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A Digital Moral Framework for Australian Secondary Schools

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Abstract

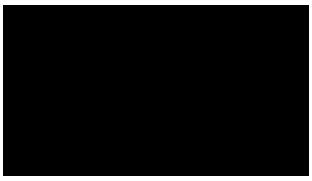
This study investigated how the moral domains of moral reasoning, moral emotion and moral behaviour mediated the use of information and communication technologies (ICTs) by a small group of secondary school students aged 15-16 years old. Eight students, six parents and six teachers participated in the study. The study took place in an independent secondary school in the outer suburbs of Melbourne, Victoria. The researcher worked with the student and teacher participants for four years. Additionally, teachers delivered classroom activities to foster moral values and abilities to 79 students. The study's main aim was to provide further understanding of adolescents' moral development, taking into consideration the relationship between morality, ICTs and pedagogy. The first outcome of the study is a Digital Moral Framework (DMF) that parents and teachers can use to foster moral practices and address moral challenges faced by secondary school students while using ICTs. The DMF outlines some moral values and abilities that can mediate the use of ICTs. The second outcome is the Cyber Values Systems model (CVS) that can be used to analyse and understand the role of values in the use of ICTs by young people.

ICTs have been greeted with enthusiasm in education; however, unethical practices in the use of ICTs by secondary school students are challenging society and educational institutions to understand the moral values and abilities that can mediate the moral domains, the moral challenges students face while using ICTs and how they can respond to these challenges. The purpose of this understanding is to provide a moral framework that parents and teachers can use to foster moral practices and address moral challenges faced by secondary school students. To fill this gap, the study employed action research methods. The data were generated through interviews with students and parents, teacher and student focus groups, classroom observations and artefacts (student worksheets). The researcher worked alongside teachers to develop and deliver educational content designed to help address moral issues associated with the use of ICTs by secondary school students. Student and parent interviews, and student and teacher focus groups provided an insight into the moral values and abilities that mediated the moral domains of the secondary school students who participated in the study.

The findings from this study suggest that some students showed moral reasoning with respect to their own moral values and emotions, and could critically assess inappropriate values and emotions with respect to their own uses of ICTs and that of their peers. Some students also showed moral agency when confronted with moral challenges. Inappropriate reasoning, emotions and behaviours were also identified, suggesting the need to address these. The processes of positive feedback, negative feedback and circularity played a role in both supporting and undermining the moral domains. The findings also suggest that parental involvement, students' own experiences and moral responses while using ICTs, and positive peer pressure were most important in fostering the moral use of ICTs in student participants.

Declaration

This thesis 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.

Signature: 

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Chapter One: Introduction

1.1 A teacher's journey

I have been teaching Information and Communication Technologies (ICTs) in secondary schools in Australia for 16 years. As a part of my duties, I help write the ICT Acceptable Use Policy (AUP) for students and teachers in the school I teach at, and I also deliver seminars to parents on cyber safety. On a regular basis I am also required to have conversations with students who violate the AUP and some instances, discipline students. In many instances, when seeking to address misconduct associated with students' uses of ICTs, I have conversations with them about their values and motivations. Through these interactions, I came to understand some of the moral challenges that students face while using ICTs. I could see that the use of ICTs by young people was not only beneficial, but could also be problematic and even detrimental, particularly in terms of their social engagement with others, their wellbeing and their moral development. Concerns about the ethical use of ICTs by young people have been expressed by range of commentators - journalists, ideologues, politicians and educators - but have received less attention from scholars (Davis et al., 2010). Researchers and theorists suggest that ongoing research is needed to develop theories and models of adolescents' moral development that consider the relationship between morality, technology and pedagogy (Jefferies, Carsten-Stahl, & McRobb, 2007; Lau & Yuen, 2014). Moral experiences and abilities gained in adolescence form the foundation of adult moral character, agency and sense of responsibility toward community and society (Paciello et al., 2017). Because of this, there is the need to understand how moral identity and moral agency (making moral judgments and the capacity to act with reference to moral judgements) are formed while using ICTs. Moral identity refers to the degree to which being a moral person is important to an individual's identity, and can motivate more prosocial interactions with others (Narvaez & Bock, 2014; Wang, Yang, Yang, Wang, & Le, 2017). My initial research interest in this area developed through my educational interactions with students in the situations I've described above. From these beginnings and on through my early investigations as a teacher I concluded that further understanding was needed in four areas:

1. The moral values and abilities that underpin moral practices, and allow young people to respond to moral challenges while using ICTs.
2. The values that drive anti-social behaviours while using ICTs.
3. The influence of ICTs on the morality of young people.
4. How parents and teachers could help support students with respect to their moral uses of ICTs.

1.2 Challenges

While ICTs have been greeted with enthusiasm for learning (Amiel & Reeves, 2008; Areepattamannil & Khine, 2017; Winter & Vie, 2008), increased opportunities for socialisation and communication (Areepattamannil & Khine, 2017; Davis et al., 2010), creativity (Buckingham, 2007; Davis et al., 2010; Pacey, 1983) and expression (Clarke, 2006; Davis et al., 2010; Livingstone, 2009; Winter & Vie, 2008), moral challenges are also associated with the uses of ICTs. The development of ICTs has not only brought enormous benefits and opportunities but also greatly outpaced our understanding of their social and moral implications (Floridi, 2010a). Some computer ethicists argue that ICTs develop quickly, but ethical responses move more slowly (Parker, 2007; Taherdoost, Sahibuddin, Namayandeh, & Jalaliyoon, 2011). More often, society focuses on the economic benefits of ICTs (Eivy, 2017; Greenwood, Burtch, & Carnahan, 2017), but pays less attention to the ethical or social costs (Brey, 2000; Feenberg, 2002; Kushlev & Proulx, 2016; McGinn, 1997; Winner, 1997). Floridi (2010a) maintains that the almost sudden appearance of a global information society has generated new and disruptive challenges, that were largely unforeseeable only a few decades ago. With respect to the use of ICTs by young people, their unethical practices are challenging educational institutions to formulate policies and educational content to address these challenges (Garland, 2010; Jenkins, Purushotma, Clinton, Weigel, & Robinson, 2009; Livingstone, 2009; Topsfield, 2010). David et al. (2010) maintain that further research is needed to understand how the use of ICTs by young people facilitates or detracts from the development of healthy, autonomous and socially responsible identities. Additionally, the participatory culture enabled by ICTs is

reworking the rules by which school, cultural expression and civic life operate (Davis et al., 2010; Jenkins et al., 2009). Despite much interest shown by national and state governments with respect to values education in Australia (Brownlee, Johansson, Walker, Scholes, & Cobb-Moore, 2017), research is at a beginning stage with respect to understanding the role of moral values and abilities in the use of ICTs by young people.

My experience as a teacher, and a range of research suggests that secondary school students face two fundamental moral challenges when using ICTs: 1) challenges associated with their own attitudes and anti-social behaviours, such as how their actions can undermine their own identities, and the identities and wellbeing of their peers (Areepattamannil & Khine, 2017; Barlett, 2017; Blair, Claster, & Claster, 2015; Davis et al., 2010; Livingstone & Smith, 2014; Lopes & Yu, 2017; Sari, 2016), and 2) the influence of certain characteristic of ICTs (anonymity, instrumentality and the diffusion of responsibility) on their wellbeing and moral disengagement (Bats, Valkenburg, & Verbeek, 2013; boyd, 2014; Chen, 2017; Davis et al., 2010; Flores & James, 2013; Li et al., 2017; Livingstone & Smith, 2014; Marett, George, Lewis, Gupta, & Giordano, 2017; Runions & Bak, 2015). Opportunities for moral challenges abound (Davis et al., 2010), and these require a moral response on the part of young people, often with the assistance of adult guidance. As a teacher, I have seen many examples of moral agency on the part of students, but also misuses of ICTs. At times, both practices were evident by the same students. Malicious attempts to damage the reputation of peers, inappropriate responses and profiles on social media, and a lack of awareness of the influence of ICTs on their behaviours, these are some of the challenges that both parents and teachers are required to regularly deal with in their care of young people (Garland, 2010; Jenkins et al., 2009; Livingstone, 2009; Topsfield, 2010). Against this backdrop, it is becoming more important to understand the ethics of adolescents, so that educators can take appropriate measures to help young people with these challenges (Davis et al., 2010; Lau & Yuen, 2014). ICT-related behavioural and motivational characteristics are under-researched. Such an examination is warranted to identify the critical ICT-related behavioural and motivational characteristics that are crucial for early adolescents' healthy psychosocial development in the digital era (Areepattamannil & Khine, 2017). Additionally, less is known about how young

people conceive moral responsibilities with respect to their uses of ICTs (Davis et al., 2010).

1.3 Tensions

In the literature and in my experience in schools and conversations with parents and teachers, clear tensions associated with the role of ICTs in the lives of young people emerge. There are tensions between enthusiasm for the opportunities provided by ICTs and the desire to restrict youth practices for the sake of protecting the wellbeing of young people. The potentials and perils of ICTs are reflected in opposing discourses described as ‘digital faith’ and ‘moral panic’ (Davis et al., 2010). I have seen some parents and teachers approaching unethical practices with the attitude of either ‘putting up with it’ or responding with a ‘knee jerk’ reaction to the ‘evils’ of technology. Researchers have pointed out the enthusiasm shown by educators, parents and the media (Blair et al., 2015; Buckingham, 2007; Livingstone, 2009; Pacey, 1983), but also question calls by some to restrict ICTs out of concerns for their risk to the social development of vulnerable youth (Bromley, 1997; Clarke, 2006; Livingstone, 2009; Lowe, 2012; Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2011; Topsfield, 2010). Media panics tend to construct most youth activity as risky and ignore the positive ways teens interact online (Narvaez & Bock, 2014; Vickery, 2012). The reality is that the use of ICTs is rich with promises and risks, both of which carry moral consequences (Davis et al., 2010). boyd (2014) maintains that these polarising views of technology can push the discussion of youth engagement with ICTs to an extreme binary. These extremes obscure the reality of teen practices. Risk is not a reason to dismiss young people’s ability to use ICTs morally and responsibly (boyd, 2014; Vickery, 2012). It is my experience that although some students behave inappropriately at times, they also demonstrate moral agency with respect to their uses, such as standing up to cyberbullies and supporting their peers. I have also seen some of the brightest and most community-minded students hack teacher and student login credentials, but when asked why, they often seemed unsure and/or regretful. I concluded that most young people aspire to follow moral values and practices, but while using ICTs these values did not always actuate. Teacher colleagues have often commented to me that they were surprised that such

a ‘nice student’ would do inappropriate things while using ICTs. In life, things are always more complex because individuals can be both moral and immoral (Colby & Damon, 2015).

1.4 New opportunities for learning

Because young people can be both moral and immoral in their use of ICTs, as a teacher I came to the conclusion that opportunities for learning are rich. A large body of literature suggests that moral values have an important role in defining and acquiring new media literacies (Beycioglu, 2009; boyd, 2014; Davis et al., 2010; Feenberg, 2002; Gotterbarn, 1992; Jenkins et al., 2009; Jocson, 2015; Jung, 2009; Kuzu, 2009; Livingstone, 2009; Tatone, 2016). Having concluded that young people’s uses were potentially both moral and immoral, I decided that an investigation of these phenomena was needed. I found that the literature provided much insight, however, it did not provide a comprehensive view of morality, technology and pedagogy with respect to secondary school students’ use of ICTs. To my knowledge, no comprehensive moral framework exists for teachers or parents to discuss and foster moral practices in the use of ICTs by secondary school students. Additionally, no model exists that could be used to analyse the moral issues associated with young people’s ICT uses.

David et al.’s (2010) moral analysis, which informed this study, focused on cognitive and moral development, peer cultures, and support from adults and curricula; however, their findings were linked mostly to adult practices. Most studies of ethical intentions have focused on undergraduate university students examining issues of property, accuracy, privacy and accessibility in order to determine ethical perceptions and possible solutions (Akbulut et al., 2008; Akcay, 2008; Beycioglu, 2009; Davis et al., 2010; Fuller et al., 2009; Jung, 2009; Mason, 1986; Masrom, Ismail, & Hussein, 2009). Some studies have investigated the role of ICTs in the lives of secondary school students, including investigations into their cultural and social roles (Blair et al., 2015; boyd, 2014; Bulfin, Johnson, & Bigum, 2015; Davis et al., 2010; Ito et al., 2010; Jenkins, 2008; Livingstone, 2009), models for analysis

(Alessi, 2008; Davis et al., 2010), the effects of new media on child psychology (Alessi, 2008; McKenna & Bargh, 2000; Mishna et al., 2011), cyberbullying, video games and aggressive behaviour, online gaming, sexuality (Blair et al., 2015; Lopes & Yu, 2017) and the role of ICTs in learning (Alvarez, Alarcon, & Nussbaum, 2011; Bulfin et al., 2015; Garland, 2010; Jenkins, 2008; Lin, Chen, & Chai, 2015; Livingstone, 2009; Paraskeva, Mysirlakia, & Papagiannia, 2010; Reynolds & Caperton, 2011; Roschelle, Rafanan, Estrella, Nussbaum, & Claro, 2010; Selwyn, Bulfin, & Johnson, 2018; Wong, Boticki, Sun, & Looi, 2011; Wrzesien & Rayaa, 2010; Xie & Sharma, 2011). What is largely missing is an attempt to fuse the different strands of morality, ICTs, and pedagogy in order to achieve a coherent understanding of their mutual influences (Jefferies et al., 2007; Lau & Yuen, 2014). This attempt at fusion and coherent understanding is particularly true with respect to the moral or immoral uses of ICTs by secondary school students.

When I began teaching ICTs, the way secondary schools attempted to address misuses and risks associated with the use of ICTs was to create policies that 'controlled' young people's use by restricting ICTs through electronic means such as proxies (servers that filter internet content). Currently, with open access to Wi-Fi in most schools in Australia and the use of personal Wi-Fis, computer-based restrictions can only be achieved in a very limited way. ICTs are ubiquitous and provide young people with open 24/7 access to any content and expressions (Heesen, 2012; Nguyen, 2016; Weckert, 2000), and young people are in the 'driver's seat' (Benkler, 2008; boyd, 2014; Symons, Ponnet, Walrave, & Heirman, 2017; Weckert; Wellman, Quan-Haase, Boase, & Chen, 2003). Because young people manage their own uses of ICTs, the individual plays the most significant role in determining moral practices (Amiel & Reeves, 2008; Crain, 1985; Feenberg, 2002; Heylighen & Joslyn, 2001; Pierce & Henry, 1996). I maintain that when seeking to address moral issues associated with the use of ICTs, the focus needs to be the individual. This requires fostering moral values, self-reflection, self-regulation, critical evaluations of the use of ICTs and moral agency as opposed to the reactive approach that focuses on imposing policies and controls on the individuals. Tensions between various approaches to cope with unethical uses of ICTs in schools are difficult to resolve unless schools can define the important moral values and abilities

that students need to have while using ICTs. Additionally, defining a moral vision can help take into account and accommodate competing values, that on the surface, appear to be in competition (Feenberg, 2002). As a society, we have not yet fully defined the moral values that should drive technological practices (Amiel & Reeves, 2008; Ito et al., 2010; Jenkins et al., 2009; Van Den Hoven, Vermaas, & Poel, 2015).

Some scholars studying the role of morality in young people's uses of ICTs question whether on their own, young people can develop the moral values and abilities needed to cope with complex and diverse online social environments (boyd, 2014; Jenkins et al., 2009; Lau & Yuen, 2014). Since young people generally know more about the new media environment than most adults do, we must be cautious about constructing teens as natural experts of technology, because this assumes that young people naturally know what to do and are able acquire the abilities to participate affectively in the new digital cultures on their own (Jenkins et al., 2009; Vickery, 2012). For those who advocate a laissez-faire approach, Jenkins et al. (2009), argue that there are number of issues to consider. First, this view assumes that young people actively reflect on their media experiences and can thus articulate what they learn from their participation. Second, it expects that they can develop on their own an ethical framework to guide their participation. Academics studying the role of new media suggest that parents and educators need to provide support for young people facing moral challenges while using ICTs (Davis et al., 2010; Lau & Yuen, 2014).

The literature about youth cyber safety is quite extant (Edwards et al., 2016; Kritzinger, 2017; Mark, 2014). Cyber-Safety programs are the main proactive intervention directed to youth with respect to their uses of ICTs (Brady, 2011). I observed some school-based cyber-safety programs provided by external providers at my school, and concluded that although issues of cyber safety were discussed, the underlying issue of the values that drive problems associated with young people's uses of ICTs was not really addressed. Costabile and Spears' (2012) review of cyber safety and digital citizenship initiatives, noted that cyber safety skills to participate online are not enough. ICT users need to have personal values that underpin digital citizenship. Braunstein (2014) maintains that the goal of digital citizenship is to encourage virtuous online behaviour. She argues that in order for

schools to establish curricula to educate young people about digital citizenship, a working model of values that define digital citizenship and how to instil these values is needed. In this study, the view that much is still unknown about the workings of moral choice and commitment makes efforts to understand moral choice and commitment worthwhile (Colby & Damon, 2015). The main contribution of the current study is to start closing the gap in our understanding of the relationship between ICTs, pedagogy and morality for the purpose of providing some pedagogical tools that can be used to foster the moral use of ICTs in secondary school students. In the following section, the research objectives of this study are outlined.

1.5 Research objectives

This research has three research objectives. The first objective is to understand the moral values and abilities that mediated the moral reasoning, moral emotions and moral behaviours (referred to the moral domains in this study) of a small group of secondary school students while using ICTs. The second objective is to understand the moral challenges these students faced and how they responded to these challenges. Since moral and immoral values mediate the use of ICTs, these need to be considered when seeking to understand how to address challenges associated with the use of ICTs by secondary school students. As part of this study, a model was formulated to critically assess and understand the reciprocal influence of values on ICTs and the influence of ICTs on values. The development of the model helped, in part, to answer the second research question (see below) by providing some understanding of the values and behaviours that undermine moral reasoning, moral emotion and moral behaviour. Understanding of the moral challenges that students may face while using ICTs and appropriate responses they can take may be important for teaching and learning. The third objective is to understand how to foster the moral values and abilities that mediate the moral domains. The purpose of this understanding is to provide a moral framework that parents and teachers can use to foster moral practices and address moral challenges faced by secondary school students.

A moral framework can serve as a proactive means of fostering morality and as a preventive measure for addressing potential or existing concerns associated with the use of ICTs by young people. The moral framework and analysis that comes out of this study will help address the ongoing capacity of school communities to respond to new and emerging moral issues. This work can also support existing cyber-safety programs by drawing on the motivating power of moral values and abilities. The study pursued the following research questions to achieve these aims:

1. How do moral reasoning, moral emotion and moral behaviour mediate secondary school students uses of Information and Communication Technologies (ICTs)?
2. What are the moral challenges that students face while using ICTs and how they responded to these challenges?
3. How to foster the moral values and abilities that mediate the moral domains of students?

In the following section, an outline of the content of each chapter is presented. Part One covers the literature review of theory and research, Part Two the methodology and Part Three the analysis and discussion.

1.6 Organisation of the thesis

The purpose of the Chapter Two research literature review is to draw on the literature to formulate a preliminary moral framework of values and abilities that could potentially underpin the moral reasoning, moral emotion and moral behaviour (the moral domains), and to gain some knowledge of how these values and abilities can be fostered. The synthesis of the information and research represents the first iteration of the Digital Moral Framework (DMF) which was used by teachers to design and deliver classroom activities to discuss with students moral issues associated with the use of ICTs. To develop this first iteration a review of the literature in moral and developmental psychology, moral philosophy, moral education, computer ethics and the Australian and Victorian curriculum frameworks was undertaken. This review also provided some of the questions asked of

participants and themes for the data analysis. Although the literature covered in Chapter Two lists moral values and abilities associated with each of the moral domains, gaps in the literature are identified with respect to how moral values and abilities mediate the use of ICTs by secondary school students and how they can be fostered.

The purpose of Chapter Three's theoretical literature review is to understand the moral challenges associated with the use of ICTs, namely, the reciprocal influence of immoral values on the use ICTs and the immoral influence of ICTs on secondary school students' values. The first part of this review covers conceptualisations of the influence of the social sphere on ICTs and the influence of ICTs on the social sphere. These influences are referred to in this study as sociotechnical phenomena, and cover some technical mediation theories, the cultural perspectives of technology and computer ethics. Understanding sociotechnical phenomena is important for this study because how sociotechnical phenomena are viewed influences the judgements made about the social and moral implications of ICTs (Feenberg, 2002, 2012b; Floridi, 2010a; Introna, 2011; Vickery, 2012), the pedagogical approaches that are used in fostering the moral use of ICTs (Bozkurt, 2017; Bromley, 1997; Lau & Yuen, 2014) and policies that are developed to guide and transform their uses (Bromley, 1997; Feenberg, 2002, 2012a; Heidegger, 1997; Introna, 2011; Latour, 1994; Parker, 2007). The second part of Chapter Three covers the cybernetic modelling processes of positive feedback, negative feedback and circularity, as these can be used for analysing and modelling interactions between the social sphere and technology. The third part of Chapter Three presents the first iteration of the Cyber Values Systems (CVS) model, that I synthesised from this literature review. The CVS model serves as a means to conceptualise the reciprocal influence of human values on ICTs and the influence of ICTs on human values. In the final section of Chapter Three, moral and immoral influences associated with the use of ICTs as identified in the technical mediation, new media and computer ethics literature are reviewed. This review also provided some of the questions asked of participants and themes for the data analysis and discussion.

Chapter Four outlines the ontology, epistemology and methodological paradigms that form the basis for this study. The ontological positioning is critical, transformative

and holistic. The epistemology is based on a cybernetics approach to knowing, in that a system is greater than the sum of its parts and that a system constructs its own understanding (constructivism). This study employed action research methods. One of the primary aims for using action research in education is to improve teaching and learning (Bauer, Himpsl-Gutermann, Sankof, & Szucsich, 2017). Underlying this method is the view that educational research should aim to understand challenges faced by educators with respect to student practices (Baskervillea & Pries-Hejeb, 1999; Dick, 1997; O'Toole & Beckett, 2010), and develop and deliver educational content that can help to address these challenges (Baskervillea & Pries-Hejeb, 1999; Bauer et al., 2017) in order to change how teachers or students do things (Carter & Little, 2007; Dick, 1997). In this study, teachers and the researcher worked together to achieve these aims. The action research cycle involved the following six tasks, which were iterated three times in this study: (a) the action planning, (b) the diagnosis, (c) the action, (d) the observation and documentation of the action, (e) the reflection and evaluation of the data collected, and (f) the documentation and replanning tasks. Chapter four also outlines the role of theory in this study. The view adopted in this study is that social research can lead to the creation of theories (ie DMF and CVS models) that are explored in a study to produce greater generalizability of a phenomenon (Packer, 2011; Ryan, 2010). The sources of data were both ethnographic and phenomenological, as I sought to explore the meaning (values) participants ascribed to actions, events, and descriptions of their lived experiences while using ICTs. The study used four data collection methods: individual interviews, focus groups, observations and artefacts (student worksheets). The data analysis relied on deductive and inductive methods to generate the themes and the findings.

Chapter Five discusses the findings with respect to the moral values and abilities that mediated the use of ICTs by the student participants. Additionally, the findings in relation to how these values and abilities can be fostered are discussed. The Digital Moral Framework synthesised in Chapter Two is used in the data analysis undertaken in this chapter. These findings help to answer in part, the first and third research questions.

Chapter Six presents the findings with respect to the reciprocal influence of immoral values on the use of ICTs and the immoral influence of ICTs on secondary school students' values. This helps, in part, answer the second and third research questions by providing some understanding of the values and behaviours that undermine and support moral reasoning, moral emotion and moral behaviour. This knowledge is important for teaching and learning with respect to fostering the moral domains. The knowledge generated in this chapter can also provide teachers with an understanding of the moral challenges that students may face while using ICTs and how to help students respond to these challenges. This knowledge can form part of the critical discussions that secondary school students need to have with respect to the moral and immoral uses of ICTs.

Chapters Seven and Eight represent the final analysis of the findings with regard to the three iterations of the action research cycle. Chapter Seven discusses the third iteration of the Digital Moral Framework developed to answer the research questions. This discussion also includes a further analysis of the findings from chapters five and six, and data from all three iterations that were not previously analysed, such as what was learnt from a teaching and learning perspective through observations of the classroom activities, and the feedback provided by teachers after these activities. Additionally, as part of the third iteration, feedback was sought in 2017 from participants on the findings in Chapters Five and Six. This feedback came from two focus group sessions with three students that took part in the original 2014 interviews and two teacher focus groups composed of five teachers who worked with me throughout this study from 2013 to 2017.

Chapter Eight discusses what was learnt through the three iterations of this action research study with respect to the Cyber Values Systems (CVS) model. This model helps, in part, answer the research questions by analysing the findings with respect to the reciprocal influence that human values have on ICTs and that ICTs have on human values. The CVS model draws on the cybernetic modelling processes of negative feedback, positive feedback and circularity to understand and explain the role that values played in moral reasoning, moral emotion and moral behaviour with respect to the use of ICTs. The findings suggest that these processes both support, and undermine the moral domains while using ICTs. The knowledge generated in

this chapter indicates the importance of some moral values and provides an understanding of the moral identity and moral agency that students demonstrated. This account is also important for teaching and learning when seeking to foster the moral domains because it provides an understanding of the moral challenges that students may experience and how students responded to these challenges.

The conclusion chapter (Chapter Nine) aims to show how the study extends understanding in three areas. First, it enhances understanding of the moral values and abilities that mediated the moral domains of a small group of secondary school students' uses of ICTs. Second, it contributes to understanding the moral challenges the students faced and the moral identity and agency some appeared to demonstrate with respect to these challenges. Third, it provides an understanding of how to foster the moral values and abilities that mediated the moral domains.

PART 1 - THEORY AND RESEARCH

Chapter Two: The moral domains and ICTs

This study employed the iterative action research methodology of introducing an educational innovation (the Digital Moral Framework and the Cyber Values Systems model) to discuss and foster morality in the use of ICTs by students and reflect on successes and improvements related to the innovation. Values education in a general sense incorporates aspects of the cognitive, affective and behavioural domains (the moral domains) of psychological functioning and development. An adequate account of morality must account for how the moral domains connect and interact with each other (Berkowitz & Bier, 2014; Berkowitz et al., 2002; Colby & Damon, 2015). To investigate the role of values in the use of ICTs with respect to these moral domains, a review of the literature on moral and developmental psychology, moral philosophy, computer ethics, new media and Australian and Victorian curriculum frameworks was undertaken. The Australian Curriculum and the Victorian Curriculum were also included in this review because these are government mandated curriculums that reflect standards and priorities that high schools in Australia need to consider when planning teaching and learning with respect to social and emotional skills.

The literature associates particular values and abilities to each to the moral domains, yet to my knowledge no synthesised moral framework exists that can be used to investigate the role of these values and abilities in mediating the moral domains in the use of ICTs by secondary school students. This study argues for particular associations of values and abilities with respect to the use of ICTs. This is the gap this chapter seeks to address. To determine which values underpin each moral domain, I drew on how moral psychology associated particular moral values to moral reasoning, moral emotion and moral behaviour. My initial engagement with the literature led to the design of a Digital Moral Framework of 20 values associated with the moral domains. Figure 2.1 illustrates the Digital Moral Framework and is included at the end of the chapter because it was the initial moral framework provided to the teachers who delivered the first iteration of classroom activities.

At the outset, it should be said that even though the moral domains are reviewed separately in this study, the moral psychology literature suggests that moral reasoning, moral emotion and moral behaviour are linked and each reciprocally influences the other (Colby & Damon, 2015; Giner-Sorolla, 2012; Krettenauer & Johnston, 2011; Mercier, 2011). For example, the integrative moral educational approach that aims to foster students' moral character incorporates all three moral domains (Han, 2016). With respect to moral development, moral intuitions (emotions) are strongly shaped by prior deliberative moral reasoning (Colby & Damon, 2015). Moral emotions develop appropriate sensibilities and habitual responses that are valued in traditional character education, whereas the conscious mind cultivates moral reasoning. Moral emotions and moral reasoning are viewed as complementary (Narvaez & Bock, 2014). Additionally, the values that the literature indicates are associated with a particular moral domain could arguably underpin other domains. For example, integrity is associated with both moral reasoning and moral behaviour. It is difficult to separate moral values and moral practices, as is the case for empathy and compassion (Giner-Sorolla, 2012; Malti & Latzko, 2012). The use of this compartmentalisation in this study is for the sake of understanding each moral domain and for formulating a moral framework for teaching and learning that is specific for each domain. This chapter reviews each discipline separately to identify the values and abilities and the practices for fostering each moral domain. However, a holistic approach to fostering morality is needed that incorporates all three domains (Brunn, 2014).

In an attempt to formulate a moral framework for this study, I recognised that the debate about whether moral values are subjective and relative to time and society or that objective moral values exist, is as old as philosophy itself (Giner-Sorolla, 2012; Minton, 1976; Morales-Sa´nchez & Cabello-Medina, 2013). Listing and justifying a particular list of values and abilities as moral, is a complex exercise for at least four reasons. First, when formulating moral frameworks for educational institutions, educators are confronted with the pluralistic nature of society, making such formulations challenging and continually open to contestation (Bauman, 2013). Second, some moral philosophers and moral psychologists acknowledge that moral judgments can be subjective (Cameron & Payne, 2013; Mercier, 2011; Pojman, 1997). Third, the task of describing moral values, not just the ones that are

considered to constitute true morality, leads to the recognition that multiple moral concerns can fall within the same moral domains (Morales-Sa´nchez & Cabello-Medina, 2013). Two opposing positions can draw on the same moral values to defend their views (Giner-Sorolla, 2012), and most moral rules can be overridden by other moral rules depending on the context (Giner-Sorolla, 2012; Pojman, 1997). Fourth, some moral values are shared across cultures, while others vary between social groups (Baggio & Beldarrain, 2011; Colby & Damon, 2015). However, as Minton (1976) argued, if ethical relativism is pushed to its logical limits, it must be concluded that the moral values of all cultures are non-rational. Conversely, permissiveness is not the answer either, because it holds no genuine moral authority (Berkowitz et al., 2002; Giner-Sorolla, 2012), and intractable value conflicts can occur in the absence of shared values (Thompson, 2010). Mercier (2011) argues that even though moral judgments are subjective, because they comprise predictions about others' behaviour, it may still be possible to evaluate moral judgments using objective criteria. The process of reasoning with others should help to develop more accurate moral judgments. Hence, there is a need to identify some values that are relevant to morality (Berkowitz et al., 2002; Giner-Sorolla, 2012) and broadly shared (Colby & Damon, 2015) which is one intent of this chapter with respect to the use of ICTs. The following section (2.1) explores the moral values and abilities associated with each of the moral domains, the role played by moral reasoning, moral emotions and moral behaviour in morality, and the approaches taken to foster the moral domains identified in the moral and developmental psychology literature.

2.1 Moral psychology and the moral domains

There are different definitions for the term moral domains. For instance, they can be defined not only as actions, but also as targets of the action (Chakroff, Dungan, & Young, 2013) or domains associated with particular values such as fairness (Berniūnas, Dranseika, & Sousa, 2016). In moral psychology, when seeking to foster morality, the literature raises questions as to whether morality is cognitively, emotionally or behaviourally driven. This study adopts the view of some moral psychologists that the moral-self incorporates the moral domains of moral reasoning, emotion and behaviour (Berkowitz et al., 2002; Ford, Atkins, & Hart, 1998;

Krettenauer & Johnston, 2011), which are argued to be inseparably linked (Colby & Damon, 2015; Giner-Sorolla, 2012; Krettenauer & Johnston, 2011; Mercier, 2011). Skilled moral emotions depend on moral reasoning (Krettenauer & Malti, 2013; Noddings, 2010; Schalkwijk, Stams, Stegge, Dekker, & Peen, 2016), and conversely, moral emotions influence a person's understanding of morality (Malti & Latzko, 2012; Vossen, Piotrowski, & Valkenburg, 2015). With respect to moral behaviour, moral reasoning and emotion are crucial. For example, individuals have the capacity to avoid rationalisations that excuse immoral behaviours, which require them to be honest with themselves, while emotions motivate behaviour (Colby & Damon, 2015).

2.1.1 Moral psychology and moral values

This subsection discusses the values associated with the moral domains. Proposing moral values is not generally considered the function of psychology. However, Starks (2016) maintains that values are impossible to eliminate from moral psychological research. A normative analysis brings in values to determine what it means to be morally mature. Any analysis of moral development must go beyond a descriptive account of what is and cannot avoid evaluative questions to understand what contributes to positive morality (honesty, fairness, respect, integrity, and the like) in order to encourage it (Colby & Damon, 2015). One goal of applied psychology is to change people's thinking from just individual interests to those that serve the common good of others. Underlying this objective is a recognition that moral values exist (Chan, 2008; Giner-Sorolla, 2012). Common behaviours take into account biological and emotional dispositions. Evolutionary science and research in human behaviour has yielded a consensus that fairness, empathy and altruism are part of the biological makeup of our species (Colby & Damon, 2015). For example, empathy, compassion, sympathy (Giner-Sorolla, 2012; Maibom, 2017; Malti & Latzko, 2012), and conscientiousness (relating to a person's conscience and remorse) (Schalkwijk et al., 2016), also referred to as *intuitions of wrongness* (Giner-Sorolla, 2012) or *anticipatory* moral emotions (Krettenauer & Johnston, 2011) are considered moral values that are more closely associated with moral emotion. However, conscience is also associated with cognitive moral development (Colby & Damon, 2015; Schalkwijk et al., 2016). Values associated with moral behaviours

towards others, such as altruism (Colby & Damon, 2015; Maibom, 2017; Schalkwijk et al., 2016), justice (Yoon, 2011), fairness (Bradley, 2005; Colby & Damon, 2015), freedom, equality and benevolence (Giner-Sorolla, 2012) are considered important for social responsibility, and are therefore more often associated with moral behaviour. A personal sense of responsibility and self-control are also considered important for self-management with regard to moral behaviour (Colby & Damon, 2015; Goleman, 2004; Morales-Sa´nchez & Cabello-Medina, 2013; Nedeleca & Beaver, 2014; Schalkwijk et al., 2016). Honesty, integrity and authenticity are associated with moral reasoning (Blau & Eshet-Alkalai, 2017; Colby & Damon, 2015). A personal sense of integrity is important because most individuals want to be valued as a moral person and have personal pride in themselves; when individuals do something that goes against our own values, they undermine their own sense of personal integrity (Carlson & Erickson, 1999; Dillena, Enter, Peters, Dijka, & Rotteveel, 2017).

