are permanent residents (3 to 9%), and there is no discernible pattern in terms of the split between domestic (local) and international students when looking at it on a unit-by-unit basis. Across both semesters, in ACF1100, the questionnaire was completed by both the highest and lowest percentages of Australian citizens (i.e., local students) and international students: with 70.7% and 22.2%

respectively in the Australian citizen category. With regard to international students, the highest participation rate is 77.8% and the lowest is 25.9%. In the second and third year units, the proportion of Australian students ranged from 25% (in ACF2100, Semester 1 2016) to 57.9% (in ACF3100, Semester 2 2016), whilst the proportion of international students ranged from 36.8% (in ACF3100, Semester 2 2016) to 75% in ACF2100, Semester 1, 2016. A review of the overall breakdown of domestic versus international students showed that the proportion of international students is greater than domestic students in the following units: ACF2100, ACF3100 and ACF3200 in Semester 1; and ACF1100, ACF2200 and ACF3200 in Semester 2 which is in line with total enrolments.

Unit	Semester	Total enrolments 1		Survey participants 1		Total enrolments 2		Survey participants 2	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent
ACF1100	Australian citizen	515	61.8	41	70.7	138	36.5	4	22.2
	Permanent resident			2	3.4			0	0.0
	International student	318	38.2	15	25.9	240	63.5	14	77.8
		833	**100.0**	**58**	**100**	**378**	**100.0**	**18**	**100**
ACF2100	Australian citizen	175	41.9	4	25	197	42.1	14	51.9
	Permanent resident			0	0			1	3.7
	International student	243	58.1	12	75	271	57.9	12	44.4
		418	**100.0**	**16**	**100**	**468**	**100.0**	**27**	**100**
ACF2200	Australian citizen	235	48.1	12	57.1	154	36.1	10	34.5
	Permanent resident			0	0.0			1	3.4
	International student	254	51.9	9	42.9	273	63.9	18	62.1
		489	**100.0**	**21**	**100**	**427**	**100.0**	**29**	**100**
ACF3100	Australian citizen	159	42.4	7	30.4	152	37.8	11	57.9
	Permanent resident			2	8.7			1	5.3
	International student	216	57.6	14	60.9	250	62.2	7	36.8
		375	**100.0**	**23**	**100**	**402**	**100.0**	**19**	**100**
ACF3200	Australian citizen	137	44.9	9	33.3	137	36.2	3	42.9
	Permanent resident			1	3.7			0	0.0
	International student	168	55.1	17	63.0	241	63.8	4	57.1
		305	**100.0**	**27**	**100**	**378**	**100.0**	**7**	**100**

Table A6.4. Breakdown of participant residency status for Semesters 1 and 2 2016 (Note: data on total enrolments split between residency status was sourced from the Business Intelligence System).

As shown in Table A6.5 (below) the majority of students are enrolled in either a Bachelor of Business or Bachelor of Business (Accounting), with the range being 55.2% for ACF1100 (Semester 1, 2016) to 94.5% (Semester 2, 2016). These results are not surprising given that the target units for this study are compulsory units within the aforementioned degrees. In second and third year, the percentage of students ranged from 71.4 % (ACF3200, Semester 2) to 92.6% (ACF3200, Semester 1), with the average being approximately 81%. This increase is not surprising given that it is likely that the majority of students undertaking second and third year accounting units have aspirations of becoming an accountant and therefore wish to

complete the 5 foci accounting units required for membership to one of the relevant accounting professional bodies.

Unit	Semester	1 No.	1 Percent	2 No.	2 Percent
ACF1100	B Bus	17	29.3	14	77.8
	B Bus(Accounting)	15	25.9	3	16.7
	Other	26	44.8	1	5.6
		58	**100**	**18**	**100**
ACF2100	B Bus	6	37.5	9	32.1
	B Bus(Accounting)	7	43.8	13	46.4
	Other	3	18.8	6	21.4
		16	**100**	**28**	**100**
ACF2200	B Bus	5	25	9	31.0
	B Bus(Accounting)	12	60	14	48.3
	Other	3	15	6	20.7
		20	**100**	**29**	**100**
ACF3100	B Bus	6	26.1	1	5.3
	B Bus(Accounting)	15	65.2	14	73.7
	Other	2	8.7	4	21.1
		23	**100**	**19**	**100**
ACF3200	B Bus	8	29.6	0	0.0
	B Bus(Accounting)	17	63.0	5	71.4
	Other	2	7.4	2	28.6
		27	**100**	**7**	**100**

Table A6.5: Enrolled course

Unit	Semester	1 No.	1 Percent	2 No.	2 Percent
ACF1100	**Accounting**	36	62.1	14	77.8
	Other	22	37.9	4	22.2
		58	**100**	**18**	**100**
ACF2100	**Accounting**	16	100	26	92.9
	Other	0	0	2	7.1
		16	**100**	**28**	**100**
ACF2200	**Accounting**	21	100.0	27	93.1
	Other	0	0.0	2	6.9
		21	**100**	**29**	**100**
ACF3100	**Accounting**	21	91.3	19	100.0
	Other	2	8.7	0	0.0
		23	**100**	**19**	**100**
ACF3200	**Accounting**	25	96.2	7	100.0
	Other	1	3.8	0	0.0
		26	**100**	**7**	**100**

Table A6.6: Nominated major

As shown in Table A6.6 above, the majority of respondents nominated accounting as their major, with the lowest percentage in first year at 62.1% (ACF1100, Semester 1). This is not surprising given that this unit is offered to many other business majors within the Business School. In ACF1100 (Semester 1, 2016) students nominated the following majors in the "Other" category: banking and finance (5 students); marketing (3 students); finance (3 students); with the remaining students majoring in economics, commerce, actuarial studies, public health, sustainability, management or human resources. Four students noted that they had not yet chosen a major. It is noted that in ACF1100 in Semester 2, most of these students were majoring in accounting, with the proportion of 77.8%; with four students majoring in banking and finance. On reviewing Table A6.6 for the second and third year accounting units, the percentages of students who nominated accounting as their major area of study ranges from 91.3% in ACF3100 (Semester 1) to 100% for the following four units: ACF2100 (Semester 1); ACF2200 (Semester 1); ACF3100 (Semester 2); and ACF3200 (Semester 2). Further, other noted majors were in banking and finance. Again, given the nature of the accounting units surveyed for this study this increase is not surprising as the majority of students would have aspirations of becoming an accountant and need to complete these 5 foci accounting units for membership to one of the relevant accounting professional bodies.

Unit	Semester	1 No.	1 Percent	2 No.	2 Percent
ACF1100	1	0	0.0	0	0.0
	2	2	3.4	0	0.0
	3	1	1.7	3	16.7
	4	54	93.1	14	77.8
	5	1	1.7	1	5.6
		58	100	18	100
ACF2100	1	0	0.0	0	0.0
	2	0	0.0	1	3.6
	3	1	6.3	4	14.3
	4	15	93.8	23	82.1
	5	0	0.0	0	0.0
		16	100	28	100
ACF2200	1	0	0.0	0	0.0
	2	0	0.0	1	3.4
	3	3	14.3	7	24.1
	4	18	85.7	20	69.0
	5	0	0.0	1	3.4
		21	100	29	100
ACF3100	1	0	0.0	0	0.0
	2	3	13.0	0	0.0
	3	1	4.3	4	21.1
	4	19	82.6	13	68.4
	5	0	0.0	2	10.5
		23	100	19	100
ACF3200	1	0	0.0	0	0.0
	2	1	3.7	0	0.0
	3	2	7.4	1	14.3
	4	24	88.9	4	57.1
	5	0	0.0	2	28.6
		27	100	7	100

Table A6.7: Number of units students are enrolled in per semester

As shown in Table A6.7 above, most students enrol in a full-time load of 3 to 4 units per semester. The recommended load for both international students on a study visa and those wishing to complete their undergraduate degree in a 3 year time frame, is 4 units per semester. As such, this is not surprising.

Unit	Semester	1 No.	1 Percent	2 No.	2 Percent
ACF1100	No	28	48.3	9	50.0
	Yes	30	51.7	9	50.0
		58	100	18	100
ACF2100	No	8	50	15	53.6
	Yes	8	50	13	46.4
		16	100	28	100
ACF2200	No	8	38.1	17	58.6
	Yes	13	61.9	12	41.4
		21	100	29	100
ACF3100	No	8	34.8	6	31.6
	Yes	15	65.2	13	68.4
		23	100	19	100
ACF3200	No	12	44.4	2	28.6
	Yes	15	55.6	5	71.4
		27	100	7	100

Table A6.8: Number of students who have completed an accounting unit prior to attending university

Pre-requisites for the Bachelor of Business or Bachelor of Business (Accounting) include satisfactory completion of english and maths for both domestic and international students. Interestingly, many students (on average, 56%) in the sample opted to complete an accounting unit prior to commencing their studies at university, whether this be at secondary school or via a pathway program (see Table A6.8 above).

Unit	Semester	1		2	
		No.	Percent	No.	Percent
ACF1100	0	3	5.2	3	16.7
	1-5	17	29.3	9	50.0
	6-10	18	31.0	1	5.6
	11-17.5	14	24.1	3	16.7
	18-20	3	5.2	1	5.6
	>20	3	5.2	0	0.0
	Other	0	0.0	1	5.6
		58	100	18	100
ACF2100	0	3	20.0	8	28.6
	1-5	7	46.7	1	3.6
	6-10	3	20.0	7	25.0
	11-17.5	2	13.3	6	21.4
	18-20	0	0.0	5	17.9
	>20	0	0.0	1	3.6
	Other	0	0.0	0	0.0
		15	100	28	100
ACF2200	0	1	5.0	6	24.0
	1-5	6	30.0	6	24.0
	6-10	3	15.0	3	12.0
	11-17.5	5	25.0	4	16.0
	18-20	3	15.0	3	12.0
	>20	2	10.0	2	8.0
	Other	0	0.0	1	4.0
		20	100	25	100
ACF3100	0	4	18.2	7	36.8
	1-5	2	9.1	4	21.1
	6-10	6	27.3	5	26.3
	11-17.5	5	22.7	2	10.5
	18-20	3	13.6	1	5.3
	>20	0	0.0	0	0.0
	Other	2	9.1	0	0.0
		22	100	19	100
ACF3200	0	4	15.4	2	28.6
	1-5	4	15.4	3	42.9
	6-10	8	30.8	0	0.0
	11-17.5	7	26.9	1	14.3
	18-20	1	3.8	1	14.3
	>20	2	7.7	0	0.0
	Other	0	0.0	0	0.0
		26	100	7	100

Table A6.9: Breakdown of paid hours of work

As noted in Table A6.9 above there is no discernible pattern in terms of hours of paid work reported by these students. Across all units in both semesters there are a number of students who are not in paid employment. This ranges from 5% (ACF2200 Semester 1) to 36.8 % (ACF3100, Semester 2). However, many students are working either 1 to 5 hours; 6 to 10 hours; or 11 to 17.5 hours per week. A small proportion are working more than 20 hours per week, with the highest, in percentage terms, noted in the unit ACF2200 across both semesters. Three students in ACF1100 Semester 1 revealed they are in paid employment in excess of 20 hours.

Unit	Semester	1 No.	1 Percent	2 No.	2 Percent
ACF1100	0-1	1	1.7	1	5.6
	2-3	18	31.0	7	38.9
	4-5	25	43.1	4	22.2
	6-7	7	12.1	1	5.6
	8-9	4	6.9	3	16.7
	10-12	1	1.7	2	11.1
	>12	1	1.7	0	0.0
	Other	1	1.7	0	0.0
		58	100	18	100
ACF2100	0-1	0	0.0	1	3.6
	2-3	5	31.25	14	50
	4-5	5	31.25	9	32.1
	6-7	3	18.75	1	3.6
	8-9	1	6.25	2	7.1
	10-12	2	12.5	0	0.0
	>12	0	0.0	1	3.6
	Other	0	0.0	0	0.0
		16	100	28	100
ACF2200	0-1	2	9.5	0	0.0
	2-3	8	38.1	9	31.0
	4-5	7	33.3	12	41.4
	6-7	3	14.3	3	10.3
	8-9	1	4.8	3	10.3
	10-12	0	0.0	0	0.0
	>12	0	0.0	1	3.4
	Other	0	0.0	1	3.4
		21	100	29	100
ACF3100	0-1	1	4.3	2	10.5
	2-3	6	26.1	4	21.1
	4-5	10	43.5	10	52.6
	6-7	3	13.0	2	10.5
	8-9	3	13.0	1	5.3
	10-12	0	0.0	0	0.0
	>12	0	0.0	0	0.0
	Other	0	0.0	0	0.0
		23	100	19	100
ACF3200	0-1	1	3.7		0.0
	2-3	5	18.5	2	28.6
	4-5	9	33.3	2	28.6
	6-7	7	25.9	2	28.6
	8-9	1	3.7	1	14.3
	10-12	2	7.4	0	0.0
	>12	2	7.4	0	0.0
	Other	0	0.0	0	0.0
		27	100	7	100

Table A6.10: Breakdown of study hours

With respect to study time, the recommended spend outside of class time in each unit is 9 hours per week. Analysis reveals that between 7% and 17% of students in first year spend this. This drops to between 5% and 10% in second year; whilst in third year this range sits somewhere between 4% and 14%. The majority of students across all units across both semesters spend between 2-3; 4-5 or 6-7 hours of study time outside of class.

Summary of demographics

With regard to students who completed the questionnaire, in summary: more females than males completed the questionnaire; the majority of students were in the age range of 18 to 20 years; and the proportion of international students was greater than domestic students in each unit for one of the two semesters, with international students being greater in ACF3200 in both semesters. Additionally, the majority of students are full-time students enrolled in a Bachelor of Business or Bachelor of Business (Accounting) with a nominated accounting major.

Appendix R: Learning analytics line items removed from the analysis

Line items removed from the learning analytics analysis due to item being of an administrative or assessment nature or not for Campus A

ACF1100 - Semester 1 2016

Unit: ACC1100 - ACF1100 Introduction to financial accounting - S1 2016

File: ACC1100 Campus B Unit Guide

Forum: News forum

File: ACF1100 Campus A Consultation and Workshop Roster

File: Semester Break Consultation

External tool: MyAccountingLab Results

File: Peer to Peer Learning Support

File: For Campus A Students - Video

File: Campus B Tutors and Tute Times

File: ACC1100 Campus B Consultation and Workshop Roster

File: For Campus A Students - Explanatory Document

File: Campus A - tutor names and tutorial times

Other

Folder: Campus/Offering name 2 (only for selective release/restricted content)

External tool: MyAccountingLab 24/7 Technical Support

External tool: MyAccountingLab System Requirements

External tool: MyAccountingLab Support and Diagnostics

Folder: Campus/Offering name 1 (only for selective release/restricted content)

External tool: MyAccountingLab Course Home

External tool: MyAccountingLab Course Settings

External tool: MyAccountingLab Gradebook

External tool: MyAccountingLab Study Plan Manager

External tool: MyAccountingLab Assignment Manager

External tool: MyAccountingLab Study Plan

External tool: MyAccountingLab Instructor Resources

File: Assignment Cover Sheet

File: Campus A - Tutor Email Addresses

Folder: Campus/Offering name 1 (only for selective release/restricted content)

File: Exam Consultation Roster – Campus B

File: Exam Consultation Roster – Campus A

ACF1100 - Semester 2 2016

Unit: ACC1100 - ACF1100 Introduction to financial accounting - S2 2016

Forum: News forum

File: ACC1100 Unit Guide – Campus B

External tool: MyAccountingLab Results

Assignment: Assignment Hand In

File: ACC1100 Campus B Consultation and Workshop Roster

File: Microfinance Competition Flyer

File: Campus B Tutors and Tute Times

File: Campus A - Tutor Email Addresses

File: Mindfulness for Academic Success Session Info

ACF2100 - Semester 1 2016

File: ACC2100 Unit Guide Campus B & Campus C Students

Unit: ACC2100 - ACF2100 Financial accounting - S1 2016

Other

Forum: News forum

File: Campus A Students: PhD Project Information Video

File: P2P Information

File: Disability Support Services

File: Calculator Instructional Video

File: Campus A P2P Workshops

File: ACF2100 Exam Consultation Times Campus A

File: ACC2100 Exam Consultation Times Campus B

ACF2100 - Semester 2 2016

Page: ACC2100 Consultation Times Campus B

Page: ACF2100 Consultation Times Campus A

Page: Student Futures

Page: Invitation to Participate in Lorena Mitrione PhD project " opportunity to win a Prize

Unit: ACC2100 - ACF2100 Financial accounting - S2 2016

File: ACC2100 Unit Guide Campus B; Campus C Students

Forum: News forum

File: Disability Support Services

File: Campus A P2P Workshops

File: Accounting Honours Information Session

Assignment: Assignment (Soft copy submission)

File: ACC2100 Campus B In-Semester Test Solution

Other

File: Calculator workshop session

Folder: folder

Page: ACC2100 Final exam Consultation Times Campus B

Page: ACF2100 Final exam Consultation Times Campus A

ACF2200 - Semester 1 2016

Unit: ACC2200 - ACF2200 Introduction to management accounting S1 2016

File: Important notice about next week's tutorials

File: Important notice about this week's tutorials

Forum: News forum

File: Information on the textbook

File: ACC2200 Unit Guide - Semester 1, 2016

Forum: ACC2200 Student Forum

Other

Label: Lecture

Label: Readings Chapter 4 of textbook (excluding…

Label: Readings Chapter 4 of textbook (excluding…

File: Consultation times

File: Disability Support Services

Label: Readings Chapter 1 of textbook

File: Important notice about next week's lecture

File: Important notice about this week's lecture

Label: Videos

Label: Readings Chapter 1 of textbook

File: Invitation to participate in research project - PLEASE WATCH!!

URL: Chartered Accountants (CA) Information Sessions - Recorded Webinar

Label: Tutorial

Label: Readings Chapter 3 of textbook (excluding…

URL: Special consideration form

Label: Questions?

File: Important notice regarding Week 7 Quiz

Label: Readings Chapter 2 of textbook

Label: Readings Chapter 3 of textbook (excluding…

Label: Readings Chapter 2 of textbook

Label: Readings Chapter 4 of textbook (excluding…

Label: The Exam

Label: Assignment

Label: Special Consideration You can apply for special …

Label: Readings Chapter 7 of textbook (excluding…

URL: Lorena Mitrione's PhD survey - win one of two $100 Westfield gift vouchers!!!

Label: Readings Chapter 5 of textbook (excluding...

Quiz: Multiple Choice Quiz 1

Quiz: Multiple Choice Quiz 1 - Two hour time limit

Label: Multiple choice quizzes

Turnitin Assignment 2: Turnitin assignment submission drop box

File: Guidelines for assignment submission

File: Guidelines for assignment submission - 4 slides per page

Quiz: Multiple Choice Quiz 1 - One week extension

Label: Readings Chapter 8 of textbook (including...

Label: Readings Chapter 20 of textbook (excluding…

Quiz: Multiple Choice Quiz 2

File: Important information on the final exam

File: Important notice regarding Week 12 quiz

File: Exam consultation timetable - UPDATED 6th June

File: Exam consultation timetable

Label: Readings Chapter 18 of textbook

Label: Readings
 Chapter 19 of textbook
Label: Readings
 Chapter 21 of textbook

Quiz: Multiple Choice Quiz 2 - Two hour time limit

ACF2200 - Semester 2 2016

File: Guidelines for Assignment Submission

Unit: ACC2200 - ACF2200 Introduction to management accounting S2 2016

File: Information on the textbook

Other

File: ACC2200 - Unit Guide

File: Consultation Timetable

Forum: News forum

File: Honours Information Session

File: Upcoming Events

File: English Connect programs

File: Assignment Coversheet
File: Invitation to participate in Lorena Mitriones PhD Project (ACF2200 - Caulfield students only)
Page: ACF2200 students only - Invitation to participate in Lorena Mitrione's PhD Project - Opportunity to win a prize

File: Student training workshops for the faculty issued HP calculator

File: Disability Support Services

Label: Tutorial

Label: Lecture

Label: Questions?