2.1.2 Moral psychology and moral reasoning

This subsection discusses the abilities associated with moral reasoning. There are differing views on the role of moral reasoning. Initial psychological investigations into moral development were dominated by the role of moral reasoning (Colby & Damon, 2015; Giner-Sorolla, 2012). For example, the cognitive-developmental approach, notably due to Piaget (1965) and Kohlberg (1984), focused on the moral reasoning of the individual and, what can be called rational moral education (Narvaez & Bock, 2014). Scholars have debated whether a moral decision based on moral reasoning necessarily results in actual moral behaviour (Han, 2016). Haidt (2007) maintains that moral motives are driven in large part by emotional intuitions that arise quickly and automatically, and then influenced by moral reasoning, which can correct and override moral intuitions. Other studies demonstrated strong links between a deliberative mind and an intuitive mind (Colby & Damon, 2015; Narvaez & Bock, 2014; Schalkwijk et al., 2016). Manifestation of moral emotions in adolescents is an indicator that moral norms have been internalised (Krettenauer & Malti, 2013). In the course of development, conscious reflection fosters moral understanding, which influences moral emotional responses (Colby & Damon, 2015). Moral reasoning is

also associated with correcting misguided emotions (Mercier, 2011; Schalkwijk et al., 2016), and research has repeatedly documented that skilled moral emotions depend on moral reasoning (Goleman, 2004; Krettenauer & Malti, 2013; Morales-Sa´nchez & Cabello-Medina, 2013; Schalkwijk et al., 2016). Knowing which emotions are being felt and how these affect judgements and behaviours are important abilities (Cameron & Payne, 2013; Goleman, 2004).

In the classical cognitivist framework, moral reasoning is defined as a set of skills specialised for moral judgments and decision making (Godbold & Lees, 2013), where one evaluates a moral judgment for its (in)consistency with one's moral values (Mercier, 2011; Vera-Estay, Dooley, & Beauchamp, 2015). Moral reasoning involves using moral values for evaluating and producing moral arguments, and decision making (Mercier, 2011; Nucci & Powers, 2014). Moral reasoning skills are considered important for the early development of moral action tendencies (Malti & Latzko, 2012; Vera-Estay et al., 2015). With respect to the use of ICTs, studies have found that disengagement with moral reasoning plays a role in the continuation of traditional face-to-face bullying (Price et al., 2014) and cyberbullying (Perren & Gutzwiller-Helfenfinger, 2012; Wang et al., 2017). The following subsection discusses the abilities associated with moral emotions.

2.1.3 Moral psychology and moral emotion

There are also differing views on the role of moral emotions in morality. Mercier (2011) argues that reasoning only rarely allows us to manage emotions well and reasoning can lead to morally inferior judgments as individuals use rationalisations to excuse their moral lapses. However, Noddings (2010) argues against the claim that emotion is more basic to morality than reasoning, since strong emotions can also lead to faulty judgements and behaviours. Moral responses are most often automatic (intuitive and emotive). These intuitions explain some common moral behaviours that are biological and emotional in nature, such as empathy, fairness and altruism. However, moral reasoning also plays a role, individuals respond quickly to moral situations because they have worked through much of the functional moral understanding that allows them to respond to familiar situations (Colby & Damon,

2015). A significant body of literature in moral psychology demonstrates that experiencing appropriate emotions and managing them well is essential for morality (Berkowitz et al., 2002; Goleman, 2004; Grappi, Romani, & Bagozzi, 2013; Hursthouse, 2012; Malti & Latzko, 2012; Mercier, 2011; Schalkwijk et al., 2016; Warburton, 2004). Moral emotions are considered mediators between moral values and moral behaviour (Krettenauer & Johnston, 2011; Perren & Gutzwiller-Helfenfinger, 2012; Schalkwijk et al., 2016).

Moral emotions influence moral reasoning (Cameron & Payne, 2013; Giner-Sorolla, 2012). Some research in adolescent behaviour indicates that moral emotions provide an early foundation for the development of the moral self (Malti & Latzko, 2012). Moral emotions are linked to the ability to coordinate perspectives of self and others in young children (Goleman, 2004; Krettenauer & Malti, 2013). Individuals with more developed emotional intelligence are better able to discern the morally relevant factors of a situation (Cameron & Payne, 2013; Goleman, 2004; Schalkwijk et al., 2016). Moral emotions help adolescents to anticipate the outcomes of socio-moral events and adjust their moral action tendencies accordingly (Malti & Latzko, 2012; Schalkwijk et al., 2016). Moral emotions are also self-evaluative (such as remorse) and other-oriented emotions (such as empathy).

Moral emotions also influence moral behaviour (Cameron & Payne, 2013; Giner-Sorolla, 2012; Krettenauer & Johnston, 2011). Deficiencies in moral emotions are predictors of adolescents' antisocial behaviours (Krettenauer & Johnston, 2011; Schalkwijk et al., 2016). One characteristic of emotional intelligence is the ability to identify emotions in the self and others, and to manage one's own affective states (Killian, 2012). Moral emotions elicited by an individual's evaluation of the self or by an affective response to the emotional state of another, and they motivate reparative behaviours, such as apologies, and restrict immoral and aggressive behaviours (Giner-Sorolla, 2012; Malti & Latzko, 2012; Schalkwijk et al., 2016). They also support motivation for actions, self-regulation and developing relations with others (Giner-Sorolla, 2012; Goleman, 2004) and psychosocial adjustment, such as overcoming aggression and frustration (Goleman, 2004). The next two subsections (2.1.3.1 and 2.1.3.2) discusses the importance of the abilities associated with

empathy and conscientiousness with respect to moral emotion. The literature suggests the importance of these moral emotions.

2.1.3.1 Empathy

Empathy is counted as a caring moral emotion (Cameron & Payne, 2013; Giner-Sorolla, 2012; Goleman, 2004; Krettenauer & Johnston, 2011; Malti & Latzko, 2012; Mercier, 2011). Some studies have shown that emotions such as empathy are quintessential parts of morality (Giner-Sorolla, 2012; Malti & Latzko, 2012; Schalkwijk et al., 2016), influencing a person's understanding of fairness and caring (Malti & Latzko, 2012). The more empathetic people are, the more they are willing to follow moral values (Giner-Sorolla, 2012; Goleman, 2004). Empathy is associated with prosocial behaviour in children (Krettenauer & Malti, 2013; Schalkwijk et al., 2016).

Empathy involves understanding and feeling what another person is experiencing and feeling (Giner-Sorolla, 2012; Malti & Latzko, 2012; Tangney, Stuewig, & Mashek, 2007; Vossen et al., 2015) and recognising that moral transgressions have negative consequences on others (Flores & James, 2013; Goleman, 2004; Nucci & Powers, 2014; Perren & Gutzwiller-Helfenfinger, 2012). These characteristics of empathy are consistent with the view that humans are primed to respond with empathy towards others (Nucci & Powers, 2014). Empathy also nurtures the desire to act out of concern for the wellbeing of others and to alleviate the suffering of others (Cameron & Payne, 2013; Floridi, 1999; Ford et al., 1998; Giner-Sorolla, 2012; Goleman, 2004; Grappi et al., 2013; Lazuras, Barkoukis, Ourda, & Tsorbatzoudis, 2013; Malti & Latzko, 2012; Warburton, 2004). Studies of cyberbullying indicate that adolescents engaging in cyberbullying behaviour tend to score lower in empathy measures (Lazuras et al., 2013), while empathy fostered support for those bullied in traditional face-to-face bullying (Price et al., 2014). Empathy facilitates social interactions, nurture relationships, acts as a protective factor that promotes young people's psychosocial adjustment and helps individuals to overcome risk factors such as aggression and immoral behaviours (Goleman, 2004; Malti & Latzko, 2012). Research that focused on online empathy found that empathetic communication styles were interpreted as being supportive and fostered

trust (Baggio & Beldarrain, 2011). A study of teenagers' online experiences indicates that they encounter situations that cause them to feel anger (Greenfield, 2008), suggesting the need for empathy. The level of empathy felt by the individual is associated with more lenient moral judgments of others (Cameron & Payne, 2013; Giner-Sorolla, 2012) and tempers anger with compassion in situations where activities cause frustration and anger (Goleman, 2004).

2.1.3.2 Conscientiousness

Conscientiousness is defined by some moral psychologists as a person's integrated moral values which act as internal moral sanctions that guide decision making and behaviour (Berkowitz & Grych, 1998; Juthberg & Sundin, 2010; Schalkwijk et al., 2016). With respect to conscience, a link exists between moral reasoning, emotion and behaviour. Colby & Damon (2015) maintain that moral reasoning is the voice of the conscience. Conscientiousness also involves reasoning and the emotional experience of feeling committed to and accountable for one's own moral values (Bauman, 2013; Goleman, 2004; Juthberg & Sundin, 2010). With respect to moral emotion and behaviour, conscience is operationalised as an emotion-regulating function and is linked to reparatory behaviours (Schalkwijk et al., 2016). Conscientious individuals have a desire for high quality interpersonal relationships (Cho, 2017). Conscientiousness is considered an anticipatory emotion or intuition prior to an action (Krettenauer & Johnston, 2011), and the recent 'intuitive turn' in moral psychology indicates that a set of intuitions underpin morality (Haidt, 2007; Mercier, 2011). Anticipatory emotions influence behaviour in two ways. First, they lead to self-evaluations as a result of emotional discomfort (guilt or remorse) following a behaviour that is in opposition to one's own moral values. Second, they influence moral reasoning when evaluating behavioural intentions (Giner-Sorolla, 2012; Krettenauer & Johnston, 2011; Lazuras et al., 2013; Schalkwijk et al., 2016; Wang et al., 2017). Some studies indicate that conscientiousness fosters moral responsibility and acts as a deterrent for immoral behaviour (Lazuras et al., 2013; Schalkwijk et al., 2016).

2.1.4 Moral psychology and moral behaviour

This section explores the abilities associated with moral behaviour. The literature suggests two dimensions to moral behaviour: self-management and social responsibility towards others. Self-management requires character, which combines ego strength with the social and psychological abilities required to function as a moral agent (Berkowitz & Bier, 2014; Colby & Damon, 2015; Lau & Yuen, 2014) and a desire on the part of the individual to maintain a moral identity (Barque-Duran, Pothos, Yearsley, & Hampton, 2016). Moral character is composed of many distinct traits such as, moral habits, moral identity, honesty, kindness, justness, altruism and self-control (Colby & Damon, 2015; Goodwin, 2015) to name a few. Self-management requires self-awareness and being honest with oneself which are considered important for moral behaviour (Mercier, 2011; Schalkwijk et al., 2016). Behavioural psychology has also demonstrated that self-control plays a significant role in self-management in academic, occupational and social success (Ent, Baumeister, & Tice, 2015; Schalkwijk et al., 2016), and is correlated with better self-management and interpersonal skills. Conversely, low self-control is a significant risk factor for a broad range of personal and interpersonal problems (Angney, Baumeister, & Boone, 2004). Research in moral psychology has also shown that self-control plays a role in individuals refraining from anti-social behaviours (Giner-Sorolla, 2012; Goleman, 2004) and in the suppression of inappropriate emotions, desires, and actions in favour of appropriate ones in adolescents (Casey, 2015). Self-control involves the ability to delay gratification and achieve goals. It plays a role in overcoming anger and is required for empathy to develop (Goleman, 2004). A study found that adolescents with higher self-control experienced fewer daily stressors and reported lower stress severity (Galla & Wood, 2015).

2.1.5 Moral psychology and fostering the moral domains

This section discusses how moral psychology envisions fostering the moral domains. The literature suggests a need to focus on the development of appropriate moral emotions, moral reasoning (Colby & Damon, 2015; Narvaez & Bock, 2014;

Schalkwijk et al., 2016) and moral behaviours (Barque-Duran et al., 2016; Schalkwijk et al., 2016). Moral reasoning is fostered in part, by the acquisition of moral values (Mercier, 2011; Perren & Gutzwiller-Helfenfinger, 2012; Schramme, 2017), while moral behaviours also rely on having moral values (Colby & Damon, 2015). Some moral psychologists maintain that moral reasoning provides a means for values to become part of the individual's moral identity (Berkowitz et al., 2002; Krettenauer & Johnston, 2011; Wang et al., 2017). Teaching children how to identify the morally salient features of a situation is important because there is a cognitive requirement to take the perspective of another (Vera-Estay et al., 2015; Wren, 2014). Providing opportunities for youth dialogue is one suggested means of acquiring this moral reasoning skill (Noddings, 2010), as groups and collaborative thinking play an essential role in moral change (Mercier, 2011; Wren, 2014). Effective moral education also incorporates emotion as part of the informational and affective experiences that generate reflection and the construction of moral knowledge and reasoning (Nucci & Powers, 2014). Therefore, moral arguments and narratives that appeal to emotion can play a role in changing moral judgments and decisions. Through rational considerations (discussions), individuals come to recognise that there are some valid criteria that are more than biases arising from private interests or from unexamined and unverifiable preconceptions (Mercier, 2011). Additionally, individuals can develop moral reasoning through their active participation in relationships with adults, peers, cultural practices and social institutions (Colby & Damon, 2015). Research has also indicated that parental involvement and connection with the adolescent foster moral reasoning and behaviour (Davis et al., 2010; Padilla-Walker & Christensen, 2011). Additionally, moral behaviours allow moral values to be internalised (Barque-Duran et al., 2016; Berkowitz et al., 2002; Krettenauer & Johnston, 2011).

Fostering abilities that allow individuals to manage emotions well, is considered an essential part of moral education (Berkowitz et al., 2002; Cherkasova, 2007; Giner-Sorolla, 2012; Goleman, 2004; Schalkwijk et al., 2016). Some studies have shown that empathy can be taught effectively through school-based programs, first because moral emotions partly rely on the acquisition of moral values (Malti & Latzko, 2012), and second, because narratives that appeal to emotions foster moral learning (Mercier, 2011). Empathy also builds on self-awareness, as the individual learns to

distinguish between the perspectives of the self and others (Noddings, 2010; Schalkwijk et al., 2016), recognise that moral transgressions have a negative impact of others (Malti & Latzko, 2012) and learn from moral mistakes (Mercier, 2011; Schalkwijk et al., 2016). These processes can help to foster children's socio-moral sensitivity by discussing conflict situations and the emotions they invoke in students as victim, perpetrator, bystander and observer (Malti & Latzko, 2012). Modelling moral values in the life of the child is another important means of fostering morality (Davis et al., 2010; Noddings, 2010) as are peer groups (Davis et al., 2010; Mercier, 2011), which can serve to positively reinforce and influence behaviour (Casey, 2015). Moral psychology provides a great deal of insight into the moral domains. The next paragraph discusses the understanding provided by moral psychology and the gaps identified that this study seeks to address.

With respect to the moral domains, research indicates that moral reasoning, emotion and behaviour are inseparably linked (Giner-Sorolla, 2012; Krettenauer & Johnston, 2011; Mercier, 2011; Schalkwijk et al., 2016). Morality is multifaceted, no single psychological process can account for all behavioural action (Colby & Damon, 2015). The link between the moral domains is important for this study as these findings point to the need to take a holistic approach that incorporates all three moral domains when seeking to foster morality in the use of ICTs by secondary school students. Moral psychology indicates that empathy, compassion, conscientiousness, accountability and remorse are associated with moral emotion; however, few studies have researched the role of conscientiousness in adolescents (Krettenauer & Johnston, 2011; Schalkwijk et al., 2016). This would appear to be particularly true with respect to their uses of ICTs. Additionally, the role of empathy in those who witness cyberbullying is not yet clear (Price et al., 2014). Responsibility and self-control are associated with moral self-management with respect to moral behaviour (Ent et al., 2015; Schalkwijk et al., 2016), while, altruism (Maibom, 2017; Schalkwijk et al., 2016), justice (Yoon, 2011), fairness (Bradley, 2005), freedom, equality and benevolence (Giner-Sorolla, 2012) are considered important for social responsibility. This knowledge helps to build an understanding of the values that can underpin the moral domains. However, to my knowledge, there is no comprehensive study that

investigates the role of these values and their associated abilities in mediating the moral domains in the use of ICTs by secondary school students.

2.2 Moral philosophy and the moral domains

Following on from the above discussion of moral psychology, this section (2.2) examines the contribution of moral philosophy to the moral values and the abilities associated with each of the moral domains, and the approaches taken to foster morality. In particular, the moral theories of deontology, consequentialism and virtue ethics are discussed and evaluated with respect to the concerns of this study. Some moral philosophies, like moral psychology, consider morality within the framework of the moral domains (Barque-Duran et al., 2016). In moral philosophy, moral reasoning, emotion and behaviour are referred to in various ways, such as knowledge, aesthetics and ethics (Packer, 2011). Montaigne (1952) referred to these as wisdom, conscience and virtue, while in Aristotle's classical rhetoric (cited in Ilie, 2006), logos relates to reasoning, pathos relates to emotions, and ethos relates to ethical practices (character). In virtue ethics, being virtuous requires appropriate moral judgements, emotions and behaviours (Berger, 1975; Hursthouse, 2012; Warburton, 2004). Virtue ethics seeks to foster phronesis (wisdom/reasoning), eudaimonia (proper emotions) and arête (excellence in behaviours) (Durant, 1926; Hursthouse, 2012). In Confucianism personhood (ren) incorporates the unity of the cognitive, aesthetic and behaviours aspects of morality (Ess, 2002; Gardner, 2000).

2.2.1 Moral philosophy and moral values

Various moral philosophies emphasise the importance of particular moral values. In deontology, moral rules rather than the consequences of actions are the primary considerations when determining morality. Kant is best known for advancing the values of goodwill (altruism), justice, conscientiousness, integrity, courage and self-control (Barque-Duran et al., 2016; Durant, 1926; Floridi, 1999; Giner-Sorolla, 2012; Han, 2016; Hursthouse, 2012; Kant, 1952b; Pojman, 1997; Spafford, 1992; Warburton, 2004; Yoon, 2011). In consequentialism, the primary moral consideration

is what maximises the wellbeing of the greatest number of people (Barque-Duran et al., 2016; Hursthouse, 2012; Yoon, 2011). Virtue ethics focuses on the moral character traits and virtues of the individual as a whole (Jones, 2016). These virtues include courage, justice, self-control, altruism (Bard, 1930; Frede, 2009; Hackett & Wang, 2012; Morales-Sa´nchez & Cabello-Medina, 2013), honesty, wisdom and personal excellence (Bard, 1930). Confucian virtue ethics include learning, empathy, altruism, harmonious balance and love (Dow, 2007).

2.2.2 Moral philosophy – Moral reasoning, emotion and behaviour

Moral philosophy also suggests some abilities that are associated with the moral domains. In Kantian deontological ethics, morality rests on moral reasoning based on moral values (Barque-Duran, Pothos, Hampton, & Yearsley, 2017; Durant, 1926; Giner-Sorolla, 2012; Kant, 1952a, 1952b) rather than emotions (Kant, 1952a; Paton, 1979). Moral reasoning leads to considering the wellbeing of the whole (Frede, 2009; Hursthouse, 2010). However, conscience (a moral emotion) is also needed, without which, we would not be inclined to follow moral duties (Durant, 1926). The conscience is considered the moral sense, the unconditional command that stirs remorse and new resolution in the individual to do what is right and the inescapable feeling faced when the temptation to do wrong is before the individual (Durant, 1926). At its most general, the concept of conscience seems to involve the human capacity to discern what one is about to do, from a moral perspective (Atkins, 2014).

In consequentialism, morality rests on how behaviours affect others (Barque-Duran et al., 2017; Floridi, 1999; Gotterbarn, 1992; Han, 2016; Pojman, 1997; Warburton, 2004). Kant (1952a) also argued the importance of moral behaviour. He maintained that human beings are capable of understanding moral values but cannot easily apply these values in their own lives. To be a person of integrity we need to live up to our own moral values, and when there is a division between our values and our practices in daily life, we cannot be considered to have integrity. Virtue ethics also focuses on the good habits (behaviours) and virtues that are part of the individual (Floridi, 1999; Han, 2016; Hursthouse, 2012; Morales-Sa´nchez & Cabello-Medina, 2013; Pojman, 1997; Warburton, 2004). We are not moral because we hold moral

values, but because we have acted rightly (Durant, 1926; Morales-Sa´nchez & Cabello-Medina, 2013). Aristotle (cited in Durant, 1926, p. 87) stated that “virtues are formed in man by his doing the actions”. One of Plato’s (cited in Berkowitz et al., 2002, p. 66) maxims is “to know the good is to do the good”. The next section discusses the understanding provided by moral philosophy and the gaps identified that will be addressed by this study.

2.2.3 Moral philosophy and fostering the moral domains: Benefits and gaps

Moral philosophy provides some insight into the values that underpin the moral domains and how to foster these. Insight are gained about fostering moral reasoning and behaviour, but provides little insight into fostering moral emotion is provided. In deontological ethics, morality rests on moral reasoning with respect to following moral values and the dictates of the conscience (moral emotion). The conscience must be cultivated by sharpening our attention to its voice and practicing self-assessment (Paton, 1979). Altruism, justice, integrity, courage and self-control are the suggested values in deontology, without clearly associating these with a particular moral domain. In consequentialism, morality rests on moral behaviours towards others based on the common good (altruism), while in virtue ethics, moral excellence is an art won by training and habituation - behaviours foster morality in the individual. The lessons from moral psychology are used in this study to classify the values associated with moral domains in moral philosophy. For instance, Kant (1952a) maintained that integrity relies on moral self-management of our values and our practices, which rely mostly on moral reasoning and moral emotion. Virtue ethics also appears to link moral self-management with personal moral excellence (self-control and courage), while behaviours towards others are associated with altruism, love and justice (Bard, 1930; Frede, 2009; Hackett & Wang, 2012; Morales-Sa´nchez & Cabello-Medina, 2013). I maintain that the values found in moral philosophy, in part, line up with the values associated with the moral domains in moral psychology. Additionally, virtue ethics emphasises a holistic approach by incorporating all three moral domains (Han, 2016).

Computer ethicists suggest the importance of certain moral values and abilities in relation to the moral domains. The following section reviews these values and abilities, and the approaches taken to foster the moral domains. This review is important for this study because computer ethics approaches teaching ethics using different methodologies, which are at times contested with respect to their effectiveness. These discussions provide insights into the best teaching and learning practices.

2.3 Computer ethics and the moral domains

Some computer ethicists also discus morality within the framework of the moral domains. Some computer ethicists maintain that moral values underpin moral reasoning (Yoon, 2011) and behaviour (Bynum, 2008; Lazuras et al., 2013; Stahl, 2004; Weckert, 2000; Yoon, 2011). Some also maintain that moral reasoning relies on learning to apply moral values to make moral judgements with regard to ICTs (Bynum, 2008; Ess, 2002; Stahl, 2004), and justifying moral judgements and decisions (Gotterbarn, 1992). Guiding behaviours involves identifying alternative solutions (Gotterbarn, 1992; Kerta, Uza, & Gecu, 2012; Taherdoost et al., 2011). Some also recognise the role of moral emotions such as empathy (Cocking & Matthews, 2001; Floridi, 1999; Lazuras et al., 2013; Runions & Bak, 2015; Stahl, 2004). The theory of *planned behaviour* (Ajzen, 2011) that is used to predict behaviours while using ICTs, incorporates reasoning and emotions as important referents for determining behaviours (Baker & White, 2010), while other computer ethicists maintain that motivations and intentions are influenced by the work of the conscience (Lazuras et al., 2013).

2.3.1 Computer ethics and moral values

The following section reviews the values considered important in computer ethics. Computer ethics is grounded in the field of technological and professional ethics; therefore, codes of ethics often stem from different national computing associations (Floridi, 2010a), while internet ethics have been associated with individual uses of

the internet (Lau & Yuen, 2014). Computer ethics courses are often based on moral values and reasoning drawn from the main moral theories discussed in the previous section (Baggio & Beldarrain, 2011; Floridi, 1999; Gotterbarn, 1992; Lau & Yuen, 2014; Liua & Yanga, 2012; Quinn, 2006; Volkman, 2015). For example, 'MINMAX' (minimise harms, maximise benefits), which is based on moral values adopted from consequentialism, while the focus on moral duties comes from deontology (Floridi, 1999).

Computer ethicists have proposed the following values as important in the use of ICTs:

- honesty, impartiality, public welfare and altruism (Floridi, 1999; Jones, 2016; Weckert, 2007).
- the protection of intellectual property and privacy (Brey, 2010; Jefferies et al., 2007; Jones, 2016).
- integrity (Jones, 2016; Lau & Yuen, 2014; Volkman, 2015) and justice (Baggio & Beldarrain, 2011; Brey, 2010).
- access to information and ICTs, confidentiality, freedom of expression (Brey, 2010) and security (Gotterbarn & Moor, 2009).
- authenticity (Floridi, 1999; Nissenbaum, 1994; Parker, 2007).
- accountability and responsibility (Brey, 2010; Davis et al., 2010; Gotterbarn, 2001; Lau & Yuen, 2014; Nissenbaum, 1994).
- conscientiousness (Lau & Yuen, 2014; Lazuras et al., 2013).
- empathy (Jones, 2016).
- trust (Brey, 2010).

A review of the literature suggests that certain values are particularly important with respect to the use of ICTs by young people – authenticity, integrity, honesty, trust, privacy, accountability and responsibility. Some computer ethicists maintain that authenticity, integrity and honesty foster trust while using ICTs (Baggio & Beldarrain, 2011; Nissenbaum, 1994; Parker, 2007). With respect to these values, ICTs are now commonly used by adolescents to construct public profiles (Baker & White, 2010; Buckingham, 2008; McGeer, 2004), which, in part, involves a desire on their part to be validated by their peers (Buckingham, 2008; Lim, Nicholson, Yang, & Kim, 2015).

The construction of online public profiles by young people raises the issue of authenticity (Lim et al., 2015) and trust (Baggio & Beldarrain, 2011). Although young people construct multiple online profiles, one concern is the impact this has on young people's psychological wellbeing as there may be psychological costs to the inconsistencies of these profiles, such as feeling alienated from one's true self (Arıcak, Dündar, & Saldaña, 2015; Lim et al., 2015). The trustworthiness, integrity and honesty of individuals are challenging issues while using ICTs (Davis et al., 2010). Trust makes it possible to interact with others in unfamiliar and unpredictable situations (Baggio & Beldarrain, 2011; Holmstrom, 2007), such as when young people use ICTs. One definition of authenticity is that it is a reflection of who we truly are across the contexts in which we find ourselves (Lim et al., 2015). Having moral integrity is considered by some ethicists as having high moral expectation, feeling a sense of personal responsibility and accountability (Eby et al., 2013), and living up to one's moral values (Laabs, 2011; Volkman, 2015).

Another important value and moral concern is privacy. While using social media young people tend to disclose more personal information, particularly if this attracts attention from their peers (Davis et al., 2010; Lim et al., 2015). Other research has found that the need for popularity was a predictor of whether adolescents posted sexual images of themselves online. Conversely, they were less likely to post sexual images if they had a lower need for popularity (Baumgartner, Sumter, Peter, & Valkenburg, 2015).

Some computer ethicists also maintain that integrity, accountability and responsibility are important in the use of ICTs (Gotterbarn, 2001; Nissenbaum, 1994; Volkman, 2015). The are two reasons for this view. First, humans have a tendency to feel unaccountable and avoid responsibility when things go wrong while using ICTs, showing a tendency to find someone or something to blame. This lack of a personal sense of accountability and responsibility can lead to a sense of exemption from moral responsibility (Gotterbarn, 2001). Second, the virtual nature of the actions taken using ICTs often provides anonymity for the actions of individuals (Barlett, 2017; Floridi, 1999; Heesen, 2012; Price & Dalgleish, 2010; Yoon, 2011) leaving individuals to feel less accountable for their actions (Price & Dalgleish, 2010; Wong, 1995). Findings suggest that anonymity fosters the development of positive attitudes

towards cyberbullying in young people, which likely predict subsequent cyberbullying behaviour (Barlett, 2017). The following section undertakes an analysis of the weaknesses and best practices in fostering morality in computer ethics. Approaches to teaching computer ethics have been varied, but the focus has predominately been on moral reasoning (Floridi, 1999; Tavani, 2002; Volkman, 2015).

2.3.2 Computer ethics and fostering the moral domains

Moral reasoning in computer ethics is most often approached using deontologist and consequentialist moral theories (rule-based vs. outcome-based) (Barque-Duran et al., 2017; Floridi, 1999; Tavani, 2002). A study of cyberbullying among teenagers concluded that moral training targeting maladaptive normative beliefs can form the basis for educational programs and preventive strategies (Lazuras et al., 2013).

Generally, computer ethics adopts the pragmatic consequentialist approach to teaching computer ethics (Floridi, 1999; Yoon, 2011). Anonymity provided by ICTs is argued to reduce a personal commitment to moral values; hence, it is considered more effective to emphasise the detrimental effects of unethical behaviour (consequentialism) rather than pointing out the importance of commitments to moral values (deontology) (Yoon, 2011). Bats, Valkenburg and Verbeek (2013) maintain that because of the potential disconnect between behaviours and the consequences of behaviours while using ICTs, fostering the link between moral reasoning (duties) and the consequences of behaviours also needs to occur. Appeals to altruistic moral principles are vital; however, Kantian theories of universal imperatives tend towards a certain moral absolutism, which at times can lead to an inability to accommodate exceptional circumstances (Jones, 2016).

However, the consequentialist approach to fostering computer ethics is not without challenges. Studies have shown that greater psychological distance while using ICTs gives rise to an abstract representation of actions that can cause the individual to ignore the immediate affective impact of their actions (Barque-Duran et al., 2017). Because of the virtual nature of ICTs, some computer ethicists speculate that users may perceive their uses as not ‘real’, and therefore with little detrimental effects on others (Ess, 2002; Floridi, 1999; Van Den Hoven, 1994).

A further problem, is that privileging of these specific strands of western ethical theory is implicitly exclusive of non-western philosophies, which is a limitation when teaching ethics in a culturally diverse, globally dispersed learning environment. Hence, a range of theories and approaches are needed and it is rarely possible to focus solely on the duties and intentions behind actions, without regard to their consequences, and vice versa (Jones, 2016). To address this problem, Volkman (2015) recommends an ethics of inquiry and reflection that does not rely merely on compliance to rules, but also on the intrinsic motivation of individuals.

Another limitation of using moral theory to foster moral reasoning is the theory practice gap. Moral theories are alternate descriptions of how we should live our lives (Gotterbarn, 1992; Warburton, 2004). Students often find it difficult to apply theory to real situations or to relate to ethical theories (Godbold & Lees, 2013; Liua & Yanga, 2012). Gotterbarn (1992) argued that it is a mistake to portray ethics as a method of picking a particular moral theory, which is an approach that reinforces the view that ethical discussions are fruitless because there are as many answers as there are theories.

Another approach to fostering moral reasoning is the use of moral dilemmas to reason about various ethical positions and solutions. Gotterbarn (1992) maintained that the problem with this approach is that it leaves students with the impression that ethical problems cannot be solved because of the diversity of opinions and that no consensus can be expected. Students may be left with the impression that morality is a matter of opinion and all opposing arguments have equal weight.

Another concern is that computer ethics has been primarily reactive, that is, seeking to address problems or policy vacuums created by the existing deployments and uses of ICTs. The consequence of this reactive approach is that once a technology is in place, the harm may already have been done (Weckert, 2007). This approach is considered a form of damage control (Kahn & Friedman, 1992) a reactive ethics-last approach that misses the importance of taking a proactive approach to fostering ethics (Gotterbarn, 1992). As Floridi (2010a) argues, there are significant differences between reactive and proactive approaches, as ethics is also a question of improving the nature of the world. This proactive approach treats the agent as a producer of moral goods, rather than reacting to a situation, once something has happened.

Hence, he argues that a large part of an ethical education consists in acquiring values and abilities that may enable the agent to take a proactive approach to the world.

Another ineffective approach to teaching ethics is what Gotterbarn (1992) called *pop computer ethics*. This teaching approach sensitise individuals to ethical issues relating to ICTs by drawing on horror stories. He also refers to this as *yellow journalism*, as it focuses on the 'evils' that are promulgated through ICTs. These stories can easily be found by students in the popular media. Moral panic is not the approach that should be taken to understand and conceptualise young people's uses of ICTs (boyd, 2014; Vickery, 2012). Gotterbarn (1992) posited that focusing on risks and cautionary tales leaves students with the impression that computer related ethical issues are promulgated by a few individuals, difficult to solve, or irrelevant to them personally. This approach places the emphasis on the unethical, rather than encouraging students to consider their own moral values and behaviours with regard to their own use of ICTs.

2.3.2.1 Benefits and gaps

This section discusses the benefits and the gaps for this study with respect to computer ethics. The classification used in moral psychology was drawn on to associate the values that are particularly significant in computer ethics to the moral domains. In this study, authenticity, integrity, honesty, trust and accountability are associated with moral reasoning because they involve a personal sense of integrity. Responsibility and privacy (moral self-management) and altruism and justice (behaviour towards others) are associated with moral behaviour, while empathy is associated with moral emotion.

Some computer ethicists maintain that an ethics of inquiry and reflection that does not rely merely on compliance to rules, but also on the intrinsic motivation of individuals is needed to foster computer ethics (Liua & Yanga, 2012). Some effective teaching and learning practices have emerged from computer ethics with respect to fostering moral reasoning. One such practice is proactively fostering moral values

and behaviours (Blau & Eshet-Alkalai, 2017; Gotterbarn, 1992), as the acquisition of moral reasoning relies on teaching, investigating and understanding moral values (Gotterbarn, 1992; Weckert, 2007). Floridi (1999) argued that fostering moral reasoning is important to moral behaviour, because moral behaviours are less likely if the individual does not hold moral values. Although Gotterbarn (1992) argued that the use of ethical dilemmas are ineffective, more recent research has found that discussions using ethical dilemmas work best when these relate to students' life experiences (Hildebrandt & Zan, 2014; Liua & Yanga, 2012). Gotterbarn and Moor (2009) argue that focusing on the consequences of behaviours on others, based on the values of justice, rights and duties can be used to foster ethical decision-making. Another important practice when seeking to foster morality in the use of ICTs, is the need to foster education that supports an engagement with diverse cultural values. Such an approach can provide individuals with skills to negotiate with multiple cultures by critically thinking about one's own values and those of others (Ess, 2002).

The role of these values with respect to the moral domains in the use of ICTs by secondary school students is not well researched. Also, an understanding of the way ICTs influence decision-making capabilities and behaviours is still unclear (Barque-Duran et al., 2017). For example, recent research indicates that it is not clear how altruism is important in the use of ICTs (Bagchi, Udo, Kirs, & Choden, 2015). Additionally, Lim et al. (2015) suggest that further research is needed to determine the consequences of a lack of online authenticity on the wellbeing of young people, as research on online authenticity is still at a rudimentary stage. It would appear that there is a gap in the computer ethics literature with respect to fostering moral emotions. Additionally, information on how to foster the moral values and abilities identified by computer ethics with respect to the use of ICTs by secondary school students is lacking.

The Australian Curriculum and Victorian Curriculum cover many academic skills. This study focuses on the standards that deal with personal, social and ethical understanding of secondary school students. These curricula also appear to argue for the need to foster the moral domains. The skills that are suggested, are self-awareness, social awareness and self-management. Including these skills into a

digital moral framework for Australian high schools is important because state education departments require that these skills be included in school curricula. These standards are discussed in the following sections.

2.4 Australian curriculum and the moral domains

Values education with respect to young people is basically conceptualised in two ways. First, children acquire values through both role modelling and socialisation from parents, teachers, individuals and groups that the child is emotionally attached to (Nucci & Powers, 2014). Second, because the child as an active interpreter of information (Nucci & Powers, 2014). Individuals grow morally through self-reflection by making an effort to become aware of their habits of mind and behaviour, by trying to overcome their biases, and by working to understand others' interpretations. This provides the foundation for individuals to exercise moral agency (Colby & Damon, 2015). This suggests that classrooms activities that seek to foster moral learning should be based on the students own experiences (Hildebrandt & Zan, 2014).

The Australian Curriculum (2016) for students 14 to 16 years old also suggests that values education involves fostering self-awareness and self-reflection. This curriculum lists awareness of one's emotional states as an important skill. The suggested means of fostering such awareness is by students identifying and describing the factors that influence their emotional responses. With respect to moral behaviour, self-management involves behavioural skills such as, self-discipline and the ability to delay gratification. Social awareness of others includes altruism (assisting others), a sense of justice, in the form of critiquing discrimination (racism and sexism), showing respect for others' perspectives, emotional states and needs, and responsibility. Fostering behavioural skills involves students identifying strategies to manage themselves in a range of situations.

Self-awareness and understanding others is also advocated by the Victorian Curriculum (2016) (for students 14 to 16 years old). This curriculum suggests that moral reasoning abilities should include evaluating and finding resolutions to ethical problems and understanding the ethical principles that are common across people and cultures. *Understanding concepts* requires students to investigate the contested

meaning of concepts, including connections between fairness and equality, and respect and tolerance. To foster these skills, it is recommended that students explore a range of ethical problems and examine the extent to which different positions are related to commonly held ethical principles. *Decision making and actions* requires students to think about duties and the consequences of ignoring these duties. Discussion of these issues are applied to approaches to decision making and action, using ethical dilemmas. Decision making also seeks to explore how one manages the interaction between reasoning, feelings, experience, dispositions and conscience.

The literature review in this chapter provides a means to formulate an initial conceptualisation of a Digital Moral Framework (DMF) that can serve as a teaching and learning tool to foster the moral use of ICTs in students. As part of the action research methodology used in this study (see Chapter Four), the DMF was used by teachers to prepare their classroom activities and refined through their teaching practices. The DMF is a synthesis of the moral values and abilities that underpin the moral domains as identified in the literature reviewed in this chapter. These values and abilities also formed the basis for the initial set of themes used to code the data. Additionally, the literature suggests some methods to foster the moral domains. See Appendix A for a summary of this. In the final part of this chapter the first iteration of the DMF is presented.

2.5 The first iteration of the Digital Moral Framework

Initial engagement with the literature pointed to 20 values that could underpin the moral domains (see Figure 2.1). Chapters Five, Six, Seven and Eight seek to uncover whether these 20 values are important for the use of ICTs by secondary school students.

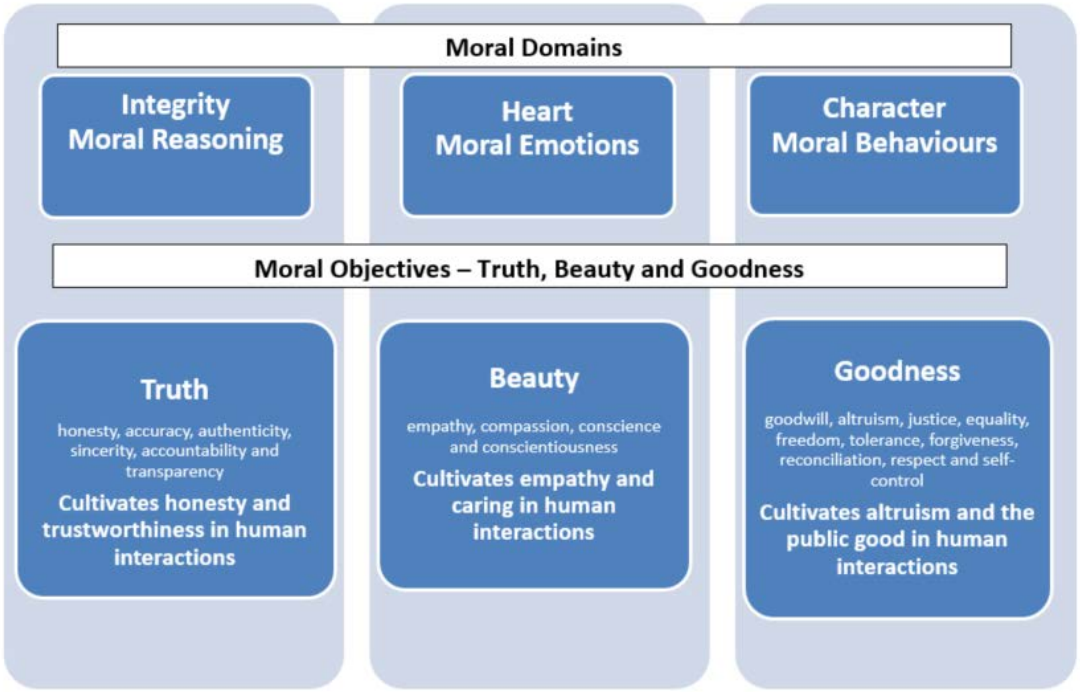


Figure 2.1 The first iteration of the Digital Moral Framework

Some computer ethicists contend that a moral framework is a prerequisite for a moral analysis of the deployment and use of ICTs (Brey, 2000; Bynum, 2007; Floridi, 1999; Kerta et al., 2012). Hence, these values also formed the basis of the literature review of immoral issues associated with ICTs undertaken in Chapter Three and the analysis of these issues in Chapter Six. One purpose of developing frameworks and models in research is to help understand and explain a social phenomenon in order to determine how it can be worked on (Anyon, 2009) or improved (Ryan, 2010). A moral framework is also required to foster computer ethics (Volkman, 2015).

The second iteration of this literature review and the initial classroom activities based on 20 values resulted in 12 values emerging as important for underpinning the moral domains. Integrity, honesty, trustworthiness, authenticity and accountability underpin moral reasoning. Empathy and contentiousness underpin moral emotion. Self-control, responsibility, altruism, respect and justice underpin moral behaviour. These 12 values were chosen because they were the most often cited by the participants as relevant to the moral domains, and encapsulate the values that are similar in nature. For example, tolerance, benevolence, freedom, equality, impartiality, access to information, confidentiality and the protection of rights are often associated with

justice, as they promote the welfare of others (Bagchi et al., 2015). There are many more values that could be significant in the use of ICTs by secondary school students, for example, patience, perseverance, courage (Morales-Sa´nchez & Cabello-Medina, 2013), humility, adaptability, assertiveness (Giner-Sorolla, 2012) and so on. However, these were not included. In order for this study to be manageable, it was necessary to limit the number of moral values in each of the moral domains.

Although the reviewed literature proposes certain broadly shared moral values and abilities, further research is needed into how these values and abilities mediate the use of ICTs by secondary school students, as well as how they can be fostered. Additionally, the disciplines reviewed tend to emphasise the importance of one moral domain over the other. It could be suggested that that each capture a part of morality, but is limited when taken individually, suggesting a need to take a holistic approach that takes into consideration all three moral domains. The 12 values also formed the basis used in the themes for the second iteration of the coding and criteria to assess immoral issues associated with the use of ICTs, which is undertaken in Chapter Three.

The next chapter undertakes the review of the literature with respect to sociotechnical issues that influence on how values (moral and immoral) mediate and are mediated by the use of ICTs.

Chapter Three: Technologically mediated moral issues

The literature review in this chapter examines how values mediate, and are mediated by, the use of ICTs. Investigation of these issues required a review of the very broad sociotechnical literature, including systems theories, which were developed to explain the reciprocal impact of humans on ICTs and ICTs on humans. Sociotechnical theories are now broadly applied to study a range of phenomena, including social media (Eason, 2014). The focus in this chapter is on the role of values in sociotechnical phenomena, which are referred to in this study as *technologically mediated moral issues* (TMMI). Floridi (2010a) maintains that such an investigation into the influence of ICTs is necessary to understand the information age, including its nature, its less visible implications and its influence on human and environmental welfare. He argues that this investigation provides a chance to anticipate difficulties, identify opportunities and resolve problems related to the use of ICTs. Additionally, for this study, how sociotechnical phenomena are viewed and understood influences the judgements made about the moral implications of ICTs (Introna, 2011; Vickery, 2012), and the pedagogical approaches (Bromley, 1997; Lau & Yuen, 2014) and policies that are used to guide and transform their use (Feenberg, 2002; Heidegger, 1997; Latour, 1994; Parker, 2007). The various models of sociotechnical phenomena conceptualise how technologies are morally assessed with respect to their social impact (Feenberg, 2002; Winner, 1997). These conceptualisations are relevant for understanding the influence of young people's values and practices, and the influence of ICTs on their values.

The relevant literature mostly conceptualises the role of values within three contexts. First, human values influence how ICTs are used and deployed, second, characteristics of ICTs influence human values and third these two reciprocally influence each other. The understanding provided in the literature about these three influences can, in part, help to answer the research questions and also help analyse data generated from TMMI. However, the study of the role of values in sociotechnical phenomena while using of ICTs by secondary school students is in its early days (Davis et al., 2010; Flores & James, 2013). It would also appear that there is little research on understanding how these three influences affect students uses and the

role of these impacts in fostering the moral use of ICTs with secondary aged students. These are some of the gaps this study seeks to address.

The chapter is in four main sections. The first section (3.1) discusses conceptualisations of the influence of the social sphere on ICTs and the influence of ICTs on the social sphere. The conceptualisations cover some technical mediation theories, cultural/contextual perspectives of technology and computer ethics. The technologies that are relevant for this study are modern ICTs used by secondary school aged students, such as smart phones, tablets, desktop and laptop computers, software, web-based applications and social media. In the reviewed sociotechnical literature, however, the term technology encompasses tools, machines, earlier forms of computing and modern ICTs (Bromley, 1997; Davis et al., 2010; Feenberg, 2002; Ito et al., 2010; Latour, 1994; McGinn, 1997; Moor, 1985). The sociotechnical literature provides understanding of the impact of technology (tools) on the social sphere. Hence, a review of sociotechnical phenomena involves both old and new technologies as the broad scope can inform how to conceptualise the influence of technology on values with respect to the use of modern ICTs by secondary school students.

The second section (3.2) examines the principles evident in generic systems theories, particularly the cybernetics principles/processes of positive feedback, negative feedback and circularity, because these can be used for analysing and modelling the characteristics of social systems (Beer, 1985), including interactions between the social sphere and technology (Heylighen & Joslyn, 2001; Heylighen, Joslyn, & Turchin, 1999). Systems theories are used in this study as a methodology for description and analysis (Dekkers, 2017) in order to help understand the relationship between the system (a young person) and its environment (ICT environments). ICT environments are defined as systems that are made up of information entities (agents and ICTs) and their properties, processes and reciprocal relations. Agents are individuals or organisations that interact with ICT environments (Floridi, 1999; Gorniak-Kocikowska, 1996). Along with the sociotechnical literature, cybernetics modelling principles/processes provide a conceptualisation of the role of values in sociotechnical phenomena.

The third section (3.3) presents the first iteration of the Cyber Values Systems (CVS) model, which is synthesised from this literature review. In terms of systems theories, researchers seek to model reality by simplifying that reality into elements, relationships and properties (Dekkers, 2017). In this study, the CVS model was used to model and analyse the role of values in sociotechnical phenomena. It also aided in the development of some of the questions asked of participants about the reciprocal influences of human values on ICTs and ICTs on values, as well as some of the themes used in the data analysis that relate to moral issues associated with the use of ICTs by students. Additionally, some computer ethicists and theorists in technical mediation claim that models are helpful for analysing the influence that the social sphere and technology have on each other (Brey, 2000; Bromley, 1997; Feenberg, 2002; Floridi, 1999; Latour, 1994; McGinn, 1997; Moor, 1985). The position adopted in this study was that models flow from the selection of characteristics important to the research questions at hand. In this sense, models are not true or false; instead they are more or less useful, depending on the purpose of the person using them (Leonard, 2009).

The final section (3.4) discusses moral and immoral influences associated with the use of ICTs as identified in the technical mediation and computer ethics literature. This study adopts the view that the study of moral development requires an evaluative stance (Colby & Damon, 2015). Scholars in these fields maintain the importance of critically evaluating the morally relevant properties and practices that are part of computer systems (Brey, 2000, 2010; Davis et al., 2010; Feenberg, 2002; Floridi, 2010a). This critical view of computer systems is important because it provides for an identification of the influences that can potentially support or undermine the moral domains of secondary school students while using ICTs, while also suggesting moral values that are needed to underpin the moral domains. Some researchers suggest that only a few studies have explored the unethical attitudes and behaviours of secondary school students (Blau & Eshet-Alkalai, 2017). An attempt is made to address this gap in this study.

3.1 Sociotechnical conceptualisations

The review that follows covers the instrumental and substantive paradigms, and the limitations of these in conceptualising the role of values in sociotechnical phenomena. Critical theory of technology and other more holistic contextual approaches are also discussed, as these are drawn upon to create the Cyber Values Systems model.

The sociotechnical phenomena incorporate complex interactions between social, cultural and technical factors (Bromley, 1997; Buckingham, 2007; Bynum, 2007; Edgerton, 2007; Ess, 2002; Feenberg, 2002; Floridi, 1999; Heesen, 2012; Jenkins, 2008; Weiner, 1960; Winner, 1980). This review of the sociotechnical literature is undertaken through the lens of *disclosive computer ethics,* which seeks to make transparent the moral features of practices and technologies that would otherwise remain hidden, thus making them available for ethical analysis and moral decision making (Brey, 2010). The design and operation of computer systems has moral consequences and therefore should be subjected to ethical analysis. Computer ethics should not just study ethical issues in the use of computer technology, but also in the technology itself (Floridi, 2010a).

The study of sociotechnical phenomena questions the moral neutrality of ICTs, and whether efficiency should be the primary consideration when deploying them (Feenberg, 2002; Introna, 2011; Latour, 1994), or should society be concerned about the potential detrimental impacts of technology on the social sphere and the natural environment (Brey, 2010; Feenberg, 2002, 2012a; Weckert, 2007). Introna (2011) maintains that how we answer these questions depends on our views of the nature (ontology) of technology. These questions and concerns are still currently being investigated and contested when it comes to the use of ICTs by adolescents. For example, questions about whether ICTs cause social change or are an outcome of social change (Livingstone, 2009), or, whether young people can manage risks associated with the use of ICTs (Davis et al., 2010; Vickery, 2012). ICTs are considered beneficial because they are claimed to provide the ability to create new forms of learning, community and personal empowerment (Davis et al., 2010; Hoshiar & Friedel, 2014). Conversely, concerns emerge about privacy, commercial

exploitation and addiction (Buckingham, 2008). However, these concerns are also contested (Vickery, 2012).

There are various sociotechnical paradigms, three of which are reviewed in this section. The first paradigm is instrumentalism (Bromley, 1997; Feenberg, 2002; Shrader-Frechette & Westra, 1997; Sikka, 2012; Street, Palmer, & Braunack-Mayer, 2012), which is also referred to as social constructivism (Nagel, 2008) or social shaping (Bromley, 1997). The second paradigm is substantivism (Feenberg, 2002; Heidegger, 1997; Introna, 2011). A variety of paradigms referred to by Bromley (1997) as the *third position*, which consider both the influence of the social sphere on technology and the influence of technology on the social sphere. These *third position* paradigms are also referred to as *sociotechnical phenomena* (Heesen, 2012; Latour, 1994; Winner, 1997), the *social contexts of technological development* (McGinn, 1997) and the *socialisation of humans and technology* (Feenberg, 2002; Heidegger, 1997; Latour, 1994).

3.1.1 The instrumental paradigm

The instrumental paradigm posits that technologies are neutral tools and values free; they are a means to an end established by humans (Andrews, 2016; Bromley, 1997; Feenberg, 2002; Heidegger, 1997; Latour, 1994; Shrader-Frechette & Westra, 1997; Sikka, 2012; Street et al., 2012). Feenberg (2002) points out that this view holds that technology is subservient to the values established in the social sphere. Moral concerns only arise when humans use technologies immorally (Street et al., 2012). The instrumental paradigm mainly views the implementation of technology through valuing effectiveness, strategic control and economic utility (Feenberg, 2002; Kline, 2001; Sikka, 2012; Straussfogel & Schilling, 2009; Weckert, 2007; Winner, 1997). The instrumental paradigm is considered to be the dominant view adopted by modern governments and policy sciences (Feenberg, 2002; Winner, 1997). The professional-ethics approach to computer ethics argues that there is no deep theoretical difference between CE and other professional ethics like business ethics (Gotterbarn, 1992). Humans determine the use of ICTs and there is no distinct difference between ethical problems surrounding the use of ICTs and any other

ethical issues. However, most computer ethicists do not take this one-sided view of ICTs (Brown, 2007; Floridi, 1999; Street et al., 2012; Weckert, 2007; Wong, 1995). It can be argued that values drive the use of ICTs, but this does not represent a complete picture of sociotechnical phenomena.

3.1.2 The substantive paradigm

The view of technology discussed below represent another approach to conceptualise the role of values in sociotechnical phenomena, that is that technology influences human values. Yet, this approach does not represent a complete picture. The substantive paradigm, views technologies as an outcome of socially situated design, development and practices based on certain 'values' and 'goals' (Andrews, 2016; Introna, 2011). Technology is an objectified form of instrumental rationality ('values' and 'goals') (Nagel, 2008). This view is based on the argument that no tool is neutral because technologies have inbuilt biases that affect the social dimension (Amiel & Reeves, 2008; Bromley, 1997; Buckingham, 2007; Edgerton, 2007; Feenberg, 2002; Heidegger, 1997; Kuflik, 1999; Latour, 1994; Van Den Hoven, 2010; Weckert, 2007). Technologies are shaped by the social interests and biases of the people who produce and control them, and these 'interests' are embedded in the design, deployment and uses of technologies (Buckingham, 2007; Feenberg, 2002; Latour, 1994). Computer ethics also approaches sociotechnical phenomena from the perspective that ICTs are special technologies that raise special ethical issues (Brey, 2000; Ess, 2002; Floridi, 1999; Gorniak-Kocikowska, 1996; Moor, 1985; Street et al., 2012).

3.1.3 Conceptual and analytical limitations of binary models

The literature indicates that the instrumental and substantive paradigms face some limitations when seeking to comprehensively model sociotechnical phenomena because each of these paradigms approaches interactions from a particular view (Feenberg, 2002). The approaches taken by these paradigms are not adopted in this study because this would limit the focus on the influence of values on ICTs and the

influence of ICTs on human values in two ways. First, when technology is deployed through an instrumental paradigm, it reduces and narrows the definition of technology to utility (Sikka, 2012). Feenberg (2002) argues that binary approaches such as the instrumental and substantive paradigms limit their focus on certain objectives and values; hence, they cannot account for multiple perspectives. Second, the instrumental and substantive paradigms consider the influences of the social sphere and technology in isolation, which presents an analytical limitation, because the influence of both the social sphere and technology need to be considered for our understanding to be comprehensive (Bromley, 1997; Latour, 1994). Both humans and technologies have a socialising effect on each other (Feenberg, 2002; Introna, 2011; Latour, 1994; Sikka, 2012). Additionally, some theorists, point out the drawbacks of the moral panic associated with the substantive paradigm. For example, this paradigm can lead to the downplaying of the role of the moral agency of adolescents in their uses of ICTs (Davis et al., 2010; Ito et al., 2010; Selwyn, 2012; Vickery, 2012), while Feenberg (2002) suggests that this view can also lead to limiting recognition of the beneficial uses of technology.

As an alternative to the instrumental and substantive paradigms, I examine critical theory of technology and other more holistic contextual approaches to sociotechnical phenomena, all of which maintain the need to consider both the influence of the social sphere on technology and the influence of technology on the social sphere when conceptualising of sociotechnical phenomena.

3.1.4 A critical theory of technology

Critical theories of technology evaluate the implementation of technology based on sociological and environmental arguments (Amiel & Reeves, 2008; Feenberg, 2002; Introna, 2011; Parker, 2007; Shrader-Frechette & Westra, 1997; Winner, 1997). With respect to the influence of technology on the social sphere, technical mediation (properties introduced by humans into technologies) is the context of transformation because these properties affects every aspect of the social sphere (Feenberg, 2002; Winner, 1997). For Feenberg (2002), an important contributor to the development of critical theories of technology, a critical theory also identifies the importance of the

influence of the social sphere on technology. Feenberg (2002) refers to the influence of the social sphere on technology as the “social battlefield” where civilizational alternatives contend (p. 10). Technocratic control is the central problem. A growing conflict has emerged between democracy and technocratic forms of organisation; choices about how we manage the relationship between human beings and technology are increasingly mediated by technical decisions. Once technical decisions become ‘technical codes’ (established procedures incorporated into technology), this process institutes the dominant power bases that influences on the social sphere (Feenberg, 2002). Feenberg (2002) argues that transforming the technical enterprise is central to addressing the demands formulated by human concerns, because the choices about how we manage the relationship between human beings and technology are increasingly mediated by technical decisions. Technologies evolve in political, social and economic contexts, and thus technology is embedded in and shaped by society (Feenberg, 2002; Sikka, 2012). Nagel (2008) postulates that Feenberg's contribution to the philosophy of technology is his attempts to bridge the gap between substantivist and constructivist approaches. It could be argued that Feenberg’s critical theory of technology considers both the influence of the social sphere on technology and the influence of technology on the social sphere, which is the position taken in this study.

3.1.5 Holistic contextual approaches to sociotechnical phenomena

The approach taken in this study is to look at the role of values in sociotechnical phenomena from a holistic/contextual approach, namely how values influence the use of ICTs, how ICTs influence values and the reciprocity of these two influences. Technical mediation mediates behaviours and moral outlooks; however, it is also about moral reflections on the technically mediated self, aimed at possible transformation (Dorrestijn, 2017). The literature in this section approaches sociotechnical phenomena from a holistic contextual approach. Contemporary practice-oriented philosophers of technology emphasise the human technology merger and the multiple types of influences of technology on the social dimension. What is needed is an analysis that combines both an exploration of the effects of

technical mediation and the user's activities (Dorrestijn, 2017). The scholars reviewed in this section approach the role of values in sociotechnical phenomena from what is referred to in this study as, the *holistic contextual approach*. The holistic contextual approach incorporates both the influence of the social sphere on ICTs and the influence of ICTs on the social sphere in their conceptualisations (Benkler, 2008; Bromley, 1997; Buckingham, 2007; Feenberg, 2012a; Gee, 2009; Heesen, 2012; Ito et al., 2010). Interactions that are accounted for in context, provide a more holistic view of sociotechnical phenomena (Amiel & Reeves, 2008; Tillquist, 2002). Bromley (1997) referred to this contextual, non-binary approach as a *third position*. The sociotechnical context influences communication (Cocking & Matthews, 2001; Floridi, 1999; Weiner, 1960), the development and use of ICTs (Bromley, 1997; Heesen, 2012), learning (Ito et al., 2010; Steenbeek & Geert, 2008) and the cultures that are created while using ICTs (Bromley, 1997; Ito et al., 2010; Jenkins, 2008; Livingstone, 2009). Another example of this holistic contextual approach is *media ecology,* which emphasises the characteristics of an overall technical, social, cultural and place-based system, in which components are intertwined. Technology, media, and public culture are shaping and being shaped by these dynamics (Ito et al., 2010; Jones, 2016).

The analysis of the cultures that are created while using ICTs also take a similar holistic contextual approach. Cultures are considered to be outcomes of the interplay between the social sphere (including values) and ICTs (Chebat, Kerzazi, & Zourrig, 2010; Latour, 1994; Pacey, 1983; Parsons, 1959). Contextual approaches have been referred to as *technological culture* (Parsons, 1959), *networked public cultures* (Benkler, 2008; Buckingham, 2007; Ito et al., 2010), *new media cultures* (Bromley, 1997; Livingstone, 2009), *media ecology* (Ito et al., 2010), *digital cultures* (Jenkins et al., 2009) and *convergence cultures* (Jenkins, 2008; Livingstone, 2009). More recent discourse refers to this phenomena as *technologically mediated moral change*, which discusses the co-shaping of technology and morality (Sharon, 2017).

3.1.6 Limitations and benefits of sociotechnical conceptualisations

In summary, the instrumental and substantive paradigms provide some understanding, but on their own, they are inadequate for formulating a comprehensive model of the role of values in sociotechnical phenomena. Holistic contextual approaches (Benkler, 2008; Buckingham, 2007; Gee, 2009; Ito et al., 2010), critical theory of technology (Feenberg, 2002; Latour, 1994) and other theorists assert the need to incorporate both the influence of the social sphere on technology and the influence of technology on the social sphere in our conceptualisations of sociotechnical phenomena (Bromley, 1997; Davis et al., 2010; Dorrestijn, 2017; Ito et al., 2010; Jenkins, 2008; Livingstone, 2009). Therefore, this study adopts the position that both the influence of the social sphere on technology and the influence of technology on the social sphere in our conceptualisations of the role of values in the use of ICTs is needed. The gap addressed by this study is an attempt to create a model that can be used to conceptualise and assess these moral influences with respect to the uses of ICTs by young people. The challenge now is the need to formulate a model to account for these reciprocal influences. The following section discusses systems theories including cybernetics modelling principles, because these theories extent on what has been covered so far to model the role of values in the sociotechnical interactions.

3.2 Cybernetics modelling and social sciences

Systems theories can be used to understand the complexity of the world, describe real-world problems, analyse these problems and find solutions to them. The aim is to identify relevant interrelationships from the perspective of entities and processes (Dekkers, 2017). Systems theories can be applied to understand and model systems of any kind (isomorphism), regardless of the applied discipline (Dekkers, 2017; Seising, 2010), such as technological, psychological and social, or any combination of these (Heylighen & Joslyn, 2001; Heylighen et al., 1999). A systems approach steers the researcher towards *holism,* which posits that the system as a whole determines in an important way how the parts behave (Dekkers, 2017; Straussfogel

& Schilling, 2009). The whole is greater than the sum of its parts (Seising, 2010; Straussfogel & Schilling, 2009). A systems approach is an alternative to reductionist or binary approaches, which seeks to understand an individual system by examining it in isolation from other systems (Hirschheim, Klein, & Newman, 1991; Straussfogel & Schilling, 2009). For the purpose of this study, human actions can be better understood by considering the interactions between humans (systems) and their environments (other systems, such as ICTs) (Dekkers, 2017; Versenyi, 1974; Wiener, 1961). The systems approach aligns well with the sociotechnical view of technological issues, as both are social and technical in nature.

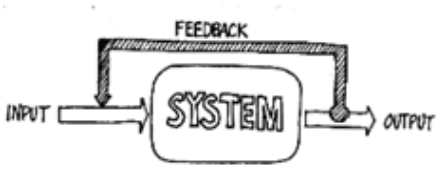
An example of a systems approach that can be used in the study of sociotechnical phenomena is *second-order cybernetics,* also referred to as 'soft-systems' theory (Dekkers, 2017)*. Second-order cybernetics* can be used to study goal oriented living systems, including human ones (Gurman & Kniskern, 1991; Heylighen & Joslyn, 2001; Seising, 2010; Straussfogel & Schilling, 2009). *Second-order cybernetics* principles have been applied to epistemology, education, management and cognition theories (Beer, 1985; Heylighen & Joslyn, 2001). Since this study incorporates the fields of moral psychology, sociotechnical theories and computer ethics, these modelling principles are drawn on to model the reciprocal influence of values on ICTs and the influence of ICTs on values. *Second-order cybernetics* is based on a constructivist epistemology (Straussfogel & Schilling, 2009), which posits that human learning (information processing) is not a passive reflection of reality, but an active construction by the subject (Heylighen & Joslyn, 2001; Heylighen et al., 1999). This is one of the important aspects of epistemology for this study, as it investigates how young people actively learn and respond to experiences while using ICTs. Learners encounter personal and social problems and this problematic encounter leads to learning (Levine, 1989). In *second-order cybernetics,* patterns, processes, communication, information processing, adaptation to change, self-organisation and goal directed behaviour are essential elements of the descriptions and explanations of systems (Gurman & Kniskern, 1991; Wiener, 1961). Based on these elements, it is possible to obtain an understanding of the dynamic responses of systems (Dransfield, 1994; Wiener, 1961). This study seeks to understand information processing, adaptation to change, self-organisation and goal-directed behaviours with respect to the role of human values in the use of ICTs. The next section outlines

the general components and mechanics that make up cybernetics modelling principles as these are later applied to the formulation of the CVS model (see 3.3.1).

3.2.1 Components of systems

Based on the generic concepts of Applied Systems Theory, the first element of a problem is delineating the system(s) or subsystem(s) that is (are) being investigated and determining which aspects need to be looked at. For example, in this study, the two systems that interact are young people and ICT environments. The aspects that need to be investigated are the reciprocal influences of values on ICTs and ICTs on values. To analyse the behaviour of a system, there are two approaches: 1) looking at the system as a whole, and 2) looking at the individual elements and their individual relationships (sub systems). Examining systems first and then moving to subsystems creates the opportunity to define the relationships a subsystem has to its environment (Dekkers, 2017). Additionally, cybernetics posits that in order to grasp how systems such as organisms and societies work, the process of circularity in the communication and control mechanism needs to be understood. Circularity is the process where an effect feeds back onto its very cause, a process that is found in all complex systems such as organisms and social structures. In simple mathematical terms, circularity can be represented by the following equation: a phenomenon (*y*) is mapped, by a transformation (process *f)*, onto itself: $y = f(y)$ (Heylighen & Joslyn, 2001). This feedback loop can also be described another way. A system operates in an environment (another system). Events and positive feedback (inputs) that occur in the environment impact the other system, which that system seeks respond to (Leonard, 2009). Outputs (negative feedback) are the impacts that the system has on the environment (Heylighen et al., 1999). In its simplest form, the behaviours of a system are outputs that result from inputs from its environment (Macrae, 1951). Figure 3.1 is a visual representation of the circularity that occurs in a feedback loop (Heylighen et al., 1999).

Figure 3.1 A feedback loop



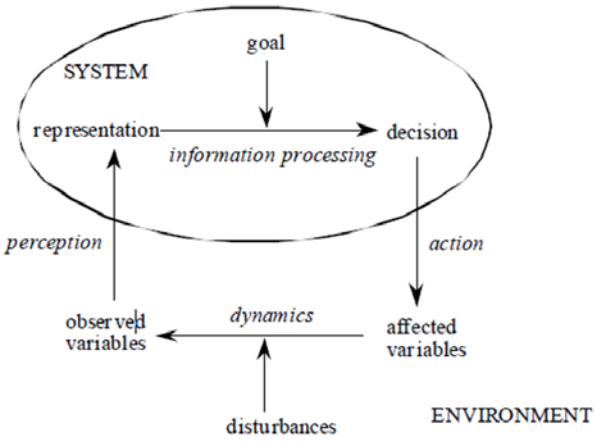
3.2.2 Communication, control, goals and disturbances

Based on the generic concepts of Applied Systems Theory, a control process involves an intervention in a transformation process that adjusts the values of the relevant aspects to the desired values of the system and which might consist of comparing and intervening (Dekkers, 2017). Goal-directed, purposeful behaviour is an essential characteristic of life (Heylighen & Joslyn, 2001). When individuals act in their environment they choose their goals (Macrae, 1951). For human systems, the preferred goals are values and objectives that humans adhere to and which allow them to maintain themselves (Holmstrom, 2007). Disturbances are all the processes (variables) in the environment that a system (humans) does not control, but can affect and intervene with. Autonomous systems, such as humans, are characterised as pursuing their own goals and resisting disturbances from the environment; thus, goal-directedness implies the regulation or control of change (Heylighen & Joslyn, 2001). This state is also referred to as homeostasis (Dekkers, 2017; Leonard, 2009) and incorporates the self-regulating mechanisms that allow the system to maintain stability despite a constant flow-through of variables coming from the environment (Straussfogel & Schilling, 2009; Wiener, 1961).

To correct for disturbances in inputs, resources and throughput, feedback is often used, as it measures the output of a process and intervenes in the input (Dekkers, 2017). Figure 3.2 below represents a process of communication and control. A system is directed by goals (Dransfield, 1994; Heylighen & Joslyn, 2001; Heylighen et al., 1999) and observes the variables in the environment (Heylighen & Joslyn, 2001). This *perception* creates a representation (a model) of what is happening in the environment. The information is processed to determine 1) in what way the variables affect the goals of the system, and 2) the best reaction to safeguard these goals (the preferred state), and then based on this information the system 3) makes

a decision on what appropriate action needs to be taken, and 4) takes *action* to affect some part of the environment (the other system) (Heylighen et al., 1999). Note that the control loop is completely symmetrical. If the Figure 3.2 were rotated 180 degrees, the environment becomes the system (Heylighen et al., 1999). Therefore, the scheme could also be interpreted as two interacting systems, each of which tries to impose its goals on the other (Heylighen & Joslyn, 2001).

Figure 3.2 The basic components of a control system



The next section (3.3) applies the cybernetics modelling principles/processes of information processing, goal-directed behaviour, positive and negative feedback and circularity to model the role of values in sociotechnical interactions. These processes are applied to create the Cyber Values Systems model. Note that values and systems are plural, as there are many combinations of values and ICT environments that can interact.

3.3 Cyber Values Systems Modelling the role of values in the use of ICTs

Three processes and influences emerge from the above discussion of the sociotechnical and cybernetics literatures, 1) human values (*outputs - negative feedback*) influence ICT environments, 2) ICT environments (*inputs - positive feedback*) influence human values and 3) human values and values that are part of ICT environments reciprocally influence each other (circularity). These processes and influences were applied to create the CVS model, which is explained below.

3.3.1 Cyber Values Systems model

The CVS model contains three main processes. These processes are:

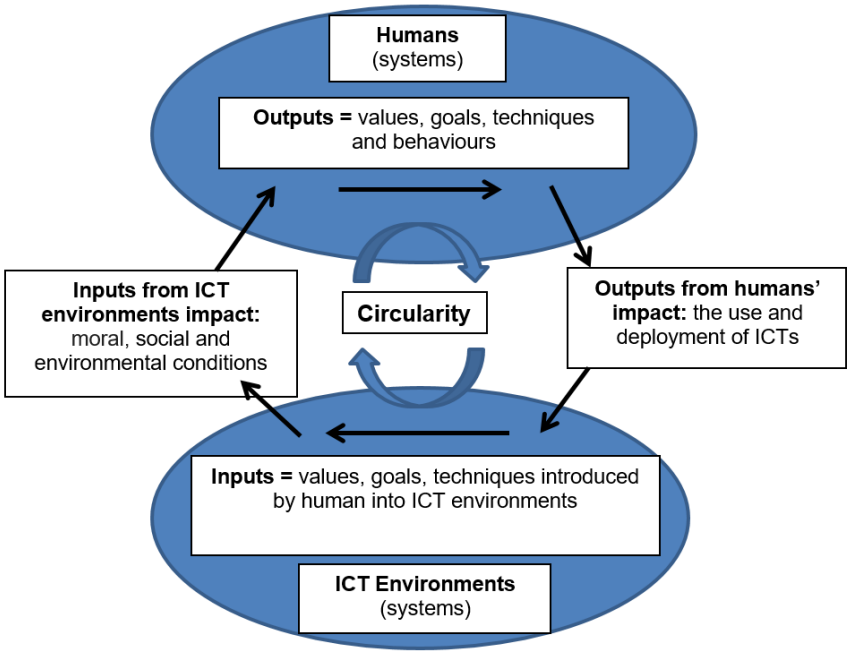
1. Human values (moral and immoral) influence the use and deployment of ICTs.
2. ICTs influence human values.
3. Humans and ICTs have a reciprocal moral influence on each other.