Label: Readings Chapter 1 of textbook

Label: Videos

Turnitin Assignment 2: Turnitin assignment submission drop box

Label: Readings Chapter 2 of textbook
Label: Readings
 Chapter 3 of textbook
Label: Readings
 Chapter 4 of textbook
Label: Special Consideration
You can apply for special …

URL: Special consideration form

Label: Readings Chapter 2 of textbook

Label: Readings Chapter 3 of textbook

Quiz: Multiple Choice Quiz 2

File: Important Notice Regarding Week 7 Quiz

Quiz: Multiple Choice Quiz 1

File: Upcoming Events

File: Important Notice Regarding Week 12 Quiz

URL: Important video to watch to avoid plagiarism penalties
Label: Readings
 Chapter 5 of textbook
Label: Readings
 Chapter 7 of textbook

Quiz: Multiple Choice Quiz 1 - Two hour time limit

Label: Readings
 Chapter 8 of textbook
Label: Readings
 Chapter 20 of textbook (excluding...

File: Guidelines for Assignment Submission

File: Week 12 Lecture - ACC2200 (Campus B students only)

File: HANDS-ON WORKSHOPS FOR STUDENTS in WEEK 12 with your HP10bII+

File: Exam Consultation Timetable

Label: Readings Chapter 18 of textbook

Label: Readings Chapter 21 of textbook
Label: Readings
 Chapter 20 of textbook (excluding...
Label: Readings
 Revision - Sample A - Exam Paper

ACF3100 - Semester 1 2016

Unit: ACC3100 - ACF3100 Advanced financial accounting - S1 2016

File: ACC3100 Unit Guide Semester 1, 2016 (for Campus B students)

Forum: News forum

File: Consultation

File: Invitation to Participate in Lorena Mitrione's PhD Project

ACF3100 - Semester 2 2016

Unit: ACC3100 - ACF3100 Advanced financial accounting - S2 2016

Assignment: Individual Essay submissions

File: ACC3100 Unit Guide Semester 2, 2016 (for Campus B and Campus C students)

Other

File: Consultation

File: Honours in Accounting Program

Page: English Connect programs

File: SETU: Unit and Staff Teaching Evaluation

Page: Invitation to Participate in Lorena Mitrione PhD project Opportunity to Win a Prize

File: Invitation to Participate in Lorena Mitrione's PhD Project

Forum: News forum

Page: CA ANZ Information Sessions

ACF3200 - Semester 1 2016

Unit: ACC3200 - ACF3200 Management accounting - S1 2016

File: Yes for Success Workshop

File: What's happening this week?

Forum: News forum

URL: Tutorial in Week 1 message

File: ACC3200 Unit guide

File: Presentation - The textbook and the Connect eBook

Page: Textbook

File: CA ANZ Employment Evening

File: Disability Support Service information

URL: Good Friday - replacement tutorial on Friday, 1s of April 2016

Group selection: Group Assignment CL03

File: Assessment task cover page template

Group selection: Group Assignment CL01

File: Assignment cover page template

Group selection: Group Assignment CA02

Group selection: Group Assignment CL12

Group selection: Group Assignment CL02

Group selection: Group Assignment CA08

File: Tutors - Tutorial details and email addresses

URL: Teaching Staff consultation hours

Page: Message for students who have not enrolled into a group

Group selection: Group Assignment CL11

URL: Group formation process - Key information

Group selection: Group Assignment CL05

Group selection: Group Assignment CA05

Group selection: Group Assignment CL08

Group selection: Group Assignment CL04

Group selection: Group Assignment CA09

URL: Announcement - group assignment released

Group selection: Group Assignment CA03

Group selection: Group Assignment CA01

Group selection: Group Assignment CA07

Other

File: CPA Australia Career Expo 2016

URL: A warm welcome to Management Accounting!

URL: Message about the textbook

File: Lorena Mitrione Research Project

Group selection: Group Assignment CA11

Group selection: Group Assignment CA04

Group selection: Group Assignment CA10

Group selection: Group Assignment CA06

Group selection: Group Assignment CL10

Group selection: Group Assignment CL06

Choice: Textbook evaluation

Page: ANZAC Day (CA07) replacement tutorial on Tuesday, 26 April at 1.30pm

Page: ANZAC Day - (CL04) replacement tutorial on Friday, 29 April at 4.30pm

Page: ANZAC Day - (CL01) replacement tutorial on Friday, 29 April at 3.00pm

Turnitin Assignment 2: Group case report - Group 1

Turnitin Assignment 2: Group case report - Group 4

Turnitin Assignment 2: Group case report - Group 3

Turnitin Assignment 2: Group case report - Group 2

Turnitin Assignment 2: Group case report - Group 6

Turnitin Assignment 2: Group case report - Group 5

File: CPA Australia - Industry Insights

File: International Study Program information

Choice: Revision lecture topics

URL: Group preference form

Choice: Group work popularity check - This is NOT the group formation process

URL: Having difficulties accessing the group report and presentation form?

File: Teaching teams office locations, contacts and teaching responsibilities

File: ACC3200 - ACF3200 - S2 2016-GROUPS MA03

URL: Assessment coversheet (online)

URL: MUST READ - dealing with group issues

URL: How do I contact my group members?

Page: Upcoming events on campus

File: Honours in Accounting?

URL: Student Futures

File: RNs marking guide

File: BCom Honours in Accounting - information session

File: A message for you from MONSU - Please read.

File: ACCA Accelerate

ACF3200 - Semester 2 2016

Unit: ACC3200 - ACF3200 Management accounting - S2 2016

URL: Group preference form

File: What's happening this week?

URL: Message about the textbook

Choice: Group work popularity check - This is NOT the group formation process

Forum: Assessment - Group case report and presentation (Q;A)

URL: Group formation process - Key information

File: Honours in Accounting?

Forum: Assessment - Tutorial preparation and participation (Q;A)

File: ACC3200 Unit guide

URL: Tutorial in Week 1 message

Page: Textbook

URL: Honours in Accounting

File: Teaching teams office locations, contacts and teaching responsibilities

File: Presentation - The textbook and the Connect eBook

File: Disability Support Service information

Chat: Coffee bar

URL: Having difficulties accessing the group report and presentation form?

Page: Upcoming events on campus

URL: English Connect Programs

File: ACC3200 - ACF3200 - S2 2016-GROUPS CA05

File: ACC3200 - ACF3200 - S2 2016-GROUPS CA14

File: ACC3200 - ACF3200 - S2 2016-GROUPS CL04

File: ACC3200 - ACF3200 - S2 2016-GROUPS CL03

File: ACC3200 - ACF3200 - S2 2016-GROUPS CA10

File: ACC3200 - ACF3200 - S2 2016-GROUPS CL11

File: ACC3200 - ACF3200 - S2 2016-GROUPS CA08

File: ACC3200 - ACF3200 - S2 2016-GROUPS CA01

File: ACC3200 - ACF3200 - S2 2016-GROUPS CL08

File: ACC3200 - ACF3200 - S2 2016-GROUPS CA04

File: ACC3200 - ACF3200 - S2 2016-GROUPS CL07

File: ACC3200 - ACF3200 - S2 2016-GROUPS MA01

File: ACC3200 - ACF3200 - S2 2016-GROUPS CL06

File: ACC3200 - ACF3200 - S2 2016-GROUPS CA07

File: ACC3200 - ACF3200 - S2 2016-GROUPS CL01

File: ACC3200 - ACF3200 - S2 2016-GROUPS CA02

File: ACC3200 - ACF3200 - S2 2016-GROUPS CA03

File: ACC3200 - ACF3200 - S2 2016-GROUPS CL09

File: ACC3200 - ACF3200 - S2 2016-GROUPS CA11

File: ACC3200 - ACF3200 - S2 2016-GROUPS MA03

File: ACC3200 - ACF3200 - S2 2016-GROUPS CA06

File: ACC3200 - ACF3200 - S2 2016-GROUPS CL10

File: ACC3200 - ACF3200 - S2 2016-GROUPS CL05

File: ACC3200 - ACF3200 - S2 2016-GROUPS CA09

File: Lorena Mitrione Research Project

File: ACC3200 - ACF3200 - S2 2016-GROUPS CL02

File: ACC3200 - ACF3200 - S2 2016-GROUPS CA13

Other

URL: A warm welcome to Management Accounting!

Choice: Revision lecture topics

File: Group case report and presentation 2016 S2

URL: Assessment coversheet (online)

Turnitin Assignment 2: Group case report - Group 1

URL: MUST READ - dealing with group issues

File: What's happening this week?

Turnitin Assignment 2: Group case report - Group 5

File: Presentation - The textbook and the Connect eBook

URL: How do I contact my group members?

URL: Announcement - group assignment released

URL: Group formation process - Key information

URL: Academic integrity 101

Turnitin Assignment 2: Group case report - Group 3

Turnitin Assignment 2: Group case report - Group 6

File: Honours in Accounting?

File: RNs marking guide

Page: Upcoming events on campus

Turnitin Assignment 2: Group case report - Group 2

File: BCom Honours in Accounting - information session

Turnitin Assignment 2: Group case report - Group 5

File: Lorena Mitrione Research Project

Turnitin Assignment 2: Group case report - Group 4
Page: Invitation to Participate in Lorena Mitriones PhD project" opportunity to win a $100 Prize