In the first process, human values (moral and immoral) influence the use and deployment of ICTs, which influence ICT environments. When individuals act in ICT environments, they do so based on goals and values (negative feedback). *Outputs* (values, goals and behaviours) are the influences that human systems have on ICT environments. *Outputs* can also be the values, goals and techniques that organisations deploy into ICT environments (Feenberg, 2002; Heidegger, 1997; Latour, 1994; Street et al., 2012; Winner, 1997).

In the second process, ICTs influence human values - Events (*inputs*) that occur in ICT environments influence human systems. *Inputs* (positive feedback) are the moral and immoral values, goals and techniques part of ICT environments (also systems) that are introduced by humans into ICT environments, which influence moral, social and environmental conditions. Human systems seek to manage and respond to these *inputs*. This feedback loop is the process of self-maintenance and goal directed behaviour (negative feedback) (Gurman & Kniskern, 1991).

In the third process, humans and ICTs have a reciprocal moral influence on each other. Circularity is the process where an effect feeds back onto its very cause (Heylighen & Joslyn, 2001). *Outputs* coming from human systems into ICT environments feedback to humans in the form of *inputs* coming from ICT environments.

Figure 3.3 The Cyber Values Systems model



So far, the influence of values on sociotechnical phenomena has been reviewed. The CVS model was created to understand and analyse the reciprocal influence of secondary school students' values on their uses of ICTs and the influence of ICTs on their values. The constructs that make up the CVS model are used in the analysis of the literature that covers potential moral issues associated with the use of ICTs (see 3.4). Additionally, the CVS model is used in Chapter Six to discuss the findings with respect to technologically mediated moral issues and the moral domains, and in Chapter Eight to discuss moral learning. The final section discusses the moral and immoral influences associated with the use of ICTs as identified in the technical mediation and computer ethics literatures. This review provides for an identification of the influences that can potentially support or undermine the moral domains of secondary school students while using ICTs.

3.4 Technologically mediated moral issues

Computer ethicists and technical mediation theorists also maintain the importance of critically assessing the immoral influence of humans on the uses of ICTs and the immoral influence of ICT environments on humans (Feenberg, 2002, 2012b; Floridi, 1999, 2010a; Gorniak-Kocikowska, 1996; Heesen, 2012; Heidegger, 1997; Introna,

2011; Moor, 1985; Weiner, 1960). ICTs can empower individuals to communicate more easily; however, certain characteristics of ICTs that provide for disinhibition can also lead to inappropriate behaviours (Baggio & Beldarrain, 2011; Davis et al., 2010). Extensive research confirms that the ethical assumptions that guide internet users resemble their everyday ethical behaviours. It is not technology, but rather character that determines behaviour online (Feenberg, 2012b). The following section presents a review of the first process in the CVS model; values (moral and immoral) influence the use and deployment of ICTs, which influence ICT environments. A review of the values that mediate the uses of ICTs is important in order to determine how these values influence the moral reasoning, emotion and behaviour of young people. These values come from organisations and individuals.

3.4.1 The influence of human values on the ICT environments

The influence of the values, goals and techniques that are embedded into ICTs by organisations need to be considered because these may be having a moral impact on young people. Probing and exploring these embedded values and revealing their articulations in technology is a vital part of ethical analysis (Ess & Thorseth, 2010). Some computer ethicists and scholars of technical mediation maintain that values held by organisations (goals and techniques) affect the deployment of ICTs. Organisational values, goals and techniques are not inherent properties of technology, but are introduced and embedded into technologies by those who control them. These values, goals and techniques can serve moral or self-serving purposes and also influence on how ICTs are deployed and used (Dorrestijn, 2017; Feenberg, 2002; Heidegger, 1997; Latour, 1994; Street et al., 2012; Winner, 1997). Feenberg (2002) maintained that strategic organisational values and goals are used to control human beings and resources. These ‘values’ become embedded in the deployment of ICTs (Buckingham, 2007; Feenberg, 2002; Jones, 2016; Latour, 1994). Ess (2002) referred to this process of embedding cultural and economic values as *computer-mediated colonisation*.

With respect to the CVS model, values (moral and immoral) held by the individual also play an important role in how ICTs are used. These values also influence ICT

environments. Computer ethicists generally agree that the moral values held by individuals affect moral reasoning (Blau & Eshet-Alkalai, 2017; Mercier, 2011; Yoon, 2011) and moral behaviour (Ess, 2002; Floridi, 1999) while using ICTs. Studies of ethical decision making by IT professionals (Pierce & Henry, 1996; Volkman, 2015) and ethical decision making of young adults (Yoon, 2011) demonstrate that personally held values are the most important factors for determining moral or immoral behaviours. The critical theory of technology aims to account for the increasing influence of values held by individuals on transforming technological practices (Feenberg, 2002; Sikka, 2012).

Computer ethicists provide several examples of immoral values that influence ICTs environment, such as: a lack of integrity, deception, violations of trust, defamation, disinformation, copyright and intellectual property violations, privacy violations, cyberbullying and abuses of the power (Akcay, 2008; Boyce, 2008; Brown, 2007; Davis et al., 2010; Floridi, 1999; Fuller et al., 2009; Gotterbarn & Moor, 2009; Kılıçer & Odabaşı, 2006; Lazuras et al., 2013; Mason, 1986; Moor, 1985; Parker, 2007; Pierce & Henry, 1996; Weckert, 2007; Wong, 1995). This section discusses some moral concerns associated with values held by individuals that may be important for adolescents. For example, inauthenticity and a desire to be validated by their peers and violations of privacy are issues that are raised in the literature.

Adolescents now commonly use ICTs to construct networked public profiles. The creation of these profiles raises moral concerns with respect to one's digital footprint (Baker & White, 2010; Buckingham, 2008; Cho, 2017; Davis et al., 2010; Livingstone, Mascheroni, & Murru, 2014; McGeer, 2004). A digital footprint is defined as a person's online activities or the digital traces left behind by individuals as they conduct their lives online, and also represents the digital content about individuals that can be made public by other individuals or organisations (Gahegan & Weaver, 2007; Hewson, 2013). Managing this digital footprint well is now considered important for protecting one's reputation and employment prospects (Baggio & Beldarrain, 2011; Willner, 2009). One possible moral concern raised is that individuals can manipulate information about themselves or others more easily using ICTs (Davis et al., 2010; McGeer, 2004) because these provide individuals with a great deal of control over how they portray themselves (Cocking & Matthews, 2001;

McGeer, 2004). To differentiate between positive and detrimental digital footprints in this study, positive networked public profiles are referred to as *digital images* and detrimental digital footprints are referred to as *digital shadows*. While seeking to create digital images, young people may also create their own digital shadows (Baumgartner et al., 2015). The creation of digital images by adolescents involves a desire on their part to show the positive side of themselves to others (Cho, 2017; Lin et al., 2015; Tatone, 2016). The creation of digital images can also be motivated by being validated by their peers (Buckingham, 2008; Lim et al., 2015) and to meet the expectations of others (McGeer, 2004). Therefore, these digital images can be either authentic or inauthentic (Busch, 2016). Lim et al. (2015) argue that enactments of inauthentic digital images can affect a young person's psychological wellbeing by making some individuals feel alienated from their true self because of a lack of authenticity between their online and offline selves. The authors suggest that further research is needed to determine the consequences of a lack of online authenticity to wellbeing. However, the influence of context on how we communicate and present ourselves is not unique to ICTs, because people tailor their communications to fit various contexts all the time. However, the concern is that ICTs may dispose us to present inauthentic pictures of ourselves more easily (Cocking & Matthews, 2001; Davis et al., 2010; Lim et al., 2015). Other research has found that the need for popularity is a predictor for whether adolescents post sexual pictures of themselves online, and conversely, those with a lower need for popularity were less likely to post sexual images of themselves (Baumgartner et al., 2015). The creation of digital shadows of adolescents, either by themselves or by others, also needs further research, as digital shadows may influence the moral domains and the wellbeing of secondary school students.

Another moral concern is the potentially broad reach of actions by individuals with respect to their impact on others' digital image and digital shadow. This raises concerns for the dignity, loss of autonomy and privacy of individuals and for the negative influences on the formation of one's public identity (Busch, 2016; Davis et al., 2010; Gahegan & Weaver, 2007; Heesen, 2012; Lim et al., 2015; Nissenbaum, 1998; Tavani, 2004; Van Den Hoven, 1999; Weckert & Miller, 2000; Wong, 1995). Autonomy in the digital age requires a measure of privacy (Davis et al., 2010; Weckert & Miller, 2000). Privacy is important for people because it is essential for the

formation of our self-definition or sense of identity (Davis et al., 2010; Nissenbaum, 1998). Privacy violations are argued to be immoral because they are violations of human autonomy, personal integrity and identity, dignity, justice, (Floridi, 1999; Moor, 1985; Van Den Hoven, 1994; Weckert & Miller, 2000) and control of personal information (Heesen, 2012; Van Den Hoven, 1994; Weckert & Miller, 2000).

3.4.2 The influence of ICT environments on human values

In the CVS model, ICT environments influence human values. The literature suggests that ICT environments not only have positive moral and social effects, but also detrimental ones. With respect to positive social effects, one study of youth between the ages of 15 and 24 found that creating and managing multiple networked profiles could lead to greater and more diverse opportunities for self-expression (Arıcak et al., 2015). Additionally, the creation of positive digital images can provide young people with opportunities for self-reflection and opportunities to get feedback from peers (Davis et al., 2010). For young people experiencing difficulties in engaging in social relationships, online anonymity may lower the barriers to creating new friendships (Heirman & Walrave, 2008). Anonymity provided by ICTs for users is also argued to enable greater freedom of expression without the constraint of conventional bonds and ties (Chen, 2017; Heesen, 2012), protect learners from ridicule, enhance the range of possible actions (Baggio & Beldarrain, 2011), protect privacy and the free flow of information (Diaz, Arroyo, & Rodriguez, 2014; Zajácz, 2013) and reduce anxiety when communicating (Schumann, Klein, Douglas, & Hewstone, 2017). One study found that youth cyber-bystanders in cyberbullying situations are able to perceive others' emotional states. Such empathy and emotional awareness challenges notions that the online environment promotes moral disengagement due to the inability to see immediate reactions (Price et al., 2013).

However, the literature also discusses the detrimental influence of ICT environments on humans. Specific characteristics of ICTs such as commercial interests embedded in ICT environments, anonymity, instrumentality, diffusion and displacement of responsibility, and the dampening of social-emotional cues that minimise the

consequences of actions on others are factors that may influence the moral disengagement and anti-social behaviour of secondary school students.

Since the early introduction of ICTs, computer ethicists and technical mediation theorists have argued for the importance of critically assessing the social and moral influences of ICTs on humans. For example, commercial deployment of ICTs is shaped by the interests and bias of the people who produce and control them, and these 'interests' are embedded in the design of ICTs that affect social systems (Brey, 2000; Buckingham, 2007; Dorrestijn, 2017; Feenberg, 2002; Floridi, 1999; Gorniak-Kocikowska, 1996; Heesen, 2012; Heidegger, 1997; Introna, 2011; Latour, 1994; Moor, 1985; Stahl, 2004; Weiner, 1960; Winner, 1980). I maintain that the influence of these 'interests' need to be explored with respect to how they mediate and influence on the moral domains of young people while using ICTs. The concern for my study is that ICTs can have an influence on defining or regulating patterns of human interaction (Brey, 2000), which raises moral concerns (Cocking & Matthews, 2001; Davis et al., 2010; McGeer, 2004; Van Den Hoven, 1994). The following section discusses these moral concerns with respect to the use of ICTs by secondary school students.

3.4.2.1 Digital moral malleability

The creation of digital images and online anonymity can be beneficial, but some studies suggest that specific characteristics (embedded techniques) of ICTs may also influence moral disengagement and anti-social behaviour (Buelga, Martínez-Ferrer, & Cava, 2017; Davis et al., 2010). Anonymity, instrumentality, diffusion and displacement of responsibility, and the dampening of social-emotional cues that minimise the consequences of actions on others, can also have a detrimental impact on moral disengagement and anti-social behaviour (Busch, 2016). These characteristics are closely related to the concept of virtual reality. ICTs provide an experiential space that is not represented as objectively graspable, but nevertheless bring about effects in reality (Heesen, 2012). An example of techniques that may influence moral disengagement and anti-social behaviour are the virtual and logically malleable characteristics of ICTs (Baggio & Beldarrain, 2011; Heesen, 2012; Moor,

1985; Van Den Hoven, 1994), which can lead to a loss of truthfulness (McGeer, 2004), a decline in the moral quality of interaction, a diminished sense of moral responsibility (Heesen, 2012; Mason, 1986; Van Den Hoven, 1994) and accountability and increases in aggression (Davis et al., 2010). The immoral influence of the virtual and logically malleable characteristics of ICTs, are referred to in this study as *digital moral malleability*. It is important to study this feature of ICTs, as it may influence secondary school students' moral engagement and behaviours. The next section discusses the potential influences of digital moral malleability on the moral domains. The individual's loss of autonomy and self-definition, authenticity and moral responsibility are examples of the influence of digital moral malleability.

3.4.2.2 Digital shadows: The loss of autonomy and self-image

Studies have shown that people are interested in protecting their moral self-image (Barque-Duran et al., 2016). Therefore, actions taken by peers in ICT environments may have an impact on the autonomy and self-image of young people. When others make representations and modify the public profiles of others in a detrimental way in ICT environments, it is a violation of the individual's self-definition (Baggio & Beldarrain, 2011; Floridi, 1999; Van Den Hoven, 1994) and personal autonomy (Heesen, 2012), which undermines their identity (Gahegan & Weaver, 2007). The detrimental digital shadows created by others may be moral concerns that may impact on adolescents. The persistence, replicability, search ability and scalability of content posted online, exacerbates these problems (boyd, 2014; Flores & James, 2013). With ICTs, the undermining of our sense of identity is exacerbated by broad public exposure (Buckingham, 2008; Davis et al., 2010), ubiquitous computing and ungovernable diffusion of information (Gahegan & Weaver, 2007; Weckert, 2000). Once information has been propagated through the use of ICTs, it is difficult to eliminate or even modify (Buckingham, 2008; Garland, 2010).

Another problem is the loss of moral autonomy while using ICTs. The creation of a moral identity (moral emotions and moral expression) is important for adolescent concept of self and identity, and for moral development which relies in part on moral autonomy (Berkowitz et al., 2002). In this study, moral autonomy is defined as

owning one's moral voice apart from the influence of others (Berkowitz et al., 2002), the capacity to shape our moral biographies (Van Den Hoven, 1994) and our ability to act as moral agents (Barque-Duran et al., 2016; Berkowitz et al., 2002). A moral agent is defined as an interactive, autonomous and adaptable system that can perform moral actions (Floridi, 2010b). Young people are now experimenting with and creating new social identities through the use of ICTs (Busch, 2016; Davis et al., 2010). It is therefore important to explore the moral implications of these on young people, because identify formations affect and are affected by relationships with others (Davis et al., 2010). There are two types of identities, personal and social. Personal self-definitions are a person's effort to construct who they are and how they represent themselves in the world (Floridi, 1999). Self-definition is important since it is through this process that adolescents arrive at their sense of identity (Buckingham, 2008), which is dependent on the perspective and the judgements of others (Buckingham, 2008; Cocking & Matthews, 2001). It is therefore important to investigate how ICT environments may influence the moral autonomy of young people.

3.4.2.3 Digital moral malleability and authenticity

In the previous section, human values were discussed as a driving factor behind inauthentic digital images. This section explores the influence of digital moral malleability on how individuals portray themselves (Busch, 2016; Cocking & Matthews, 2001; McGeer, 2004) and adopt new personas (Baggio & Beldarrain, 2011). Cocking and Matthews (2001) maintain that ICTs dispose individuals to present information in a skewed way to fit their objectives; hence, they influence the creation of false self-representations. Distance from the audience while using ICTs may also influence how one represents oneself (Busch, 2016), and increased psychological distance gives rise to an abstract representation of actions (Barque-Duran et al., 2017). The creation of inauthentic digital images by individuals may also become detrimental digital shadows, which may affect the wellbeing of secondary school students (Davis et al., 2010).

3.4.2.4 Digital moral malleability and moral responsibility

This section explores how digital moral malleability can have a detrimental influence on moral responsibility. Anonymity, which is the distance of actions while using ICTs and the instrumental mindset is argued to influence moral responsibility (Bats et al., 2013; Davis et al., 2010; Floridi, 1999; Yoon, 2011). Anonymity in the use of ICTs is defined as the affordance provided to act without individuals being identified, which provides anonymity for actions (Floridi, 1999; Heesen, 2012; Lazuras et al., 2013; Price & Dalgleish, 2010; Yoon, 2011). Some computer ethicists and social media scholars argue that the anonymity provided by ICTs, impacts detrimentally an personal commitment to moral values (Bats et al., 2013; Davis et al., 2010; Yoon, 2011) and accountability (Christie & Dill, 2016). Anonymity is argued to influence the individual's sense of moral responsibility (Price & Dalgleish, 2010; Wong, 1995), thus increasing the likelihood of immoral (Yoon, 2011) and aggressive behaviours (Christie & Dill, 2016). Anonymity also opens the possibility for the false development of trust through false representations (Heesen, 2012) and can contribute to distorted and deceptive self-presentation online (Christie & Dill, 2016).

Cyberbullying is another example where anonymity can be used by the aggressor (Lazuras et al., 2013; Price & Dalgleish, 2010). Studies have shown that cyberbullies consider anonymity to be desirable because it allows them to feel less inhibited and less accountable for their actions (Christie & Dill, 2016; Price & Dalgleish, 2010). Research has also shown that people who engage in 'trolling' often use the anonymity provided by ICTs. Trolling is considered a form of online bullying and harassment that includes starting aggressive arguments and posting inflammatory malicious messages online to deliberately provoke and upset others (Chen, 2017; Craker & March, 2016). Anonymity may have a 'disinhibition' effect (Flores & James, 2013), and is also referred to as 'deindividuation' (Chen, 2017; Christie & Dill, 2016). One study showed that political discourse on YouTube is less polite than the less anonymous Facebook platform (Runions & Bak, 2015). Some psychologist have also shown that diffusion of responsibility can undermine one's ability to act on deeply held values (Tangney et al., 2007), which suggests that anonymity may influence the moral reasoning and behaviour of young people.

Another potential influence of digital moral malleability on moral responsibility is the distancing of one's actions from their effects on others (Flores & James, 2013). Some computer ethicists have speculated that the remote, immaterial (virtual) and faceless nature of interactions while using ICTs causes individuals to perceive their actions as less 'real', hence distancing individuals from their actions (Floridi, 1999; Nissenbaum, 1994; Runions & Bak, 2015; Wong, 1995). This disburdening effect of ICTs relieves us of the need for emotional engagements with the world (Sikka, 2012), and may also result in individuals having no knowledge of potential harm, because the link between cause and effect is blurred (Baggio & Beldarrain, 2011). Moral disengagement may occur because of the distance from the victim and the inability to see the victim's reaction. This distance may create an illusion that no harm is inflicted because the aggressor does not have to physically see the direct effect of their harm on the victim (Barlett, 2017). Immoral actions while using ICTs can easily be perceived as 'victimless crimes' (Sikka, 2012). Dehumanising the target, acts to reframe the individual's perceptions about the target's role, and it is speculated that the invisibility of the victim and the physical and temporal distance afforded by ICT communication creates an emotional gap that enables cyberbullies to disregard the emotional consequences (remorse) of aggressive acts (Perren & Gutzwiller-Helfenfinger, 2012; Runions & Bak, 2015). Another issue associated with distancing, is the absence of nonverbal cues, such as facial expressions and tone of voice (Allison & Bussey, 2017). Runions and Bak (2015) maintain that removing these cues eliminates one of the conditions for the elicitation of empathy.

The instrumental mindset or utilitarian rationality associated with the use ICTs also explains how digital moral malleability influences moral responsibility. ICTs have become synonymous with society's view of modernization and progress, and as cost-efficient ways to solve a multitude of problems (Dorrestijn, 2017; Introna, 2011; Sikka, 2012; Winner, 1997). Computer ethicists and scholars of technical mediation define the instrumental mindset as viewing ICTs as having instrumental qualities (Feenberg, 2002; Floridi, 1999; Sikka, 2012), tools that allow us to achieve what we want (Introna, 2011). Some computer ethicists have speculated that the instrumental mindset may undermine a sense of moral responsibility when using ICTs (Gotterbarn, 1992) and restrict moral evaluations of the potential harm ICTs may cause (Floridi, 1999). This mindset can lead to using technology without considering

the moral implications, and opens up the possibility of their exploitation for self-interest (Sikka, 2012) and unethical behaviours (Buckingham, 2007; Craker & March, 2016; Jung, 2009). The moral ramifications of the instrumental mindset may be that individuals may perceive ICTs as simply a means to an end (Amiel & Reeves, 2008; Ess, 2002) and view other human beings as a means to their own ends in these technological processes (Ess, 2002). Utilitarian rationality may be more easily demonstrated because an action is not directed to a specific person, but is merely the side effect of another action (Bats et al., 2013), which can lead humans to view others as information entities with undefined boundaries (Floridi, 1999). For example, we may consider it wrong to steal chocolate from a shop, but feel differently about stealing information (Wong, 1995). Instrumentality may be an attitude adopted by students because they may view ICTs as tools for their use and enjoyment, which may lead to unethical behaviours. As the literature does not fully address this issue, this study will address the gap by further studying the influence of digital moral malleability on adolescents' loss of autonomy and self-definition, authenticity and moral responsibility.

3.4.3 Reciprocal influence of values and ICTs on each other

The third process in the CVS model is the reciprocal moral and immoral influence of humans and ICTs on each other (circularity), which may influence the moral domains of young people in a detrimental way. The social arrangements of a particular site (context) influence the use and deployment of technology, and technologies, in turn, influence the social dimension (Bromley, 1997; Dorrestijn, 2017). Cybernetics modelling posits that a system is not the nature of its parts alone, but rather the interrelationships between the parts, and between the system and its environment (Seising, 2010; Straussfogel & Schilling, 2009). The principle of circularity is where an effect feeds back onto its very cause. Circularity can reinforce both positive and detrimental behaviours. For example, the creation of positive digital images by young people can provide them with opportunities for self-reflection as they get positive feedback from peers, reinforcing positive behaviours. A detrimental impact of circularity is when anonymous actions while using ICTs minimise the immoral

consequences of actions on others reinforces moral disengagement and anti-social behaviours. Cyberbullies may consider anonymity to be desirable because it allows them to feel less accountable for their actions. Another detrimental impact of circularity is sexting, which may embarrass young people (Weldon, 2011) or even cause psychological harm (Strassberg, Cann, & Velarde, 2017). Instrumentality could also be seen as another example of the reciprocal influence of ICTs on human values and human values on ICT environments, as the virtual and morally malleable nature of ICTs may be perceived as simply a means to an end. Hence, moral disengagement is not only dependent on the characteristics of the individual, but also on the context in which an individual is acting (Runions & Bak, 2015). Additionally, the reciprocal moral influence of ICTs on values and the influence of human values on ICT environments may be having an impact on inauthenticity. For instance, the ease of information manipulation afforded by ICTs in the creation of inauthentic digital images may be reinforcing such behaviours.

3.5 Summary

The purpose of this chapter has been twofold. First, it has reviewed the sociotechnical and cybernetics literature in order to understand the role of values in sociotechnical phenomena. The literature suggest that values influence the use of ICTs and suggests some may be relevant with respect to this study. The review also indicates certain moral concerns with respect to the moral influence of ICTs, and the reciprocal influence of human values on the use of ICTs and the influence of ICTs on values. The CVS model presented in this chapter provides the means to analyse the role of values in the use of ICTs by secondary school students. The second purpose has been to identify technologically mediated moral issues (TMMI) that may potentially influence the moral domains when it comes to the use of ICTs by secondary school students, and to provide an understanding of the values that may underpin or undermine the moral domains.

The following chapter (Chapter Four) outlines the methodology and research design of this study. The conceptual framework and descriptions of the approach to the

research are discussed. Through this explanation, the interrelationship between the research questions and the theoretical perspective is framed and justified.

PART 2 - THE METHODOLOGY

Chapter Four: Methodology and research design

This chapter is divided into six main sections. Section 4.1 discusses the ontological paradigms that have guided this study. I define myself as a researcher that draws on critical theories of technology, cybernetics and moral values drawn from moral philosophy and moral psychology and computer ethics to evaluate, understand and conceptualise the role of values in *sociotechnical* phenomena. The literature review undertaken in Chapter two provided the means to synthesise a framework of moral values and abilities that can potentially mediate the moral domains in the use of ICTs. This framework also shaped my ontology. In section 4.2 the epistemological approach is outlined. The literature review in Chapter Three allowed for the creation of the Cyber Values System (CVS) model which formed, in part, the basis for the epistemology. This model posits that *sociotechnical* phenomena can be understood within context of three influences - human values influence ICT environments, ICT environments influence human values and these two reciprocally influence each other. The CVS model also provided the means to critically evaluate the values and behaviours that mediate the use of ICTs. Section 4.3 discusses the research aims and the action research methods used in this study. Six iterative action research tasks were used in this study: planning, diagnosis, action, observation, reflection and replanning. Three iterations of these tasks were undertaken. In section 4.4 the data sources and collection methods are outlined. The data came from: semi-structured individual interview transcripts with eight year nine students, transcripts of individual interviews with six parents, observations of classroom activities, student worksheets used during classroom activities and focus groups composed of students and teachers. Section 4.5 discusses the data analysis methods, which involved the construction of the themes template, checking the validity of the themes, making links between themes, and corroborating the findings with students and teachers. In Section 4.6, the ethics of the study, the site of the study, the period and type of engagement required of the participants and issues of rigour are discussed.

4.1 The study's ontology

Ontology represents a shared understanding in a certain domain that can be used as a framework to solve a problem (Uschold & Grunninger, 1996). Theory that can be used to understand social phenomena (Anyon, 2009), to identify what needs to be remedied (Griffin & Bell, 2007) and to determine how a phenomenon could be worked on (Anyon, 2009) and improved (Ryan, 2010). Theory also provides the basic assumptions and the important questions (Anyon, 2009; Ryan, 2010) that enable a researcher to think clearly about their intentions and how these could be actualised in the classroom (Griffin & Bell, 2007). The initial formulation of the Digital Moral Framework (DMF) synthesised in Chapter Two provided the theory to understand the role of values *sociotechnical* phenomena, and to determine which moral values and abilities can mediate the use of ICTs by secondary school students. Action research often starts with an action planning such as the DMF which formed the basis for the classroom activities delivered by the teachers who worked with me in this study. A discussion on the importance of moral values and moral development for this study follows.

The role of moral values and moral practices in human affairs are critical because these facilitate moral engagement and participation, and ultimately the wellbeing of individuals and society (Berkowitz et al., 2002; Brownlee et al., 2017; Goleman, 2004). The values that individuals embrace influence on how they behave in their daily lives and in their uses of ICTs (Amiel & Reeves, 2008; Feenberg, 2002; Floridi, 1999; Gotterbarn, 1992; Heylighen & Joslyn, 2001; Kahn & Friedman, 1992; Parker, 2007; Pierce & Henry, 1996; Weckert, 2007; Yoon, 2011). Critical theory of technology maintains that critically assessing the values and techniques that drive the use, and deployment of technology is important in order to determine the moral values that can underpin the uses of ICTs (Feenberg, 2002).

With respect to the role of values in education, this study adopts the views that education should attend to both the intellectual and moral development of the individual (Berkowitz et al., 2002; Biesta, 2007; Brownlee et al., 2017). Educational research therefore needs to provide knowledge that can bring positive change (transformational change and teaching practices) by making a difference to the

quality of lives and experiences of people (Bulfin & Joseph, 2010; Tavani, 2001). Investigations should lead to formulations about new ways of being and to foster social change (Packer, 2011).

Having stated a reliance on moral values, it should be noted that critical theories argue that findings are value-mediated (Johnson, 2007) and that our views of knowledge and reality are influenced by our own beliefs and experiences (Johnson & Onwuegbuzie, 2004). After all, researchers are hegemonised, as our field of knowledge and understanding are structured by limited exposure to competing definitions of the socio-political world. However, the critical researcher recognises that hegemonic consent is always contested, and therefore seeks to be mindful of their own hegemonised assumptions (Kincheloe & McLaren, 2002). Hence, it was necessary to be mindful of my own preconceptions of the values that I believe should mediate the use of ICTs. A sophisticated morality is neither dogmatic, nor authoritarian. A sophisticated ontology presumes that a culture is a dynamic and contested form of life (Packer, 2011).

4.2 Epistemology

Three principles form the basis for the epistemology of this study, holism, critical reflections and that the 'researcher' and the 'participants' are both researchers. Holism is based on systems theories and *sociotechnical* conceptualisations. Generic systems theories, cybernetics modelling principles and the *sociotechnical* literature (outlined in Chapter Three) suggest that a holistic understanding the role of values in the use of ICTs relies on three constructs:

(1) Human values influence the use ICTs. When individuals act in ICT environments, they choose their goals or values (Macrae, 1951). Outputs (values and behaviours) are the influences that human systems have on ICT environments (Dekkers, 2017; Heylighen et al., 1999).

(2) ICT environments also influence human values. Events (inputs) occur in the ICT environments, which influence human systems (Dekkers, 2017; Heylighen et al.,

1999). The system needs to cope with these inputs (Leonard, 2009), resulting in a process of self-maintenance and goal-directed behaviour based on preferred values (Gurman & Kniskern, 1991).

(3) Values and ICT environments reciprocally influence each other. Circularity seeks to model relationships that are dynamic (Leonard, 2009), and is the process where an effect feeds back onto its very cause (Heylighen & Joslyn, 2001). The processes of inputs and outputs described above reciprocally influence each other.

With respect to reciprocity, system theories maintains the importance of taking into account the interactions between systems (Dekkers, 2017; Seising, 2010). For instance, individual morality cannot be separated from social contexts (Packer, 2011). A systems approach is knowing that a system is greater than the sum of its parts, also, the system as a whole determines in an important way how the parts behave (Dekkers, 2017; Straussfogel & Schilling, 2009). The holistic-interactionistic model posits that individuals (systems) function within a structure of multiple individual and environmental factors, thus child developmental outcomes are determined by the patterning of relevant aspects of structures and processes in the individual and in the environment (Li et al., 2017). Action research also maintains that complex social systems cannot be understood by trying to understand a system in isolation from other systems (Baskervillea & Pries-Hejeb, 1999).

The second epistemological principle adopted in this study is the role personal critical reflections of values and behaviours plays in generating knowledge about the role of values in the use of ICTs. In this study, two aspects of critical reflection were studied. The first aspect is the need to critically explore the conditions (values and practices) that make a phenomenon possible, for the purpose of transforming practices (Packer, 2011). Critical theory of technology suggests that the empowerment of the individual is critical in transforming technological practices (Feenberg, 2002). In cybernetics, knowledge cannot be passively absorbed from the environment; it must be actively constructed by the system itself (O'Toole & Beckett, 2010; Straussfogel & Schilling, 2009). Second, values education encourages self-reflection with respect to values and commitments to responsibilities that guide

attitudes and behaviours (Brownlee et al., 2017). Some computer ethicists also maintain that moral learning can occur when individuals undertake critical self-reflection of their uses of ICTs (Davis et al., 2010; Lau & Yuen, 2014; Liua & Yanga, 2012), while some moral psychologists maintain that self-evaluation plays an important role in moral learning (Barque-Duran et al., 2016; Giner-Sorolla, 2012; Malti & Latzko, 2012). These two aspects of critical reflection are important for this study because knowledge can be gained from participants about their critical moral reflections of the influences of ICTs on morality and of their own behaviours while using ICTs.

The third epistemological principle adopted in this study is drawn from action research, which posits that the 'researcher' and the 'participants' are both researchers (Bauer et al., 2017). Cybernetics also maintains that all models are constructed by some observer and that the observer must be included in the model for it to be complete (Heylighen & Joslyn, 2001). A teacher's mental processes while acquiring knowledge are very important with respect to the beliefs they hold about how children learn, because this informs teacher practices in the classroom (Brownlee et al., 2017). Critical theory in educational research also posits that the participants contribute to the research by generating knowledge as knowing subjects that construct meaning from their own experiences and by exploring the value systems involved in the research (Boden, 2005; Muir-Cochrane, 2006).

4.3 Research design

This section discusses the research aims, the methods and techniques used in this study and illuminates the connection between theory and the methods employed. The ontological and epistemological framework described above, the Digital Moral Framework, the Cyber Values Systems model and action research shaped the design of the research. These different elements suggested appropriate questions to ask participants, informed the values and abilities used to analyse the data and provided the basis for the praxis (the teaching and learning content used by teachers in the classroom activities) and the methods used in this study.

4.3.1 Research aims and methods

The first research aim was to understand the moral values and abilities that mediated the moral reasoning, moral emotion and moral behaviour of a small group of secondary school students' uses of ICTs with the purpose of formulating a moral values and abilities that can underpin the use of ICTs. The second aim was to understand the moral challenges these students faced in order to help them meet these challenges. The third research aim was to understand how to foster the moral values and abilities that mediate the moral domains. The study pursued the following research questions to achieve these aims:

1. How do moral reasoning, moral emotion and moral behaviour mediate secondary school students' uses of Information and Communication Technologies (ICTs)?
2. What are the moral challenges that students face while using ICTs and how they responded to these challenges?
3. How to foster the moral values and abilities that mediate the moral domains of students?

4.3.2 Why qualitative methods?

This section discusses the rationale for the use of ethnographic and phenomenological methods. Educational ethnographers describe, interpret, and analyse the experiences of students and schools (Dingle & Stuber, 2008; O'Toole & Beckett, 2010). The purpose of the ethnographic interviews was to explore the meaning (in this case, values in the use of ICTs) the participants ascribe to actions and events that occurred in their cultural worlds (Burgess, 1994; Carter & Little, 2007; O'Toole & Beckett, 2010; Packer, 2011; Roulston, 2010). In this study, ethnographic data brought forth multiple perspectives of people (students, parents and teachers) within a social context (the use of ICTs by secondary school students). An ethnographic study can involve immersion into the social practices of a community (Packer, 2011), and this situation was partially achieved in this study by discussing with students, parents and teachers the moral and immoral values that

mediate the use of ICTs by young people. The researcher also observed the delivery of classroom activities and analysed the various worksheets (artefacts) filled out by students. As a secondary school information technology teacher, I have been exposed to the experiences of my students for 16 years through their candid explanations of their experiences while using ICTs. The multiple perspectives of students, parents and teachers, and my immersion into the social practices of students allowed me to uncover in part, how the participants understood the role of values in the use of ICTs by secondary school students.

The focus of phenomenological interviews is to gain descriptions of particular lived experiences (Packer, 2011; Roulston, 2010), and this study sought to uncover the lived experiences of students while using ICTs. Colby and Damon (2015) maintain that research into values must include the full range of moral responses that people perform in real life. Interviews, focus groups, classroom observations and participating in the subject under study are methods that I maintain helped uncover the lived experiences of students while using ICTs. This aspect of the study was significant for the purpose of determining the reciprocal influence of values on the use of ICTs and the influence of ICTs on values. See Appendix B to view the questions asked of the participants.

4.3.3 Action research methodology

Action research is a practical and rigorous qualitative research method that has been used in many applied fields, including in information systems (Baskervillea & Pries-Hejeb, 1999) and education (Biesta, 2007; O'Toole & Beckett, 2010). The research aims could be accomplished by using action research methods for two reasons: 1) this method can be used to understand challenges faced by educators with respect to secondary school students' practices (Baskervillea & Pries-Hejeb, 1999; Dick, 1997; O'Toole & Beckett, 2010) and 2) researchers are encouraged to work alongside teachers to develop and deliver educational content that could help address challenges (Baskervillea & Pries-Hejeb, 1999; Bauer et al., 2017), with the aim of changing how students do things (Carter & Little, 2007; Dick, 1997). Both situations applied to this study.

Action research methodology is founded upon the view that one way to study a social process is by introducing changes into that process and observing the effects (Baskervillea & Pries-Hejeb, 1999). Understanding and change are pursued at the same time (Dick, 1997; O'Toole & Beckett, 2010), as the action research methodology integrates theory with action (Bauer et al., 2017). In this study, changed was introduced in the form of teachers delivering the content of the DMF and CVS model (the theory) in the classroom. Additionally, with action research, the professional environment often provides the research questions, the research site and the target community (O'Toole & Beckett, 2010), which was also the case for this study. Through action research, community-based organisations apply learning experiences that come out of cyclical processes of innovation (planning the theory), implementation of the theory in the classroom (action, data collection and analysis) and reflection with the participants (Bauer et al., 2017; Sipos, Battisti, & Grimm, 2008). The researcher aims to make changes in how students do things (Carter & Little, 2007; Dick, 1997). Action research was chosen for all the reasons listed above. The following is a description of action research methods.

4.3.4 Action research methods

This study, employed the action research method of using iterative cycles, involving six tasks (Dick, 1997; O'Toole & Beckett, 2010). These tasks were iterated three times. The tasks are: a) the action planning, b) the diagnosis, c) the action, d) the observation and documentation of the action, e) the reflection and evaluation of the data collected, and f) the documentation and replanning tasks. These tasks are described in more detail in sections 4.3.4.1 to 4.3.4.6 below. Action research often starts with a proposed intervention or action to be enacted (Biesta, 2007; O'Toole & Beckett, 2010), but it can also start with identifying a problem that needs fixing (a diagnosis) (Dick, 1997; O'Toole & Beckett, 2010). Action research questions can be put forward as a vision to be achieved (Baskervillea & Pries-Hejeb, 1999; O'Toole & Beckett, 2010). In this instance, how moral values and abilities can underpin the use of ICTs by young people. The research questions and action research methods directed formulation of the Digital Moral Framework that served as the basis for the

classroom activities that sought to foster values and abilities in the moral domains. This study started with both identifying a problem and thinking about how to solve it. As a teacher, dealing with student issues associated with their uses if ICTs and the identification that these student issues were a problem was the initial, informal diagnosis of the problem that occurred before the research formally started. A formal diagnosis was later undertaken as part of the action research cycles in the form of interviews, focus group and observations.

Action research is characterised by constant change between theory and practice, so that theories are validated through practice – a process of reflection-in-action (Bauer et al., 2017). The development of the DMF and CVS model in this study involved three processes: (1) formulation, (2) comparing theory with the data and (3) modifying the theory in relation to the data.

(1) When formulating new theory, the researcher must recognise that theories/models assume facts about a phenomenon being modelled (Carter & Little, 2007). These flow from the selections of characteristics that are important to the question. However, they are not true or false; they are more or less useful, depending on the purpose for using them (Leonard, 2009).

(2) Theories are compared with the data to determine if the world operated as predicted by these theories (Anyon, 2009; Tavani, 2001). Researchers use theory and data to interrogate each other (Anyon, 2009).

(3) As the research progresses, the researcher questions whether the theoretical constructs are still useful in explaining the phenomena, or does a rethink of the theory need to occur (Anyon, 2009). In this process new theory/models can emerge from the data and analysis (Burgess, 1994).

In sections 4.3.4.1 to 4.3.4.6 the six action research tasks undertaken in this study are described, namely: 1) planning the action (educational content) that teachers deliver in the classroom, 2) diagnosing/identifying the problems or issues with respect to students uses of ICTs, 3) delivering the action in the classroom, 4) observing the action in the classroom, 5) evaluating on the success of the action and

improvement needed, and 6) documenting the successes and improvements. This cycle of tasks was iterated three times, each time starting again with the replanning of the action. It should be noted that these tasks do not always occur in this order, tasks occurred at the same time, such as planning the action and diagnosing the problems. Tables 4.1, 4.2 and 4.3 which follow the description of the action research tasks summarise the three iterations of these tasks undertaken in this study, including the methods, sources of data and collaborative status of each task.

4.3.4.1 Action planning

The action planning task involved drawing upon theory to plan the action (Baskervillea & Pries-Hejeb, 1999). Action planning also involved an analysis of the data collected in each of the three cycles undertaken in this study. Chapters Two and Three represent the first iteration of the DMF and CVS model (the theory). In February 2014, the initial version of these was presented to five teachers, for the purpose of getting their feedback. The feedback was used by the researcher to create some preliminary teaching and learning materials: a lesson plan, some background knowledge of the DMF and CVS model and a PowerPoint presentation. These were provided to the teachers who delivered the first two classroom activities in April 2014. The second iteration of the action planning relied, in part, on what was learnt from the first iteration of the action research cycle. The material that was provided to teachers for the next four classes in July 2104 were modifications of the materials used in the first iteration of classroom activities. These modifications came from presentations and worksheets created by the teachers who delivered the first iteration of the classroom activities. The third iteration was based on a further analysis and synthesis of the Chapter Five and Six findings by the researcher, the feedback provided by students and teachers in 2017 on Chapters Five and Six findings, and a further review of the literature by the researcher. The third iteration of the planning of the action is presented in Chapters Seven and Eight.

4.3.4.2 Diagnosis

Diagnosing involves identifying problems or issues, such as ones faced in education (Biesta, 2007; O'Toole & Beckett, 2010). This was undertaken through a collaborative analysis of the reciprocal influence of values on the use ICTs, the influence of ICTs on values, and the moral concerns associated with the use of ICTs. Two methods and sources of data were used in this collaborative diagnosis. The first source of data was ethnographic and phenomenological individual interviews with students and parents, three focus groups with teachers and two focus groups with students. The second source was the observations of the delivery of the classroom activities. During the interviews and the classroom activities participants candidly shared how values (moral and immoral) mediated the use of ICTs and how ICTs influenced the values of young people. This also provided some data to reflect on the constructs that make up the DMF and CVS model. This diagnosis supported the action, reflection and evaluation, and replanning and documentation tasks.

4.3.4.3 The action

The action task involved the classroom delivery of the teaching content and activities created by the researcher and the teachers. In this task, researchers and practitioners collaborate in the formulation and delivery of classroom activities (Baskervillea & Pries-Hejeb, 1999). The action consisted of two teachers delivering the first iteration of classroom activities, to two classes of 19 and 15 students, respectively. Four teachers delivered the second iteration of classroom activities to four classes of 17, 15, 7 and 6 students. Various worksheets and activities solicited different responses from the six different classes. The timing, materials and how these where delivered were a collaborative affair between myself and the teachers. Each teacher who delivered the teaching content based on the DMF and CVS model modified this content to suit their teaching and learning approaches. The CSV model was used by some teachers to explain the reciprocal nature of values in the *sociotechnical* context.

4.3.4.4 The observation

The observation involved my observation of the delivery of six classroom presentations and activities. This task involved using a research journal to document student's values listed during classroom activities and on worksheets, the teaching and learning practices used by teachers, and the teachers' reflections on how the activities went during a debrief with them. In action research these data are used in the reflection and evaluation and replanning tasks (Baskervillea & Pries-Hejeb, 1999).

4.3.4.5 Reflection and evaluation

In action research, the evaluation of the effectiveness of an educational program must specify that learning has occurred. This evaluation can be achieved in several ways: 1) when participants acknowledge that learning has occurred, 2) whether the theoretical effects of the action were realised, that is, whether the theory-inspired action was a factor in the success, 3) whether these effects relieved some problems (Baskervillea & Pries-Hejeb, 1999) and 4) whether a team of people could draw learning from their collective experiences (Baskervillea & Pries-Hejeb, 1999; Dick, 1997; Packer, 2011). Some of these criteria were achieved in this study. Based on my observation of the classroom activities, student worksheets and teacher feedback after the lessons, some students acknowledged that learning had occurred, for instance, noting that moral reasoning, remorse and justice were important. This result provided input for the documentation and replanning of the intervention. With respect to participants acknowledging that learning had occurred, the comments made by students during classroom discussions about what they were learning and whether the DMF and the classroom activities were factors in student learning were recorded. The teaching and learning practices observed during the six classroom presentations, and the feedback provided by teachers after the presentations also provided some evidence that learning had occurred (see 7.3.3). However, one teacher commented that it was a shame that she could not have had a second opportunity to discuss the values and issues raised with students in another class at

the end the school year to determine if theory had an influence on the practices of students. With respect to whether a team of people (in this instance, the researcher, students, parents and teachers) could draw learning from their collective experiences, the changes made by teachers to the intervention provided an evaluation of the effectiveness of the action and augmented an understanding of teaching and learning with regard to the DMF. Additionally, the ethnographic and phenomenological interviews with students, parents and teachers provided an evaluation and plausibility of the DMF and CVS model in terms of their ability to deal with moral problems associated with the use of ICTs and foster the moral use of ICTs. This provided a means for the participants to theorise back to the researcher. Drawing on participant feedback in the evaluation of theory supports collaborative learning (Anyon, 2009).

4.3.4.6 Documentation

Following the evaluation of classroom activities, the documentation and replanning of the action is undertaken. First, the intervention is either reinforced or modified to reflect the realities of the action and the data. It is this evolution of theory that constitutes the important contribution that action research methods bring to research. The success or failure of the theory is important for the practitioner community because it offers insight into future practices (Baskervillea & Pries-Hejeb, 1999). The replanning of the action (the DMF and the CVS model) went through two additional iterations. Bringing theory to the participants allowed them to theorise back into the research process with respect to the theory (Anyon, 2009). Chapter Seven and Eight represent this.

Table 4.1 First Iteration of Action Research Cycles

Action Research Tasks	Data Sources	Collaborative
First Iteration		
(a) Action planning	The initial literature review to formulate the first iteration of the DMF (chapter two) and the CVS model (chapter three) and the teaching materials.	No
(b) Diagnostic	2013 The use of ethnographic and phenomenological questions in interviews with four students, two parents and a focus group composed of five teachers. Questions were based on the DMF and the CVS model.	Yes Students, parents and teachers
(c) Action (Implementation)	April 2014 - Two teacher led, classroom presentations took place based on the first iteration of the DMF and the CVS model.	Yes Teachers
(d) Observation and documentation of the action	April 2014 - The researcher's journal of the student's values listed during the first two classroom presentations and worksheets, and the observation of the teaching and learning practices.	Yes Students and teachers
(e) Reflection and evaluation	The analysis of the data from the first iteration: the researcher's journal of the teaching and learning practices observed during the first iteration of two classroom activities, student data and the feedback provided by teachers after these classes.	Yes Students and teachers
(f) Documentation and replanning of the action	Changes made to the first iteration of the DMF and the CVS model. This is reflected in the second iteration of the planning.	No

Table 4.2 Second Iteration of Action Research Cycles

Second Iteration		
Action Research Tasks	**Data Sources**	**Collaborative**
(b) Diagnostic	The 2014 interviews with four other students, four other parents and five teacher focus groups (ethnographic and phenomenological questions).	Yes Students, parents and teachers
(c) Action (Implementation)	July 2014 – Four classroom presentations based on the second iteration of the DMF and the CVS model.	Yes Teachers
(d) Observation and documentation of the action	July 2014 - The researcher's journal notes of the student's values listed during the second three classroom presentations and worksheets, and the observation of the teaching and learning practices.	Yes Students and teachers
(e) Reflection and evaluation	The analysis of the data used in the second iteration (listed above), the researcher's journal notes of the teaching and learning practices observed during the second iteration of three classroom presentations, and the feedback provided by teachers after the presentations.	Yes Students and teachers
(f) Documentation and replanning of the action	Chapter Five represents the second iteration of the DMF, while Chapter Six represent the second iteration of the CVS model. They are outcomes of the second iteration of the action research cycle, a second literature review, an analysis of the researcher's field notes of the teaching and learning practices observed during the second iteration of four classroom activities, and the feedback provided by teachers after the classes.	Yes Teachers

Table 4.3 Third Iteration of Action Research Cycles

Third Iteration		
Action Research Tasks	**Data Sources**	**Collaborative**
(b) Diagnostic	March 2017 – A focus group composed of five teachers and three students who took part in the 2014 interviews. The focus was on revisiting the moral issues from the first two iterations and getting feedback on the findings from Chapters Five and Six.	Yes Students and teachers
(c) Action (Implementation)	None taken	
(d) Observation and documentation of the action	None taken	
(e) Reflection and evaluation	March 2017 – A focus group composed of five teachers and three students who took part in the 2014 interviews. The focus was on revisiting the moral issues from the first two iterations and getting feedback on the findings from Chapters Five and Six. These conclusions appear Chapters Seven and Eight.	Yes Students and teachers
(f) Documentation and Replanning	Document third iteration of the digital moral framework and the cyber values systems model in chapters seven and eight.	No

The following section describes the data sources, the rationale for using them, how the data were collected and the involvement of participants in this process.

4.4 Research data sources and collection methods

This study relied on data from thick descriptive qualitative datasets (see Tables 4.1, 4.2 and 4.3) and the literature. Interviews were used and are prominent in educational research (Clarke & Robertson, 2001) because they offer access to people's ideas, thoughts, and memories in their own words rather than in the words of the researcher (Johnson, 2007; Packer, 2011). Additionally, focus groups can be used to obtain several perspectives about the same topic. Interactions between participants also enable them to ask questions of each other, hence stimulating

understanding (Gibbs, 1997), which is what occurred with the teachers and students during the focus groups.

The action research method requires different sources of data (Baskervillea & Pries-Hejeb, 1999). This increases credibility (Carter & Little, 2007; Freeman, Marrais, Preissle, & Roulston, 2007; Weber, 1990). To achieve this, the following data collection methods and source were used in this study. The student data come from seven sources:

- Semi-structured individual interview transcripts with eight year nine students (14 and 15 year olds) (four females and four males) undertaken twice (2013 and 2014).
- Transcripts of individual interviews with six parents (four females and two males) (2013 and 2014).
- The researcher's observation journal notes of teachers presenting and discussing values with students during six classroom activities involving 79 students in total (2014).
- Teacher debriefs about teaching and learning with respect to classroom activities (2014).
- Written student responses from worksheets used during classroom activities (2014).
- Transcripts of two separate focus groups composed of three students (two females and one male) each (2017).
- Transcripts of three separate teacher focus group sessions, composed of two females and three males (2013, 2014 and 2017).

The semi-structured interviews allowed the researcher to clarify and rephrase the questions when needed during interviews. The meaning of both questions and answers are negotiated in the qualitative interview because the interviewer may paraphrase, rephrase, or elaborate the questions when the participants ask for clarification or do not respond appropriately to questions (Packer, 2011). A great effort was made to put the participants at ease and encourage them to talk freely. Strategies used were being flexible and responsive to what the participants considered important, and also being sensitive and demonstrating that the interviewees had something important to say. The order of questions varied and

which subtopics were covered depended on where the respondents took the conversation during the interviews. During the interviews, topics were introduced collaboratively, because the participants introduced new topics as the interviews progressed and elaborated responses were encouraged. Most of the activities the participants described centred on the use of social media, but the activities described by the participants were not observed by the researcher.

4.5 Data analysis methods

This section describes the data analysis methods used. In this study thematic data analysis methods involved five steps: 1) constructing the themes template, 2) checking the validity of the themes, 3) clustering text according to themes and identifying new themes, 4) making links between themes, and 5) writing up and corroborating theory. Each of these steps and the rationale for using them is outlined below. Deductive and inductive methods were used to generate the themes and the findings. The following, is also an account of these themes, how they were generated and the reasons for using these methods.

Thematic analysis was used to search for essential ideas in the data and describe the phenomena (Baskervillea & Pries-Hejeb, 1999; Burgess, 1994; Muir-Cochrane, 2006), such as the values and abilities that mediated the moral domains of the students. Themes were used because this allowed for the identification of the participants' perceptions and experiences that were relevant to the research questions (King, 2007a). Themes also allowed establishment of links with the research findings (Thomas, 2003).

The credibility of the analysis relies in part on the transparency of the processes for coding and drawing conclusions from the raw data (Weber, 1990). Transparency relied on feedback from students and teachers about the findings. The use of a themes template also provided a trail of evidence for the credibility of the findings (Muir-Cochrane, 2006). Coding themes (see Appendix C), coding definitions for student worksheets, classroom observations and the NVivo qualitative data analysis software were used to code the data.

4.5.1 Constructing the themes template

Data analysis and the construction of the themes template combined the use of deductive a priori themes with data-driven inductive methods for generating themes (Gotterbarn & Moor, 2009; Mackenzie & Knipe, 2006; O'Toole & Beckett, 2010; Tavani, 2001). For the a-priori themes template, see Appendix C. However, not all of these themes were actually relevant. Themes can be identified before, during and after data collection (Packer, 2011), which was the case in this study. Hierarchical coding was used and broad themes encompassed successively more specific ones. The following themes were not part of the a-priori themes template: remorse, disingenuous friendships, attention seeking, popularity, evaluating and managing emotions, critical reflection and self-assessment. These data-driven inductive themes were those that the data and the literature suggested were important.

Theory is a critical interpretative and explanatory tool (Anyon, 2009). The a-priori themes that emerged from the theory served these purposes. An initial set of a priori themes was developed based on the DMF and the CVS model before the data analysis began. The method of identifying themes before the data analysis begins is based on the rationale that themes are not hiding in the data, waiting to be discovered by the researcher, but rather, themes arise from the way the researcher's theoretical perspective engages with the data in an attempt to address particular research questions. This study started with the assumption that certain aspects of the phenomena (values, abilities and influences) under investigation should be focused on. The importance of some issues in relation to the topic being researched is so well established in the literature that the researcher can expect them to arise from the data (2007a). The other reason for using a-priori themes is that action research often starts with a practical problem that suggests predefined categories and concepts that need to be addressed (Baskervillea & Pries-Hejeb, 1999). For these reasons, it was postulated that the initial themes were relevant and could frame the discussion of the findings. Additionally, inductive method were used to identify, label and group conceptual categories (themes) that are the essential concepts that emerge from the data (Baskervillea & Pries-Hejeb, 1999; Burgess, 1994; Packer, 2011). This method was used in this study to discover new themes.

4.5.2 Checking the validity of themes

An important step in the development of the template is to make sure that the themes are appropriate for the analysis (Muir-Cochrane, 2006). There are some pitfalls of using a-priori themes. By focusing on data that fit a-priori themes it is possible to overlook material that does not relate to them (2007a, 2007b). To deal with this pitfall, it was recognised that it was important to consider the initial a-priori themes as tentative and subject to redefinition or removal (2007a). This process occurred throughout the study, as the initial DMF had 20 values. The second iteration had 12 values and the final iteration had eight. Also, new themes emerged for the CVS model, such as positive and negative peer pressure, popularity and the positive influence of ICTs on student communication. To avoid prematurely narrowing the focus of the analysis based the a-priori themes, reflexivity was employed. Reflexivity is the need to reflect on the way the researcher's own assumptions shape the outcomes of the research, and comments from independent scrutinisers or respondents can help reflect on and question these assumptions (King, 2004). In this study, the participants challenged my own assumptions throughout. The teachers were not enlisted to help develop the initial a-priori themes because their involvement in this study was already quite time intensive, and the development of the initial themes required an expertise in this field of study that these teachers may not have had. However, a focus group interview was conducted with five teachers at the very start of data collection to determine if the themes were plausible. Their comments stimulated some reflections about the themes and the theory. This process supported reflexivity (King, 2014a).

4.5.3 Clustering text according to themes and identifying new themes

The third step is to cluster text according to themes (King, 2014b; Muir-Cochrane, 2006; Packer, 2011) and analyse similarities and differences across cases (Onwuegbuzie & Weinbaum, 2017), which is a process of analysis and data reduction (King, 2014b; Knigge & Cope, 2006; Tavani, 2001). NVivo data analysis software was used to cluster the responses of the participants according to the themes. This process was carried out for each participant group (students, teachers

and parents) by looking for consistencies or inconsistencies in responses, and by identifying patterns in the transcript texts (Knigge & Cope, 2006). Themes were seen in the context of individual participant's accounts, as well as across participants, which helped to avoid one pitfall of thematic analysis - the tendency to focus too much on what is common across cases, and lose sight of the context in which themes are identified in individual accounts (King, 2007b). This process allowed preservation of the participant's subjective point of view and acknowledged the context within which the phenomenon was studied (Muir-Cochrane, 2006).

Clustering also provided the opportunity to discover new potential themes (Muir-Cochrane, 2006), and was achieved by employing exploratory, inductive analysis methods (Baskervillea & Pries-Hejeb, 1999; Gotterbarn & Moor, 2009). This approach allows researchers to query the data from multiple angles, make new or revised connections and entertain rival explanations (Knigge & Cope, 2006). During analysis, the new inductive themes that emerged were assigned to segments of data (Baskervillea & Pries-Hejeb, 1999; Muir-Cochrane, 2006; Packer, 2011). These new themes were included in the data analysis. Both the original and new themes were used to review the transcripts again, until it was considered that the meaning and experiences of the participants were represented in the findings.

4.5.4 Making links between themes

Making links between themes allowed an understanding of the 'the big picture' items in relation to the phenomena. As the data were being analysed, relationships were established between the themes found in the data. For example, responsibility was ranked by students as the most important value. A link was established when it became clear that this finding was linked to the irresponsible uses of ICTs by their peers (see 6.3.1). This link allowed for new understanding to be generated and the initial theory was validated and modified to reflect this link. These methods allowed for inferences to be drawn from the data in order to synthesise it into patterns of meaning (Gotterbarn & Moor, 2009; Mackenzie & Knipe, 2006; O'Toole & Beckett, 2010; Tavani, 2001).

Additionally, similarities and differences across participant groups (students, parents and teachers) emerged, indicating areas of consensus in response to the research questions and areas of difference across the groups (Muir-Cochrane, 2006) (see Table 5.1). Themes were therefore compared in order to come up with higher level concepts such as why responsibility was so important for students and the shared values of parents and their children (see Table 5.2). Certain values and themes became “theoretically saturated” when new incidents fitted easily into existing themes (Packer, 2011). The goal in using these iterative coding procedures was to develop theory that would become conceptually adequate (Baskervillea & Pries-Hejeb, 1999).

4.5.5 **Writing up and corroborating the findings**

The final stage of the analysis involved writing and corroborating the findings. Qualitative comparative analysis is used as a theory-building approach. The analyst makes connections among categories that have been identified previously, and also tests and develops these categories further (Onwuegbuzie & Weinbaum, 2017). Such a process of compares theory with reality. A theory is made up of statements about the generalised relations among conceptual categories (themes) and their properties (instances found in the data). This method was used to synthesise the data into patterns of meaning associated with the theory found in the literature. Theories can be considered trustworthy because the action research methods employed allowed for explanations to fit the realities of the phenomena (Baskervillea & Pries-Hejeb, 1999). Multiple perspectives (students, parents and teachers) provide some credible account of the educational and cultural meanings emerging from the data and the further questions generated from the study (O'Toole & Beckett, 2010). An important cybernetics modelling principle is that although no observation can confirm theory, different observations can mutually support each other (Amiel & Reeves, 2008; Heylighen & Joslyn, 2001). Theoretical constructs appear more ‘real’ as they vary less between observations (Heylighen & Joslyn, 2001). Interviews, focus groups, observations and artefacts provided multiple sources that changed and augmented the theory (action) developed in this study.

To achieve interpretive rigour and trustworthy findings, action research iterative cycles, prolonged engagement in the field, persistent observation, triangulation and peer debriefing were all used. These methods are argued to help achieve some measure of interpretive rigour and produce quality and trustworthy findings (Carter & Little, 2007; Knigge & Cope, 2006), and their application is discussed below.

4.5.6 Interpretive rigor and trustworthy findings

Confirmability, in part, involves others reviewing the research results and confirming the findings (Bradley, 1993). To counter bias, some scrutiny of the researcher's analysis is needed (King, 2014a). Multiple perspectives provide a more trustworthy and interpretive account of the educational and cultural meanings emerging from the data (Freeman et al., 2007; O'Toole & Beckett, 2010). Objectivity is not the characteristic of an individual; it is inherently a social phenomenon that is achieved within the context of a broader community (Dingle & Stuber, 2008). Action research methods follow the process of cooperative design between the researcher and the participants, which can help add rigour to the process (Baskervillea & Pries-Hejeb, 1999). This cooperation was partially achieved with the development of DMF and CVS model used by teachers in the classroom since they contributed to theory development by adding their own content and providing feedback into the refining of the DMF and CVS model.

The credibility of action research can be measured by the way in which practitioners generate knowledge in the study and evaluate the findings (Muir-Cochrane, 2006). Feedback about the theory and findings was received from both students and teachers in 2017, and teacher debriefing occurred throughout the study. My interpretations of the Chapter Five and Six findings were compared with that of other teachers and students. Having discussions with other 'researchers' can help improve the quality and credibility of the findings (Muir-Cochrane, 2006). Teachers provided feedback on the findings during focus groups. Students provided feedback on the theory in both their interviews and during focus groups. Parents also provided feedback on the theory in their interviews.

Template analysis facilitates reflexivity and interpretive rigour by encouraging the researcher to be explicit about their analytical interpretations, and showing where these interpretations came from (King, 2014a; Tavani, 2001). In this study, this method was used to ensure that the data interpretation remained directly linked to the words of the participants, as the participants' own words help strengthen the validity and credibility (trustworthiness) of the research findings (Muir-Cochrane, 2006). To counter bias, I also endeavoured to make my own subjectivity more transparent (Dingle & Stuber, 2008), by demonstrating an account of the interpretations that emerged as the study progressed, how pre-existing understandings changed (O'Toole & Beckett, 2010) and how alternative explanations were considered (Carter & Little, 2007). I maintain that the discussion findings, in part, represent this.

Additionally, teachers also provided their evaluation of the effectiveness of the intervention. However, in some situations respondents may feel uncomfortable criticising the researcher's interpretation (King, 2014a). In the instance of the study, teachers were quite candid at sharing their views and power relations did not appear to influence their ability to express their opinions freely since these teachers were my peers.

Other activities that help to improve the credibility of research results are prolonged engagement in the field, persistent observation (Lincoln & Guba, 1985) and dependability. Dependability refers to the way the researcher accounts for changing conditions in the phenomena (Bradley, 1993). In this study, observation of changing conditions was achieved by prolonged engagement and observation that involved datasets collected in 2013, 2014 and 2017 and my own experiences as an ICT teacher over the last 16 years. Teachers also provided feedback on the findings four years after the initial focus group and classroom activities. These methods created the conditions for the credibility of this study because of the iterative process that required the researcher to modify the theory and the findings over a period of time throughout the study.

The next section introduces the site, the participants, the recruitment and selection methods, their period and type of engagement and an explanation of the ethics of the study.

4.6 Research ethics

Permission to undertake this research was granted from Monash University Human Research Ethics Committee (Approval number: CF13/2007 – 2013001022) in accordance with university guidelines for the ethical conduct of research associated with humans. The site of the study was a preparatory to year 12 independent school located on the outskirts of Melbourne, Australia. The research participants were four female and four male year nine students (14 and 15 year olds), six parents (35 to 50 years old) of the student participants and five teachers (27 to 45 years old). Student and parent participants were recruited through voluntary participation though a letter sent by the head of administration of the year nine sub-school. In 2013 and 2014, the administrative staff from this sub-school mailed out the invitation to participate in the study to the year nine students' home addresses. In 2013, four students and two parents agreed to participate. In 2014, an additional four students and four parents agreed to be part of the study. Included in the letter of invitation was an explanatory statement and a consent form. The student and parents who signed and returned the consent form to the head of administration were selected. Letters and consent forms were not included in the appendix since these identified the school. Additionally, in Term One 2014, I was also invited by the head of year nine to speak about my study to year nine students as part of regularly scheduled year level assemblies. This was information only and no pressure to participate was put on students by any teacher. The teacher participants were recruited through a poster placed in the staff room, which ensured their voluntary participation. The first five to respond to the poster advertisement were selected. Participants supplied their contact details to the researcher on the consent form. The interviews with students, parents and teachers took place in a classroom. I did not teach year nine students nor deal with them on a daily basis, as the year nine program is a separate sub-school located in a separate building on the campus. The privacy of the participants was respected and

information on their right to refuse to participate or withdraw at any time was provided in the explanatory statement.

Table 4.4 Participant involvement

Participants	**Interviews and duration**	**Focus groups and duration**	**Teacher debrief**	**Classroom presentations and preparation time**
Eight Students	2 X 40 minutes			
Three Students		2 X 40 minutes		
Six Parents	1 X 1 hour			
Six Teachers				6 X 45 minutes classroom presentations involving 79 students
Five Teachers			25 minutes	One hour classroom preparation for five teachers

The literature review presented in Chapter Two and Three, and the methodology chapter sets the scene for the presentation and discussion of the thematic data in relation to the research questions. In Part 3 - Analysis and Discussion – the findings about the moral values and abilities that mediated the use of ICTs by student, and how to foster these values is presented in Chapter Five. Chapter Six discusses the findings in relation to the moral challenges faced by young people while using ICTs.

PART 3 - ANALYSIS AND DISCUSSION

Chapter Five: Moral values and abilities in the use of ICTs by secondary school students

This chapter reflects what was learnt from the second iteration of the action research cycle with respect to the moral values and abilities that mediated the use of ICTs by a small group of secondary school students. Additionally, the findings in relation to how these values and abilities can be fostered are discussed. As an outcome of the initial literature review undertaken in Chapter Two, the first iteration of the Digital Moral Framework (DMF), which was composed of 20 values, was synthesised (see Figure 5.1). This initial framework composed of 20 values was trialled through teacher-led classroom presentations and activities involving two classes composed of 35 students. A preliminary analysis of these classroom presentations suggested a framework composed of 12 values (see Figure 5.2). The data analysis in this chapter is based on these 12 values.

The data analysed in this chapter are the 2013 and 2014 interviews with eight students and six parents, two focus groups with five teachers, the researcher's written observations of the student's values listed during the six classroom presentations held in April and July 2014 and the completed student worksheets. It should be noted that students who took part in the classroom activities are not identified in this chapter. This is because this data represents de-identified data (the researcher's written observations of classes and worksheets filled out anonymously by students) that was beyond the scope of the ethics. In this chapter, the discussion is divided into three main sections that represent the three moral domains and their associated values and abilities. The first section examines the participants' views on integrity, honesty, trust and trustworthiness, authenticity and accountability in relation to moral reasoning. The first section discusses the participants' views on moral emotion in relation to empathy and conscientiousness. The third section discusses the participants' views on moral in relation to altruism, justice, respect, self-control and responsibility. Most of the examples provided by participants occurred while using social media.