URL: Student Futures

Appendix S: Pie charts for each unit

Figure	Unit
7.2	Semester 1 ACC/ACF1100
7.3	Semester 2 ACC/ACF1100
7.4	Semester 1 ACC/ACF2100
7.5	Semester 2 ACC/ACF2100
7.6	Semester 1 ACC/ACF2200
7.7	Semester 2 ACC/ACF2200
7.8	Semester 1 ACC/ACF3100
7.9	Semester 2 ACC/ACF3100
7.10	Semester 1 ACC/ACF3200
7.11	Semester 2 ACC/ACF3200
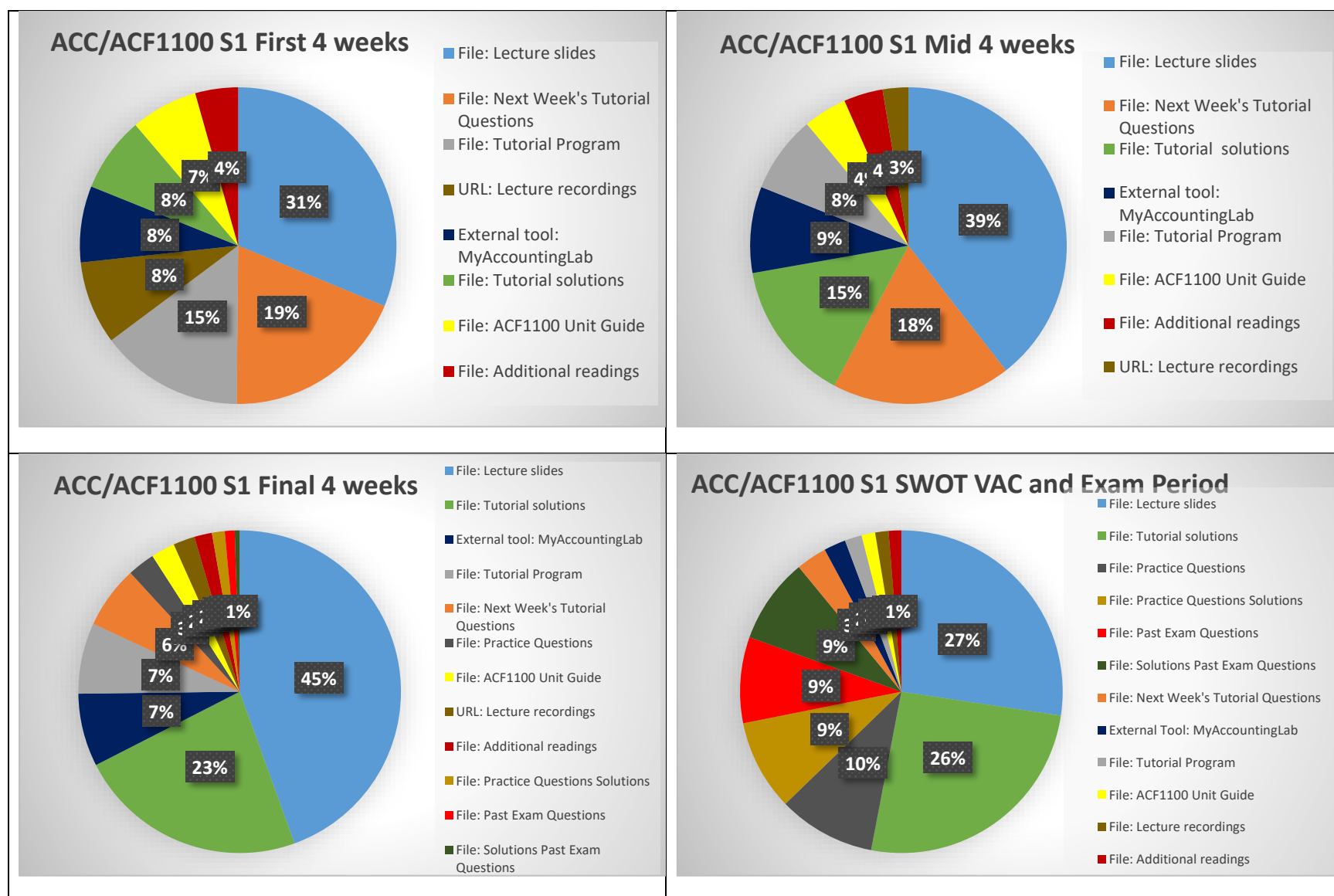
Figure 7.2 Usage of the learning resources in Semester 1 in ACC/ACF1100 split into the 4 time periods
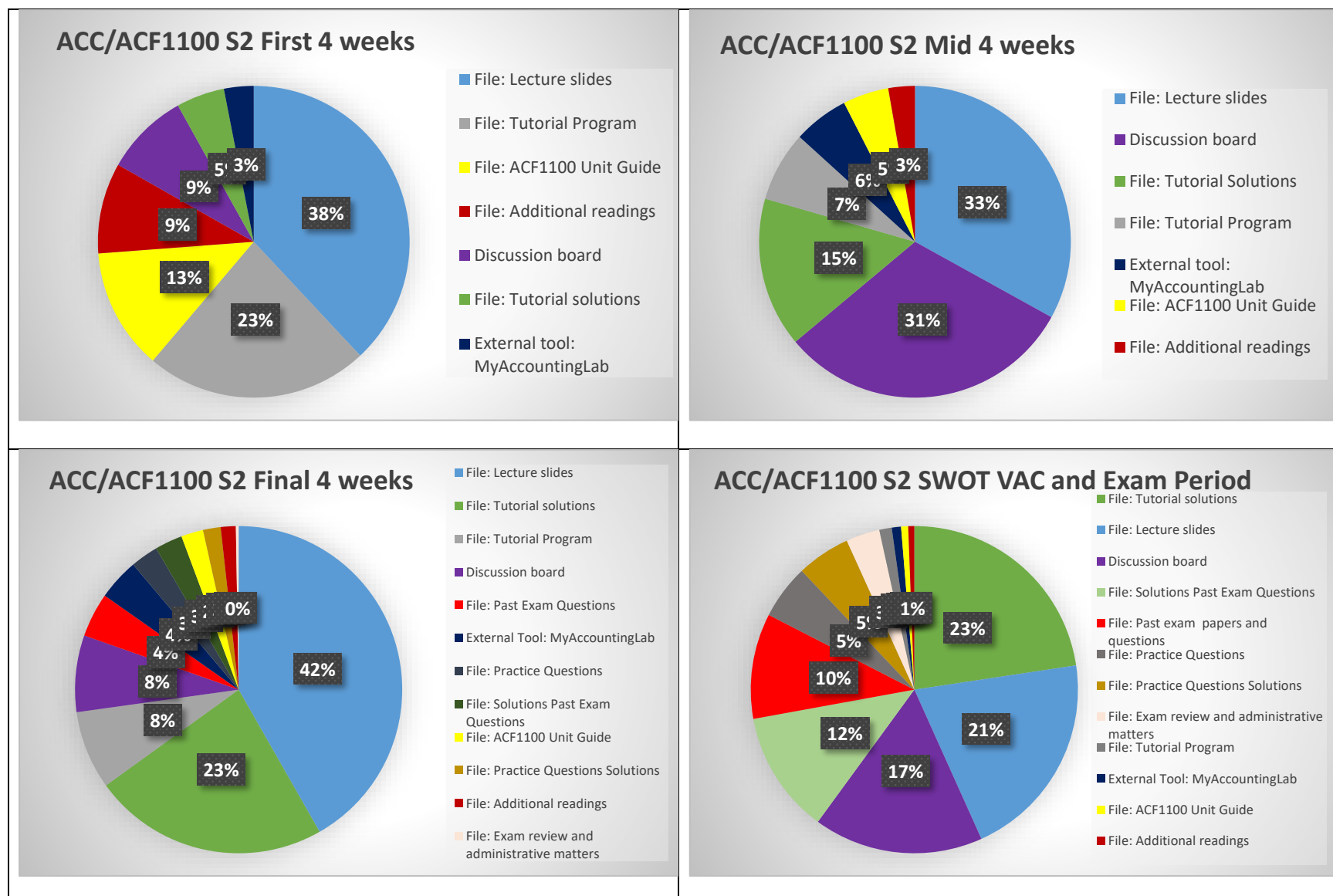
Figure 7.3 Usage of the learning resources in Semester 2 in ACC/ACF1100 split into the 4 time periods
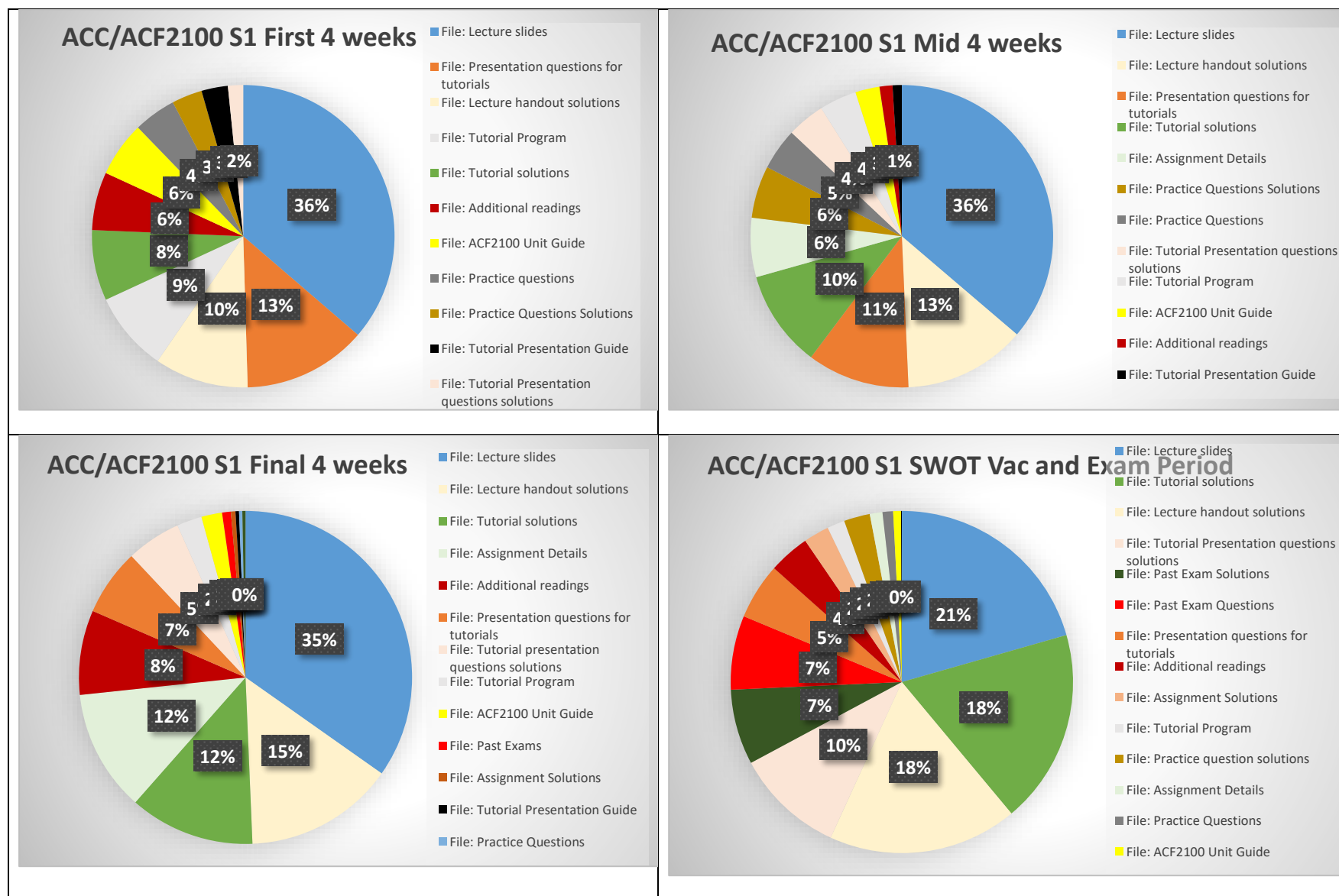
Figure 7.4 Usage of the learning resources in Semester 1 in ACC/ACF2100 split into the 4 time periods
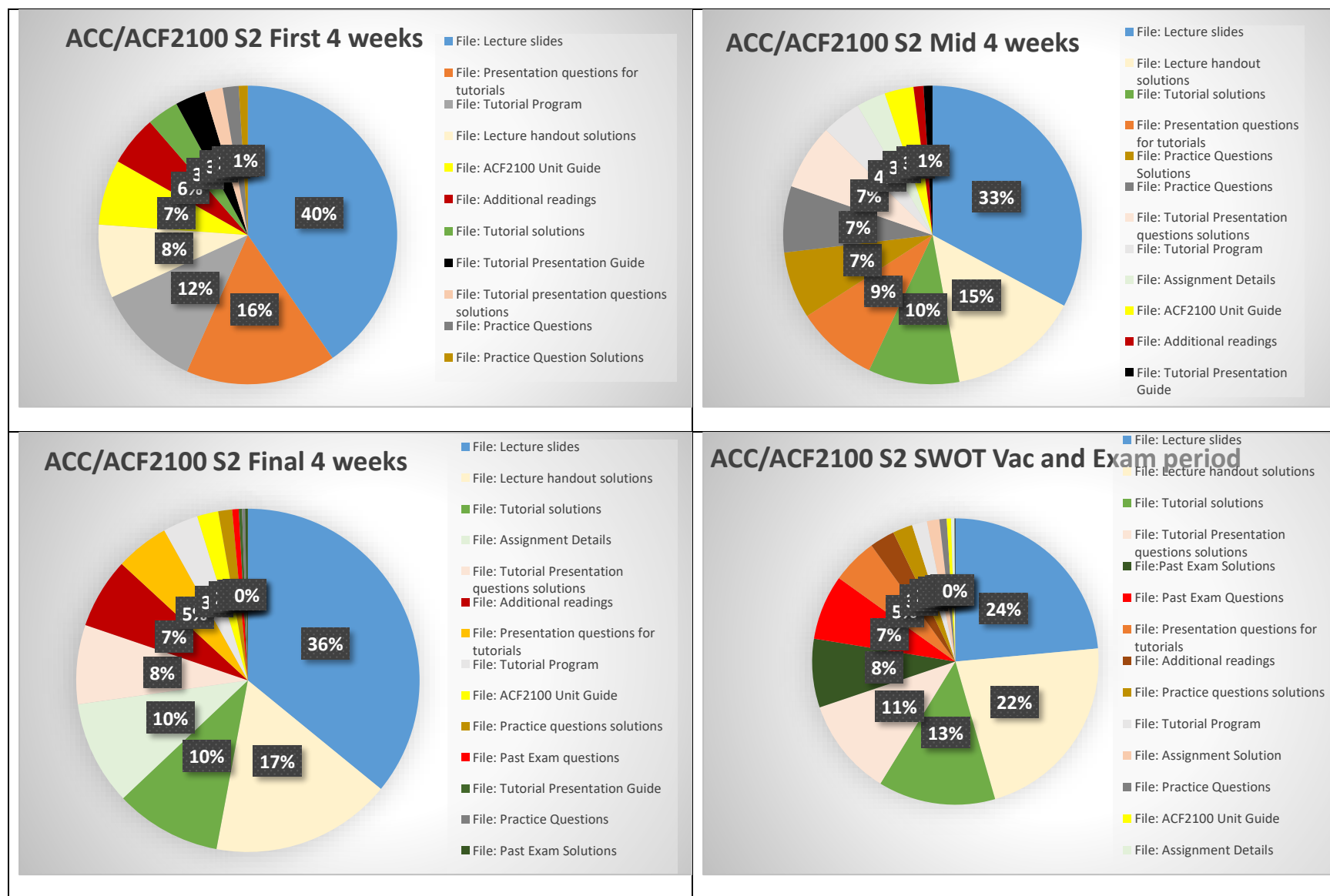
Figure 7.5 Usage of the learning resources in Semester 2 in ACC/ACF2100 split into the 4 time periods
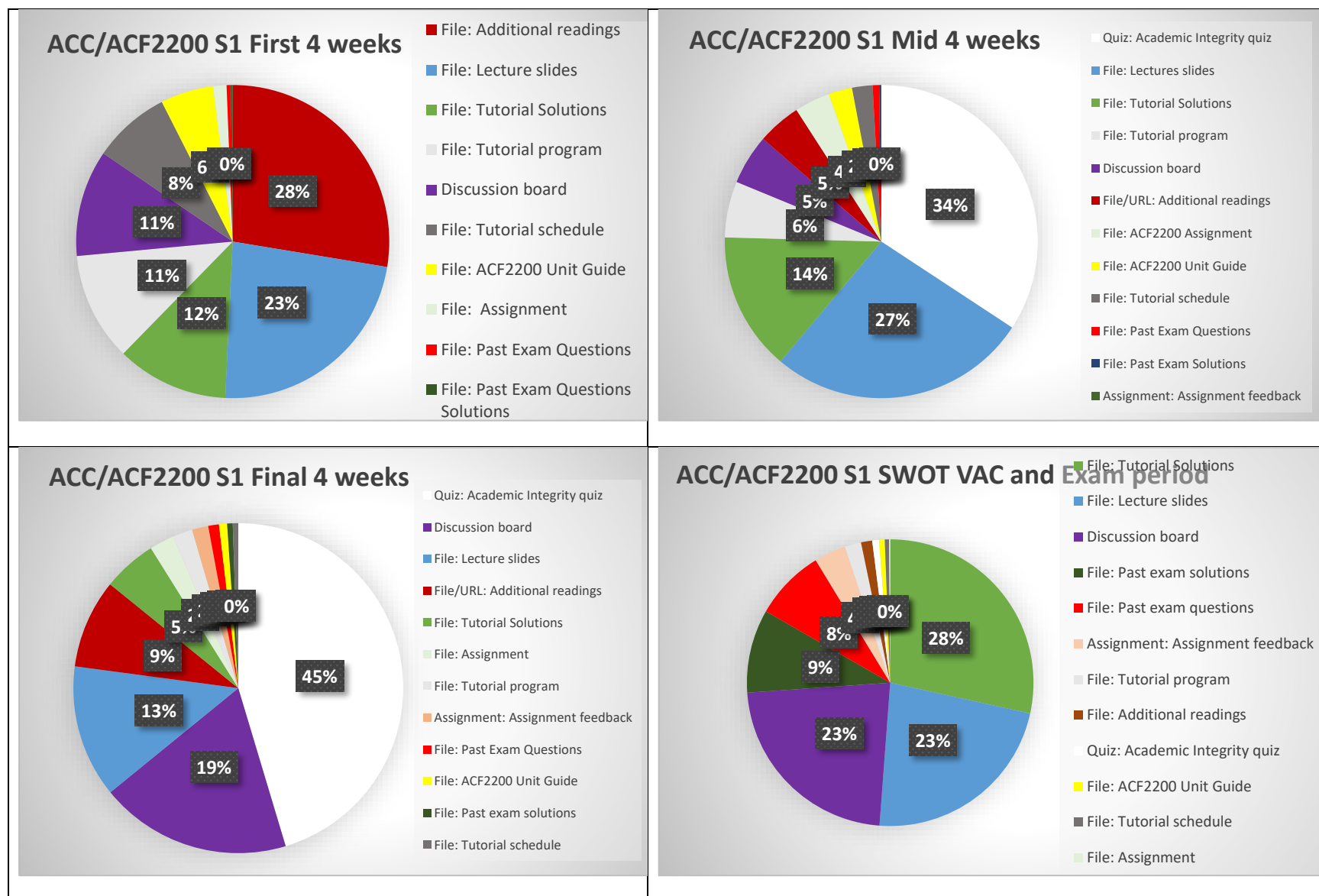
Figure 7.6 Usage of the learning resources in Semester 1 in ACC/ACF2200 split into the 4 time periods
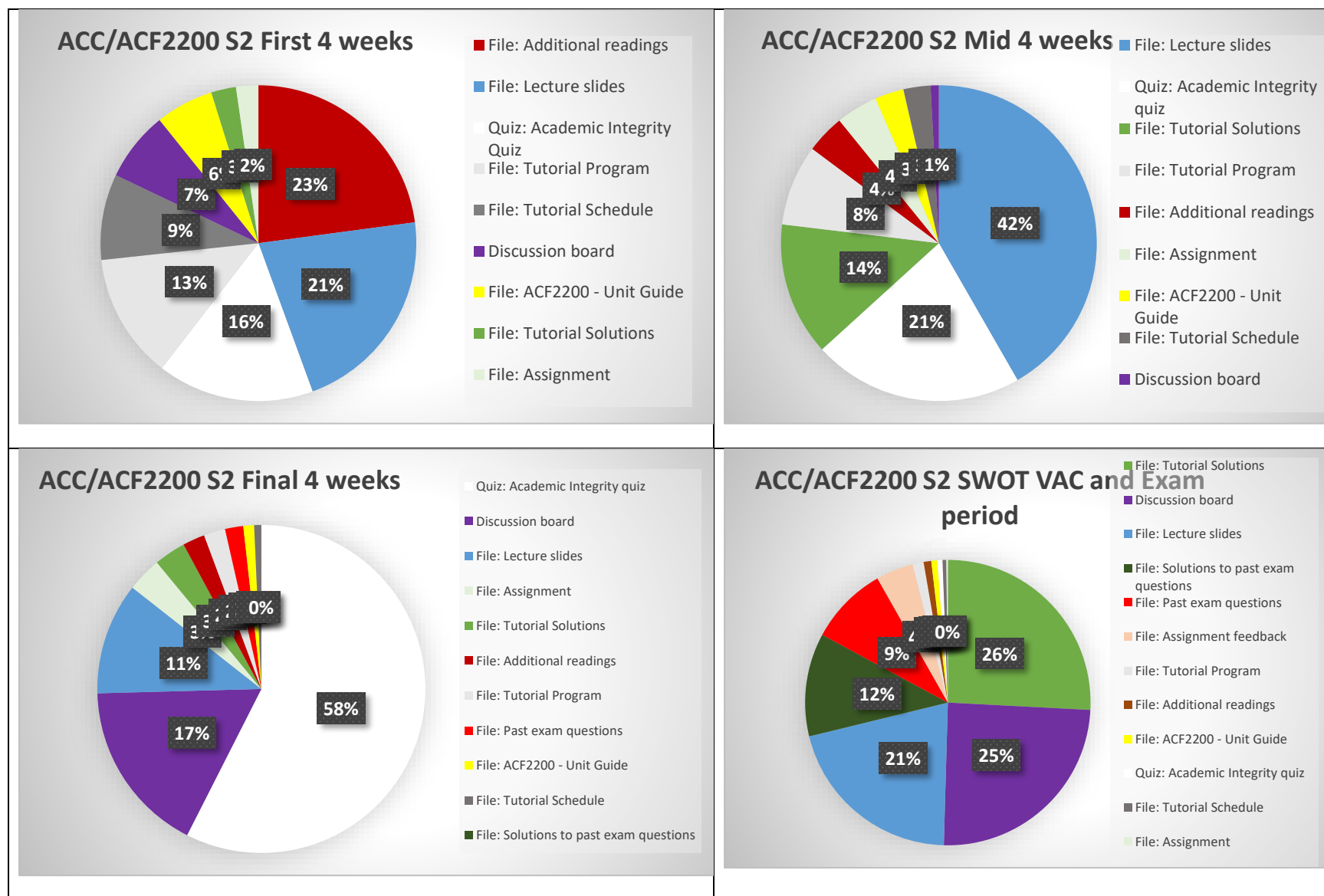
Figure 7.7 Usage of the learning resources in Semester 2 in ACC/ACF2200 split into the 4 time periods
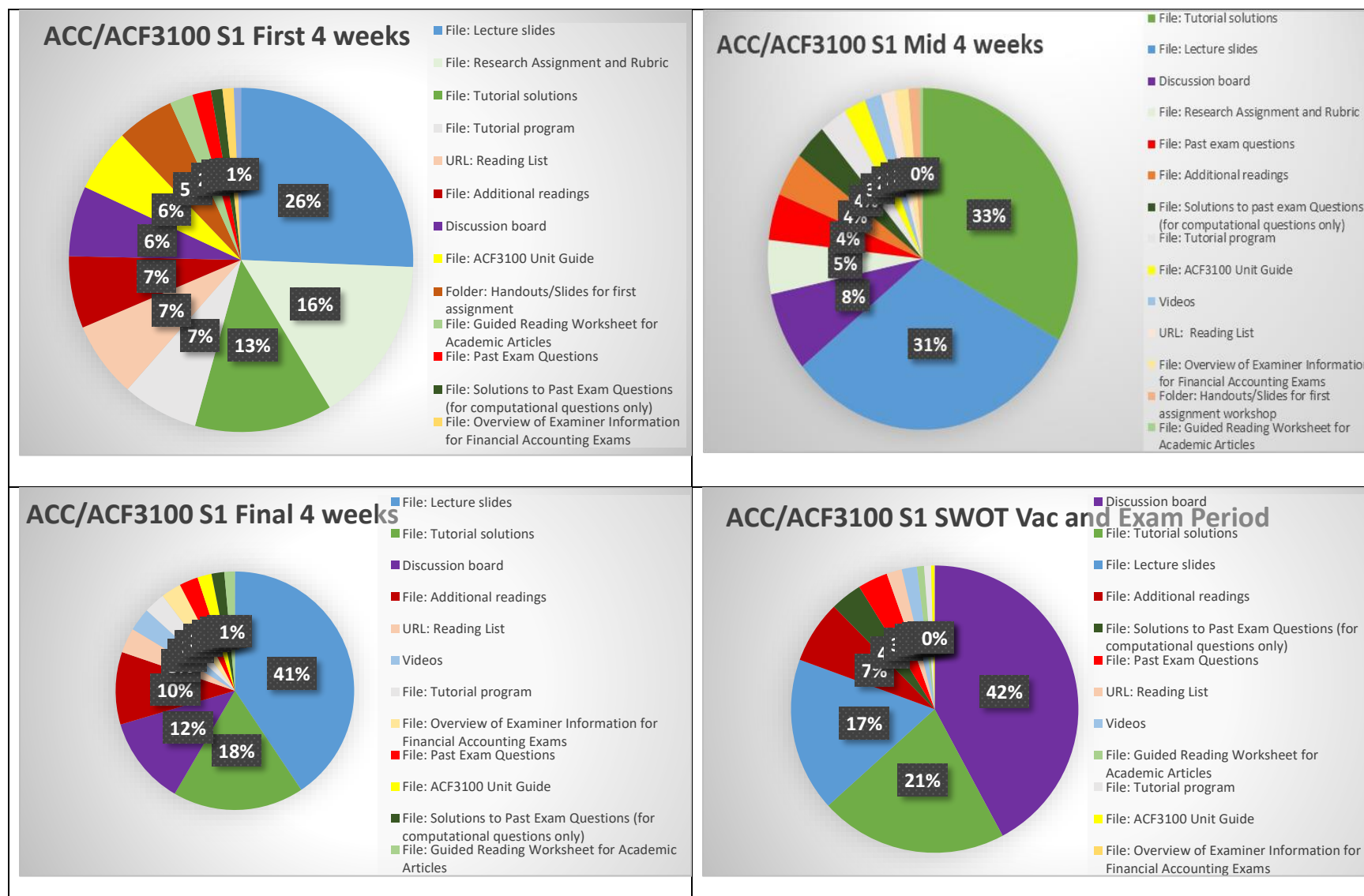
Figure 7.8 Usage of the learning resources in Semester 1 in ACC/ACF3100 split into the 4 time periods
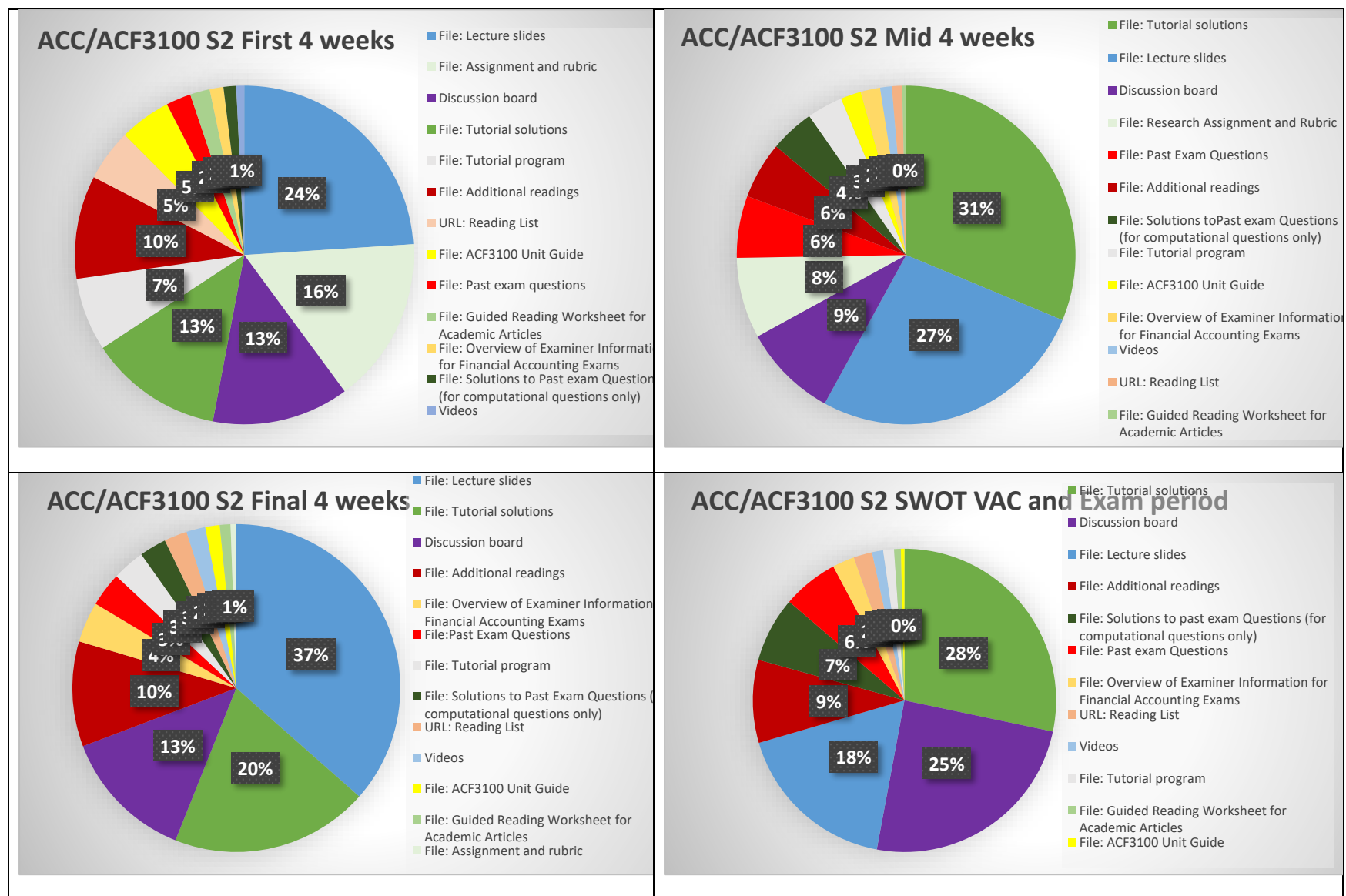
Figure 7.9 Usage of the learning resources in Semester 2 in ACC/ACF3100 split into the 4 time periods
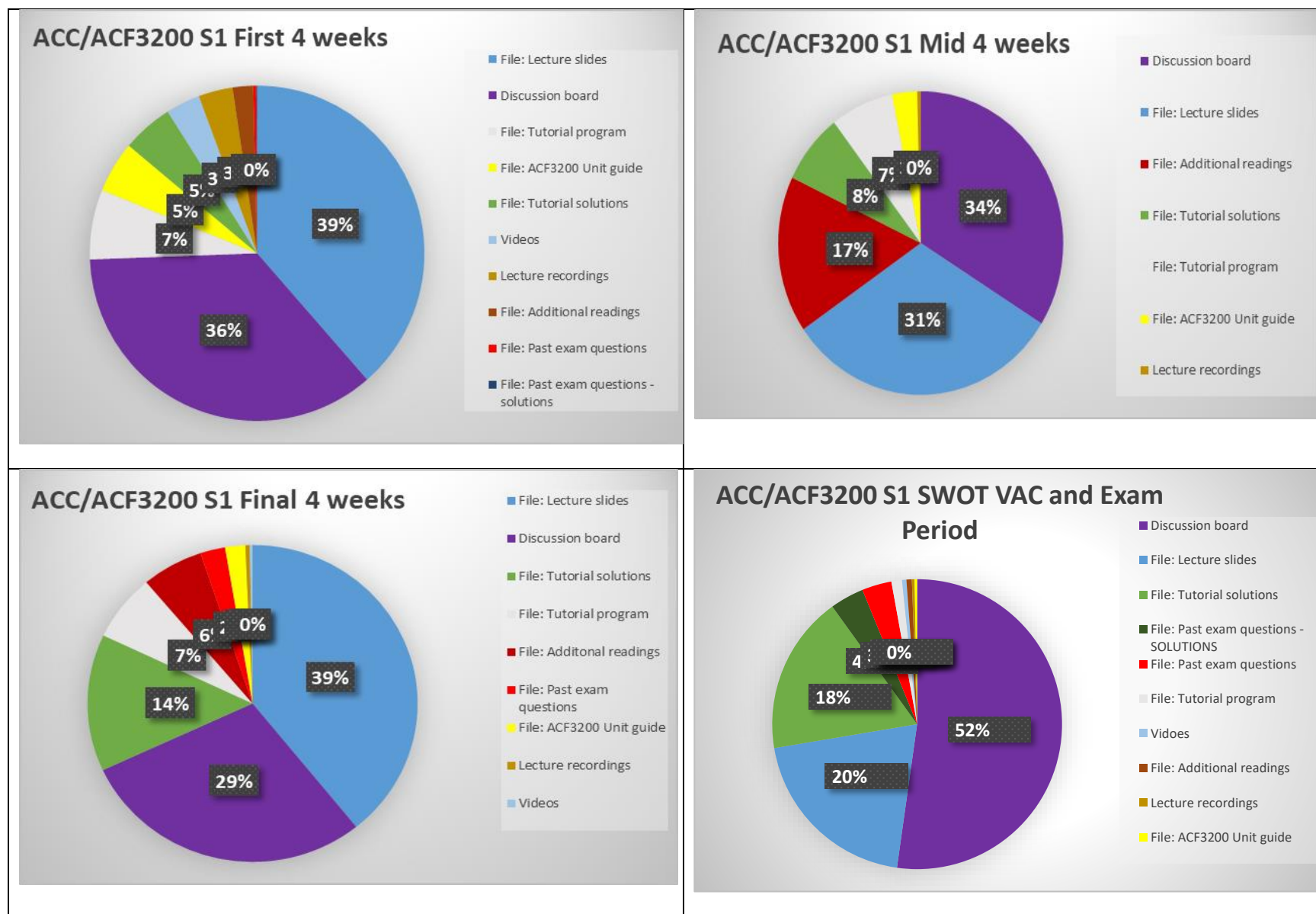
Figure 7.10 Usage of the learning resources in Semester 1 in ACC/ACF3200 split into the 4 time periods
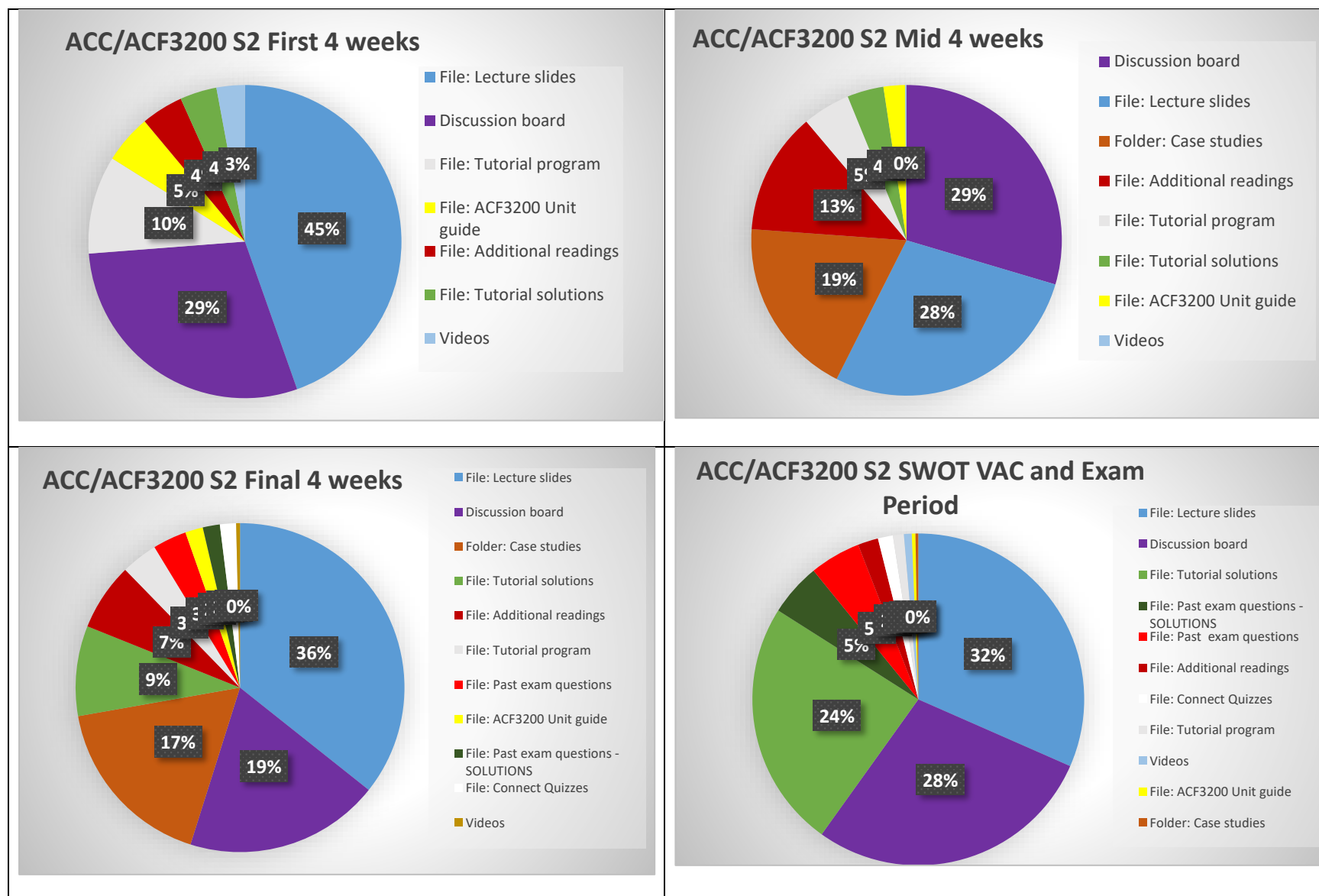
Figure 7.11 Usage of the learning resources in Semester 2 in ACC/ACF3200 split into the 4 time periods