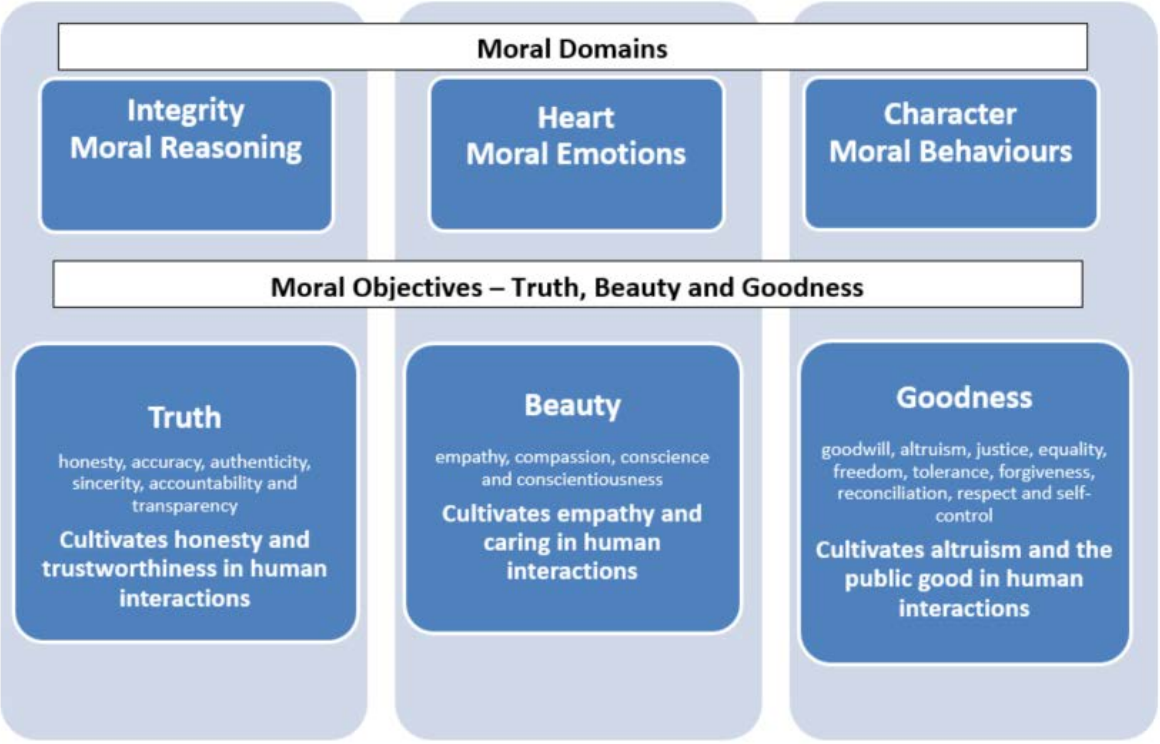


Figure 5.1 The first iteration of the digital moral framework

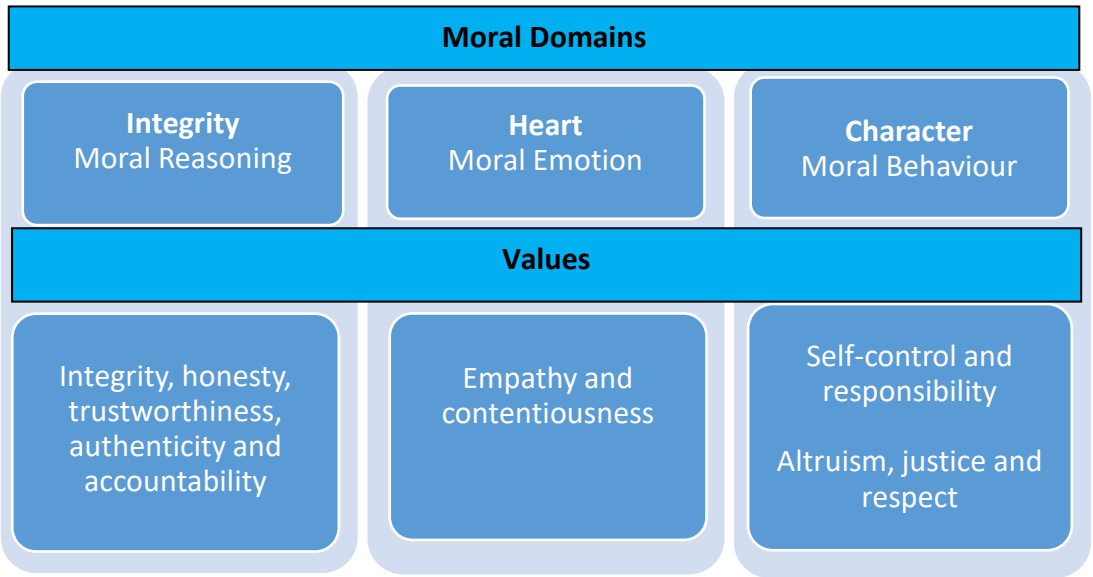


Figure 5.2 The second iteration of the digital moral framework

Although the values and abilities associated with moral behaviours (responsibility, altruism, justice and self-control) (see Table 5.1) appeared to be the most important for the student participants, in this chapter, moral reasoning and moral emotion are discussed first, for two reasons. First, the literature review in Chapter Two and the data indicate that moral reasoning and moral emotion influence moral behaviour, and examples of moral reasoning are found in the discussion of each of the moral domains. The importance the participants placed on each of the 12 moral values can be seen in Table 5.1. For students, this order of importance represents as a percentage the number of times the 12 values were cited both by the eight students in their interviews and by other students who took part of the classroom discussions and worksheets they filled out (the classroom data). This order of importance of values is referred to in the discussion of each moral domain, because this suggests the importance placed by participants in relation to the 12 values. Other values that can potentially support the moral domains emerged from the classroom data, but these were less commonly cited, for example, common sense, safety, maturity and resilience. However, in order to keep the study manageable, the focus of the data analysis is on the 12 values mentioned.

Table 5.1 Order of importance of values

	Students	Parents	Teachers
1	Responsibility - 16.33%	Justice - 13.51%	Self-control - 14.29%
2	Altruism - 12.24%	Self-control - 13.51%	Honesty - 14.29%
3	Justice - 11.66%	Empathy - 13.51%	Respect - 14.29%
4	Self-control - 10.50%	Authenticity - 13.51%	Altruism - 14.29%
5	Authenticity - 8.75%	Honesty - 10.81%	Justice - 9.25%
6	Accountability - 8.75%	Integrity - 8.11%	Empathy - 9.25%
7	Respect - 7.00%	Respect - 8.11%	Conscientiousness - 9.25%
8	Empathy - 7.00%	Altruism - 8.11%	Responsibility - 4.76%
9	Honesty - 6.41%	Responsibility - 5.41%	Accountability - 4.76%
10	Integrity - 4.66%	Accountability - 2.70%	Integrity -4.76%
11	Trustworthiness - 4.08%	Trustworthiness - 2.70%	Authenticity - 0.00%
12	Conscientiousness - 2.33%	Conscientiousness - 0.00%	Trustworthiness - 0.00%

Table 5.1 represents the importance the participants placed on each of the12 values used in the second iteration of the DMF. The table combines interview and classroom data. These values were cited by students 343 times.

Table 5.2 Shared values of parents and their children

	Child	Parent	Child	Parent	Child	Parent	Child	Parent	Child	Parent
Values	**Clairie**	**Sue**	**Louise**	**Spencer**	**Shouja**	**Sparkly Eyes**	**Baba**	**Aphro**	**Tim**	**Hodge**
Integrity										
Honesty										
Trust										
Authenticity										
Accountability										
Empathy										
Responsibility										

In Table 5.2, the shaded green cells represent the shared values held by the parents and their children. Table 5.2 is referred to in this discussion to indicate the influence parental values had on their children.

5.1 Values and moral reasoning

This section discusses the participants' views on integrity, honesty, trust and trustworthiness, authenticity and accountability in relation to moral reasoning, followed by a discussion of some abilities associated with these values. This section also discusses how these values and moral reasoning can be fostered.

5.1.1 Integrity, ICTs and young people

Seven out of eight student interviewees spoke about their own sense of integrity. Four commented on their reasoning with respect to their own sense of integrity while

using ICTs. For example, Betty noted, “If we’re trying to tell someone to have good values, we’ve got to make sure we’ve got good values…. If you’ve got values, stick to them” (Student interview, 01/11/2013), while Tyrone said, “Do the right thing. Just because everyone else is not, you still have a choice” (Student interview, 16/09/2013). Two students, Clairie and Louise, also indicated their desire to hold themselves accountable to their own values and recommended that their peers do the same. The later section on altruism (see 5.3.1) and justice (see 5.3.2) also provides some examples of how students reported having moral expectations of themselves. Three parents considered integrity to be important for young people’s uses of ICTs, while two said that their children had integrity when using ICTs. Spencer noted, “I think if they’ve got values in the first place, then values are going to be passed on to technology. I don’t think my daughter (Louise) in any way changes her values when she uses the computer” (Parent interview, 21/10/2013).

The findings show that some of the student interviewees appeared to demonstrate a level of moral reasoning with regard to their own sense of integrity while using ICTs in that they displayed moral expectations of themselves. However, students ranked integrity in tenth position (see Table 5.1). I would argue that the reason for this is that the idea of having integrity may not be part of the language used by students while using ICTs, yet still understanding the importance of having expectations of themselves.

5.1.2 Honesty and trustworthiness, ICTs and young people

Six student interview participants considered honesty to be an important value, while four considered trustworthiness be important. Four parents and three teachers commented on the importance of honesty and one parent commented on trustworthiness. However, the overall order of importance for honesty was not high (9th), yet honesty was important in the use of ICTs for particular reasons. For example, Betty maintained, “Honesty is very important because people can’t see if you’re being honest (behind the screen). They just have to trust that you’re being honest” (Student, interview, 31/10/2013).

Some data suggest that honesty was reasoned by some students to act as a protective measure while using ICTs. For example, Louise suggested that honesty alleviates problems while using ICTs, noting, “You’re not going to get yourself into as many little problems” (Student interview, 19/10/2013). Two parents also held this view. Spencer, shared a similar view as her daughter Louise: “If you’re honest with everybody else around you, then everything’s easy. You don’t have to have a good memory because you're honest” (Parent interview, 21/10/2013). The similar responses suggest a link between the value held by both the parent and the child.

In two student interview transcripts and some classroom data, it appeared that students demonstrated some sophistication in the measured use of honesty while using ICTs. In some situations, honesty was not always considered the ‘best policy’. Betty, for example, maintained that not disclosing private information while using ICTs is appropriate in some situations in order to protect oneself and others: “If someone tells you something that they don’t want you to share, you cannot share that but still be honest” (Student interview, 01/11/2013). One parent, Hodge, also argued for the discriminative use of honesty:

> There could be situations through ICT where honesty and truth are absolutely not the best policy. I’m referring to the fact that you can get predators after these kids. Honesty and truth, yes, I agree, it’s a core value in use of ICT … Is it always desirable? ‘No’ (Parent interview, 17/09/2013).

Adults considered honesty to be important. Teachers ranked it second, and overall, the parents ranked it fifth. Considering that some students were aware that honesty was not always the ‘best policy’ while using ICTs, this may explain, in part, why honesty was not considered by the students to be as important as other values. Additionally, the prevalence of illegal downloads of digital content reported by the participants also may explain, in part, why honesty was not ranked high. Although the literature suggests that integrity, honesty and authenticity are closely related values (see 2.1.1), on its own, honesty cannot be considered one of the key values that mediated the moral reasoning of student participants. However, these findings suggest that some student participants could reason morally with regard to honesty

and its judicious use.

5.1.3 **Authenticity,** ICTs and young people

One definition of authenticity while using ICTs is being who we truly are and being consistent in one's self-presentations (Lim et al., 2015). Five out of eight student participants and several students during the classroom activities noted that authenticity was important for themselves and their peers, indicating the importance of being consistent in how they portrayed themselves online. Some students expressed the view that they wanted to be 'true to themselves' while using ICTs and how they portrayed themselves on social media, noting, "I am the same on the internet as I am in real life" (Student worksheet, 28/04/2014), "I don't try look better" (Shouja, interview, 14/04/2014), "increase your social status" or get more "likes" (Louise, interview, 18/02/2014). Five out of six parents also considered authenticity to be important for children's ICT use. Spencer maintained, "I don't think my daughter (Louise) in any way changes her values when she uses the computer" (Parent interview, 21/10/2013), which was a view reflected in one of Louise's interviews. The data suggest that several students valued authenticity, that they reflected on their own authenticity and reported that they wanted to be authentic in their use of ICTs. In Table 5.1, authenticity is in fifth position in relation to the 12 values. Based on these findings, authenticity can be considered one of the key values that mediated moral reasoning in the use of ICTs by these secondary school students.

5.1.4 **Accountability,** ICTs and young people

All student interviewees noted that accountability was an important value in the use of ICTs. Overall, accountability was ranked sixth by students. Betty summed up the need for accountability by saying that "in our generation we have a saying. 'What happens on the internet stays on the internet'" (Student interview, 22/10/2013). In this comment Louise suggests that a lack of accountability while using ICTs was a normal occurrence in her cohort. Louise linked having a sense of gratitude for what

one has with one's sense of accountability in the use of ICTs. Some students also appeared to link a lack of accountability to inappropriate behaviours using social media, which some later regretted. For instance, Tyrone observed, "A lot of people will go back to what they've said on Facebook … and say 'Why was I was such an idiot?'" (Student interview, 16/09/2013). Based on these findings accountability can be considered one of the key values that mediated moral reasoning in the use of ICTs by these secondary school students. For parents and teachers, accountability was ranked low, possibly because they did not understand the implications of this value from the children's point of view. The findings discussed in Chapter Six shows that responsibility and accountability are considered very important by students because of their lived experiences with respect to the lack of responsibility and accountability on the part of their peers resulting in negative consequences.

The data suggest a link between integrity, authenticity and accountability because students had moral expectations of themselves. Of the five values that were posited to be significant for moral reasoning, authenticity and accountability were the two most significant with regard to mediating moral reasoning in the use of ICTs by these secondary school students. The next section discusses the findings in relation to abilities associated with moral reasoning.

5.1.5 Moral reasoning, ICTs and young people

From student interviews, 138 references were identified about values and moral reasoning. Students wrote down 19 times on worksheets during classroom activities that moral values formed the basis for what they considered appropriate or not, while using ICTs. During the student interviews, Louise reflected on her own critical reasoning with regard to her use of ICTs: "Take your friends on the internet, you do adopt their behaviours and what they think …. Sometimes you'll be a lot more critical and think whether you want to or not" (Student interview, 31/10/2013). Such a reflection indicates that some students could make moral judgments and decisions based on moral values. All six parent participants appeared to believe that their children had some moral reasoning abilities. However, some parents said that determining what is true or not on the internet was a challenging task for young

people. During the teacher focus group, Dee argued that most year nine students would not yet have developed sophisticated moral reasoning abilities. The findings on integrity, honesty, trustworthiness, authenticity and accountability suggest that many of the student participants applied some moral values to make moral choices and in some instances could justify their choices. For example, in order to protect their peers, students did not disclose private information and were aware of the need to be authentic. The classroom data suggests that 20 out of 86 students maintained that moral values formed the basis for what they considered appropriate while using ICTs. Although this figure is low, most students could list moral values that were significant in their use of ICTs and in most instances, could explain why they listed these values. A discussion on how to foster values and moral reasoning is provided below (5.1.6). The data on authenticity and honesty are presented to provide some insights into how the participants thought moral reasoning could be fostered. No data emerged on how to foster accountability or integrity.

5.1.6 Fostering moral values and moral reasoning

Some student participants suggested that fostering moral reasoning could be best achieved by providing young people with opportunities to think through their own values and choices, and have a voice in the values parents and teachers consider important for their uses of ICTs. Tyrone indicated, “Instead of just saying you should be doing this” (Student interview, 16/09/2013). Betty also stated that “I want to have a say” (Student interview, 22/10/2013). Some students also noted that they need to be taught how to reason critically with regard to the online content, and could learn from past mistakes, peers and school programs. For example, Tim said that honesty is fostered through what others see their peers doing online. He said, “If you’re honest, you might be able to inform people to be more honest” (Student interview, 12/09/2013). Louise suggested that school programs played a role in fostering authenticity in her use of ICTs, stating, “That [the school program] got me to realise that I don’t want to change who I am depending on whether I’m around my family or around my friends” (Student interview, 17/10/2013).

Two students, two teachers and all parents suggested the importance of parental guidance in fostering values, moral reasoning and moral behaviour in the use of ICTs. For example, Sue guided her daughter to think critically about what she posted social media and noted that her daughter learnt from her advice and removed inappropriate postings: “The child took that down, so they made the decision, ‘Well, you know what? You’re probably right. It probably could be taken out of context, so I’ll get rid of it’” (Parent interview, 18/03/2014). Baba provided an example of the importance of parental guidance and influence, stating, “I have the rule, if my mum would see it and be like, “‘Oh my God, it’s terrible,’" I won’t post” (Student, interview, 04/03/2014). Table 5.2 summarised the shared values expressed by parents and their children with respect to the use of ICTs. This summary and the interview data suggest the influence parents have on their children’s values. Some parents also suggested that parental supervision and clear expectations are important. For example, Sparkly Eyes noted, “Parents inquiring into how the child is doing and guiding them is important” (Parent interview, 20/02/2014). Two parents also noted that peer pressure and the values taught at school fostered moral reasoning. Sue suggested that “it can also be peer pressure associated with the use of technology. I think that there can be really good values coming out of it” (Parent, interview, 18/03/2014).

Teachers also suggested that young people can learn from their mistakes and those of their peers. Dee noted, “I think what they see in the IT environment sort of sets a bit of a standard” (Teacher focus group, 18/02/2014). Two teachers Dee and Derrick also maintained that parental support and cultural upbringing play a significant role. Derrick argued, like some students did, that setting rules would not be as effective as providing opportunities for students to think through their values. Ess (2002) argued that in the computer age, individuals need to think critically about their own values and those of others, to negotiate with multiple cultures. Derrick, a media studies teacher, said that this critical thinking could be achieved in classroom discussion on the positive or negative effects of social media and new technologies, and through the use of film by identifying the moral reasoning, emotions and behaviours of the film characters. Robert said that he would also use this approach to explore internet scams: “You could work on the basis of what’s being compromised by looking at their values” (Teacher focus group, 18/02/2014). He also suggested that

emphasising the detrimental effects of unethical behaviour and using ethical dilemmas that relate to students' life experiences could be beneficial for fostering values and moral reasoning.

5.2 Values and moral emotions

This section discusses the participants' views on moral emotion and behaviour in relation to the values of empathy and conscientiousness, the abilities associated with these values, and how these values and abilities can be fostered. Six students out of eight considered empathy to be important, while five considered conscientiousness to be important (see Table 5.1).

5.2.1 Empathy, ICTs and young people

From student interviews, 27 references were extracted that related to empathy. The classroom and student interview data were rich with examples of self-reported empathic behaviours and similar behaviours of peers while using social media. Two students Tim and Louise spoke about looking after their friends when they were upset and comforting those who were bullied online. One study found that youth cyber-bystanders of cyberbullying were able to perceive others' emotional states (Price et al., 2013). Empathy, involves in part, understanding what others are experiencing and feeling, and feeling what another person is feeling (Giner-Sorolla, 2012; Malti & Latzko, 2012). The findings suggest that Tim and Louise had some understanding of the emotional needs of their peers, but this understanding did not necessarily mean that they felt empathy for their peers.

The ability to place to consider a situation from another's point of view is one prerequisite moral reasoning and moral behaviour (Davis et al., 2010). During classroom activities, three students wrote down on worksheets that it was not fair to blame others without "putting yourself in other people's shoes" (Student worksheet, 24/07/2014). Some students appeared to consider empathy while using social media to be beneficial to the wellbeing of their peers who were depressed. For example, Louise said that showing empathy "gives them a reason to stick around … So it's

pretty important" (Student interview, 22/10/2013). Tim also commented, stating "There's always good things going on Facebook … Someone might be having a hard day and they'll post something … saying like, I'm there for you" (Student interview, 12/09/2013). Some moral psychologists have shown that empathy influences a person's understanding of the nature of caring, supports motivation for actions (Malti & Latzko, 2012) and is associated with prosocial behaviour in children (Krettenauer & Malti, 2013). Based on Tim and Louise's comments, empathy appeared to play a role in the care that their peers showed to others while using ICTs. Empathy also acts as a protective factor that promotes young people's psychosocial wellbeing (Goleman, 2004; Malti & Latzko, 2012). Three students Louise, Tyrone and Shouja maintained that the practice of empathy is beneficial to their peers in need. Dee, an IT teacher, also supported this view, stating "You'll have issues where somebody has been picked on, on Facebook and some students jump on and support that person" (Teacher focus group, 17/09/2013). Empathy is also the ability to perceive the experience of another and being aware that moral transgressions have negative consequences on others (Goleman, 2004) and the findings suggest that such was the case for Tim, Tyrone, Louise, and Shouja. However, some parents and one teacher argued that year nine students do not typically have highly developed levels of empathy sufficient to be aware of moral transgressions and their negative consequences. Evaluating and managing one's emotions well is also considered important to moral behaviour (Goleman, 2004; Malti & Latzko, 2012). Empathy appeared to also paly this role for some student, since in three instances students wrote that they did not want to blame others without knowing their situation. Therefore, it could be argued that for some students, empathy plays a role in evaluating and managing their impulse to blame others. In Table 5.1, empathy is ranked in eighth position by students in relation to the other 12 values. Based on this order of importance and some extracts, empathy could, to some extent be considered an important moral emotion for moral reasoning.

5.2.2 Conscientiousness, ICTs and young people

Some moral psychologists maintain that conscientiousness influences behaviour because it acts as an *intuition of wrongness*, before a behaviour (Giner-Sorolla, 2012) or as a remorse, felt after a behaviour (Krettenauer & Johnston, 2011). If an individual has developed an internalised norm and does not act accordingly, they will experience an internal sanction in the form of a negative self-evaluation, feelings of remorse or a bad conscience (Allison & Bussey, 2017; Blasch & Ohndorf, 2015). Louise, Shouja and Tyrone spoke about the remorse they and their peers felt about some of their past actions on social media. Tyrone said that "a lot of people will go back to what they've said on Facebook … and say 'Why was I was such an idiot?'" (Student interview, 16/09/2013). Some students also spoke about feeling conscientious in standing up for others who were being bullied. Shouja indicated, "I'm not exactly sure what the word I'm looking for is, but just like the feeling of just going on with it and pumped up to go for it and that you'd feel better after doing it" (Student interview, 14/03/2014). Dee maintained that the conscientiousness was important because it "sets the foundation of your reasoning. I think children that have a bit more of a moral compass would genuinely behave more morally online" (Teacher focus group, 18/02/2014). In Table 5.1, conscientiousness is ranked twelfth by students. Based on this order of importance and the sparseness of data, this value cannot be considered one of the primary values that mediated moral emotion in the use of ICTs by these student participants. However, it is worth noting that conscientiousness is also considered to be a sense of holding oneself accountable (Goleman, 2004) and is associated with feeling remorse (Blasch & Ohndorf, 2015). In the interview extracts on integrity (see 5.1.1) and accountability (see 5.1.4), Shouja, Betty, Clairie and Louise appeared to express their sense of responsibility by holding themselves accountable for their own practices while using ICTs, suggesting that this sense of responsibility may be linked to remorse. The findings on remorse are important because some students appeared to have developed internalised values and experienced internal sanctions (remorse) when they acted in ways that they felt contradicted their values.

5.2.3 Fostering empathy and conscientiousness

This section explores the views of students, parents and teachers in relation to fostering empathy and conscientiousness. Some moral psychologists maintain that moral emotions develop in children when they learn to distinguish between their own personal perspectives and those of others, and become aware that moral transgressions have negative consequences on others (Malti & Latzko, 2012). Two factors may be important for fostering empathy. First, the self-reported empathetic behaviours displayed by some students on social media in response to the perceived distress of their peers, suggests that some were aware of the needs of others. Encouraging such an awareness may be a factor in fostering empathy. Second, some students also appeared to suggest that their own empathetic behaviours fostered empathy, because of the emotional reward this brought, namely, feeling good about one's empathetic behaviours online. Encouraging empathetic behaviours may also be a factor in fostering empathy. Clairie stated that empathetic behaviours "makes me, in turn, feel nice that my comments have been appreciated and have had a positive outcome on the recipient" (Student interview, 18/02/2014) and another student said it feels "like you make a difference to someone" (Student worksheet, 24/07/2014). Sparkly Eyes (parent) said that empathy could be nurtured by parents showing interest in their children; "rather than getting home, doing dinner and, "Yeah, done your homework? Yeah? Go to bed" (Parent interview, 20/02/2014). Hodge (parent) maintained that empathetic behaviours online, such as "speaking up in situations like suicide", "picking up on people that are having some difficulty out there" and "putting yourself in another person's shoes", fosters empathy in young people (Parent interview, 17/09/2013). However, fostering empathy was argued by parents to be a challenging task for this age group. Although students said that they and some of their peers demonstrated empathy, there was no evidence that empathy was shaped by seeing others respond to the distress of another (Goleman, 2004).

Some moral psychologists have shown that moral emotions such as remorse allow individuals to learn from moral mistakes. Discussing conflict situations and the

emotions they invoke in students can help to foster children's socio-moral sensitivity (Malti & Latzko, 2012). Some data suggest that emotional learning could occur from past mistakes made while using ICTs. Robert maintained that students' experience of remorse for actions on social media should be included in the teaching of values, "because this side of technology has allowed them to do it, so I can see how it would feel. I think it would be very interesting to keep that in mind when we do the lessons" (Teacher focus group, 18/02/2014). Shouja and Tyrone (students) also indicated that they learned a moral lesson from actions that they regretted doing while using ICTs.

5.3 Values and moral behaviour

This section presents and discusses the participants' views on moral reasoning and behaviour in relation to altruism, justice, respect, self-control and responsibility, and how these values and their associated abilities can be fostered. In moral psychology and computer ethics, the abilities associated with moral reasoning are making moral decisions based on moral values, justifying moral judgements and having moral expectations of oneself (see 2.1.4, 2.2.1, 2.4). Some of the findings in this study suggest that these abilities also underpinned the moral behaviour of the students in this study. Additionally, the literature and the findings suggest that altruism, justice and respect are important for social responsibility towards others, while responsibility and self-control are important for moral self-management.

5.3.1 Altruism, ICTs and young people

The student interview transcripts generated 26 references related to altruism. All eight student participants noted that altruism is important in the use of ICTs. During classroom activities involving 86 students in five separate classes, altruism was mentioned 35 times. Some students reported on the altruistic behaviours they considered important, such as "caring" and "performing random acts of kindness". During another activity, students were asked to rank what was most important for them while using ICTs; "doing good for others", "thinking of others", "treating others

well" and "being kind" were often noted (Student worksheet, 22/07/2014). Some research in moral psychology indicates that altruism influences moral behaviour and fosters the wellbeing of others (Goleman, 2004; Malti & Latzko, 2012), this appeared to be the case for students. For four students Tyrone, Baba, Shouja and Clairie looking after their peers when they are upset or getting cyberbullied was also important. Tim held the view that "caring for others" (Student interview, 13/09/2013) and, going "out on a limb for them" (Student interview, 12/09/2013) were important behaviour for him, while Louise talked about guiding her peers in relation to their inappropriate uses of ICTs, "because you don't want to get them in trouble" (Student interview, 17/10/2013). Some research suggests that altruism is motivated by the good feelings that come from giving (self-reward), guilt reduction, self-esteem or conforming to one's moral values (Blasch & Ohndorf, 2015). Findings suggest that some students had moral expectations of themselves with respect to altruism and some appeared to be motivated by the reward that came with being altruistic.

Additionally, Tyrone, Clairie, Louise, Tim and Baba noted that altruism is an important moral behaviour in the use of ICTs for them and for some of their peers. For example, Tim maintained that, "people are really kind in general, and they'll just offer themselves as best they can" (Student interview, 12/09/2013). The next section on justice also provides examples of altruisms reported by students (see 5.3.2). In Table 5.1, altruism is in second position**.** These findings suggest that altruism is a value that mediated the moral reasoning and behaviour of some of the student participants.

5.3.2 Justice, ICTs and young people

Justice is considered to play an important role in analysing moral issues associated with the use of ICTs (2008; Floridi, 1999; Yoon, 2011), and behaving morally (Grappi et al., 2013). The findings in this study suggest that some students could make moral decisions, had moral expectations of themselves based on justice, and in some instances, reported acting in situations calling for justice. In Table 5.1, justice is ranked in third position by students. These findings suggest that justice can be

considered one of the key values that mediated moral reasoning and behaviour in the use of ICTs by some of these student participants.

Research indicates that adolescents consider justice important for themselves and others (Lind, 2016). Research has also shown, however, that despite their potential to reduce or remedy the influence of cyberbullying, most bystanders do not intervene in witnessed incidents. However, those with stronger beliefs that cyberbullying is wrong should feel more compelled to intervene (Allison & Bussey, 2017). Seven out of eight student participants commented on the importance of justice, particularly when it came to cyberbullying. Some said that they believed in treating others the way they wanted to be treated and made efforts to not put others down when online. Six out of eight student interviewees reported their own pursuit of justice in situations where their peers were being cyberbullied. For example, Tyrone, Baba, Tim and Shouja all reported that they stood up for others online, indicating that justice played a role in the moral behaviour of these young people. Shouja maintained that, “if someone is getting cyber bullied I'd tell the … bully to back off” (Student interview, 14/03/2014). Also, Tyrone reported intervening in a bullying situation, saying “You don’t really need to write that” (Student interview, 17/09/2013) and recommended to his peers “to stand up” and speak out in cyberbullying situations (Student interview, 16/09/2013). Three students also indicated that some of their peers pursued justice. For instance, Tyrone described an incident on Facebook where some in his cohort were being ranked as the “top ten worst”. “That’s when a lot of people went, that’s just too far. … you don’t really need to write that” (Student interview, 17/09/2013).

Five out of six parents also considered justice to be important. Spencer expressed the same sentiments as her daughter Louise, with respect to pursuing justice online, noting: “She does not like the bullying thing. She's usually the first one to say ‘don't pick on people’” (Parent interview, 21/10/2013). Only two teachers suggested that young people stood up to injustices online, while one teacher believed that this was not a regular occurrence. During the teacher focus group session, Dee said that she thinks students do stand up to injustices online, stating, “I think people aren’t so afraid to jump on and support each other” (Teacher focus group, 18/02/2014), while Stuart suggested that students do not regularly stand up for their peers, stating, “You get the exceptions where all stand up and try to make a difference but in general

they want to be accepted" by their peers (Teacher focus group, 09/12/2013). The implication here for Stuart was that being accepted by the students' peers may be more important than their sense of justice while using ICTs.

5.3.3 Respect, ICTs and young people

Seven out of eight students considered respect to be an important behaviour for both themselves, and their peers. These concerns were cited 35 times during interviews. Some students suggested that, respect had to be earned and given. Betty said, "You have to earn respect" (Student interview, 01/11/2013). Tim had a similar view, stating "Respect others and they'll respect you … don't disrespect people, for everyone to see" (online) (Student interview, 12/09/2013). Tim's view also suggests that Tim values attempts to respect the privacy of others. Louise appeared to suggest that self-respect forms the basis of respect for others, as she said, "If you're respectful, you're respectful of who you are as a person. You respect who others are" (Student interview, 17/10/2013). During classroom activities several students wrote about the need for, and the importance of, respect while using ICTs.

Recent research indicates that adolescents desire privacy while using ICTs (boyd, 2014). The findings in this study suggest this was the case for some students. Some parents and students noted that young people needed to have self-respect, particularly with regard to respecting the privacy of their bodies, by not posting explicit photos of themselves on social media. Aphro (parent) maintained that, "they need to respect their privacy with their bodies" (Parent interview, 06/04/2014). Student and parent participants also shared their concern for respecting the privacy of others while using ICTs. Seven references were gleaned from the teacher focus group transcripts relating to respect. Woody a teacher suggested, "I think those students who struggle with respect for themselves don't have as much control over what they are doing on their iPads, as opposed to those students who do have respect" (Teacher focus group, 09/12/2013). For two teachers, respect for cultural diversity and women was also important. In Table 5.1, students ranked respect in seventh position, which was the same weighting as empathy. Parents ranked respect in fifth position, while teachers ranked it in second position. Based on these findings, respect can be considered one of the key values that mediated moral

reasoning and moral behaviour in the use of ICTs by most student participants. The findings suggest that several students could make moral decisions, had moral expectations of themselves based on respect and in some instances reported having self-respect and respecting others.

5.3.4 Self-control, ICTs and young people

Some research in moral psychology has shown that self-control plays a role in underpinning moral behaviour, such as refraining from anti-social behaviours (Giner-Sorolla, 2012; Goleman, 2004), managing emotions and risky behaviours while using ICTs (Houck et al., 2014). In general, research has found that more hurried or time pressured responses, are thought to be aligned with more emotional/gut feeling responses, therefore if the use of ICTs is associated with more hurried responses then emotional reactions may be an important factor in how individuals use ICTs (Barque-Duran et al., 2017). Some findings in this study suggest that self-control played a role in managing emotional reactions while using ICTs. For example, seven out of eight students maintained that self-control is important in order to not hurt others and to manage anti-social behaviours, such as inappropriate social media posting and how they respond to the postings of others. Betty commented on the importance of self-control: “If you are on technology you can go out of your limits [in the level of inappropriate social media postings] and think that was too far, but you can’t control it because of someone else doing it to you as well” (Student, interview, 22/10/2013). Shouja said that some of her peers “get carried away” and post things “they probably didn't want to imply” (Student, interview, 14/03/2014). Louise also talked about some of her peers airing disputes on social media.

Four parents and two teachers also held the view that self-control is needed to manage anti-social behaviours. Hodge provided an example of a friend of his son who had a break-up with a girl which had played out on Facebook in a very nasty way. “That goes to the heart of this self-control issue …otherwise, it just spirals out of control” (Parent interview, 17/09/2013). In the following extract, Woody (teacher) shared his reasoning for the need for self-control:

> If they (students) lack self-control, then they might type a message on Facebook that's actually quite obscene and offensive and most definitely bullying … as opposed to those students who have self-control and they might say, okay, I am angry now, I won't respond, so I'll come back to my computer in about half an hour when I'm calmer. (Teacher focus group, 09/12/2013)

Some computer ethicists maintain that self-control plays a role in controlling the information individuals reveal while using ICTs (Baggio & Beldarrain, 2011). Shouja and Tim (students) also expressed the need for self-control with regard to how young people portray themselves on social media, sharing stories of girls who posted pictures of themselves, that they later regretted. Two parents also shared this view. For example, Aphro said, that "they (students) need to respect their privacy with their bodies. They need to hold back a little bit" (Parent interview, 06/04/2014).

One student, one parent and two teachers noted that self-control also plays a role in managing the content young people accessed. For example, Tim said, "There are things on the web that aren't meant to be viewed by younger people. There is no stopping them" (Student interview, 12/09/2013). Sparkly Eyes maintained that "It's the same as the Playboy thing, but it's tenfold because there's so much they can access" (Parent interview, 20/02/2014). Two parents also commented that self-control is needed to control the amount of time young people spend using ICTs. Students ranked self-control fourth in relation to the 12 values. Based on these findings, self-control is considered an important value for moral behaviour by these students. Several students could make moral decisions and appeared to have moral expectations of themselves based on self-control. However, there are no data to suggest that self-control actually underpinned their behaviours.

5.3.5 **Responsibility,** ICTs and young people

All eight student participants commented on the importance of responsibility while using ICTs. For example, Tim maintained that "you might really want to say something there, but you know if you do, it won't be the right thing…" (Student interview, 12/09/2013). Louise said of her peers that, those who "take pride in who

they are, get along with people and try hard to do everything, they will be more respectful and more cautious on social media" (Student interview, 17/10/2013). The following extracts could also have been used as examples of justice, but in this instance, they also apply to social responsibility. Shouja noted, "If someone is getting cyber bullied I'd tell the … bully to back off" (Student interview, 14/03/2014), while Baba said, "I just like to be responsible and make sure everything is going okay" (Student interview, 04/03/2014). Tim suggested that some of his peers also felt responsible for those who were targets of derogatory postings on social media; "I have seen people standing up for others… and … try to help…" (Student interview, 12/09/2013).

Three parents also suggested that a personal sense of responsibility is important for young people. For example, Sue said that in her family, not taking the use of ICTs for granted was a value she encouraged. "It's something that you earn the right to be able to use, and use it in a responsible way" (Parent interview, 18/03/2014). Table 5.1 shows that parents ranked responsibility in ninth position and teachers ranked it in eighth position in relation to the 12 values; however, responsibility is ranked first by students. The disparity between the views of adults and students in this regard, is likely that adults do not necessarily understand the experience of young people when it comes to a lack of responsibility shown by their peers while using ICTs. The data suggest that several students could make moral decisions and appeared to have moral expectations of themselves based on their own sense of responsibility and social responsibility for others, while in some instances they reported that they behaved accordingly.

The literature indicates that social responsibility, altruism, justice and respect are closely related social values (Baggio & Beldarrain, 2011; Feenberg, 2002; Floridi, 1999; Griffin & Bell, 2007; Warburton, 2004; Weckert, 2007; Yoon, 2011). The findings on responsibility, altruism and justice indicate that the values associated with social responsibility for others are considered by these secondary school students to be the most important values in the use of ICTs. Their own sense of responsibility, self-control and accountability are all ranked in the top six values, suggesting the importance these students place on managing themselves well. This finding is significant for the use of ICTs by secondary school students, as some

research indicates that effective self-management plays an important role in moral reasoning and moral behaviour (Baggio & Beldarrain, 2011), while social responsibility is underpinned by empathy, altruism and justice (Giner-Sorolla, 2012; Goleman, 2004).

The following section discusses the views of the participants on how moral behaviour might be fostered. How to foster altruism, justice, respect, self-control and responsibility with young people in relation to their use of ICT is then discussed. All six parents, all five teachers and seven student participants shared their views on these topics.

5.3.6 Fostering altruism, justice, respect, self-control and responsibility

Three students noted that parental values are an important influence on their own behaviours while using ICTs. Four parents and two teachers also said that values education coming from parents plays a role in fostering moral behaviour in the use of ICTs by young people. For example, Sparkly Eyes maintained that the guidance she provides is effective because her child consulted with her: “She would bring that to me to say, ‘I don't think it’s right, what they’re talking about this girl’. We brought up our kids with good values, which I think follows through to the internet” (Parent interview, 20/02/2014). In other extracts, Sparkly Eyes listed responsibility, empathy, respect, self-control and critical reasoning with regard to behaviour as the ‘good values’ she referred to. Another parent – Sue - maintained that values education and communication “helped out our children to be able to use things in a correct fashion” (Parent interview, 18/03/2014). In previous extracts, Sue listed authenticity, being mindful of what her daughter posted and not taking things for granted as some of the values she tries to foster in her daughter. Sue also said trusting her children was important and “also let them know that you’re still there for them” (Parent, interview, 18/03/2014).

Parental supervision and imposing consequences for misbehaviours were also proposed by some parents and one teacher as a means to foster values and moral behaviour. For example, Aphro noted that “parents need to read what the children are writing (on social media). If they think what they’re doing is inappropriate, they

need to educate their children on what they can and can't do" (Parent interview, 06/03/2014). As (parent), Sue suggested setting limits on the usage of ICTs as a means of fostering self-control. She said that if there were no limits set, "they would probably just go on them 24/7, if they could" (Parent interview, 18/03/2014). Two parents maintained that teaching children not to take things for granted also fosters responsibility. Sue held the view that "in our family, I think the fact is that it's not to be taken for granted. … it's something that you earn the right to be able to use and use it in a responsible way" (Parent interview, 18/03/2014).

In previous student data on altruism (see 5.3.1), justice (see 5.3.2) and respect (see 5.3.3), peer pressure appeared to foster these values in students. Betty and Tim (students) suggested that respecting others fosters this behaviour in their peers. Tim maintained, "just respect others and they'll respect you" (Student interview, 12/09/2013). During a classroom activity, one student wrote that respect is important because their peers "would give us a hard time when we are not respectful" (Student worksheet, 28/04/2014). Paul (parent) suggested that peers can have a positive influence on the behaviours of young people. He provided an example of peers influencing the decision of a student that was ready to leave school but continued because of the encouragement that came from his friends on Skype and Facebook. Some research indicates that peers can serve as positive reinforcers of self-control (Casey, 2015), but no findings in this study support this idea. One teacher also recommended mobilising peer pressure to foster moral values and behaviours. Dee referred to this as "positive-wise" (Teacher focus group, 18/02/2014):

> If a peer calls them out on their behaviour, they will take that on board almost immediately … In some ways, I would like to see this being taught by another student to a bunch of younger students. I think their voice would be a lot more powerful than our voices". "I think peer pressure would change culture. So, the more educated the students become, the more pressure there is to behave in a certain way. (Teacher focus groups, 18/02/2014)

Woody also suggested mobilising peers in the same way that it worked to discourage cigarette smoking:

> Kids actually tell each other not to smoke… I think as society sort of recognises actually that cyberspace is not necessarily a safe place to be and the rest of the students recognise that, they will start to educate each other… I guess we have got to make sure that we are driving that education quite young so that they can make those decisions. (Teacher focus group, 09/12/2013)

Self-assessment of the influence of one's actions on oneself and others while using ICTs was seen by some students and teachers as a means of fostering respect and self-control. Louise (student) suggested that knowing herself and others helped her respect others. She also suggested that fostering a sense of pride in oneself, getting along with others and being respectful could foster responsibility in the use of ICTs. From a teacher's perspective, Woody suggested that self-assessment supports self-control: "I guess it comes back to that issue of self-control and being aware of how actions can impact on yourself and other people. So, I guess it's that awareness of self" (Teacher focus group, 09/12/2013). Some psychologists maintain that self-control involves goal-directed behaviour in the face of important, competing inputs and actions (Casey, 2015; Goleman, 2004). The implication is that self-awareness of one's goals and values may be a factor in self-control.

One student, parent and teacher suggested that altruistic causes promoted through ICTs foster altruism in individuals. For example, Tim mentioned that "there is always people convincing people of good ideas" (Student interview, 19/09/2013). During the teacher focus group, Stuart also said that ICTs foster social activism in young people "Like 'Get Up' (a website that promotes progressive issues), it's like you can be aware of issues that I would have no idea about previously" (Teacher focus group, 18/02/2014). Dee (teacher) agreed and provided an example of social activism initiated by students at the school in the form of a website set up to discuss issues of young suicide.

Two students, Betty and Tim, also suggested that school-based programs could play a role in fostering moral reasoning and behaviour. Tim suggested, "I think people, when they're young, when they're just getting to the stage where they're starting to use technology we need to teach them self-control … I just don't think it's taught"

(Student interview, 12/09/2013). Three parents also suggested that school-based values education could augment what parents do in the home.

Some research has shown that parental involvement and connection with adolescents promotes moral reasoning and behaviour (Padilla-Walker & Christensen, 2011), while other research suggests that a lack of parental involvement in the use if ICTs by their children and inappropriate peer norms are related to more risky behaviours while using ICTs (Livingstone & Smith, 2014). Additionally, recent literature shows that family relationships characterised by a positive family climate and open and empathic parent and child communication act as protector factors against cybervictimisation and cyberperpetration. By contrast, cyberbullies more commonly have dysfunctional family relationships characterised by poor emotional attachment to their parents (Buelga et al., 2017). Peer pressure also plays a role in the behaviour of teenagers (Lashbrook, 2000). The findings in this study suggest that parental values, guidance and supervision were the most important factors for fostering moral values and moral behaviour, followed by peer pressure. Research has also found that self-assessment influences how we treat others (Malti & Latzko, 2012) and regulate ourselves (Nielsen, 2017). The findings indicate that self-awareness and self-assessment underpins respect and self-control, which suggests that fostering these abilities are important for moral behaviour. Findings also suggest that the promotion of good causes through ICTs and values education in schools was seen by some participants as a means of fostering altruism and moral behaviour.

Research in moral psychology indicates that changing peer culture requires convincing young people to see themselves as part of a community and to accept responsibility for each other (Berkowitz et al., 2002). These broader social values allow individuals to acknowledge their responsibility with regard to their decisions and behaviours and how they impact on others (Goleman, 2004; Malti & Latzko, 2012). The data from the above sections on altruism, justice, respect and responsibility (see 5.3.1, 5.3.2 and 5.3.5) indicate that personal and social responsibility were considered the most significant values in the use of ICTs by the student participants. Based on these findings, encouraging young people to practise altruism, justice, respect and responsibility in their online communities could be an

effective means of fostering moral behaviour. Some computer ethicists maintain that identifying moral problems relating to the use of ICTs based on moral values can be used foster a sense of moral responsibility (Gotterbarn, 1992; Liua & Yanga, 2012). The data also indicate that some students could identify moral issues with regards to altruism, justice, respect and responsibility (see 5.3.1, 5.3.2 and 5.3.5), which appeared to encourage them to act ethically. Hence, it can be argued that moral reasoning about moral problems associated with the use of ICTs in part, fostered moral behaviours such as altruism, justice and responsibility.

In summary, the findings in this chapter in informed the second iteration of this action research study. This chapter helped determine the moral values and abilities that are needed to underpin the moral domains in the use of ICTs by secondary school students, and how the moral domains can be fostered. The final iteration of the action research will be presented in Chapter Seven. The findings in this chapter suggest that eight values were considered most important by the student participants for the use of ICTs. For student, authenticity and accountability were the most important for moral reasoning for students. Altruism, justice and respect were the most important, for moral behaviour in relation to others, while responsibility and self-control were most important for managing oneself. The data also suggest that some students could reflect critically with respect to their own values. Many of the student participants appeared to apply values to make moral choices and, in some instances, could justify their choices. Some participants also suggested that fostering moral values could be best achieved by providing young people with opportunities to think through their own values. Additionally, peers, school programs and parental values also promote the moral domains in the use of ICTs. The findings suggest that student participants considered the values associated with social responsibility, self-management and authenticity were the most important values with respect to the use of ICTs.

The next chapter (chapter six) discusses findings in relation to the reciprocal influences of human values (moral and immoral) on ICT environments, and the moral and immoral influence of ICT environments on human values.

Chapter Six: Findings in relation to *technologically mediated moral issues*

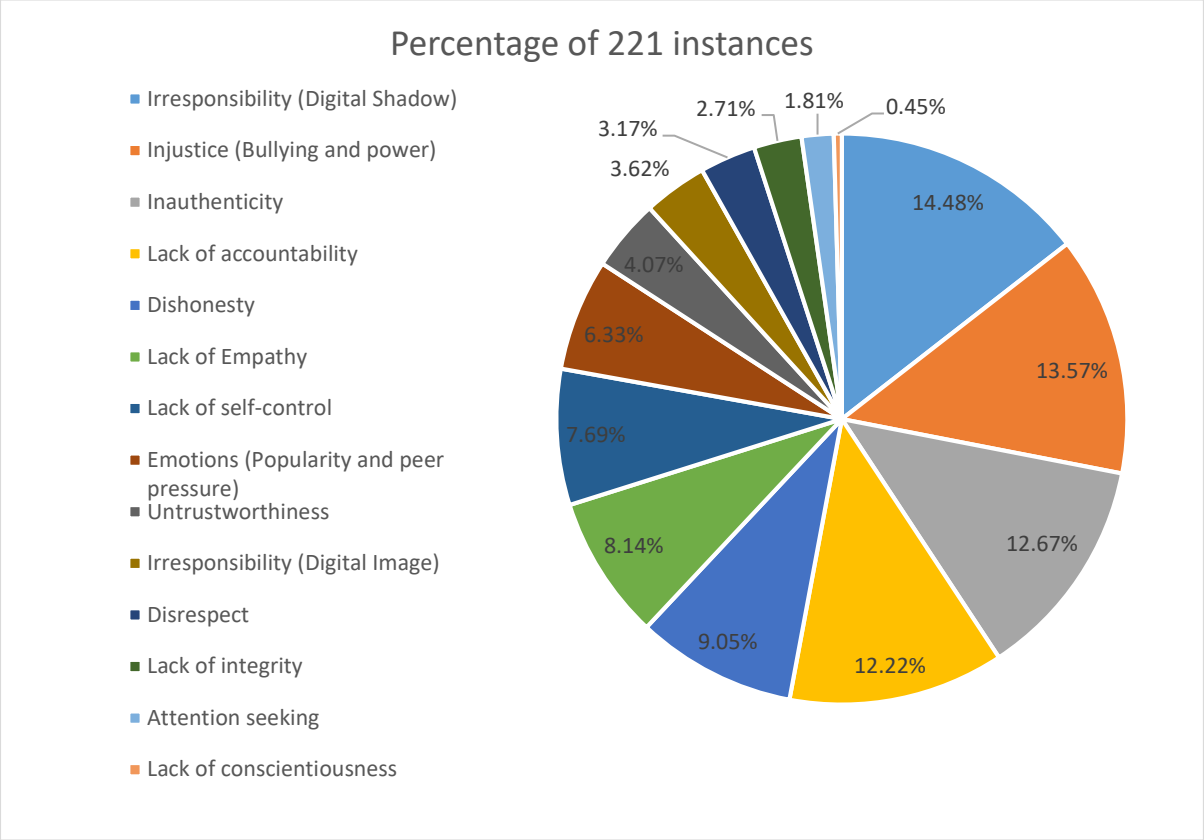
The literature review undertaken in Chapter Three sets the scene for the discussion of the thematic data in relations to *technologically mediated moral issues* (TMMI), which is the term used in this study to define and discuss the reciprocal influences of human values (moral and immoral) on ICT environments, and the moral and immoral influences of ICT environments on human values. The analysis undertaken in this chapter represents the diagnostic task of action research, which involved understanding the moral challenges faced by students while using ICTs. Additionally, the findings in this chapter supported the preparation for the classroom activities – the planning task of action research. Chapter Three presented the first iteration of the Cyber Values Systems (CVS) model, which is used in this chapter to analyse the reciprocal influence of TMMI on the moral domains. This analysis helps to answer the research questions (How do the moral domains mediate the use of ICTs and how can the moral domains be fostered?) by providing some understanding of the moral challenges faced by young people, and the moral reasoning and moral behaviour (moral agency) that some students showed with respect to these moral challenges. In Chapter Five, the focus was the moral influence of secondary school students' values on ICT environments. The data presented in this chapter focusses mostly on the immoral values that mediated the use of ICTs which highlights the importance of particular moral values and behaviours. Additionally, the detrimental influence of ICTs on morality are explored. Taking a critical view of the influence of ICTs on morality, the literature cautions not to adopt a reactive or deficit approach by focusing primarily on the detrimental effects of ICTs on morality, as firstly, this view can result in a restricted acknowledgement of the benefits ICTs can offer (Feenberg, 2002; Weckert, 2007). Derrick (teacher) expressed concern that "very rarely you will find positive messages about technology in the media" (Teacher focus group, 10/02/2014). For this reason, the positive moral influences of ICTs on secondary school students' values are also covered in this chapter, but to a lesser extent, because of the sparseness of data. A second problem with taking the reactive approach is that focusing on the detrimental features of ICTs can also result in downplaying the significance of the agency that young people have while using ICTs

(Vickery, 2012). The data presented in this chapter suggest that the student participants could reflect critically on immoral issues associated with the use of ICTs.

This chapter are divided into three main sections, each dealing with a moral domain. The findings suggest that lapses in moral reasoning influenced young people's uses of ICTs, but, conversely, ICTs also had a detrimental influence on their moral reasoning with respect to a lack of integrity, honesty, trustworthiness, authenticity and accountability. With respect to moral emotion, the immoral influence of secondary school students on ICT environments with respect to a lack of empathy and conscientiousness, and the impact of ICT environments on emotions are discussed. The final section discusses the participants' views about behaviour with respect to the reciprocal influence of human values on ICT environments and the influence of ICT environments on human values with regard to responsibility, justice, respect and self-control.

The data analysis in this chapter relies on both the literature and the constructs that make up the CVS model: a) human values influence ICT environments, b) ICT environments influence human values, and c) humans and ICTs reciprocally influence each other. To understand reciprocal immoral influences of humans and ICTs on each other, the study focuses on the diametrically opposed values and behaviours that undermine integrity, honesty, trustworthiness, authenticity, accountability, empathy, contentiousness, self-control, responsibility, altruism, justice and respect (the 12 values used in the Chapter Five data analysis). These opposing values were placed in order of importance with respect to the moral concerns expressed by student participants. The order of importance is from highest to lowest based on the 221 instances each moral concern was expressed by students (see Figure 6.1). After categorising these values, the following order of importance emerged: Irresponsibility with respect to how young people portray others *(*referred to in this study as digital shadows), injustice (cyberbullying and harassment), inauthenticity, a lack of accountability, dishonesty, lack of empathy, a lack of self-control, peer pressure, untrustworthiness, irresponsibility (self-made digital shadows), disrespect, a lack of integrity and a lack conscientiousness. During the interviews and classroom activities students suggested that popularity undermined the moral domains, and this feature is included in the analysis.

Figure 6.1 Student order of importance of moral concerns while using ICTs



The analysis begins with a discussion of the immoral influence of secondary school students on ICT environments with respect to a lack of integrity, honesty, trustworthiness, authenticity and accountability.

6.1 *Technologically mediated moral issues* and moral reasoning

With respect to reciprocal immoral influence of humans on ICTs and the influence of ICTs on morality, some studies of moral disengagement in the use of ICTs maintain that disengagement is dependent on both, the characteristics of the individual and the context in which an individual is acting (Allison & Bussey, 2017; Runions & Bak, 2015). Swierstra (cited in Bats et al., 2013) argued that techno-moral transformations occur when new technologies alter the consequences of our actions and moral reasoning. The findings suggest that lapses in moral reasoning influenced young people's uses of ICTs, but, conversely, ICTs also had a detrimental influence on their moral reasoning. Louise provided an example of this reciprocal influence, "You're

more taught things from technology, not as much as putting things out there. You have different values putting things out there, but in most cases, you get the wrong ones back" (Student interview, 31/10/2013). All eight student interviewees and some who took part in the classroom activities commented on reciprocal immoral influences with respect to moral reasoning in relation to a lack of integrity, dishonesty, untrustworthiness and inauthenticity. However, the data on a lack of accountability was thin.

The sections that follow discuss students' lapses in moral reasoning with respect to integrity, honesty, trust and authenticity.

6.1.1 The influence of secondary school students on the ICT environments

Some student participants appeared to be able to critically evaluate the lack of moral reasoning and integrity of some of their peers and its effect on trustworthiness and authenticity. Louise suggested that moral reasoning was often lacking while using social media: "You don't think about your values when you post something" (Student interview, 31/10/2013). Betty also appears to understand that one can be honest, yet lack integrity and moral reasoning with respect to protecting the confidentiality of their peers, and therefore not being trustworthy while using ICTs: "If I think someone's honest, I still may not think that they're trustworthy, because even though they may be honest, they still might spread things (using ICTs)" (Student interview, 22/10/2013). The literature indicates that online identity performances by adolescents often involve a desire to be validated by their peers (Buckingham, 2008) and meet expectations of peers (McGeer, 2004). This situation also appeared to occur in this study. Clairie commented that some of her peers, "post something against their values that they think would make them so much better" (Student interview, 07/04/2014), suggesting that integrity is sacrificed for the sake of being validated by one's peers. Several other examples of this behaviour can also be found in the section on inauthenticity below (see 6.1.1.3).

6.1.1.1 Dishonesty

Some students suggested that dishonesty is a normal occurrence while using ICTs. Lying, pirating music and videos, spreading rumours and a lack of discernment with regard to being 'too honest' were examples of moral issues associated with honesty and, in some respects, accountability. Tyrone commented that lying to access age restricted sites was a normal occurrence in his peer group, "Nobody goes, 'Oh, I'm under 18, I shouldn't go in there' (Student interview, 16/09/2013). During a classroom discussion, some students said that their peers lied to avoid confrontation, to protect themselves, to represent themselves better and to access age restricted websites or applications (Classroom activities, 28/04/2014). Betty noted, "Honesty is something that the internet relies on and lots of people break that" (Student interview excerpt, 31/10/2013). She also said that some lie in order to be popular, "Oh, I hang with this person. You probably don't hang with them … you're using their name to get you more friends or more likes. If your value is being the coolest person then you obviously might lie" (Student interview excerpt, 01/11/2013). Tyrone, Tim and Baba commented that some of their peers pretend to be others in order to spread lies and rumours about their peers. Tim told the story of a student that created a fake Facebook account to "pretend to be other people … and tell people lying stuff about themselves" (Student interview, 19/09/2013), suggesting dishonesty and a lack of accountability. Tyrone and Tim also appeared to suggest that being overly honest about others while using ICTs was also a moral concern, as this behaviour hurt others. Tyrone noted, "That's also not very good because honesty hurts and people take that to heart" (Student interview, 16/09/2013). Some students and teachers suggested that pirating digital content was a common occurrence for high school children. These findings may explain in part, why honesty was not considered as important as other values.

6.1.1.2 Untrustworthiness

Additional issues associated with honesty emerged in the findings. Being too trusting of online content, misleading others in order to gain their trust and the need for trust

in ICT environments were concerns expressed by students. McGeer (2004) argues that violations of trust while using ICTs is a concern, as immature ‘trusters’ may be vulnerable to being misled and manipulated. Louise appeared to question whether some of her peers were being overly ‘honest’ online in order to gain the trust of others, “It’ll make you think, is this person actually trustworthy or are they just saying all these things because they’re trying to make you feel that way” (Student interview, 17/10/2013). Shouja suggested that some of her peers felt the need to be honest in order to foster trust with friends, while considering it to be optional when interacting with others outside their friendship group. “If you’re not so good friends, you wouldn’t really care if you lied to them” (Student interview, 14/03/2014).

Louise, Betty, Tyrone and Clairie shared that they wanted to interact with individuals they could trust to not violate their privacy. Betty noted, “If you tell someone something about yourself, you don’t want them to post it anywhere. Telling other people, it’s not lying, it’s just passing on information, so they would still be honest but you wouldn’t be trusting them” (Student interview, 22/10/2013). Louise also suggested that it was sometimes hard to trust her peers because of the influence of ICTs on their moral reasoning. Tyrone also expressed that he was wary of trusting others online. “If you tell someone something just between you and them, they might go and tell someone else on the internet” (Student interview, 16/09/2013). These findings suggest that some students could critically evaluate the immoral influence of dishonesty and untrustworthiness on ICT environments and could critically evaluate lapses in moral reasoning.

6.1.1.3 Inauthentic digital images

ICTs are commonly used by high school children to create digital personal profiles, referred to in this study as digital images. Some computer ethicists maintain that ICTs provide the ability for users to manipulate information about themselves more easily (McGeer, 2004) and adopt a new persona (Baggio & Beldarrain, 2011). This section explores the phenomena of inauthentic digital images and disingenuous online friendships. However, boyd (2014) suggests that caution must be taken in reading these kinds of identity performances on social media as inauthentic. A teen

might use her given name on a service like Skype, but choose a descriptive screen name on a photo app like Instagram. In this study, students never expressed concern about these types of identity performances; however, several students expressed concern about the inauthenticity of some of the digital images and disingenuous online friendships of their peers. Popularity was often cited as a motivating factor for inauthentic and inappropriate digital images. Several students expressed a desire to have a favourable digital images that are a positive reflection of who they are. It would appear that the desire to create favourable digital images on the part of adolescents can sometimes lead to the creation of detrimental digital personal profiles, referred to in this study as digital shadows. There appeared to be an awareness by some students that creating inauthentic digital images may lead to an increase in this behaviour because of the approval students received from their peers. Popularity and attention seeking appeared to be a major factor for online inauthenticity. This situation would probably also be the case in student's offline worlds; however, ICTs may have been a factor that intensifies this behaviour because of the ease that it can be done using ICTs. Shouja (student) maintained that some posts on social media are inauthentic for the purpose of being "defined as being cool. Mainly whatever makes them seem like more popular than others" (Student interview, 14/03/2014). Betty maintained, "People [her peers] tend to be someone different, or somebody who they want to be … not who you are" (Student interview, 33/10/2013). Louise agreed, saying that "you could be putting it on… You're different around your teachers, different around your parents, and different around your friends; but when you're on computers you're a whole, other type" (Student interview, 31/10/2013). Clairie commented that some of her peers post "photos that aren't true to their personality" on social media (Student interview excerpt, 07/03/2014). Sue, Clairie's mother, believed that young people's postings were different, depending on the audience: "If they're using social media it depends on what type of an audience they're after and to get the response that they want" (Parent interview, 18/03/2014). Aphro (parent) also suggested that attention seeking from their peers, a lack of attention coming from friends and family, and a lack of family values were reasons for the inauthenticity in young people:

> A major thing that girls do, they'll put on there, "Oh, I'm so fat and ugly". That comment is more common than you would ever think. Once

> they've posted this comment, then they'll get a whole load of people saying, "Oh, no you're not. You're beautiful". That's what they want to hear. (Parent interview excerpt, 06/03/2014)

Betty said something similar about popularity. "It's very powerful. There's the saying 'guilty by association', there's 'popular by association'" (Student interview, 01/11/2013). She noted that some of her peers pretended to be empathetic towards others and use the appearance of online friendships to gain popularity on social media. "You probably don't hang with them, you're using their name to get you more friends or more likes" (Student interview, 01/11/2013). During a classroom discussion, some students questioned the authenticity of some of their peers with statements such as "some fake on social media", "you can mask yourself online", "some get lots of likes not because the photo is good but because they are popular" (Classroom observation, 24/07/2014). Another student wrote, "I am a completely different person online depending on who I am talking with" (Worksheet, 22/07/2014). Hodge (parent) said, "I think authenticity is important particularly when it comes to a thing as widespread as Facebook" (Parent interview, 17/09/2013). Some findings suggest that inauthentic digital images and disingenuous online friendships were a real concern for some participants.

Baumgartner et al. (2015) found that some adolescents' desire for popularity caused them to disclose inappropriate information while using ICTs in order to attract the attention of their peers. Some of the findings in this study support this. For example, Betty said, "Well, if someone wants to get a lot of likes on Facebook, they have to be not wearing as much clothes as they probably should be, just so they can say, 'Oh, I've got 100 likes on my photo last night'" (Student interview, 01/11/2013) and John said, "The more popular you are, then the more you'll post things online without thinking because it's all peer pressure" (Student interview, 12/03/2014). Four parents also said that they believed that peer pressure could undermine young people's uses of ICTs, for example, it can result in young people posting inappropriate pictures of themselves. Aphro (parent) maintained that, "They don't need to show their body parts to their friends through their iPad, through their phone" (Parent interview, 06/03/2014). These findings suggest that some students' desire to create digital

images that received peer approval appeared to lead to the creation of detrimental digital personal profiles.

6.1.1.4 Disingenuous friendships

Some students suggested that some friendships can be disingenuous while using ICTs. Betty noted that it was very common for their peers to be mean to each other online, yet at school they would act as if nothing had happened. Betty and Shouja suggested that some sacrificed authentic friendships in order to maintain their popularity. Clairie shared an experience she had where some of her former schoolmates who would not befriend her while in primary school, now wanted to add her as a friend on Facebook, “I was like, no. I don’t understand, because you wouldn’t be my friend in person, although you want to be my friend on Facebook” (Student interview, 07/04/2014). Shouja talked about a friendship that was created on Facebook, which appeared to be genuine, but turned out to be disingenuous. She shared, “When you go back to school you think you’re really good friends with them, but they might ditch you, but that’s because they are only good friends while through technology” (Student interview, 14/03/2014). Betty also shared a similar experience. “I’ve had people bullying me over the internet, and then I see them face- to-face, ‘Oh, hi, how you going?’ It’s like, ‘You’re saying bad things about me over the internet, but then when I see you, you’re being all nice to me’” (Student interview, 01/11/2013). During a classroom discussion, two students also questioned the authenticity of online friendships, suggesting that most times, “Facebook friends don’t translate into real friends” (Classroom observation, 22/07/2014 and 24/07/2014) and “You don’t really know people just because you know them online” (Classroom observation, 24/07/2014). Two parents also expressed their concern with the inappropriate moral reasoning associated with online friendships. Sue expressed her struggle to teach her child about authenticity: “That is a major battle, because how can anybody have 30 friends, for example, in the real world, but in the IT world, have three or 400 friends” (Student interview, 18/03/2014).

Some of the findings suggest that students could critically evaluate the lack of integrity of some of their peers and its influence on trustworthiness and authenticity.

Lying, pirating, spreading rumours and violations of privacy, were all examples of deficiencies with respect to honesty, trustworthiness and accountability. However, participants had most to say about a lack of moral reasoning when it came to authenticity. Of the four moral concerns associated in this study with moral reasoning, enactments of inauthenticity in their peers' digital personal profiles and how this could lead to digital shadows for them, and disingenuous friendships by their peers appeared to be the greatest concern for the students.

In the CVS model, human values influence ICT environments and ICT environments influence human values. In this previous section, how dishonesty, untrustworthiness and inauthenticity mediated the use of ICTs were explored. The section below discusses the influence of ICT environments on secondary school students' moral reasoning and moral behaviours. Virtual and logically malleable characteristics of ICTs such as diffusion, displacement, instrumentality appear to influence honesty, trust and authenticity.

6.1.2 The immoral influence of ICT environments on moral reasoning

It has been postulated by some computer ethicists and scholars of technical mediation that some of the virtual and logically malleable characteristics of ICTs detrimentally influence truthfulness (Marett et al., 2017; McGeer, 2004), moral responsibility (Heesen, 2012; Mason, 1986; Runions & Bak, 2015; Van Den Hoven, 1994) and social behaviour (Runions & Bak, 2015; Sikka, 2012). However, tendencies to deceive online are not well understood (Marett et al., 2017). The virtual and logically malleable characteristics of ICTs, and techniques, such as anonymity and instrumentality, that have an immoral influence on human values, are referred to as digital moral malleability. Examples of virtual and logically malleable characteristics of ICTs that influence morality are lessened socio-emotional cues (Heirman & Walrave, 2008; Runions & Bak, 2015), anonymity (Price et al., 2014), the diffusion and displacement of responsibility (Flores & James, 2013; Runions & Bak, 2015; Sikka, 2012) and instrumentality or utility (Feenberg, 2002; Floridi, 1999; Sikka, 2012). Some of the findings suggest that digital moral malleability affects the moral reasoning of students with regard to integrity, honesty, accountability,

authenticity and privacy. When providing feedback about the CVS model, Dee (teacher) suggested that the influence of ICT environments on young people was much greater than their influence on ICT environments; however, she also suggested reciprocity of these influences, stating “I would almost want a big fat arrow going back to humans as opposed to a skinny arrow … Their values are going to be impacted and then that’s going to come right back at us probably at a later stage as they grow” (Teacher focus group, 18/02/2014). Woody (teacher) also suggested this, noting, “in year nine we have daily occurrences of students doing silly things and bullying, who are the kind of kids that would never do this in real life. They would say that they have these values but when using ICTs these values are not engaged (Teacher focus group, 09/03/2017). In the examples that follow, students appear to be able to reflect critically on the influence of the virtual and logically malleable characteristics ICTs on truthfulness, moral responsibility, authenticity and social behaviour.

6.1.2.1 The influence of diffusion and displacement on moral reasoning

This section discusses the influence of the virtual and logically malleable characteristics ICTs on moral reasoning. Some participants appeared to suggest that diffusion and displacement influenced moral reasoning in a detrimental way with respect to how they portray themselves while using ICTs. Additionally, in the CVS model humans and ICTs reciprocally influence each other. Circularity operates when an effect feedback on to its cause. Students expressed some concerns about these two phenomena. Some students appeared to critically reflect on the impact of diffusion and displacement on morality suggesting that influenced their peers to be ‘too honest’ about themselves and others while using ICTs. Louise commented, “Like, when you talk to someone face-to-face, your morals and what you think is different to when you are just talking to someone behind a keyboard” (Student interview, 31/10/2013). Clairie provided this advice to her peers during an interview, “Don’t go out of your way to do something you wouldn’t normally say or do. Put it into a real life context and say, ‘Would I really do that normally without being behind a

computer screen?'" (Student interview, 07/03/2014). Betty noted that, "There are things that you should probably keep to yourself" (Student interview, 31/10/2013).

With respect to circularity and the detrimental influence of diffusion and displacement on what his peers posted on social media, Tyrone said, "Well, just like with me, you might be more honest because you just think it might not come back around as much, but it really does" (Student interview, 17/09/2013). Louise and Betty also shared this view. Louise stated, "They don't realize how much of an effect that this is going to have on them. You think that everyone should have the right to know" (Student interview, 17/09/2013). This view was also echoed by some students during a classroom discussion (Classroom observation, 28/04/2014). Tyrone noted, "what goes around comes around" (Student interview, 17/09/2013). Betty also seemed to understand this issue, stating, "If you're mean on the internet, it could come back to bite you later" (Interview, 01/11/2013), while Louise pointed out that if you are driven by bad moods while using ICTs, "That's what you're going to get out of it" (Student interview, 01/11/2013).

6.1.2.2 The influence of instrumentality on moral reasoning

Instrumentality is defined as viewing ICTs as having instrumental qualities (Feenberg, 2002; Floridi, 1999; Sikka, 2012), that is, they are tools that allow us to achieve what we want (Introna, 2011). Technology is seen through the decontextualised and objectified lens of utility, and is a view of technology that is open to exploitation (Sikka, 2012). Some students shared this view. For example, Betty stated, "Yeah, on the internet, people think, 'I can get away with a lot'" (Student interview, 01/11/2013). Some computer ethicists have speculated that instrumentality may restrict moral evaluations of the harm that can be done through or with technologies (Floridi, 1999), and therefore undermine a sense of moral accountability and responsibility (Gotterbarn, 1992). Through moral disengagement, individuals can be freed from the self-sanction and the accompanying guilt and shame that would ensue when behaviour violates internal standards (Wang et al., 2017).

Tyrone shared this about the influence of instrumentality on honesty and accountability:

> It (ICTs) just opens up more ways to do things that are not strictly 100% legal, like downloading music … Your parents know you're downloading music, they don't really care anyway … You don't have the risk and everyone does it anyway. So you just feel like it's not really that much of a bad thing you are doing. (Interview, 17/09/2013)

Hodge (parent) also shared about pirating content and instrumentality, stating, "ICT has enabled that behaviour and I take advantage of it. They probably got that from me, in terms of the value" (Parent interview, 17/09/2013). Stuart (teacher) also shared, "you would struggle to find some school kid that haven't illegally downloaded a song or a video" (Teacher focus group, 09/12/2013). This finding is similar to other research that has found that despite an awareness of the associated ethical or legal problems, most people conduct minor dishonest behaviours when they believe that they can get away with it (Blau & Eshet-Alkalai, 2017). This appeared to be the case with respect to the diffusion and displacement of responsibility. However, it could also be argued that most students may not have seen pirating digital content as immoral.

6.1.2.3 The influence of ICTs on trust

A study that looked at issues of trust found that virtual settings alter or even obstruct the process of trust formation (Rusmann, Bruggen, Sloep, & Koper, 2010). Finding it hard to trust that what is shared online will remain private was another concern expressed by some students. Louise also suggested that not enough of her peers critically questioned the information that was presented to them online, stating, "You don't think about whether you trust what's online" (Student interview, 31/10/2013). John and Tyrone appeared to express their concern with respect to the influence of ICTs on privacy and trust. Tyrone claimed, "You'd probably be warier of trusting it, telling people on the internet because if you message someone something that's really private, they have that message and they can ... send it to someone else" (Student interview, 16/09/2013).

6.1.2.4 The influence of ICTs on authenticity

Cocking and Matthews (2001) maintained that ICTs dispose individuals to present information in a skewed way to fit their objectives. Thus, ICTs influence the creation of false self-representations, which may lead young people to present more idealised versions of themselves than would be possible in offline settings (Valkenburg, Koutamanis, & Vossen, 2017). This action raises the issue of authenticity, and some of the findings suggest that this characteristic of ICTs is influencing authenticity in a detrimental way. Tim claimed that “people might behave like they normally do in person, but then others may tend to differ from their actual real personality in the real world” (Student interview, 19/09/2013). Shouja also shared this view by stating, “That’s very strange. Because some people are very kind, more open, some are more angry or upset on that (ICTs)” (Student interview, 14/03/2014).