Appendix T: Scale reliability – main study
Scale: Intrinsic goal orientation

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the

procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.760	.762	4

Item Statistics

	Mean	Std. Deviation	N
MIntCuriosity	5.29	1.230	246
MIntEffort	4.99	1.279	246
MIntSatisUnders	5.48	1.124	246
MIntSatUnderstandAccMajor	5.53	1.173	246

Inter-Item Correlation Matrix

	MIntCuriosity	MIntEffort	MIntSatisUnders	MIntSatUnderstandAccMajor
MIntCuriosity	1.000	.526	.455	.319
MIntEffort	.526	1.000	.478	.363
MIntSatisUnders	.455	.478	1.000	.525
MIntSatUnderstandAccMajor	.319	.363	.525	1.000

Inter-Item Covariance Matrix

	MIntCuriosity	MIntEffort	MIntSatisUnders	MIntSatUnderstandAccMajor
MIntCuriosity	1.514	.828	.629	.460
MIntEffort	.828	1.637	.688	.545
MIntSatisUnders	.629	.688	1.263	.692
MIntSatUnderstandAccMajor	.460	.545	.692	1.376

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.324	4.988	5.533	.545	1.109	.061	4
Item Variances	1.448	1.263	1.637	.374	1.296	.026	4
Inter-Item Covariances	.640	.460	.828	.368	1.801	.015	4
Inter-Item Correlations	.444	.319	.526	.208	1.652	.007	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MIntCuriosity	16.00	8.127	.547	.332	.711
MIntEffort	16.31	7.716	.580	.358	.693
MIntSatisUnders	15.81	8.193	.625	.404	.671
MIntSatUnderstandAccMajor	15.76	8.703	.490	.294	.739

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
21.30	13.475	3.671	4

Scale: Task value

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.608	.610	3

Item Statistics

	Mean	Std. Deviation	N
MTaskUseful	5.39	1.081	246
MTaskUnders	6.06	.959	246
MTaskUse	5.79	1.086	246

Inter-Item Correlation Matrix

	MTaskUseful	MTaskUnders	MTaskUse
MTaskUseful	1.000	.270	.321
MTaskUnders	.270	1.000	.439
MTaskUse	.321	.439	1.000

Inter-Item Covariance Matrix

	MTaskUseful	MTaskUnders	MTaskUse
MTaskUseful	1.170	.280	.377
MTaskUnders	.280	.919	.457
MTaskUse	.377	.457	1.180

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.745	5.390	6.057	.667	1.124	.113	3
Item Variances	1.089	.919	1.180	.260	1.283	.022	3
Inter-Item Covariances	.371	.280	.457	.177	1.634	.006	3
Inter-Item Correlations	.343	.270	.439	.169	1.627	.006	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MTaskUseful	11.85	3.013	.350	.123	.607
MTaskUnders	11.18	3.103	.436	.211	.486
MTaskUse	11.45	2.648	.472	.237	.423

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
17.24	5.495	2.344	3

Scale: Control of learning beliefs

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.582	.630	4

Item Statistics

	Mean	Std. Deviation	N
MControlLearn	5.68	1.013	246
MControlNonuse	4.21	1.569	246
MControlEffort	5.89	1.075	246
MControlLearnContentAccMajor	5.48	.993	246

Inter-Item Correlation Matrix

	MControlLearn	MControlNonuse	MControlEffort	MControlLearnContentAccMajor
MControlLearn	1.000	.274	.332	.508
MControlNonuse	.274	1.000	.110	.165
MControlEffort	.332	.110	1.000	.404
MControlLearnContentAccMajor	.508	.165	.404	1.000

Inter-Item Covariance Matrix

	MControlLearn	MControlNonuse	MControlEffort	MControlLearnContentAccMajor
MControlLearn	1.027	.436	.362	.511
MControlNonuse	.436	2.461	.186	.257
MControlEffort	.362	.186	1.156	.431
MControlLearnContentAccMajor	.511	.257	.431	.985

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.317	4.211	5.894	1.683	1.400	.571	4
Item Variances	1.407	.985	2.461	1.476	2.498	.499	4
Inter-Item Covariances	.364	.186	.511	.325	2.752	.014	4
Inter-Item Correlations	.299	.110	.508	.398	4.615	.020	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MControlLearn	15.59	6.349	.512	.312	.413
MControlNonuse	17.06	5.776	.233	.076	.677
MControlEffort	15.37	6.880	.347	.185	.525
MControlLearnContentAccMajor	15.78	6.611	.470	.321	.446

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
21.27	9.993	3.161	4

Scale: Control of learning beliefs 1

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.677	.680	3

Item Statistics

	Mean	Std. Deviation	N
MControlLearn	5.68	1.013	246
MControlEffort	5.89	1.075	246
MControlLearnContentAccMajor	5.48	.993	246

Inter-Item Correlation Matrix

	MControlLearn	MControlEffort	MControlLearnContentAccMajor
MControlLearn	1.000	.332	.508
MControlEffort	.332	1.000	.404
MControlLearnContentAccMajor	.508	.404	1.000

Inter-Item Covariance Matrix

	MControlLearn	MControlEffort	MControlLearnContentAccMajor
MControlLearn	1.027	.362	.511
MControlEffort	.362	1.156	.431
MControlLearnContentAccMajor	.511	.431	.985

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.686	5.484	5.894	.411	1.075	.042	3
Item Variances	1.056	.985	1.156	.171	1.173	.008	3
Inter-Item Covariances	.435	.362	.511	.149	1.412	.004	3
Inter-Item Correlations	.415	.332	.508	.176	1.530	.006	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MControlLearn	11.38	3.003	.497	.277	.574
MControlEffort	11.16	3.035	.423	.185	.674
MControlLearnContentAccMajor	11.57	2.907	.557	.320	.498

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
17.06	5.776	2.403	3

Scale: Self-efficacy for learning and performance

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.829	.830	3

Item Statistics

	Mean	Std. Deviation	N
MSelfEfficacyCertain	5.15	1.251	246
MSelfEfficacyConfident	5.35	1.157	246
MSelfEfficacyConfidentAcc Major	5.38	1.110	246

Inter-Item Correlation Matrix

	MSelfEfficacyCertain	MSelfEfficacyConfident	MSelfEfficacyConfidentAccMajor
MSelfEfficacyCertain	1.000	.676	.579
MSelfEfficacyConfident	.676	1.000	.601
MSelfEfficacyConfidentAcc Major	.579	.601	1.000

Inter-Item Covariance Matrix

	MSelfEfficacyCertain	MSelfEfficacyConfident	MSelfEfficacyConfidentAccMajor
MSelfEfficacyCertain	1.565	.979	.804
MSelfEfficacyConfident	.979	1.340	.772
MSelfEfficacyConfidentAcc Major	.804	.772	1.232

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.294	5.150	5.378	.228	1.044	.016	3
Item Variances	1.379	1.232	1.565	.333	1.270	.029	3
Inter-Item Covariances	.852	.772	.979	.207	1.269	.010	3
Inter-Item Correlations	.619	.579	.676	.097	1.168	.002	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MSelfEfficacyCertain	10.73	4.115	.703	.504	.750
MSelfEfficacyConfident	10.53	4.405	.721	.523	.730
MSelfEfficacyConfidentAcc Major	10.50	4.863	.644	.416	.805

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
15.88	9.247	3.041	3

Scale: Rehearsal

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.873	.874	2

Item Statistics

	Mean	Std. Deviation	N
LSRehearsalReuseOver	5.32	1.363	246
LSRehearsalReuseRemember	5.50	1.277	246

Inter-Item Correlation Matrix

	LSRehearsalReuseOver	LSRehearsalReuseRemember
LSRehearsalReuseOver	1.000	.777
LSRehearsalReuseRemember	.777	1.000

499

Inter-Item Covariance Matrix

	LSRehearsalReuseOver	LSRehearsalReuseRemember
LSRehearsalReuseOver	1.858	1.352
LSRehearsalReuseRemember	1.352	1.631

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.407	5.317	5.496	.179	1.034	.016	2
Item Variances	1.744	1.631	1.858	.228	1.140	.026	2
Inter-Item Covariances	1.352	1.352	1.352	.000	1.000	.000	2
Inter-Item Correlations	.777	.777	.777	.000	1.000	.000	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LSRehearsalReuseOver	5.50	1.631	.777	.604	.
LSRehearsalReuseRemember	5.32	1.858	.777	.604	.

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
10.81	6.193	2.489	2

Scale: Elaboration

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.784	.785	3

Item Statistics

	Mean	Std. Deviation	N
LSElaborateRelate	5.49	1.177	246
LSElaborateConnect	5.38	1.232	246
LSElaborateRelateOtherUnits	5.30	1.228	246

Inter-Item Correlation Matrix

	LSElaborateRelate	LSElaborateConnect	LSElaborateRelateOtherUnits
LSElaborateRelate	1.000	.679	.515
LSElaborateConnect	.679	1.000	.453
LSElaborateRelateOtherUnits	.515	.453	1.000

Inter-Item Covariance Matrix

	LSElaborateRelate	LSElaborateConnect	LSElaborateRelateOtherUnits
LSElaborateRelate	1.386	.985	.745
LSElaborateConnect	.985	1.518	.686
LSElaborateRelateOtherUnits	.745	.686	1.509

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.390	5.301	5.492	.191	1.036	.009	3
Item Variances	1.471	1.386	1.518	.132	1.095	.005	3
Inter-Item Covariances	.805	.686	.985	.299	1.436	.020	3
Inter-Item Correlations	.549	.453	.679	.226	1.498	.011	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LSElaborateRelate	10.68	4.398	.701	.515	.624
LSElaborateConnect	10.79	4.385	.648	.476	.680
LSElaborateRelateOtherUnits	10.87	4.873	.528	.285	.808

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
16.17	9.244	3.040	3

Scale: Metacognitive self-regulation

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.781	.784	4

Item Statistics

	Mean	Std. Deviation	N
LSMetaSRAlternativeRes	5.17	1.340	246
LSMetaSRNeedEngage	4.95	1.333	246
LSMetaSRSetGoals	4.87	1.445	246
LSMetaSRThinkIdeas	5.17	1.168	246

Inter-Item Correlation Matrix

	LSMetaSRAlternativeRes	LSMetaSRNeedEngage	LSMetaSRSetGoals	LSMetaSRThinkIdeas
LSMetaSRAlternativeRes	1.000	.439	.363	.425
LSMetaSRNeedEngage	.439	1.000	.569	.511
LSMetaSRSetGoals	.363	.569	1.000	.550
LSMetaSRThinkIdeas	.425	.511	.550	1.000

Inter-Item Covariance Matrix

	LSMetaSRAlternativeRes	LSMetaSRNeedEngage	LSMetaSRSetGoals	LSMetaSRThinkIdeas
LSMetaSRAlternativeRes	1.797	.784	.703	.666
LSMetaSRNeedEngage	.784	1.777	1.096	.796
LSMetaSRSetGoals	.703	1.096	2.089	.928
LSMetaSRThinkIdeas	.666	.796	.928	1.364

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.039	4.870	5.167	.297	1.061	.023	4
Item Variances	1.757	1.364	2.089	.725	1.532	.089	4
Inter-Item Covariances	.829	.666	1.096	.430	1.645	.023	4
Inter-Item Correlations	.476	.363	.569	.206	1.566	.006	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LSMetaSRAlternativeRes	14.99	10.869	.487	.250	.778
LSMetaSRNeedEngage	15.20	9.844	.640	.415	.700
LSMetaSRSetGoals	15.28	9.429	.614	.417	.714
LSMetaSRThinkIdeas	14.99	10.828	.622	.392	.716

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
20.15	16.972	4.120	4

Scale: Time and study environment

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.752	.752	2

Item Statistics

	Mean	Std. Deviation	N
LSTimeChooseLocation	5.63	1.339	246
LSTimeFewDistractions	5.46	1.314	246

Inter-Item Correlation Matrix

	LSTimeChoose Location	LSTimeFewDistr actions
LSTimeChooseLocation	1.000	.603
LSTimeFewDistractions	.603	1.000

Inter-Item Covariance Matrix

	LSTimeChoose Location	LSTimeFewDistr actions
LSTimeChooseLocation	1.793	1.060
LSTimeFewDistractions	1.060	1.727

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.545	5.459	5.630	.171	1.031	.015	2
Item Variances	1.760	1.727	1.793	.066	1.038	.002	2
Inter-Item Covariances	1.060	1.060	1.060	.000	1.000	.000	2
Inter-Item Correlations	.603	.603	.603	.000	1.000	.000	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LSTimeChooseLocation	5.46	1.727	.603	.363	.
LSTimeFewDistractions	5.63	1.793	.603	.363	.

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
11.09	5.641	2.375	2

Scale: Goal setting - OSLQ

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.823	.824	2

Item Statistics

	Mean	Std. Deviation	N
OSLQGoalSetGoals	4.90	1.533	246
OSLQGoalSetSTermLTerm	4.73	1.654	246

Inter-Item Correlation Matrix

	OSLQGoalSetGoals	OSLQGoalSetSTermLTerm
OSLQGoalSetGoals	1.000	.701
OSLQGoalSetSTermLTerm	.701	1.000

Inter-Item Covariance Matrix

	OSLQGoalSetGoals	OSLQGoalSetSTermLTerm
OSLQGoalSetGoals	2.350	1.778
OSLQGoalSetSTermLTerm	1.778	2.736

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.817	4.732	4.902	.171	1.036	.015	2
Item Variances	2.543	2.350	2.736	.386	1.164	.075	2
Inter-Item Covariances	1.778	1.778	1.778	.000	1.000	.000	2
Inter-Item Correlations	.701	.701	.701	.000	1.000	.000	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OSLQGoalSetGoals	4.73	2.736	.701	.492	.
OSLQGoalSetSTermLTerm	4.90	2.350	.701	.492	.

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
9.63	8.641	2.940	2

Scale: Lifelong learning

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the
procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.876	.879	7

Item Statistics

	Mean	Std. Deviation	N
LLLEnjoyLearning	5.59	1.235	246
LLLDevelopPerson	6.22	.927	246
LLLIdentifyNeed	5.77	1.131	246
LLLAwarePreferLearn	5.68	1.242	246
LLLUseDifferentResources	5.45	1.183	246
LLLUpdateSkills	5.75	1.232	246
LLLImportantAchieveCareer Goals	6.24	.948	246

Inter-Item Correlation Matrix

	LLLEnjoyLearning	LLLDevelopPerson	LLLIdentifyNeed	LLLAwarePreferLearn	LLLUseDifferentResources	LLLUpdateSkills	LLLImportantAchieveCareerGoals
LLLEnjoyLearning	1.000	.483	.462	.361	.529	.475	.421
LLLDevelopPerson	.483	1.000	.527	.311	.359	.506	.720
LLLIdentifyNeed	.462	.527	1.000	.587	.589	.642	.541
LLLAwarePreferLearn	.361	.311	.587	1.000	.554	.559	.356
LLLUseDifferentResources	.529	.359	.589	.554	1.000	.625	.477
LLLUpdateSkills	.475	.506	.642	.559	.625	1.000	.630
LLLImportantAchieveCareerGoals	.421	.720	.541	.356	.477	.630	1.000

Inter-Item Covariance Matrix

	LLLEnjoyLearning	LLLDevelopPerson	LLLIdentifyNeed	LLLAwarePreferLearn	LLLUseDifferentResources	LLLUpdateSkills	LLLImportantAchieveCareerGoals
LLLEnjoyLearning	1.525	.553	.645	.553	.772	.722	.493
LLLDevelopPerson	.553	.860	.553	.358	.393	.578	.633
LLLIdentifyNeed	.645	.553	1.279	.825	.788	.894	.580
LLLAwarePreferLearn	.553	.358	.825	1.541	.814	.855	.419
LLLUseDifferentResources	.772	.393	.788	.814	1.399	.911	.535
LLLUpdateSkills	.722	.578	.894	.855	.911	1.518	.736
LLLImportantAchieveCareerGoals	.493	.633	.580	.419	.535	.736	.899

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.814	5.447	6.236	.789	1.145	.092	7
Item Variances	1.289	.860	1.541	.681	1.792	.087	7
Inter-Item Covariances	.648	.358	.911	.554	2.547	.027	7
Inter-Item Correlations	.510	.311	.720	.409	2.315	.011	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LLLEnjoyLearning	35.11	27.241	.580	.387	.870
LLLDevelopPerson	34.48	29.246	.612	.583	.865
LLLIdentifyNeed	34.93	26.395	.738	.563	.848
LLLAwarePreferLearn	35.02	27.057	.592	.439	.868
LLLUseDifferentResources	35.25	26.418	.693	.536	.854
LLLUpdateSkills	34.95	25.332	.757	.602	.845
LLLImportantAchieveCareer Goals	34.46	28.552	.670	.623	.859

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
40.70	36.244	6.020	7

Scale: Lifelong learning beliefs

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excludedª	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.839	.845	5

Item Statistics

	Mean	Std. Deviation	N
LLLEnjoyLearning	5.59	1.235	246
LLLDevelopPerson	6.22	.927	246
LLLUseDifferentResources	5.45	1.183	246
LLLUpdateSkills	5.75	1.232	246
LLLImportantAchieveCareer Goals	6.24	.948	246

Inter-Item Correlation Matrix

	LLLEnjoyLearning	LLLDevelopPerson	LLLUseDifferentResources	LLLUpdateSkills	LLLImportantAchieveCareerGoals
LLLEnjoyLearning	1.000	.483	.529	.475	.421
LLLDevelopPerson	.483	1.000	.359	.506	.720
LLLUseDifferentResources	.529	.359	1.000	.625	.477
LLLUpdateSkills	.475	.506	.625	1.000	.630
LLLImportantAchieveCareerGoals	.421	.720	.477	.630	1.000

Inter-Item Covariance Matrix

	LLLEnjoyLearning	LLLDevelopPerson	LLLUseDifferentResources	LLLUpdateSkills	LLLImportantAchieveCareerGoals
LLLEnjoyLearning	1.525	.553	.772	.722	.493
LLLDevelopPerson	.553	.860	.393	.578	.633
LLLUseDifferentResources	.772	.393	1.399	.911	.535
LLLUpdateSkills	.722	.578	.911	1.518	.736
LLLImportantAchieveCareerGoals	.493	.633	.535	.736	.899

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.850	5.447	6.236	.789	1.145	.132	5
Item Variances	1.240	.860	1.525	.665	1.773	.111	5
Inter-Item Covariances	.633	.393	.911	.518	2.316	.022	5
Inter-Item Correlations	.522	.359	.720	.361	2.006	.011	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LLLEnjoyLearning	23.66	12.250	.588	.386	.824
LLLDevelopPerson	23.02	13.681	.629	.564	.813
LLLUseDifferentResources	23.80	12.234	.631	.472	.810
LLLUpdateSkills	23.50	11.443	.707	.543	.788
LLLImportantAchieveCareer Goals	23.01	13.163	.697	.620	.796

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
29.25	18.857	4.342	5

Scale: Lifelong learning attitudes

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the

procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.738	.740	2

Item Statistics

	Mean	Std. Deviation	N
LLLIdentifyNeed	5.77	1.131	246
LLLAwarePreferLearn	5.68	1.242	246

Inter-Item Correlation Matrix

	LLLIdentifyNeed	LLLAwarePrefer Learn
LLLIdentifyNeed	1.000	.587
LLLAwarePreferLearn	.587	1.000

Inter-Item Covariance Matrix

	LLLIdentifyNeed	LLLAwarePrefer Learn
LLLIdentifyNeed	1.279	.825
LLLAwarePreferLearn	.825	1.541

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.726	5.679	5.772	.093	1.016	.004	2
Item Variances	1.410	1.279	1.541	.263	1.206	.035	2
Inter-Item Covariances	.825	.825	.825	.000	1.000	.000	2
Inter-Item Correlations	.587	.587	.587	.000	1.000	.000	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LLLIdentifyNeed	5.68	1.541	.587	.345	.
LLLAwarePreferLearn	5.77	1.279	.587	.345	.

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
11.45	4.469	2.114	2

Appendix U: Histograms with normality plots

MIntCuriosity

Mean = 5.26
Std. Dev. = 1.243
N = 292

MIntEffort

Mean = 4.97
Std. Dev. = 1.281
N = 292

MTaskUnders

Mean = 6.01
Std. Dev. = .974
N = 292

MTaskUse

Mean = 5.77
Std. Dev. = 1.087
N = 292

MControlLearn

Mean = 5.67
Std. Dev. = 1.056
N = 292

MControlNonuse

Mean = 4.22
Std. Dev. = 1.588
N = 292

MControlEffort

Mean = 5.88
Std. Dev. = 1.088
N = 270

MSelfEfficacyCertain

Mean = 5.12
Std. Dev. = 1.244
N = 270

MSelfEfficacyConfident

Mean = 5.34
Std. Dev. = 1.151
N = 270

LSRehearsalReuseOver

Mean = 5.31
Std. Dev. = 1.354
N = 270

LSRehearsalReuseRemember

Mean = 5.5
Std. Dev. = 1.261
N = 270

LSElaborateRelate

Mean = 5.44
Std. Dev. = 1.214
N = 270

LSElaborateConnect

Mean = 5.36
Std. Dev. = 1.232
N = 270

LSElaborateRelateOtherUnits

Mean = 5.25
Std. Dev. = 1.286
N = 270

LSCriticalDevelopIdeas

Mean = 5.03
Std. Dev. = 1.239
N = 270

LSMetaSRAlternativeRes

Mean = 5.12
Std. Dev. = 1.375
N = 265

LSMetaSRNeedEngage

Mean = 4.94
Std. Dev. = 1.336
N = 265

LSMetaSRSetGoals

Mean = 4.83
Std. Dev. = 1.471
N = 265

527

LSMetaSRThinkIdeas

Mean = 5.17
Std. Dev. = 1.16
N = 265

LSTimeChooseLocation

Mean = 5.6
Std. Dev. = 1.356
N = 265

LSTimeFewDistractions

Mean = 5.43
Std. Dev. = 1.324
N = 265

LSEffortWorkUntilFinished

Mean = 5.12
Std. Dev. = 1.344
N = 265

529

LSHelpSeekLectTutor

Mean = 4.84
Std. Dev. = 1.683
N = 265

OSLQGoalSetGoals

Mean = 4.88
Std. Dev. = 1.552
N = 259

OSLQGoalSetSTermLTerm

Mean = 4.88
Std. Dev. = 1.552
N = 259

OSLQEvalCommunicateStudents

Mean = 4.64
Std. Dev. = 1.611
N = 259

MIntSatUnderstandAccMajor

Mean = 5.49
Std. Dev. = 1.224
N = 259

MControlLearnContentAccMajor

Mean = 5.45
Std. Dev. = 1.057
N = 259

MSelfEfficacyConfidentAccMajor

Mean = 5.34
Std. Dev. = 1.185
N = 259

LLLEnjoyLearning

Mean = 5.58
Std. Dev. = 1.231
N = 259

LLLDevelopPerson

Mean = 6.21
Std. Dev. = .939
N = 259

LLLIdentifyNeed

Mean = 5.77
Std. Dev. = 1.124
N = 259

534

LLLAwarePreferLearn

Mean = 5.67
Std. Dev. = 1.238
N = 259

LLLUseDifferentResources

Mean = 5.45
Std. Dev. = 1.171
N = 259

LLLUpdateSkills

Mean = 5.73
Std. Dev. = 1.222
N = 259

LLLImportantAchieveCareerGoals

Mean = 6.22
Std. Dev. = .96
N = 259

536

Appendix V: Shapiro-Wilk - normality tests

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
MIntCuriosity	.189	246	.000	.908	246	.000
MIntEffort	.183	246	.000	.919	246	.000
MIntSatisUnders	.189	246	.000	.905	246	.000
MTaskUseful	.214	246	.000	.907	246	.000
MTaskUnders	.244	246	.000	.829	246	.000
MTaskUse	.228	246	.000	.866	246	.000
MControlLearn	.230	246	.000	.886	246	.000
MControlEffort	.230	246	.000	.844	246	.000
MSelfEfficacyCertain	.190	246	.000	.912	246	.000
MSelfEfficacyConfident	.187	246	.000	.909	246	.000
LSRehearsalReuseOver	.171	246	.000	.903	246	.000
LSRehearsalReuseRememb er	.198	246	.000	.877	246	.000
LSElaborateRelate	.216	246	.000	.875	246	.000
LSElaborateConnect	.230	246	.000	.879	246	.000
LSElaborateRelateOtherUnit s	.199	246	.000	.911	246	.000
LSCriticalDevelopIdeas	.185	246	.000	.924	246	.000
LSMetaSRAlternativeRes	.182	246	.000	.911	246	.000
LSMetaSRNeedEngage	.181	246	.000	.929	246	.000
LSMetaSRSetGoals	.153	246	.000	.932	246	.000
LSMetaSRThinkIdeas	.193	246	.000	.917	246	.000
LSTimeChooseLocation	.215	246	.000	.863	246	.000
LSTimeFewDistractions	.192	246	.000	.891	246	.000
LSEffortWorkUntilFinished	.199	246	.000	.914	246	.000
LSHelpSeekLectTutor	.188	246	.000	.900	246	.000
OSLQGoalSetGoals	.176	246	.000	.921	246	.000
OSLQGoalSetSTermLTerm	.195	246	.000	.921	246	.000
OSLQEvalCommunicateStu dents	.200	246	.000	.921	246	.000
MIntSatUnderstandAccMajo r	.204	246	.000	.881	246	.000
MControlLearnContentAccM ajor	.231	246	.000	.892	246	.000

MSelfEfficacyConfidentAcc Major	.241	246	.000	.886	246	.000
LLLEnjoyLearning	.203	246	.000	.875	246	.000
LLLDevelopPerson	.311	246	.000	.777	246	.000
LLLIdentifyNeed	.226	246	.000	.856	246	.000
LLLAwarePreferLearn	.212	246	.000	.863	246	.000
LLLUseDifferentResources	.221	246	.000	.890	246	.000
LLLUpdateSkills	.206	246	.000	.851	246	.000
LLLImportantAchieveCareer Goals	.314	246	.000	.770	246	.000

a. Lilliefors Significance Correction

Appendix W: z-tests

Statement/Variable	n	Skewness	Std. Error	Z score	Kurtosis	Std. Error	Z score
MIntCuriosity	246	-0.68	0.155	-4.387	0.525	0.309	1.699
MIntEffort	246	-0.626	0.155	-4.039	0.432	0.309	1.398
MIntSatUnders	246	-0.377	0.155	-2.432	-0.45	0.309	-1.456
MTaskUseful	246	-0.319	0.155	-2.058	-0.488	0.309	-1.579
MTaskUnders	246	-0.703	0.155	-4.535	-0.404	0.309	-1.307
MTaskUse	246	-0.824	0.155	-5.316	0.478	0.309	1.547
MControlLearn	246	-0.46	0.155	-2.968	-0.4	0.309	-1.294
MControlEffort	246	-0.999	0.155	-6.445	1.042	0.309	3.372
MSelfEfficacyCertain	246	-0.565	0.155	-3.645	-0.054	0.309	-0.175
MselfEfficicayConfident	246	-0.499	0.155	-3.219	-0.094	0.309	-0.304
LSRehearsalReuseOver	246	-0.658	0.155	-4.245	-0.003	0.309	-0.010
LSRehearsalReuseRemember	246	-0.969	0.155	-6.252	1.06	0.309	3.430
LSElaborateRelate	246	-1.017	0.155	-6.561	1.566	0.309	5.068
LSElaborateConnect	246	-1.017	0.155	-6.561	1.302	0.309	4.214
LSElaborateRelateOtherUnits	246	-0.591	0.155	-3.813	0.147	0.309	0.476
LSCriticalDevelopIdeas	246	-0.496	0.155	-3.200	0.03	0.309	0.097
LSMetaSRAlternativeRes	246	-0.718	0.155	-4.632	0.329	0.309	1.065
LSMetaSENeedEngage	246	-0.483	0.155	-3.116	-0.14	0.309	-0.453
LSMetaSRSetGoals	246	-0.302	0.155	-1.948	-0.69	0.309	-2.233
LSMetaSRThinkIdeas	246	-0.375	0.155	-2.419	-0.263	0.309	-0.851
LSTimeChooseLocation	246	-0.78	0.155	-5.032	-0.245	0.309	-0.793
LSTimeFewDistractions	246	-0.743	0.155	-4.794	0.107	0.309	0.346
LSEffortWorkUntilFinished	246	-0.591	0.155	-3.813	-0.187	0.309	-0.605
LSHelpSeekLectTutor	246	-0.743	0.155	-4.794	-0.218	0.309	-0.706
OSLQGoalSetGoals	246	-0.609	0.155	-3.929	-0.172	0.309	-0.557
OSLQGoalSetSTermLTerm	246	-0.542	0.155	-3.497	-0.497	0.309	-1.608
OSLQEvalCommunicateStudents	246	-0.541	0.155	-3.490	-0.528	0.309	-1.709
MIntSatUnderstandAccMajor	246	-0.92	0.155	-5.935	1.374	0.309	4.447
MControlLearnContentAccMajor	246	-0.535	0.155	-3.452	0.377	0.309	1.220
MSelfEfficacyConfidentAccMajor	246	-0.772	0.155	-4.981	0.45	0.309	1.456
LLLEnjoyLearning	246	-0.922	0.155	-5.948	0.888	0.309	2.874
LLLDevelopPerson	246	-0.893	0.155	-5.761	-0.176	0.309	-0.570
LLLIdentifyNeed	246	-0.977	0.155	-6.303	1.045	0.309	3.382
LLLAwarePreferLearn	246	-0.996	0.155	-6.426	1.026	0.309	3.320
LLLUseDifferentResources	246	-0.835	0.155	-5.387	0.748	0.309	2.421
LLLUpdateSkills	246	-1.049	0.155	-6.768	1.262	0.309	4.084
LLLImportantAchieveCareerGoals	246	-1.038	0.155	-6.697	0.266	0.309	0.861

Appendix X: Mann-Whitney U – year differences

First year v. Second year

Test Statistics[a]

	Subscale MIntrinsic	Subscale MIntrinsicMajor	Subscale MTaskvalue	SubscaleMControl2	SubscaleMControlMajor2	Subscale MSELFEFF	Subscale MSELFEFF Major	Subscale Rehearsal	Subscale Elaborate	Subscale MetacogSR	Subscale Time and Environment	Subscale OSLQGoalSetting	Subscale LLLBEliefs	Subscale LLLAttitudes
Mann-Whitney U	2581.000	2850.500	3110.500	3269.000	3372.000	3252.000	3276.000	3476.000	3408.500	2899.000	3533.000	3230.000	3362.500	3504.000
Wilcoxon W	7046.000	7315.500	7575.500	7734.000	7837.000	7717.000	7741.000	7941.000	7873.500	7364.000	6459.000	7695.000	7827.500	7969.000
Z	-3.125	-2.270	-1.459	-0.965	-0.632	-1.014	-0.933	-0.304	-0.516	-2.117	-0.124	-1.079	-0.659	-0.216
Asymp. Sig. (2-tailed)	0.002	0.023	0.145	0.335	0.528	0.311	0.351	0.761	0.606	0.034	0.901	0.280	0.510	0.829

a. Grouping Variable: YearIdentifier

First year v. third year

Test Statistics[a]

	Subscale MIntrinsic	Subscale MIntrinsicMajor	Subscale MTaskvalue	SubscaleMControl2	SubscaleMControlMajor2	Subscale MSELFEFF	Subscale MSELFEFF Major	Subscale Rehearsal	Subscale Elaborate	Subscale MetacogSR	Subscale Time and Environment	Subscale OSLQGoalSetting	Subscale LLLBEliefs	Subscale LLLAttitudes
Mann-Whitney U	2877.000	2757.000	2815.000	2876.000	2650.000	2833.000	2735.500	2371.500	2745.500	2869.000	2378.500	2450.000	2488.000	2635.500
Wilcoxon W	5803.000	5683.000	5741.000	5802.000	5576.000	5759.000	5661.500	5297.500	5671.500	5795.000	5304.500	5376.000	5414.000	5561.500
Z	-0.041	-0.484	-0.271	-0.045	-0.885	-0.205	-0.565	-1.934	-0.530	-0.070	-1.908	-1.626	-1.480	-0.945
Asymp. Sig. (2-tailed)	0.967	0.628	0.786	0.964	0.376	0.838	0.572	0.053	0.596	0.944	0.056	0.104	0.139	0.344

a. Grouping Variable: YearIdentifier

Second year v. Third year

Test Statistics[a]

	Subscale MIntrinsic	Subscale MIntrinsicMajor	Subscale MTaskvalue	SubscaleMControl2	SubscaleMControlMajor2	Subscale MSELFEFF	Subscale MSELFEFF Major	Subscale Rehearsal	Subscale Elaborate	Subscale MetacogSR	Subscale Time and Environment	Subscale OSLQGoalSetting	Subscale LLLBEliefs	Subscale LLLAttitudes
Mann-Whitney U	2686.000	2745.500	3174.500	3234.500	3060.500	3197.000	3046.000	2873.000	3195.000	2900.500	3024.500	2776.500	2791.500	3184.000
Wilcoxon W	7151.000	7210.500	7639.500	7699.500	7525.500	7662.000	7511.000	7338.000	7660.000	7365.500	7489.500	7241.500	7256.500	7649.000
Z	-2.791	-2.599	-1.257	-1.076	-1.618	-1.191	-1.662	-2.217	-1.189	-2.111	-1.739	-2.508	-2.454	-1.233
Asymp. Sig. (2-tailed)	0.005	0.009	0.209	0.282	0.106	0.234	0.096	0.027	0.234	0.035	0.082	0.012	0.014	0.217

a. Grouping Variable: YearIdentifier

Appendix Y: Mann-Whitney U – residency differences

Australian citizen v. permanent resident

| Test Statistics[a] | | | | | | | | | | | | | |
	Subscale MIntrinsic	Subscale MIntrinsicMajor	Subscale MTask value	SubscaleMControl2	SubscaleMControlMajor2	Subscale MSELFEFF	Subscale MSELFEFF Major	Subscale Rehearsal	Subscale Elaborate	Subscale MetacogSR	Subscale Time and Environment	Subscale OSLQGoalSetting	Subscale LLLBEliefs	Subscale LLLAttitudes
Mann-Whitney U	301.500	279.500	234.000	239.000	238.500	322.500	320.000	432.500	393.500	228.500	354.000	221.500	291.500	271.500
Wilcoxon W	6971.500	6949.500	6904.000	6909.000	6908.500	6992.500	6990.000	7102.500	7063.500	6898.500	7024.000	6891.500	6961.500	6941.500
Z	-1.637	-1.861	-2.338	-2.314	-2.294	-1.427	-1.447	-0.285	-0.687	-2.383	-1.107	-2.460	-1.735	-1.965
Asymp. Sig. (2-tailed)	0.102	0.063	0.019	0.021	0.022	0.154	0.148	0.775	0.492	0.017	0.268	0.014	0.083	0.049

a. Grouping Variable: Residency

Australian citizen v. international student

| Test Statistics[a] | | | | | | | | | | | | | |
	Subscale MIntrinsic	Subscale MIntrinsicMajor	Subscale MTask value	SubscaleMControl2	SubscaleMControlMajor2	Subscale MSELFEFF	Subscale MSELFEFF Major	Subscale Rehearsal	Subscale Elaborate	Subscale MetacogSR	Subscale Time and Environment	Subscale OSLQGoalSetting	Subscale LLLBEliefs	Subscale LLLAttitudes
Mann-Whitney U	6841.000	6549.500	6230.000	6292.500	6302.000	6464.000	6271.000	6671.000	6888.000	6820.000	6500.500	6251.000	6178.000	6298.500
Wilcoxon W	14344.000	14052.500	12900.000	13795.500	13805.000	13967.000	13774.000	13341.000	13558.000	13490.000	14003.500	12921.000	13681.000	13801.500
Z	-0.332	-0.886	-1.500	-1.393	-1.363	-1.057	-1.420	-0.660	-0.242	-0.371	-0.988	-1.458	-1.592	-1.378
Asymp. Sig. (2-tailed)	0.740	0.376	0.134	0.164	0.173	0.291	0.156	0.509	0.809	0.711	0.323	0.145	0.111	0.168

a. Grouping Variable: Residency

Permanent v. International student

| Test Statistics[a] | | | | | | | | | | | | | |
	Subscale MIntrinsic	Subscale MIntrinsicMajor	Subscale MTask value	SubscaleMControl2	SubscaleMControlMajor2	Subscale MSELFEFF	Subscale MSELFEFF Major	Subscale Rehearsal	Subscale Elaborate	Subscale MetacogSR	Subscale Time and Environment	Subscale OSLQGoalSetting	Subscale LLLBEliefs	Subscale LLLAttitudes
Mann-Whitney U	325.500	300.500	314.500	215.500	225.500	327.000	316.000	487.000	431.000	286.000	337.000	257.000	267.500	256.500
Wilcoxon W	7828.500	7803.500	7817.500	7718.500	7728.500	7830.000	7819.000	7990.000	7934.000	7789.000	7840.000	7760.000	7770.500	7759.500
Z	-1.582	-1.822	-1.696	-2.685	-2.565	-1.578	-1.677	-0.010	-0.556	-1.963	-1.482	-2.256	-2.142	-2.274
Asymp. Sig. (2-tailed)	0.114	0.068	0.090	0.007	0.010	0.114	0.093	0.992	0.578	0.050	0.138	0.024	0.032	0.023

a. Grouping Variable: Residency

Appendix Z: Factor correlation matrix

Correlation	MIntCuriosity	MIntEffort	MIntSatisUnders	MTaskUseful	MTaskUnders	MTaskUse	MControlLearn	MControlEffort	MSelfEfficacyCertain	MSelfEfficacyConfident	LSRehearsalReuseOver	LSRehearsalReuseRemember	LSElaborateRelate	LSElaborateConnect	LSElaborateRelateOtherUnits	LSCriticalDevelopIdeas	LSMetaSRAlternativeRes	LSMetaSRNeedEngage	LSMetaSRSetGoals	LSMetaSRThinkIdeas	LSTimeChooseLocation	LSTimeFewDistractions	LSEffortWorkUntilFinished	LSHelpSeekLectTutor	OSLQGoalSetGoals	OSLQGoalSetSTermLTerm	OSLQEvalCommunicateStudents	MIntSatUnderstandAccMajor	MControlLearnContentAccMajor	MSelfEfficacyConfidentAccMajor	LLLEnjoyLearning	LLLDevelopPerson	LLLIdentifyNeed	LLLAwarePreferLearn	LLLUseDifferentResources	LLLUpdateSkills	LLLImportantAchieveCareerGoals
MIntCuriosity	1.000	0.526	0.455	0.276	0.180	0.190	0.298	0.205	0.361	0.300	0.239	0.146	0.278	0.266	0.303	0.246	0.369	0.295	0.318	0.412	0.229	0.166	0.317	0.187	0.318	0.253	0.148	0.319	0.305	0.343	0.415	0.304	0.336	0.286	0.375	0.385	0.220
MIntEffort	0.526	1.000	0.478	0.375	0.280	0.312	0.353	0.156	0.300	0.314	0.356	0.329	0.373	0.417	0.285	0.395	0.427	0.383	0.427	0.482	0.312	0.283	0.448	0.413	0.430	0.400	0.338	0.363	0.374	0.337	0.413	0.192	0.345	0.337	0.443	0.446	0.228
MIntSatisUnders	0.455	0.478	1.000	0.402	0.471	0.465	0.413	0.303	0.343	0.361	0.342	0.279	0.375	0.310	0.234	0.222	0.412	0.291	0.315	0.470	0.307	0.272	0.399	0.303	0.364	0.272	0.157	0.525	0.349	0.321	0.405	0.378	0.318	0.267	0.377	0.358	0.379
MTaskUseful	0.276	0.375	0.402	1.000	0.270	0.321	0.498	0.225	0.358	0.421	0.276	0.261	0.288	0.278	0.117	0.187	0.189	0.248	0.268	0.265	0.156	0.132	0.276	0.244	0.264	0.248	0.119	0.251	0.439	0.434	0.151	0.173	0.140	0.197	0.271	0.251	0.252
MTaskUnders	0.180	0.280	0.471	0.270	1.000	0.439	0.347	0.196	0.109	0.144	0.242	0.234	0.232	0.227	0.121	0.182	0.228	0.184	0.209	0.341	0.258	0.193	0.309	0.183	0.212	0.174	0.083	0.383	0.275	0.171	0.178	0.403	0.204	0.125	0.193	0.288	0.358
MTaskUse	0.190	0.312	0.465	0.321	0.439	1.000	0.479	0.232	0.240	0.443	0.263	0.341	0.347	0.368	0.280	0.342	0.394	0.235	0.300	0.350	0.196	0.203	0.219	0.237	0.274	0.155	0.096	0.310	0.383	0.351	0.261	0.294	0.293	0.176	0.258	0.327	0.330
MControlLearn	0.298	0.353	0.413	0.498	0.347	0.479	1.000	0.332	0.318	0.529	0.313	0.329	0.359	0.425	0.248	0.258	0.265	0.348	0.205	0.390	0.351	0.353	0.350	0.232	0.287	0.202	0.105	0.323	0.508	0.493	0.237	0.185	0.189	0.278	0.291	0.309	0.253
MControlEffort	0.205	0.156	0.303	0.225	0.196	0.232	0.332	1.000	0.491	0.450	0.157	0.160	0.173	0.132	0.120	0.165	0.182	0.127	0.101	0.232	0.163	0.136	0.198	0.062	0.110	0.152	-0.030	0.281	0.404	0.321	0.207	0.216	0.202	0.222	0.223	0.239	0.245
MSelfEfficacyCertain	0.361	0.300	0.343	0.358	0.109	0.240	0.318	0.491	1.000	0.676	0.273	0.260	0.340	0.281	0.273	0.236	0.282	0.225	0.255	0.293	0.155	0.072	0.285	0.177	0.195	0.246	0.073	0.371	0.434	0.579	0.302	0.136	0.267	0.302	0.357	0.310	0.114
MSelfEfficacyConfident	0.300	0.314	0.361	0.421	0.144	0.443	0.529	0.450	0.676	1.000	0.443	0.417	0.414	0.384	0.367	0.333	0.338	0.313	0.245	0.373	0.240	0.164	0.288	0.206	0.231	0.246	0.083	0.333	0.522	0.601	0.293	0.211	0.252	0.258	0.343	0.308	0.232
LSRehearsalReuseOver	0.239	0.356	0.342	0.276	0.242	0.263	0.313	0.157	0.273	0.443	1.000	0.777	0.566	0.482	0.360	0.425	0.411	0.424	0.332	0.382	0.340	0.308	0.336	0.321	0.368	0.295	0.141	0.259	0.432	0.312	0.308	0.234	0.269	0.323	0.458	0.404	0.286
LSRehearsalReuseRemember	0.146	0.329	0.279	0.261	0.234	0.341	0.329	0.160	0.260	0.417	0.777	1.000	0.543	0.485	0.404	0.438	0.424	0.367	0.331	0.418	0.265	0.294	0.352	0.306	0.373	0.285	0.201	0.188	0.415	0.270	0.246	0.171	0.228	0.232	0.420	0.377	0.297
LSElaborateRelate	0.278	0.373	0.375	0.288	0.232	0.347	0.359	0.173	0.340	0.414	0.566	0.543	1.000	0.679	0.515	0.447	0.509	0.408	0.345	0.415	0.310	0.355	0.406	0.398	0.402	0.322	0.279	0.288	0.452	0.369	0.300	0.232	0.382	0.421	0.469	0.419	0.276
LSElaborateConnect	0.266	0.417	0.310	0.278	0.227	0.368	0.425	0.132	0.281	0.384	0.482	0.485	0.679	1.000	0.453	0.424	0.451	0.439	0.422	0.532	0.318	0.336	0.364	0.281	0.383	0.302	0.252	0.295	0.474	0.382	0.301	0.197	0.332	0.336	0.472	0.390	0.266
LSElaborateRelateOtherUnits	0.303	0.285	0.234	0.117	0.121	0.280	0.248	0.120	0.273	0.367	0.360	0.404	0.515	0.453	1.000	0.442	0.277	0.410	0.376	0.406	0.219	0.172	0.339	0.218	0.391	0.355	0.174	0.265	0.322	0.344	0.227	0.213	0.326	0.267	0.362	0.438	0.296
LSCriticalDevelopIdeas	0.246	0.395	0.222	0.187	0.182	0.342	0.258	0.165	0.236	0.333	0.425	0.438	0.447	0.424	0.442	1.000	0.438	0.449	0.368	0.410	0.200	0.236	0.313	0.345	0.421	0.332	0.273	0.194	0.381	0.331	0.270	0.193	0.309	0.314	0.489	0.429	0.285
LSMetaSRAlternativeRes	0.369	0.427	0.412	0.189	0.228	0.394	0.265	0.182	0.282	0.338	0.411	0.424	0.509	0.451	0.277	0.438	1.000	0.439	0.363	0.425	0.366	0.371	0.359	0.342	0.266	0.258	0.271	0.330	0.393	0.292	0.355	0.187	0.300	0.327	0.475	0.337	0.162
LSMetaSRNeedEngage	0.295	0.383	0.291	0.248	0.184	0.235	0.348	0.127	0.225	0.313	0.424	0.367	0.408	0.439	0.410	0.449	0.439	1.000	0.569	0.511	0.369	0.334	0.384	0.256	0.453	0.370	0.324	0.254	0.391	0.335	0.280	0.144	0.326	0.190	0.425	0.365	0.235
LSMetaSRSetGoals	0.318	0.427	0.315	0.268	0.209	0.300	0.205	0.101	0.255	0.245	0.332	0.331	0.345	0.422	0.376	0.368	0.363	0.569	1.000	0.550	0.346	0.332	0.436	0.285	0.674	0.627	0.348	0.308	0.348	0.326	0.274	0.156	0.304	0.265	0.409	0.374	0.222
LSMetaSRThinkIdeas	0.412	0.482	0.470	0.265	0.341	0.350	0.390	0.232	0.293	0.373	0.382	0.418	0.415	0.532	0.406	0.410	0.425	0.511	0.550	1.000	0.361	0.306	0.404	0.327	0.445	0.437	0.286	0.373	0.434	0.335	0.382	0.297	0.350	0.333	0.454	0.466	0.337
LSTimeChooseLocation	0.229	0.312	0.307	0.156	0.258	0.196	0.351	0.163	0.155	0.240	0.340	0.265	0.310	0.318	0.219	0.200	0.366	0.369	0.346	0.361	1.000	0.603	0.359	0.186	0.354	0.329	0.158	0.318	0.353	0.210	0.384	0.261	0.300	0.375	0.411	0.340	0.297
LSTimeFewDistractions	0.166	0.283	0.272	0.132	0.193	0.203	0.353	0.136	0.072	0.164	0.308	0.294	0.355	0.336	0.172	0.236	0.371	0.334	0.332	0.306	0.603	1.000	0.322	0.251	0.391	0.299	0.182	0.358	0.205	0.190	0.197	0.167	0.197	0.256	0.245	0.151	0.142
LSEffortWorkUntilFinished	0.317	0.448	0.399	0.276	0.309	0.219	0.350	0.198	0.285	0.288	0.336	0.352	0.406	0.364	0.339	0.313	0.359	0.384	0.436	0.404	0.359	0.322	1.000	0.307	0.425	0.377	0.235	0.338	0.371	0.298	0.373	0.286	0.433	0.356	0.513	0.427	0.310
LSHelpSeekLectTutor	0.187	0.413	0.303	0.244	0.183	0.237	0.232	0.062	0.177	0.206	0.321	0.306	0.398	0.281	0.218	0.345	0.342	0.256	0.285	0.327	0.186	0.251	0.307	1.000	0.479	0.345	0.418	0.203	0.239	0.150	0.236	0.090	0.246	0.263	0.342	0.282	0.146
OSLQGoalSetGoals	0.318	0.430	0.364	0.264	0.212	0.274	0.287	0.110	0.195	0.231	0.368	0.373	0.402	0.383	0.391	0.421	0.266	0.453	0.674	0.445	0.354	0.391	0.425	0.479	1.000	0.701	0.347	0.213	0.334	0.278	0.311	0.196	0.263	0.260	0.371	0.389	0.249
OSLQGoalSetSTermLTerm	0.253	0.400	0.272	0.248	0.174	0.155	0.202	0.152	0.246	0.246	0.295	0.285	0.322	0.302	0.355	0.332	0.258	0.370	0.627	0.437	0.329	0.299	0.377	0.345	0.701	1.000	0.373	0.272	0.350	0.242	0.266	0.204	0.279	0.326	0.362	0.412	0.241
OSLQEvalCommunicateStudents	0.148	0.338	0.157	0.119	0.083	0.096	0.105	-0.030	0.073	0.083	0.141	0.201	0.279	0.252	0.174	0.273	0.271	0.324	0.348	0.286	0.158	0.182	0.235	0.418	0.347	0.373	1.000	0.195	0.170	0.087	0.256	0.072	0.278	0.250	0.266	0.215	0.073
MIntSatUnderstandAccMajor	0.319	0.363	0.525	0.251	0.383	0.310	0.323	0.281	0.371	0.333	0.259	0.188	0.288	0.295	0.265	0.194	0.330	0.254	0.308	0.373	0.318	0.358	0.338	0.203	0.213	0.272	0.195	1.000	0.489	0.440	0.335	0.288	0.316	0.286	0.287	0.349	0.246
MControlLearnContentAccMajor	0.305	0.374	0.349	0.439	0.275	0.383	0.508	0.404	0.434	0.522	0.432	0.415	0.452	0.474	0.322	0.381	0.393	0.391	0.348	0.434	0.353	0.205	0.371	0.239	0.334	0.350	0.170	0.489	1.000	0.648	0.299	0.317	0.324	0.428	0.427	0.449	0.368
MSelfEfficacyConfidentAccMajor	0.343	0.337	0.321	0.434	0.171	0.351	0.493	0.321	0.579	0.601	0.312	0.270	0.369	0.382	0.344	0.331	0.292	0.335	0.326	0.335	0.210	0.190	0.298	0.150	0.278	0.242	0.087	0.440	0.648	1.000	0.289	0.195	0.241	0.358	0.396	0.367	0.245
LLLEnjoyLearning	0.415	0.413	0.405	0.151	0.178	0.261	0.237	0.207	0.302	0.293	0.308	0.246	0.300	0.301	0.227	0.270	0.355	0.280	0.274	0.382	0.384	0.197	0.373	0.236	0.311	0.266	0.256	0.335	0.299	0.289	1.000	0.483	0.462	0.361	0.529	0.475	0.421
LLLDevelopPerson	0.304	0.192	0.378	0.173	0.403	0.294	0.185	0.216	0.136	0.211	0.234	0.171	0.232	0.197	0.213	0.193	0.187	0.144	0.156	0.297	0.261	0.167	0.286	0.090	0.196	0.204	0.072	0.288	0.317	0.195	0.483	1.000	0.527	0.311	0.359	0.506	0.720
LLLIdentifyNeed	0.336	0.345	0.318	0.140	0.204	0.293	0.189	0.202	0.267	0.252	0.269	0.228	0.382	0.332	0.326	0.309	0.300	0.326	0.304	0.350	0.300	0.197	0.433	0.246	0.263	0.279	0.278	0.316	0.324	0.241	0.462	0.527	1.000	0.587	0.589	0.642	0.541
LLLAwarePreferLearn	0.286	0.337	0.267	0.197	0.125	0.176	0.278	0.222	0.302	0.258	0.323	0.232	0.421	0.336	0.267	0.314	0.327	0.190	0.265	0.333	0.375	0.256	0.356	0.263	0.260	0.326	0.250	0.286	0.428	0.358	0.361	0.311	0.587	1.000	0.554	0.559	0.356
LLLUseDifferentResources	0.375	0.443	0.377	0.271	0.193	0.258	0.291	0.223	0.357	0.343	0.458	0.420	0.469	0.472	0.362	0.489	0.475	0.425	0.409	0.454	0.411	0.245	0.513	0.342	0.371	0.362	0.266	0.287	0.427	0.396	0.529	0.359	0.589	0.554	1.000	0.625	0.477
LLLUpdateSkills	0.385	0.446	0.358	0.251	0.288	0.327	0.309	0.239	0.310	0.308	0.404	0.377	0.419	0.390	0.438	0.429	0.337	0.365	0.374	0.466	0.340	0.151	0.427	0.282	0.389	0.412	0.215	0.349	0.449	0.367	0.475	0.506	0.642	0.559	0.625	1.000	0.630
LLLImportantAchieveCareerGoals	0.220	0.228	0.379	0.252	0.358	0.330	0.253	0.245	0.114	0.232	0.286	0.297	0.276	0.266	0.296	0.285	0.162	0.235	0.222	0.337	0.297	0.142	0.310	0.146	0.249	0.241	0.073	0.246	0.368	0.245	0.421	0.720	0.541	0.356	0.477	0.630	1.000

a. Determinant = 3.87E-010

Appendix AA: Monte Carlo PCA for parallel analysis output

14/03/2018   7:33:01 PM
Number of variables: 37
Number of subjects: 246
Number of replications: 100

Eigenvalue #	Random Eigenvalue	Standard Dev
1	1.8271	0.0578
2	1.7154	0.0402
3	1.6387	0.0354
4	1.5740	0.0314
5	1.5123	0.0273
6	1.4553	0.0276
7	1.4127	0.0282
8	1.3650	0.0269
9	1.3198	0.0226
10	1.2782	0.0247
11	1.2364	0.0219
12	1.2010	0.0196
13	1.1604	0.0227
14	1.1272	0.0205
15	1.0881	0.0190
16	1.0546	0.0179
17	1.0197	0.0182
18	0.9845	0.0169
19	0.9551	0.0179
20	0.9222	0.0190
21	0.8915	0.0179
22	0.9562	0.0167
23	0.8322	0.0155
24	0.7996	0.0174
25	0.7715	0.0164
26	0.7420	0.0176
27	0.7148	0.0175
28	0.6870	0.0169
29	0.6597	0.0189
30	0.6311	0.0190
31	0.6007	0.0174
32	0.5719	0.0181
33	0.5429	0.0175
34	0.5104	0.0186
35	0.4806	0.0166
36	0.4490	0.0192
37	0.4113	0.0226

14/03/2018   7:33:06 PM
Monte Carlo PCA for Parallel Analysis
Watkins, M. W. (2000). MonteCarlo PCA for parallel analysis [computer software]. State College, PA: Ed & Psych Associates

Appendix AB: PCA rotated component matrix without suppressing small coefficients

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
OSLQGoalSetGoals	**.736**	.246	.100	.072	.169
LSMetaSRSetGoals	**.730**	.218	.105	.138	.120
OSLQGoalSetSTermLTerm	**.715**	.127	.170	.127	.046
OSLQEvalCommunicateStudents	**.618**	.108	.112	-.050	-.056
MIntEffort	**.573**	.143	.211	.300	.213
LSHelpSeekLectTutor	**.518**	.260	.067	.054	.118
LSMetaSRNeedEngage	**.511**	.419	.099	.149	.123
LSMetaSRThinkIdeas	.483	.309	.243	.239	.281
LSEffortWorkUntilFinished	.439	.215	.329	.194	.217
LSRehearsalReuseRemember	.135	**.786**	.093	.110	.184
LSRehearsalReuseOver	.152	**.734**	.161	.147	.181
LSElaborateRelate	.262	**.688**	.201	.206	.118
LSElaborateConnect	.286	**.635**	.146	.207	.165
LSCriticalDevelopIdeas	.322	**.558**	.222	.142	-.009
LSElaborateRelateOtherUnits	.268	**.511**	.252	.187	-.066
LSMetaSRAlternativeRes	.344	.446	.156	.193	.215
LLLIdentifyNeed	.220	.171	**.777**	.116	.019
LLLImportantAchieveCareerGoals	-.027	.185	**.744**	.053	.342
LLLDevelopPerson	-.035	.035	**.739**	.050	.401
LLLUpdateSkills	.255	.288	**.718**	.200	.081
LLLUseDifferentResources	.338	.389	**.591**	.217	-.001
LLLEnjoyLearning	.287	.077	**.589**	.201	.138
LLLAwarePreferLearn	.245	.232	**.577**	.231	-.064
MSelfEfficacyCertain	.133	.143	.148	**.805**	-.117
MSelfEfficacyConfident	.042	.392	.086	**.742**	.081
MSelfEfficacyConfidentAccMajor	.145	.253	.138	**.737**	.052
MControlEffort	-.058	.026	.191	**.601**	.144
MControlLearnContentAccMajor	.183	.373	.216	**.556**	.244
MTaskUseful	.182	.111	-.005	**.532**	.317
MControlLearn	.120	.285	.007	**.513**	.473
MIntSatUnderstandAccMajor	.261	.000	.236	.445	.366
MIntCuriosity	.396	-.042	.324	.409	.100
MTaskUnders	.075	.062	.193	.087	**.746**
MIntSatisUnders	.292	.042	.259	.369	**.568**
MTaskUse	.043	.312	.129	.308	**.525**
LSTimeFewDistractions	.373	.304	-.014	-.022	.446
LSTimeChooseLocation	.346	.224	.245	.036	.401

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 7 iterations.

Appendix AC: PCA five-factor solution – communalities

Communalities		
	Initial	Extraction
MIntCuriosity	1.000	0.441
MIntEffort	1.000	0.529
MIntSatisUnders	1.000	0.613
MTaskUseful	1.000	0.429
MTaskUnders	1.000	0.611
MTaskUse	1.000	0.487
MControlLearn	1.000	0.582
MControlEffort	1.000	0.422
MSelfEfficacyCertain	1.000	0.722
MSelfEfficacyConfident	1.000	0.720
LSRehearsalReuseOver	1.000	0.642
LSRehearsalReuseRemember	1.000	0.691
LSElaborateRelate	1.000	0.639
LSElaborateConnect	1.000	0.577
LSElaborateRelateOtherUnits	1.000	0.436
LSCriticalDevelopIdeas	1.000	0.485
LSMetaSRAlternativeRes	1.000	0.425
LSMetaSRNeedEngage	1.000	0.484
LSMetaSRSetGoals	1.000	0.625
LSMetaSRThinkIdeas	1.000	0.524
LSTimeChooseLocation	1.000	0.392
LSTimeFewDistractions	1.000	0.432
LSEffortWorkUntilFinished	1.000	0.432
LSHelpSeekLectTutor	1.000	0.358
OSLQGoalSetGoals	1.000	0.645
OSLQGoalSetSTermLTerm	1.000	0.574
OSLQEvalCommunicateStudents	1.000	0.411
MIntSatUnderstandAccMajor	1.000	0.456
MControlLearnContentAccMajor	1.000	0.588
MSelfEfficacyConfidentAccMajor	1.000	0.650
LLLEnjoyLearning	1.000	0.494
LLLDevelopPerson	1.000	0.711
LLLIdentifyNeed	1.000	0.696
LLLAwarePreferLearn	1.000	0.504
LLLUseDifferentResources	1.000	0.661
LLLUpdateSkills	1.000	0.710
LLLImportantAchieveCareerGoals	1.000	0.708

Extraction Method: Principal Component Analysis.

Appendix AD: Factor reliability

Factor 1: Goal setting and metacognitive self-regulation

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.862	.866	9

Item Statistics

	Mean	Std. Deviation	N
OSLQGoalSetGoals	4.90	1.533	246
LSMetaSRSetGoals	4.87	1.445	246
OSLQGoalSetSTermLTerm	4.73	1.654	246
OSLQEvalCommunicateStudents	4.66	1.625	246
MIntEffort	4.99	1.279	246
LSHelpSeekLectTutor	4.89	1.660	246
LSMetaSRNeedEngage	4.95	1.333	246
LSMetaSRThinkIdeas	5.17	1.168	246
LSEffortWorkUntilFinished	5.15	1.321	246

Inter-Item Correlation Matrix

	OSLQGoalSet Goals	LSMetaSRSet Goals	OSLQGoalSet STermLTerm	OSLQEvalCo mmunicateStu dents	MIntEffort	LSHelpSeekL ectTutor	LSMetaSRNe edEngage	LSMetaSRThi nkIdeas	LSEffortWork UntilFinished
OSLQGoalSetGoals	1.000	.674	.701	.347	.430	.479	.453	.445	.425
LSMetaSRSetGoals	.674	1.000	.627	.348	.427	.285	.569	.550	.436
OSLQGoalSetSTermLTer mS	701	.627	1.000	.373	.400	.345	.370	.437	.377
OSLQEvalCommunicateS tudents	.347	.348	.373	1.000	.338	.418	.324	.286	.235
MIntEffort	.430	.427	.400	.338	1.000	.413	.383	.482	.448
LSHelpSeekLectTutor	.479	.285	.345	.418	.413	1.000	.256	.327	.307
LSMetaSRNeedEngage	.453	.569	.370	.324	.383	.256	1.000	.511	.384
LSMetaSRThinkIdeas	.445	.550	.437	.286	.482	.327	.511	1.000	.404
LSEffortWorkUntilFinishe d	.425	.436	.377	.235	.448	.307	.384	.404	1.000

Inter-Item Covariance Matrix

	OSLQGoalSet Goals	LSMetaSRSet Goals	OSLQGoalSet STermLTerm	OSLQEvalCo mmunicateStu dents	MIntEffort	LSHelpSeekL ectTutor	LSMetaSRNe edEngage	LSMetaSRThi nkIdeas	LSEffortWork UntilFinished
OSLQGoalSetGoals	2.350	1.493	1.778	.865	.844	1.218	.926	.796	.860
LSMetaSRSetGoals	1.493	2.089	1.500	.817	.790	.684	1.096	.928	.832
OSLQGoalSetSTermLTer m	1.778	1.500	2.736	1.003	.846	.947	.815	.845	.824
OSLQEvalCommunicateS tudents	.865	.817	1.003	2.641	.702	1.127	.702	.542	.504
MIntEffort	.844	.790	.846	.702	1.637	.876	.652	.720	.757
LSHelpSeekLectTutor	1.218	.684	.947	1.127	.876	2.756	.566	.634	.673
LSMetaSRNeedEngage	.926	1.096	.815	.702	.652	.566	1.777	.796	.677
LSMetaSRThinkIdeas	.796	.928	.845	.542	.720	.634	.796	1.364	.624
LSEffortWorkUntilFinishe d	.860	.832	.824	.504	.757	.673	.677	.624	1.745

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.924	4.663	5.167	.504	1.108	.028	9
Inter-Item Covariances	.868	.504	1.778	1.274	3.527	.073	9
Inter-Item Correlations	.417	.235	.701	.466	2.986	.011	9

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OSLQGoalSetGoals	39.41	61.705	.729	.640	.833
LSMetaSRSetGoals	39.45	63.244	.708	.613	.836
OSLQGoalSetSTermLTerm	39.59	61.762	.658	.556	.840
OSLQEvalCommunicateStudents	39.65	66.447	.473	.270	.860
MIntEffort	39.33	67.601	.588	.380	.848
LSHelpSeekLectTutor	39.42	65.404	.501	.358	.857
LSMetaSRNeedEngage	39.37	67.376	.569	.409	.849
LSMetaSRThinkIdeas	39.15	68.479	.609	.430	.847
LSEffortWorkUntilFinished	39.17	68.368	.527	.309	.853

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
44.32	81.613	9.034	9

Factor 2: Rehearsal and elaboration

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.862	.863	7

Item Statistics

	Mean	Std. Deviation	N
LSRehearsalReuseRemember	5.50	1.277	246
LSRehearsalReuseOver	5.32	1.363	246
LSElaborateRelate	5.49	1.177	246
LSElaborateConnect	5.38	1.232	246
LSCriticalDevelopIdeas	5.07	1.239	246
LSElaborateRelateOtherUnits	5.30	1.228	246
LSMetaSRAlternativeRes	5.17	1.340	246

Inter-Item Correlation Matrix

	LSRehearsal ReuseReme mber	LSRehearsal ReuseOver	LSElaborate Relate	LSElaborate Connect	LSCriticalDe velopIdeas	LSElaborate RelateOther Units	LSMetaSRAlt ernativeRes
LSRehearsalReuseRe member	1.000	.777	.543	.485	.438	.404	.424
LSRehearsalReuseOve r	.777	1.000	.566	.482	.425	.360	.411
LSElaborateRelate	.543	.566	1.000	.679	.447	.515	.509
LSElaborateConnect	.485	.482	.679	1.000	.424	.453	.451
LSCriticalDevelopIdeas	.438	.425	.447	.424	1.000	.442	.438
LSElaborateRelateOthe rUnits	.404	.360	.515	.453	.442	1.000	.277
LSMetaSRAlternativeR es	.424	.411	.509	.451	.438	.277	1.000

Inter-Item Covariance Matrix

	LSRehearsal ReuseReme mber	LSRehearsal ReuseOver	LSElaborate Relate	LSElaborate Connect	LSCriticalDe velopIdeas	LSElaborate RelateOther Units	LSMetaSRAlt ernativeRes
LSRehearsalReuseRe member	1.631	1.352	.816	.763	.692	.634	.725
LSRehearsalReuseOve r	1.352	1.858	.909	.810	.717	.602	.751
LSElaborateRelate	.816	.909	1.386	.985	.652	.745	.803
LSElaborateConnect	.763	.810	.985	1.518	.647	.686	.745
LSCriticalDevelopIdeas	.692	.717	.652	.647	1.534	.673	.727
LSElaborateRelateOthe rUnits	.634	.602	.745	.686	.673	1.509	.456
LSMetaSRAlternativeR es	.725	.751	.803	.745	.727	.456	1.797

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.317	5.069	5.496	.427	1.084	.025	7
Inter-Item Covariances	.757	.456	1.352	.897	2.967	.030	7
Inter-Item Correlations	.474	.277	.777	.500	2.807	.011	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LSRehearsalReuseRemember	31.72	31.417	.696	.637	.833
LSRehearsalReuseOver	31.90	30.872	.679	.637	.836
LSElaborateRelate	31.73	31.807	.740	.595	.829
LSElaborateConnect	31.84	32.224	.663	.504	.838
LSCriticalDevelopIdeas	32.15	33.263	.575	.348	.850
LSElaborateRelateOther Units	31.92	33.912	.531	.344	.856
LSMetaSRAlternativeRes	32.05	32.801	.548	.342	.855

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
37.22	43.013	6.558	7

Factor 3: Importance of learning

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the
procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.876	.879	7

Item Statistics

	Mean	Std. Deviation	N
LLLIdentifyNeed	5.77	1.131	246
LLLImportantAchieveCareer Goals	6.24	.948	246
LLLDevelopPerson	6.22	.927	246
LLLUpdateSkills	5.75	1.232	246
LLLUseDifferentResources	5.45	1.183	246
LLLEnjoyLearning	5.59	1.235	246
LLLAwarePreferLearn	5.68	1.242	246

Inter-Item Correlation Matrix

	LLLIdentifyNeed	LLLImportant AchieveCareerGoals	LLLDevelopPerson	LLLUpdateSkills	LLLUseDifferentResources	LLLEnjoyLearning	LLLAwarePreferLearn
LLLIdentifyNeed	1.000	.541	.527	.642	.589	.462	.587
LLLImportantAchieveCareerGoals	.541	1.000	.720	.630	.477	.421	.356
LLLDevelopPerson	.527	.720	1.000	.506	.359	.483	.311
LLLUpdateSkills	.642	.630	.506	1.000	.625	.475	.559
LLLUseDifferentResources	.589	.477	.359	.625	1.000	.529	.554
LLLEnjoyLearning	.462	.421	.483	.475	.529	1.000	.361
LLLAwarePreferLearn	.587	.356	.311	.559	.554	.361	1.000

Inter-Item Covariance Matrix

	LLLIdentifyNeed	LLLImportant AchieveCareerGoals	LLLDevelopPerson	LLLUpdateSkills	LLLUseDifferentResources	LLLEnjoyLearning	LLLAwarePreferLearn
LLLIdentifyNeed	1.279	.580	.553	.894	.788	.645	.825
LLLImportantAchieveCareerGoals	.580	.899	.633	.736	.535	.493	.419
LLLDevelopPerson	.553	.633	.860	.578	.393	.553	.358
LLLUpdateSkills	.894	.736	.578	1.518	.911	.722	.855
LLLUseDifferentResources	.788	.535	.393	.911	1.399	.772	.814
LLLEnjoyLearning	.645	.493	.553	.722	.772	1.525	.553
LLLAwarePreferLearn	.825	.419	.358	.855	.814	.553	1.541

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.814	5.447	6.236	.789	1.145	.092	7
Inter-Item Covariances	.648	.358	.911	.554	2.547	.027	7
Inter-Item Correlations	.510	.311	.720	.409	2.315	.011	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LLLIdentifyNeed	34.93	26.395	.738	.563	.848
LLLImportantAchieveCareerGoals	34.46	28.552	.670	.623	.859
LLLDevelopPerson	34.48	29.246	.612	.583	.865
LLLUpdateSkills	34.95	25.332	.757	.602	.845
LLLUseDifferentResources	35.25	26.418	.693	.536	.854
LLLEnjoyLearning	35.11	27.241	.580	.387	.870
LLLAwarePreferLearn	35.02	27.057	.592	.439	.868

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
40.70	36.244	6.020	7

Factor 4: Self-efficacy and control of learning beliefs

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.857	.860	9

Item Statistics

	Mean	Std. Deviation	N
MSelfEfficacyCertain	5.15	1.251	246
MSelfEfficacyConfident	5.35	1.157	246
MSelfEfficacyConfidentAccMajor	5.38	1.110	246
MControlEffort	5.89	1.075	246
MControlLearnContentAccMajor	5.48	.993	246
MTaskUseful	5.39	1.081	246
MControlLearn	5.68	1.013	246
MIntSatUnderstandAccMajor	5.53	1.173	246
MIntCuriosity	5.29	1.230	246

Inter-Item Correlation Matrix

	MSelfEfficacy Certain	MSelfEfficacy Confident	MSelfEfficacy ConfidentAcc Major	MControlEffor t	MControlLear nContentAcc Major	MTaskUseful	MControlLear n	MIntSatUnder standAccMajo r	MIntCuriosity
MSelfEfficacyCertain	1.000	.676	.579	.491	.434	.358	.318	.371	.361
MSelfEfficacyConfident	.676	1.000	.601	.450	.522	.421	.529	.333	.300
MSelfEfficacyConfidentA ccMajor	.579	.601	1.000	.321	.648	.434	.493	.440	.343
MControlEffort	.491	.450	.321	1.000	.404	.225	.332	.281	.205
MControlLearnContentAc cMajor	.434	.522	.648	.404	1.000	.439	.508	.489	.305
MTaskUseful	.358	.421	.434	.225	.439	1.000	.498	.251	.276
MControlLearn	.318	.529	.493	.332	.508	.498	1.000	.323	.298
MIntSatUnderstandAccM ajor	.371	.333	.440	.281	.489	.251	.323	1.000	.319
MIntCuriosity	.361	.300	.343	.205	.305	.276	.298	.319	1.000

Inter-Item Covariance Matrix

	MSelfEfficacy Certain	MSelfEfficacy Confident	MSelfEfficacy ConfidentAcc Major	MControlEffor t	MControlLear nContentAcc Major	MTaskUseful	MControlLear n	MIntSatUnder standAccMajo r	MIntCuriosity
MSelfEfficacyCertain	1.565	.979	.804	.661	.539	.484	.404	.544	.556
MSelfEfficacyConfident	.979	1.340	.772	.560	.600	.527	.620	.452	.427
MSelfEfficacyConfidentA ccMajor	.804	.772	1.232	.383	.714	.521	.555	.573	.468
MControlEffort	.661	.560	.383	1.156	.431	.262	.362	.354	.272
MControlLearnContentAc cMajor	.539	.600	.714	.431	.985	.472	.511	.570	.372
MTaskUseful	.484	.527	.521	.262	.472	1.170	.546	.318	.367
MControlLearn	.404	.620	.555	.362	.511	.546	1.027	.384	.372
MIntSatUnderstandAccM ajor	.544	.452	.573	.354	.570	.318	.384	1.376	.460
MIntCuriosity	.556	.427	.468	.272	.372	.367	.372	.460	1.514

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.462	5.150	5.894	.744	1.144	.049	9
Inter-Item Covariances	.505	.262	.979	.717	3.740	.023	9
Inter-Item Correlations	.405	.205	.676	.471	3.291	.014	9

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MSelfEfficacyCertain	44.00	36.249	.660	.583	.834
MSelfEfficacyConfident	43.80	36.544	.705	.596	.829
MSelfEfficacyConfidentAccMajor	43.78	36.942	.710	.577	.829
MControlEffort	43.26	40.030	.483	.318	.851
MControlLearnContentAccMajor	43.67	38.352	.685	.541	.834
MTaskUseful	43.76	39.593	.514	.329	.849
MControlLearn	43.48	39.222	.591	.449	.842
MIntSatUnderstandAccMajor	43.62	39.069	.498	.301	.851
MIntCuriosity	43.86	39.654	.425	.202	.859

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
49.15	47.756	6.911	9

Factor 5: Task value and time and study environment

Case Processing Summary

		N	%
Cases	Valid	246	100.0
	Excluded[a]	0	.0
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.715	.721	5

Item Statistics

	Mean	Std. Deviation	N
MTaskUnders	6.06	.959	246
MIntSatisUnders	5.48	1.124	246
MTaskUse	5.79	1.086	246
LSTimeFewDistractions	5.46	1.314	246
LSTimeChooseLocation	5.63	1.339	246

Inter-Item Correlation Matrix

	MTaskUnders	MIntSatisUnders	MTaskUse	LSTimeFewDistractions	LSTimeChooseLocation
MTaskUnders	1.000	.471	.439	.193	.258
MIntSatisUnders	.471	1.000	.465	.272	.307
MTaskUse	.439	.465	1.000	.203	.196
LSTimeFewDistractions	.193	.272	.203	1.000	.603
LSTimeChooseLocation	.258	.307	.196	.603	1.000

Inter-Item Covariance Matrix

	MTaskUnders	MIntSatisUnders	MTaskUse	LSTimeFewDistractions	LSTimeChooseLocation
MTaskUnders	.919	.507	.457	.243	.331
MIntSatisUnders	.507	1.263	.568	.401	.461
MTaskUse	.457	.568	1.180	.289	.285
LSTimeFewDistractions	.243	.401	.289	1.727	1.060
LSTimeChooseLocation	.331	.461	.285	1.060	1.793

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.684	5.459	6.057	.598	1.109	.061	5
Inter-Item Covariances	.460	.243	1.060	.817	4.361	.053	5
Inter-Item Correlations	.341	.193	.603	.410	3.123	.019	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MTaskUnders	22.36	12.093	.461	.294	.676
MIntSatisUnders	22.93	10.951	.521	.336	.649
MTaskUse	22.63	11.712	.430	.282	.684
LSTimeFewDistractions	22.96	10.374	.471	.374	.671
LSTimeChooseLocation	22.79	10.020	.504	.393	.656

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
28.42	16.089	4.011	5

Appendix AE: Comparison of early versus late responses

To test whether late respondents behave in a similar way to early respondents, as noted by Benke and Street (1992, p.39), an accepted practice is to "*compare early responses to later responses or first responses to responses generated from a second stimulus to the sample*". In this study the second stimulus involved responses from my reminder when I attended a subsequent lecture in each unit.

Analysis has been undertaken on the group of 58 students (late respondents), who completed the questionnaire after this repeat visit to the lecture was made: Semester 1 April 18; Semester 2 12 September.

The following tables report results of a range of tests, namely Cronbach's alpha, PCA (addressing RQ2) and non-parametric tests (addressing RQ3), to test whether there were differences between the two groups of respondents i.e., early vs. late.

Reliability – Cronbach's alpha

Scale	Cronbach's Alpha			
	Late respondents 58 students	Early respondents 188 students	Main study – Semesters 1 and 2 2016	Pintrich et al. (1991)
Motivation/Affect				
Intrinsic goal orientation	0.841	0.732	0.76	0.74
Task value	**0.540**	**0.623**	0.608	0.9
Control of learning beliefs			0.582	0.68
Control of learning beliefs 2	**0.609**	0.704	0.677	0.68
Self-efficacy for learning and performance	0.843	0.826	0.829	0.93
Learning Strategy				
Rehearsal	0.889	0.869	0.873	0.69
Elaboration	0.762	0.792	0.784	0.76
Critical thinking*				0.8
Metacognitive self-regulation	0.770	0.785	0.781	0.79
Time and study environment	**0.673**	0.772	0.752	0.76
Effort regulation*				0.69
Help-seeking*				0.52
OSLQ goal setting	0.894	0.797	0.823	
OSLQ self-evaluation*				
Lifelong Learning				
Lifelong learning	0.905	0.867	0.876	
Lifelong learning -beliefs	0.851	0.835	0.839	
Lifelong learning -attitudes	0.893	0.694	0.738	

There are issues with the Cronbach's alpha for the following scales:

(1) Late respondents (58 students): *task value; control of learning beliefs 2;* and *time and study environment*
(2) Early respondents (188 students): *task value* and *lifelong learning attitudes.*

Whilst the Cronbach's alpha noted above are below the threshold of 0.7, similarities exist in the measures between the two groups (i.e., early vs. late) in the scale *task value.* Further, measures of *time and study environment* and *lifelong learning attitudes* are closer to the threshold. All other Cronbach's alpha in both groups are robust.

1. Factor analysis

PCA were undertaken on both groups using a Varimax rotation with 5 factors. The factor analysis for the early respondents is presented first followed by the late respondents.

Rotated Component Matrix[a]

	Component 1	2	3	4	5
OSLQGoalSetGoals	0.736				
LSMetaSRSetGoals	0.697				
OSLQGoalSetSTermLTerm	0.696				
MIntEffort	0.648				
OSLQEvalCommunicateStudents	0.553				
LSHelpSeekLectTutor	0.524				
LSMetaSRNeedEngage	0.503	0.456			
LSMetaSRThinkIdeas	0.499				
MIntCuriosity	0.496				
LSEffortWorkUntilFinished	0.416				
LSRehearsalReuseRemember		0.774			
LSRehearsalReuseOver		0.730			
LSElaborateRelate		0.677			
LSElaborateConnect		0.611			
LSCriticalDevelopIdeas		0.587			
LSMetaSRAlternativeRes		0.547			
LSElaborateRelateOtherUnits		0.536			
MSelfEfficacyCertain			0.776		
MSelfEfficacyConfident			0.756		
MSelfEfficacyConfidentAccMajor			0.756		
MControlEffort			0.599		
MControlLearn			0.568		0.471
MControlLearnContentAccMajor			0.542		
MTaskUseful			0.490		
MIntSatUnderstandAccMajor			0.414		
LLLDevelopPerson				0.779	
LLLImportantAchieveCareerGoals				0.761	
LLLIdentifyNeed				0.737	
LLLUpdateSkills				0.711	
LLLUseDifferentResources		0.459		0.558	
LLLEnjoyLearning				0.552	
LLLAwarePreferLearn				0.441	
MTaskUnders					0.715
MIntSatisUnders					0.594
MTaskUse					0.497
LSTimeFewDistractions					0.455
LSTimeChooseLocation					0.383
Extraction Method: Principal Component Analysis.					

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 9 iterations.

Late respondents (58 students)

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
MIntCuriosity					.606
MIntEffort		.465	.557		
MIntSatisUnders					.606
MTaskUseful		.606			
MTaskUnders	.453				.633
MTaskUse					
MControlLearn		.478			.417
MControlEffort		.621			
MSelfEfficacyCertain		.791			
MSelfEfficacyConfident		.843			
LSRehearsalReuseOver		.574	.537		
LSRehearsalReuseRemember		.486	.482		
LSElaborateRelate			.751		
LSElaborateConnect			.626		
LSElaborateRelateOtherUnits			.564		
LSCriticalDevelopIdeas			.603	.454	
LSMetaSRAlternativeRes			.438		
LSMetaSRNeedEngage				.424	.467
LSMetaSRSetGoals				.772	
LSMetaSRThinkIdeas				.410	
LSTimeChooseLocation	.462			.427	.528
LSTimeFewDistractions				.668	
LSEffortWorkUntilFinished			.431		.430
LSHelpSeekLectTutor			.618		
OLSQGoalSetGoals			.417	.765	
OLSQGoalSetSTermLTerm				.774	
OLSQEvalCommunicateStudents				.679	
MIntSatUnderstandAccMajor					.497
MControlLearnContentAccMajor		.692			
MSelfEfficacyConfidentAccMajor		.655			.453
LLLEnjoyLearning	.631				
LLLDevelopPerson	.674				
LLLIdentifyNeed	.862				
LLLAwarePreferLearn	.829				
LLLUseDifferentResources	.609				
LLLUpdateSkills	.738				

| LLLImportantAchieveCareerGoals | .733 | | | | |

N.B. One statement in the late respondents did not load on any factors i.e., *MTaskUse.*

When comparison is made between the two PCAs, two points of difference occur:

1. The reversal of Factors 1 through 4 between the two groups; and,
2. Statements relating to *rehearsal, intrinsic goal orientation* and *time and study environment* scales load on to different factors. Specifically, the statements from *rehearsal* moved from loading with *elaboration* (early respondents) to loading with *control of learning beliefs* and *self-efficacy for learning* (late respondents); whilst statements relating to *time and study environment* (early respondents) loaded on to *goal setting and metacognitive SR* and *task value and intrinsic goal orientation* (late respondents). In addition, statements pertaining to *intrinsic goal orientation* loaded on to Factor 5 (late respondents) which load on to Factor 1 for the early respondents.

As shown in the following two tables, the Cronbach's alpha based on the new reconfigured factors for both early and late respondents are robust.

Factor/(number of statements)	Cronbach's Alpha
1. Goal setting and metacognitive self-regulation (10)	0.865
2. Rehearsal and elaboration (7)	0.865
2. Self-efficacy and control of learning beliefs (8)	0.862
4. Importance of learning (7)	0.867
5. Task value and time and study environment (5)	0.701

Emerging factor and associated Cronbach's alpha for the early respondents (188 students)

Factor/(number of statements)	Cronbach's Alpha
1. Importance of learning (7)	0.905
2. Self-efficacy, control of learning beliefs and rehearsal (9)	0.879
3. Elaboration and critical thinking (8)	0.867
4. Goal setting and metacognitive self-regulation (6)	0.858
5. Task value and intrinsic goal orientation (6)	0.817

Emerging factor and associated Cronbach's alpha for the late respondents (58 students)

3. Non-parametric analysis on the factors

With reference to the five reconfigured factors reported above, results from non-parametric analysis based on year level (RQ3) shows:

Early respondents (188 students)

Test Statistics^{a,b}

	Goal setting and metacognitive self-regulation	Rehearsal and elaboration	Importance of learning	Self-efficacy and control of learning beliefs	Task value and time and study environment
Kruskal-Wallis H	2.992	1.972	4.493	2.088	5.533
df	2	2	2	2	2
Asymp. Sig.	.224	.373	.106	.352	.063

a. Kruskal Wallis Test

b. Grouping Variable: YearIdentifier

Late respondents (58 students)

Test Statistics^{a,b}

	Importance of learning	Self efficacy control of learning beliefs and rehearsal	Elaboration and critical thinking	Goal setting and metacognitive self-regulation	Task value and intrinsic goal orientation
Kruskal-Wallis H	.478	7.660	5.061	3.857	1.839
df	2	2	2	2	2
Asymp. Sig.	.788	.022	.080	.145	.399

a.   Kruskal Wallis Test

b.   Grouping Variable: YearIdentifier

As reported, only one factor is statistically significant at the 10% level for early respondents (Factor 5, Task value and time and study environment), whilst two factors are statistically significant (Factor 2, Self efficacy, control of learning beliefs and rehearsal) and Factor 3 (Elaboration and critical thinking) at the 5 and 10 % levels respectively for the late respondents.

4. Non-parametric tests based on year level
(a) Non-parametric tests based on year level

For both early and late respondents, non-parametric statistics were computed on the scales and on each of the individual statements.

Comparison between these two groups of respondents (see the tables presented below) reveals:
   (a) Statistical differences on the scales varies amongst the two groupings: *Intrinsic goal orientation* and *intrinsic goal orientation major* are both statistically significantly different at the 5% level, whilst *LLL beliefs* is statistically significantly different at the 10% level for early respondents, whilst *task value* is statistically significant at the 10% level and *rehearsal* is statistically significant at 5 % level for late respondents.

(b) All other scales were not statistically different between the two groups.
(c) On a statement-by-statement basis, for early respondents, the following additional statement *LSMetaSRThinkIdeas* showed a statistical difference, whilst the late respondents recorded statistically significant differences on statements at the 0.05 level within the scales: *elaboration, critical thinking, help-seeking* and *OSLQ goal setting,* with significance at the 10% level for *control of learning beliefs* and *self-efficacy for learning and performance*.
(d) All other statements behaved similarly.

Early respondents (188 students)

Statistics/ Scale	Intrinsic goal orientation	Intrinsic goal orientation major	LLL beliefs
Kruskal- Wallis	10.864	8.379	5.499
Df	2	2	2
Significance level	0.004*	0.015**	0.064**

Statistics/ Statement	MintC urio	MintS atisUn dersta nd	LSMet sSRT hinkId eas	LLLEnjoy LEarn	LLLImp ortantA chieveC areerGo als
Kruskal-Wallis	7.207	17.1	7.669	6.387	4.849
Df	2	2	2	2	2
Significance level	0.027	0.000	0.022	0.041	0.089

Late respondents (58 students)

Statistics/ Scale	Subscale MTask value	Subscale Rehearsal
Kruskal-Wallis	5.622	7.793
Df	2	2
Significance level	0.060**	0.020**

Statistics/ Statement	MTas kUsef ul	MCont rolLea rn	MSelf Efficac yConfi dent	LSRehea rsalReus eOver	LSRehe arsalRe useRe member	LSEla borate Relate	LSCritic al develop ideas	LSHelp SeekLe ctTutor	OSLQG oalSet Goals
Kruskal-Wallis	6.217	5.878	5.185	5.668	9.092	7.586	6.848	7.828	7.847
Df	2	2	2	2	2	2	2	2	2
Significance level	0.045	0.053	0.075	0.059	0.011	0.023	0.033	0.02	0.02

In conclusion, whilst prima facie it was expected that no difference would exist in the results between early and late respondents, in this study as reported above, this is not the case.

Appendix AF: Confirmatory factor analysis

Rotated Component Matrix[a]

	Component							
	1	2	3	4	5	6	7	8
MIntCuriosity						0.809		
MIntEffort						0.679		
MIntSatisUnders					0.589	0.513		
MIntSatUnderstandAccMajor	0.428				0.479			
MTaskUseful								0.783
MTaskUnders					0.830			
MTaskUse					0.633			
MControlLearn								0.656
MControlEffort	0.779							
MControlLearnContentAccMajor	0.488							
MSelfEfficacyCertain	0.786							
MSelfEfficacyConfident	0.663							
MSelfEfficacyConfidentAccMajor	0.568							0.464
LSRehearsalReuseOver			0.820						OK
LSRehearsalReuseRemember			0.835						
LSElaborateRelate		0.634	0.454						OK
LSElaborateConnect		0.633						
LSElaborateRelateOtherUnits		0.697						
LSMetaSRAlternativeRes						0.431		
LSMetaSRNeedEngage				0.711					OK
LSMetaSRSetGoals				0.813				
LSMetaSRThinkIdeas				0.588				
LSTimeChooseLocation							0.794		OK
LSTimeFewDistractions							0.851	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 7 iterations.

Appendix AG: Email to student for interview

Dear Student

Firstly, thank you very much for taking the time to complete the survey instrument regarding your engagement with the learning resources for ACF1100. I really appreciate it. I am also very grateful that you have agreed to participate in the next stage of the research project, that is, a one-on-one interview. To that end, I am available to meet with you anytime between 1 p.m. and 5 p.m. on the following days:

Wednesday May 17
Friday May 19
Monday May 22
Friday May 26
Monday May 29
Tuesday May 30, and
Friday June 2.

Please let me know what day and time would suit you. If however, the above times are not suitable, I would be happy for you to contact me via return email (lorena.mitrione@monash.edu) so that we can work out a more suitable time.

I look forward to hearing from you.

Kind regards

Lorena

Appendix AH: Interviews held by year level
Semester 1, 2016 students

Student de-identified code	Accounting unit	File name	Time in minutes
First year (8)			
IM01	ACF1100	ACF1100 701_0083	7.51
IM02	ACF1100	ACF1100 701_0071	6.54
IM03	ACF1100	ACF1100 701_0068	4.51
IM04	ACF1100	ACF1100 160523_0025	6.48
IM05	ACF1100	ACF1100 160524_0026	9.02
IM06	ACF1100	ACF1100 160526_0032	5.17
IM07	ACF1100	ACF1100 160530_0036	4.23
IM08	ACF1100	ACF1100 701_0067	5.47
Second year (10)			
IM09	ACF2200	ACF2200 701_0074	5.49
IM10	ACF2200/ACF3100	ACF2200 ACF3100 160526_0030	8.29
IM11	ACF2100/ACF2200	ACF2100 ACF2200 701_0064	13.52
IM12	ACF2200	ACF2200 701_0075	6.55
IM13	ACF2200	ACF2200 701_0081	4.58
IM14	ACF2200/ACF2100	ACF2100 ACF2200 160906_0048 ****(notes)	11.52
IM15	ACF2100/ACF2200	ACF2100 ACF2200 701_0078	5.09
IM16	ACF2100/ACF2200	ACF2100 ACF2200 701_0061 701_0062 701_0063	17.23
IM17	ACF2100/ACF2200	ACF2100 ACF2200 701_0060	6.05
IM18	ACF2100/ACF3200	ACF2100 ACF3200 701_0084	4.08
Third year (9)			
IM19	ACF3100	ACF3100 160601_0040	7.34
IM20	ACF3200	ACF3200 701_0079	9
IM21	ACF3200	ACF 3200 701_0077	8.5
IM22	ACF3200	ACF3200 701_0069	10.52
IM23	ACF3100/ACF3200	ACF3100 ACF3200 701_0073	9.41
IM24	ACF3100	ACF3100 701_0086	10.19
IM25	ACF3200	ACF3200 701_0087	8.37
IM26	ACF3200	ACF3200 701_0082	6.23
IM27	ACF3200	ACF3200 701_0085	9.15

27 interviews

Semester 2, 2016 students

Student de-Identified code	Accounting unit	File name	Time in minutes
First year (2)			
IM28	ACF1100	ACF1100 701_0089	5.52
IM29	ACF1100	ACF1100 701_0090 701_0091	9.34
Second year (8)			
IM30	ACF2100	ACF 2100 701_0105	4.52
IM31	ACF2100	ACF2100 161005_0054	12.16
IM32	ACF2100	ACF2100 701_0088	7
IM33	ACF2100	ACF2100 701_0093	8.40
IM34	ACF2100/ACF2200	ACF2100 ACF2200 701_0098	5.23
IM35	ACF2100	ACF2100 701_0099	7.36
IM36	ACF2100	ACF2100 161031_0062	5.59
IM37	ACF2200	ACF2200 701_0103 701_0104	6.09
Third year (5)			
IM38	ACF3100	ACF3100 161005_0056	6.39
IM39	ACF3100/ACF3200	ACF3100 ACF3200 161011_0057	4.43
IM40	ACF3100	ACF3100 701_0097	9.24
IM41	ACF3200	ACF3200 701_0100	8.51
IM42	ACF3100/ACF3200	ACF3100 ACF3200 701_0102	7.34

15 students

Blue highlighted codes are students who have been interviewed going from a first year unit to a second year unit; and from a second year unit to a third year unit.

Student IM10 and IM18 were enrolled in a second and third year unit concurrently (the third year unit is highlighted in yellow).