Enactments of inauthentic digital images may affect young people’s psychological wellbeing (Arıcak et al., 2015; Lim et al., 2015), as there may be psychological costs to inconsistency, such as feeling alienated from one’s true self, because of a lack of authenticity between one’s online and offline selves (Lim et al., 2015). These fragmented identities may cause young people frustration because of their inability to reconcile their online and offline selves. The long term effects of fragmentation is still unknown (Davis et al., 2010). In one study, students (15 to 24 year olds) expressed discomfort about the multiplicity of identities while using ICTs, such as interpersonal betrayal and the violation of online social norms (Arıcak et al., 2015). Some students suggested that some of their peers sacrificed authentic friendships in order to maintain their popularity. Others expressed their disappointment about disingenuous friendships on social media, noting that some consider relationships ‘less real’ online (see 6.1.1.4).

In the extracts below, some students express concern about the influence of ICTs on authenticity and that having two different representations of oneself, one real life and one in cyberspace, might lead to split personalities. Tim noted, “I would say people behave differently over ICTs than they do in person” (Student interview, 19/09/2013). Louise also shared this view, stating, “Your morals and what you think is different to when you are just talking to someone behind a keyboard or behind a computer

screen, because it's like you could just be putting it on" (Student interview, 19/09/2013). Betty also reflected on this phenomenon, stating, "In our generation, a lot they have the term, 'What happens on the internet stays on the internet.' Which I think is just irrational because it's still life" (Student interview, 22/10/2013). At a later date, she added:

> If someone's growing up being two different people on the internet and in person, they're going to have split personalities. If they're so used to being this way to someone face-to-face, then being the other way to someone on the internet. Maybe they're going to lose some friends because people have found out who they are really, in both of their lives. (Student interview, 01/11/2013)

The findings suggest that students were concerned about the immoral influence of ICT environments on secondary school students' moral reasoning and behaviours. Some students appeared to suggest that digital moral malleability negatively influenced integrity, honesty and accountability. The diffusion and displacement of responsibility and instrumentality that comes with using ICTs appeared to be the reason. However, the effects of ICT environments on authenticity appeared to be the greatest concern for students. As with other research, some findings suggest that the enactments of false self-representations in young people's digital images may be affecting young people's psychological wellbeing.

6.2 Technologically mediated moral issues and moral emotion

The section discusses the immoral influence of secondary school students on ICT environments with respect to a lack of empathy and inappropriate emotions. In the CSV model, ICTs also have an influence on human morality, hence, the influence of digital moral malleability on empathy and conscientiousness/remorse are also discussed. Student participants spoke about ICTs as the 'space', 'barrier' or 'shield' that distanced people from each other, suggesting that ICTs dampened the empathy felt for others and the remorse felt for inappropriate behaviours. For example, Tim noted, "There is distance between you and the other person" (Student interview,

19/09/2013). Tim's father also spoke about this distance, suggesting that this could encouraged anti-social behaviour.

6.2.1 The influence of inappropriate emotions on the use of ICTs

Research has shown that moral disengagement with empathy is a crucial mediation mechanism associated with cyberbullying (Wang et al., 2017). Some students shared that they and their peers did not often display empathy, while a lack of empathy for others caused emotional harm to others. Shouja, Louise, Tim and Tyrone said that not being considerate of the feelings of others lead to emotional upsets, anger or sadness in others. For example, Tim maintained, "There is always people being hurt over social media and ICT. In some ways it isn't good for people's wellbeing" (Student interview, 19/09/2013), while Louise shared that when some of her peers post hurtful things, "they don't think about how this could affect other people" (Student interview, 17/10/2013). These findings suggest that a lack of empathy mediate the use of ICTs by some young people. Additionally, a lack of empathy was considered the sixth greatest concern by students with respect to the 14 moral concerns studied (see Figure 6.1). The next section discusses emotional issues such as anxiety, 'bad moods', a desire to be popular and peer pressure, and how these emotions mediated the use of ICTs.

6.2.1.1 Inappropriate emotions

With respect to the role of inappropriate emotions, research shows that online forms of anti-social behaviour are associated with depression, anxiety and low levels of self-esteem (Craker & March, 2016). Some research suggests that emotions and the approval of peers plays a role in adolescent's use of ICTs (Baker & White, 2010; Davis et al., 2010). Adolescents who report more intense and labile emotions, and less effective regulation of these emotions have been found to report more problem behaviours while using ICTs (Houck et al., 2014). Seven out of eight student interviewees suggested that emotional states such as anxiety, 'bad moods', a desire to be popular and loved, and peer pressure, undermined the use of ICTs by some of

their peers. For example, Betty suggested that emotions had an influence on their peers lying online, while Louise claimed, “If you’re in a bad mood and you go on social media you’re out looking for somebody to vent to” (Student interview, 17/10/2013), while she also suggests that emotions associated with online romances can have adverse influences on privacy:

> Definitely emotions are involved because if you’ve got someone that you meet and you like them, and you really get to know them and you share things with them over the internet that you probably shouldn’t, they can screenshot (the ability to capture content on the screen) or send away. They can give your personal information to everyone but you thought it was the right thing to do because you were emotionally attached to them. (Student interview, 01/11/2013)

6.2.1.2 Attention seeking and popularity

Youth identity exploration and formation are facilitated by self-expression, self-refection and feedback from others. Feedback from others is a critically important source of validation; however, our reliance on feedback from others may interfere with self-reflection (Davis et al., 2010). Valkenburg et al. (2017) maintian that self-esteem is one of the main predictors of psychological wellbeing, and social self-esteem is largely shaped through interactions with close friends and peers, which often occurs on social network media. Early adolescents can be highly preoccupied with how they appear in the eyes of others. Valkenburg et al.’ study found that positive feedback from friends on social media improved social or global self-esteem, whereas negative feedback from and neglect by friends decreased global and social self-esteem. Another study found that social networking use was higher among people low in self-esteem, high in narcissism and high in loneliness (Liua & Baumeister, 2016). One of the concerns noted by students is that while using ICTs, attention seeking, peer acceptance and popularity undermined moral reasoning, emotion and behaviour and the digital images of some of their peers.

Research suggests that more depressed users are inclined to do more broadcasting activities on social media (Wee, Jang, Lee, & Jang, 2017) and that people act more

irrationally when it comes to self-disclosure of negative life events because of their desire to seek help and release stress, while considering other potential consequences of self-disclosure less rationally (Cho, 2017). Some students shared this concern. For instance, Baba reported that “people who have anxiety ... attention seek on social media and they receive sympathy of people” (Student interview, 04/03/2014). Some of the findings suggest that attention seeking and popularity were also reasoned to motivate harassing others. Research into the phenomenon known as ‘trolling’ is limited, it is attracting increasing interest. The research to date suggests that individuals involved in trolling are motivated by attention seeking (Craker & March, 2016). Tim shared that “on Facebook there are lots of attention seekers, just hoping to get their little bit of attention and a bit of laugh, but it’s not always fun for the other person” (Student interview, 12/09/2013). Shouja said that the values that many adopt online are based on “whatever makes them seem more popular than others” (Student interview, 14/03/2014). She reasoned that this caused them to feel that they “are more important than others, which develops unfairness” (Student interview, 14/03/2014). Betty stated that some of her peers would, “Lie, cheat, make fake things and do bad stuff to get popular… I just think that they want to be accepted into the real world, but then when they're on the internet, they may not be as cool (Student interview, 01/11/2013).

Research also suggests that the display of idealised online versions of young people’s selves may increase the likelihood of receiving positive feedback, and, in turn, enhance social self-esteem. The results suggest that feedback may be a more valid mechanism to explain the short-term effects of social media use on self-esteem (Valkenburg et al., 2017). Some students shared their concern about these short-term attempts to raise their self-esteem. In order to be popular online, some of their peers post inappropriate content that went against their values. For example, Betty stated, “Well, if someone wants to get a lot of likes on Facebook, they have to be not wearing as much clothes” (Student interview, 01/11/2013). Baba also shared this view, stating, “Some girls post bikini shots and then they get all these comments from the boys and the year-level girls, ‘Hot’” (Student interview, 04/03/2014). Aphro (parent) also maintained, “more so than anything else, they want to look good, they want to look good to their peers” (Parent interview, 06/03/2014), while Robert (teacher) said, “We get a lot of girls that I would think were quite sensible normally,

but because of that feeling of wanting to belong and be put on a pedestal, they do very silly things" (Teacher interview, 09/12/2013). Some students also shared this concern. Clairie shared that "they've got like a popularity scale almost. So, they will do things that they wouldn't normally do" (Student interview, 18/02/2014). John said, "Honestly, I don't think they have many values. That depends if you're popular or not. The more popular you are, then the more you'll post things online without thinking" (Student interview, 12/03/2014).

Seven out of eight student interviewees also suggested that peer pressure had a detrimental influence on the moral domains. Three students believed that peer pressure while using ICTs influenced them to go against their own values. Tim claimed that some of his peers "care too much about what other people say" (Student interview, 19/09/2013). Betty suggested, "You are sort of going along with the flow, just so that you can have friends and you can be counted as a popular person" (Student interview, 01/11/2013), while Louise stated, "Take your friends on the internet, you do adopt their behaviours and what they think 'Oh, yeah. They're doing it; it must be normal'" (Student interview, 31/10/2013). Tyrone acknowledged his own shortcomings and the remorse he felt when faced with peer pressure to do something that went against his values. "You might still go along with something even though you're not that comfortable with it. You would still feel bad about what you're doing, just not do anything about it" (Student interview, 17/09/2013).

When seeking to foster morality in the use of ICTs it may be important to consider the finding that online popularity caused some young people to post content that went against their own values, while succumbing to peer pressure caused some to adopt the inappropriate reasoning and behaviours of their peers.

6.2.2 The immoral influence of ICT environments on moral emotion

This section discusses findings in relation to the immoral impact of ICT environments on moral emotion. Characteristics of ICTs, such as diffusion and displacement of responsibility create an emotional gap while using ICTs, which in turn, appears to impact the level of empathy and concern felt for others, and anti-social behaviours. One study found that distance from others while using ICTs minimises the

consequences of actions on others, which influenced moral disengagement and anti-social behaviour (Runions & Bak, 2015). Additionally, the emotional gap that is created lessened socio-emotional cues reduce emotional consequences (remorse) of aggressive acts (Perren & Gutzwiller-Helfenfinger, 2012; Runions & Bak, 2015). Empathy relies, in part, on sensory emotional cues (Goleman, 2004; Rauers, Blanke, & Riediger, 2013). Runions and Bak (2015) maintain that removing nonverbal cues, such as tone of voice, eliminates one of the conditions for the elicitation of empathy while using ICTs. Some students shared that communication while using ICTs was difficult at times, because of the lack of sensory emotional cues. For instance, Louise claimed that "In real life you say something and you can see the look on people's faces, whether they approve or disapprove of what you're saying, so you can accommodate what you're talking about" (Student interview, 19/09/2013). Betty also shared this concern, stating, "You can't say 100% because you might ask 'Are you lying?' and you say, 'No, no, I'm not lying,' but they could be lying because you can't see their face" (Student interview, 01/11/2013).

Five students suggested that the dampening of emotional cues affected the level of empathy and concern felt for others and increased the anti-social behaviours of some of their peers. However, it is not clear whether these recognitions influenced the empathy they showed to others. Betty said that empathy was not often present because it was hard to determine who was in need while using ICTs and that it was easier to exclude people online. "I don't know what it's doing to them, so I don't care. No one will know that you're hurt" (Student interview, 01/11/2013). She also said:

> It doesn't happen a lot [empathy] because everyone just looks at them and be like, 'They're fine, they're all right'. We don't see the people's reaction to it. Seeing people's reaction would flick a switch maybe to be like, if that's how they're reacting I probably should say [rude] things like that . (Student interview, 22/10/2013)

Roberts and Wasieleski (2012) maintain that the distance between individuals while using ICTs minimises the consequences of one's actions on others. Also, Perren and Gutzwiller-Helfenfinger (2012) argue that the potential invisibility of the victim might be a specific feature of cyberbullying that is important to consider, as there is an increased probability that the bully does not directly see the emotional impact of

his/her actions on the victim, at least not in the immediate exchange. Additionally, a lack of visual ques may make deception easier (Davis et al., 2010). Shouja (student) maintained that “some people may find it easier to put someone down or lie when you're not doing it to the face, because they can’t see your body language or facial expressions. They don’t know from their other side if it’s probably developing into anger or sadness” (Student interview, 14/03/2014). Tyrone also noted that, “someone's not really there you’re not going to feel bad about hurting someone if you don’t see them hurt” (Student interview, 16/09/2013). Betty said that it was very common for her peers to say things on social media that they would not necessarily say, face to face. On three different occasions, Louise made similar statements:

> I think when you’re on social media and technology you don’t really think about it as much as you would if you’re talking to someone in person” (Student interview, 17/10/2013). You’re like, I don’t really care, I can say something meaner (Student interview excerpt, 22/10/2013). You don’t think about whether it would have an effect. Would this hurt another person? Emotionally would this upset this person that I'm putting this photo up? (Student interview, 31/10/2013)

Several studies have indicated that bullying is associated with lower levels of remorse (Perren & Gutzwiller-Helfenfinger, 2012). With respect to the influence of ICTs on conscientiousness and remorse, Tyrone suggested that remorse for hurting others or pirating music was also dampened while using ICTs, while Betty also held this view: “On the internet, people think, I can get away with a lot” (Student interview, 10/11/2013). Robert (teacher) also commented on the influence of ICTs on remorse:

> We talked about someone who can throw something online that really shouldn’t have been there and they only feel a bad experience and get their emotional connection to it when they realise it’s gone wrong. Because this side of technology has allowed them to do it, so I can see how it would feel” (Teacher interview, 18/02/2014).

Five students appeared to suggest that while using ICTs, socio-emotional cues were lessened, which negatively influenced moral disengagement and the level of empathy and concern felt for others. Distance between individuals while using ICTs appeared to minimise the consequences of one’s actions on others and lessened

remorse. These findings suggest that these influences had an impact the emotions of young people while using ICTs.

6.2.3 The positive influence of ICT environments on communication

The data presented in section 6.2.2, focussed on immoral the influence of ICT environments on moral emotion. However, the literature and some findings suggest that ICT environments also has a positive influence on some young peoples' emotions with respect to communication with peers. Research suggests that ICTs can provide increased opportunities for communication (Craker & March, 2016) and self-expression (Arıcak et al., 2015; Baggio & Beldarrain, 2011). For young people experiencing difficulties in engaging in social relationships, online anonymity may lower the barriers to meeting new friends (Heirman & Walrave, 2008) and increase greater freedom of expression (Heesen, 2012). Some students suggested that ICT environments had a beneficial influence on communication for some young people. Louise, Betty, Tim and Shouja commented that ICTs allowed some of their peers to communicate more easily. Louise stated that "when somebody is talking on social media or just texting, they will be open to you and then you can be open back to them" (Student interview, 17/10/2013). Betty argued that some of her peers were more confident to share while being anonymous. The anonymity allowed them to overcome their shyness, share their feelings more openly and get support from others. Betty stated, "If they post it anonymously, there's people to give them support without knowing who they are (Student interview, 01/11/2013). Betty also claimed:

> You can communicate on the technology easier than you can face-to-face, like you may mumble your words when you're talking face-to-face but on the internet you can backspace, you can autocorrect. Some people can be more confident on the internet. They can say things that they wouldn't generally say to someone's face. (Student interview, 22/10/2013)

6.3 Technologically mediated moral issues and moral behaviour

This section discusses the participants' views about the reciprocal influence of human values on ICT environments and the influence of ICT environments on human values with regard to responsibility, justice, respect and self-control. The findings suggest that digital moral malleability appeared to have an immoral influence on responsibility, justice and respect. Students shared their concerns about how a person's *digital-image* can be detrimentally affected by their peers. One study found that moral reasoning with respect to themselves was triggered by privacy issues and posting habits, while moral reasoning with respect to others was triggered by comments on social media, gossiping and violation of the privacy of others (Flores & James, 2013). This study had similar findings as outlined below.

6.3.1 The immoral influence of secondary school students on the ICT environments – Responsibility, justice, respect and self-control

Self-definition is considered important for adolescents, as it is through this process that they arrive at their sense of identity (Buckingham, 2008). In this section, students express their concerns about irresponsible moral reasoning and behaviours with respect to portraying oneself and others in a detrimental way using ICTs. The findings suggest that adolescents' public network identities (digital images) were undermined by their own behaviours and the behaviours of their peers while using ICTs. This situation could explain, in part, why irresponsibility was the highest ranked moral concern for student participants.

6.3.1.1 Self-made digital shadows

A lack of responsibility with respect to self-made digital shadows was a concern expressed by many students. For some adolescents, portrayals of online identity involve a desire on their part to be validated by their peers (Buckingham, 2008; Davis et al., 2010). Deceptive and inappropriate cyber images may be harming

young people, and the long term effects are still unknown (Davis et al., 2010). The findings suggest that some students appeared to understand the impact of adopting the wrong values and reasoning (popularity with peers) on the creation of self-made digital shadows. John claimed, “I don't think they think before they act, before they put it online” (Student interview, 12/03/2014). Louise also shared this view, stating, “When they put something on Facebook, they just write something big about themselves, but you don’t realise that you might not want everybody to know about that… and how much of an effect that this is going to have on them” (Student interview, 17/10/2013). Louise went on to say, “I saw a person, he was very opinionated in what he said, but he immediately deleted the post but … He got a lot of people disliking him” (Student interview, 01/11/2013). Tyrone also shared this about self-made digital shadows: “Looking back to your Facebook posts and realising that you were that much of an idiot. All the things that you said mean to people … a lot of people can relate to that” (Student interview, 16/09/2013). Betty and Baba also provided other examples. Betty said she knew of a girl who lost her reputation by posting an inappropriate picture of herself. “She tried to get it back but she couldn’t and then all these boys got it” (Student interview, 01/11/2013). Baba shared a similar view, noting that “on Instagram my sister showed me this photo that one of her friends put on and it was terrible” (Student interview, 04/03/2014). Aphro (parent) said of her daughter’s peers that “there’s a lot of girls out there that are putting these unrealistic photos of themselves and wearing inappropriate clothing, really, very inappropriate bathroom shots” (Parent interview, 06/03/2014).

6.3.1.2 Injustice and digital shadows

Five parents said that cyberbullying was a concern. All eight student interviewees commented on the injustices perpetrated through malicious digital shadows created by others and cyberbullying. Some students suggested possible mindsets that lead to this negative online behaviour. Shouja maintained that “all of that is unfair, that someone should think that they’re better than someone else” (Student interview, 14/03/2014). Tyrone and Clairie also shared that some of their peers lacked a sense of justice and were cowards hiding behind the keyboard.

One study suggests that while using ICTs, young people may perceive their actions as having fewer consequences, or that cyberspace is a ‘safe place’ to act out conflicts (Davis et al., 2010). Students also spoke about how some of their peers deliberately misused ICTs to disrespect and humiliate others, air disputes, act out revenges and destroy the reputation of others through lies, derogative postings and rumours. Tim stated, “I just don’t feel it’s right, so then everyone can just see and say their egos and having a dispute” (Student interview, 12/09/2013). Baba also shared that “a lot of revenge” is going on in social media (Student interview, 04/03/2014), while John said that some take the anger they experience in their lives and act it out online in the form of cyberbullying. Louise and Tim said that some of their peers made up rumours about others and posted embarrassing photos on social media that humiliate their peers. Tim noted that this led to some of his peers being depressed and closing social media accounts: “It just gave that person a really bad reputation” (Student interview, 19/09/2013). Baba also spoke of some of her peers posting nasty comments on Instagram and Facebook, with postings such as, “Rates Out of Ten”, “To be honest I hate you, go away, stop liking” (Student interview, 04/03/2014). During a classroom discussion, some students noted that most of their peers experienced being treated unjustly while using ICTs. One student noted that, “A lot of people blame others to make them feel bad” and some hide behind the screen to “hurt your social status” (Classroom observation, 28/04/2014). Dee (teacher) said, “It’s almost like the norm now to actually hunt people down and be quite volatile online” (Teacher focus group, 09/12/2013).

Another phenomenon reported by the students was that their peers would stand up to bullies, only to then go on and bully others themselves. Baba said, “If there’s bullying, they all want to be in the conversation… but while they’re helping the person they were really terrible to the other person” (Student interview, 04/03/2014). Tim also commented on this, stating, “They put their nose in and try to help … but they can end up harassing others” (Student interview, 12/09/2013). Betty reflected on parents’ and peers’ encouragement of young people to stand up for themselves online, but questioned whether this advice can lead to cyberbullying. Her parents told her to “stick up for yourself, don’t let anyone put you down, so you could be thinking, ‘“That means I can put them down’” (Student interview, 22/10/2013). On another occasion, she mentioned that the message was, “Oh, yeah, stand up for yourself”,

but then, when people take it too far … They're putting other people down" (Student interview, 01/11/2013). The students are pointing out that by young people becoming part of arguments to defend others, they then can sometimes become unethical by harassing the bullies. This situation is another example of the reciprocal immoral influence of ICT environments on values and the influence of student values on ICT environments.

6.3.1.3 A lack of self-control

Some psychologists maintain that self-control involves the ability to suppress inappropriate emotions and actions in favour of appropriate ones. Self-control therefore requires goal-directed behaviour in the face of salient, competing inputs and actions (Casey, 2015; Goleman, 2004). Most students indicated that ICTs play a role in undermining self-control. For instance, Betty (student) maintained that "if you are on technology you can go out of your limits and think that was too far but you can't control it because of someone else doing it to you as well" (Student interview, 22/10/2013). One study of morality found that individuals tend to be less ethical when temptations are great and the payoffs for unethical behaviours are greater (Lau & Yuen, 2014). The findings suggest that some participants considered self-control important for managing what young people post on social media and do while using ICTs. However, five students expressed the view that self-control is not a value and behaviour adopted by most of their peers.

One teachers expressed the view that self-control was an issue for students' uses of ICTs because of their tendency for instant gratification. Robert maintained that instant gratification is so prevalent because "it is possible to do a lot of things that they want to online", while Woody said, "If they lack self-control they might type a message on Facebook that's actually quite obscene and offensive" (Teacher focus group, 09/12/2013). One parent spoke about the importance of self-control with respect to the fights that are played out online. Tyrone (student) referred to his peers not adopting the value of self-control, saying that "they probably don't feel a need to because there's nobody there to tell them off and tell them they are doing the wrong thing, so why do you need to control yourself if there's not a reason to" (Student

interview, 12/09/2013). Tyrone's reason supports the view that moral self-regulation requires triggers to be activated, which online settings provide little of (Runions & Bak, 2015). This view was also shared in the classroom, with one student stating, "I don't have self-control online mainly because there aren't many boundaries" (Classroom observation, 28/04/2014).

Two students also suggested that a lack of self-control on social media could lead to a breakdown in friendships. Tim said that in order to safeguard relationships, young people needed to resist "the urge to say something nasty … There's just not enough people that have self-control. Maybe they just see someone they don't like and just say it on a social media site" (Student interview, 12/09/2013). Louise held a similar view:

> It's easy just to vent and just get all your thoughts out there. When you're face-to- face, you have limits, in the real world you have limits and you think about things more. When you are on a computer, you just say it and hope it works out. (Student interview, 31/10/2013)

John said self-control was important in order to not "act out another life" online (Student interview, 12/03/2014). During a classroom discussion, two students commented on self-control, saying that "it's hard to maintain self-control in some situations" and that "this is important, since once it's on the internet, it can't be taken off" (Classroom observation, 28/04/2014).

Findings in sections 6.3.1.1 and 6.3.1.2 suggest that participants were concerned about irresponsible moral reasoning and behaviours with respect to portraying oneself and others in a detrimental way using ICTs. Injustices perpetrated through malicious digital shadows created by others and cyberbullying were of great concern. Standing up to cyberbullies in some instances appeared to foster bullying, suggesting the reciprocal immoral influence of student values on ICT environments and the influence of ICT environments on their values. The findings also suggest that some participants considered self-control important for managing anti-social behaviours. The next section discusses the findings about the immoral influence of ICT environments on moral behaviour. However, at the end of the section some findings are discussed with respect to the positive influence on ICTs on moral behaviour.

6.3.2 The immoral influence of ICT environments on moral behaviour

Some research indicates that on social media, interpersonal positive or negative feedback on the self is often more public than in comparable face-to-face settings, which may make adolescents more susceptible to such feedback than comparable feedback in face-to-face settings. Positive feedback from friends improved social or global self-esteem, whereas negative feedback from and neglect by friends decreased global and social self-esteem (Valkenburg et al., 2017). Studies also suggest that techniques such as persistence, replicability (spread ability), search ability, and scalability (wide availability) of inappropriate content posted online are having a detrimental impact on secondary school students (boyd, 2014; Flores & James, 2013). boyd (2014) argues that bullying online makes these dynamics more visible and more persistent to more people. What follows are the views of students and the moral reasoning they appeared to have with respect to the immoral influence of ICT environments on moral behaviour. The findings suggest that some students felt that detrimental digital shadows and violations of privacy undermined the personal autonomy, self-definition and formation of adolescents' public identities and self-esteem.

Two parents also expressed concern about the persistence, replicability and scalability of digital shadows. Aphro stated, "What they're writing now can impact on them so much later on down the track. These conversations are happening online for the whole world to see. People read about it later and they can share those texts with other people" (Parent interview, 17/09/2013), while Spencer stated, "Now you can just say something on the computer. It's out there in the world. I don't think they realize how wide it is" (Parent interview, 21/10/2013). Digital moral malleability had an immoral influence on responsibility, justice and respect. With respect to the influence of ICTs on responsibility, justice and respect Dee noted that: "They can see someone's been bombarded by Twitter about something, it kinds of sets that social norm, to think that they can do that too" (Teacher focus group, 09/12/2013). Distancing and anonymity appeared to have a negative influence on secondary school students' moral disengagement and immoral behaviours with respect to cyberbullying and privacy violations. This finding is similar to those of a study by Buelga et al. (2017).

With respect to persistence, replicability and scalability of self-made digital shadows, the findings suggest that some students were concerned about this. Louise (student) maintained that, “what you put out there, it’s always going to be there. You’re never going to be able to get it back” (Student interview, 22/10/2013). Several students expressed the view that “once you press send, you can’t get it back”, “if you say it on Facebook, it’s always there to remind that person” and “there's always a record on the IT” (Student interviews, 22/10/2013, 12/09/2013). Six student interviewees noted the regret they and their peers felt about inappropriate posts on social media. Tyrone shared, “Well, just like with me you might be more honest because you just think it might not come back around as much, but it really does. It’s actually worse, because you have a physical state of what you said. … Even when you delete something, it’s not deleted” (Student interview, 17/09/2013). Tim also said that, “when it’s posted on Facebook it’s kind of there for everyone to see” (Student interview, 12/09/2013).

boyd (2014) maintains that the persistence and visibility of cyberbullying leave traces of cruel teen interactions. Others can see what is happening and this visibility enables individuals to amplify these attacks. Such heightened visibility can significantly increase the emotional duress of a bullying incident. Some students in this study also expressed their concern about the persistence and visibility of cyberbullying. Louise noted, “I think it hurts more (when bullied online) because you can look at it and you subconsciously just read it over and over again and it makes you feel worse” (Student interview, 17/10/2013). Betty also shared a similar concern with respect to persistence and the amplification of attacks:

> If you’re mean on the internet, it could come back to bite you later, because that comment will always be there. It’s always there to remind that person. Anyone can take it and twist it around. …we’ve seen the effects of what can happen if you do put something out there that you probably shouldn’t (Student interview, 01/11/2013).

Two parents also spoke about persistence, replicability and scalability of digital shadows. Aphro said:

> The whole world can see. You might be emotional; something could have happened where maybe a boy dumped a girl. People can see, they’ll start hinting and from 3 or 4 people it becomes 20. They come to school the

> next day and there's 100, 200 people that know about these issues that they've had (Parent interview, 06/03/2014).

Another example of the influence of digital moral malleability on morality is the distancing of one's actions from their effects on others, which can destabilise relationships with others (Flores & James, 2013). The virtual nature of the interactions while using ICTs causes individuals to perceive their actions as less 'real', hence distancing individuals from their actions (Floridi, 1999; Nissenbaum, 1994; Runions & Bak, 2015; Wong, 1995). Derrick (teacher) said that "often with technology there's no consequence" (Teacher focus group, 09/12/2013). Moral disengagement may occur because of the distance to the victim and the inability to see the victim's reaction (Sikka, 2012). Stuart (teacher) referred to this moral disengagement, as "values being attenuated". She said, "We don't apply all of the values that we do in the real world. Kids who wouldn't say something nasty to somebody to their face would say that online" (Teacher focus group, 09/12/2013). Some students provided some examples of this phenomenon. Shouja, Betty and Tim said that for some of their peers, it was easier to put others down online and share their opinions. Louise claimed that "they just think that when Facebook, for example, comes up with 'What's on Your Mind' they put out everything. They don't think about how this could affect other people" (Student interview, 17/10/2013). Tyrone said that "when they use that computer and stuff, that's kind of a shield, they can say what they really think to people" (Student interview, 16/09/2013). Stuart (teacher) stated, "I think being anonymous is like a shield for bad behaviour" (Teacher focus group, 09/12/2013). Baba also spoke of bad behaviours such as posting nasty comments on Instagram and Facebook using "TBH" (a term that encourages individuals to 'To Be Honest'). During the classroom observations, students also shared their concern about TBH. Tim, John, Baba, Tyrone and Louise also said that the level of respect declines when their peers use ICTs, indicating the influence of ICTs on values and behaviours. Tyrone said, "I think that kind of goes down when using computers" (Student interview, 16/09/2013), while Louise shared:

> If you're talking to someone you'd be respectful to them. No matter if you like them or not you're respectful, but when you're on social media or technology you're sort of not. You're talking to a computer screen, not as

> much a person, so you forget what your values are and how you treat people. It's easy just to vent and just get all your thoughts out there, but you don't think of the consequences. (Student interview, 17/10/2013)

John expressed the view that ICTs influence how young people communicate: "It gives you the power to say the things you wouldn't say to their face" (Student interview, 12/03/2014). Shouja also shared John's view, stating that "some people may find it easier to put someone down or lie when you're not doing it to their face" (Student interview, 14/03/2014).

Another example of the influence of digital moral malleability on morality is the anonymity provided by ICTs, which has also been referred to as invisibility (Perren & Gutzwiller-Helfenfinger, 2012). Thanks to the anonymity, real identities and actions are separated from the real world (Heirman & Walrave, 2008). Some researchers have speculated that anonymity may have a disinhibition effect (Flores & James, 2013), that may detrimentally influence on a personal commitment to moral values (Bats et al., 2013; Davis et al., 2010; Yoon, 2011). It is known to increase the likelihood that people will transgress rules and laws (Yoon, 2011) and increases aggression (Davis et al., 2010). Tyrone (student) claimed, "You have that opportunity to be able to do things that aren't okay or aren't seen as the right thing to do, but you have that anonymity just to do it and know that you can get away with it" (Student interview, 17/09/2013). One study showed that cyberbullies consider anonymity to be desirable, because it allows bullies to feel less inhibited and less accountable for their actions (Price & Dalgleish, 2010). The findings suggest that students were concerned about anonymity being used by some of their peers to undermine the *digital-image* of others and to cyberbully others. Betty, Tim and Tyrone stated that some of their peers created anonymous Facebook profiles to destroy the reputation of others. Additionally, anonymity appeared to detrimentally influence moral engagement. Tyrone and Betty suggested that anonymity in social media influenced their peers' sense of caring and caused some to treat others unjustly. Tyrone noted, "Some people will go to a lot of trouble to hide who they are online so they can say what they want and do what they want" (Student interview, 16/09/2013). Betty maintained:

> You can't predict what people are going to do on the internet because this person maybe the nicest person you ever meet and they could have an anonymous account online where they trash people. They'll be mean to people and you could never know because they have no links to reality (Student interview, 01/11/2013).

Tyrone also provided an example of someone who created a fake Facebook account for a student who did not have one, in order to embarrass them, explaining that "it just gave that person a really bad reputation" (Student interview, 12/09/2013). Tim also provided an example: "Some pretend to be other people on Facebook and message people and tell people lying stuff". He said that a student in his cohort created an anonymous Facebook account called "Honest Bob". "Every week they would post lists basically of who's the hottest or not" (Student interview, 19/09/2013). Tyrone also spoke about this incident. "Some people were like who's the most hated and who's the ugliest" (Student interview, 16/09/2013). Woody (teacher) maintained that anonymity influenced on the mindset of some students. He explained that "because it's not them in person, that it's almost like, 'okay I am anonymous' (Teacher focus group, 09/12/2013). The situation described above would appear to be another example of the reciprocal immoral influence of ICT environments on human values and human values on ICT environments, as the morally malleable nature of ICTs is perceived and used as a means to undermine others.

Research suggests that broad exposure of information is making privacy more salient for young people. They may be feeling that their identity, reputation and sense of safety is increasingly beyond their control. Because of this, young people may be more aware of the need to carefully manage what they disclose while using ICTs (Davis et al., 2010). Six students shared concerns about the immoral influence of persistence, replicability and scalability on their privacy. Betty noted, "If you put a photo out there, even if you delete it people can save it, people can share it and you have no control over what they do with it" (Student interview, 01/11/2013), while Louise said, "Anyone can get to it, anyone can see exactly what you're doing" (Student interview, 01/11/2013). Tyrone also expressed his concern about the impact of a lack of privacy on online relationships. "If you tell someone something

just between you and them they might go and tell someone else on the internet" (Student interview, 16/09/2013).

Feenberg (2002) argued that one of the most important concerns for humanity is understanding what aspects of human life are affected by the techniques that are embedded into technology. Commercial deployment of ICTs are shaped by the interests and biases of the people who produce and control them, and these, in turn, affect social systems (Buckingham, 2007; Feenberg, 2002). Some student participants expressed concern that these embedded techniques could undermine their personal autonomy, privacy and public identities. For example, Betty and Tim shared their concern about the loss of control of their own personal content (persistence, replicability and scalability) such as their inability to remove content. Some students also suggested that techniques (persistence, replicability, scalability and anonymity) influenced responsibility, justice and respect, and how their peers played out power relations online.

The findings also suggest that participants were concerned about the techniques that are embedded into ICTs. Techniques such as *click bait* (techniques used to encourage visitors to click on a link to a particular web page) and the loss of control of personal information on social media sites were concerns expressed by students and parents. Sue (parent) also noted the following about clickbait: "I'm a protective parent, but that's not in my control if things pop up on the screen, I can't control that" (Parent interview, 31/10/2013). In Tyrone's view, "All companies do that anyway. It's just techniques and they'll do it online as much as they would do it on a billboard" (Student interview, 17/09/2013).

Louise shared her concern about Facebook updates and controlling techniques:

> I think every time that they release a new update, it's almost like they're just getting new ways to control how we think. They pop up things like … things like a suggested page or something you may like … It worries me, though, where they're getting all this information to put that up. They're collecting absolutely everything about you. Anything that you put on, they're collecting, and constantly watching what you're doing, just so they can figure out what you might like (Student interview, 31/10/2013).

Some students also noted that critical reasoning was needed with respect to techniques and online content. Louise spoke about the need to teach young people to judge whether something online is “true or not … You don’t think about what you trust online” (Student interview, 31/10/2013). Some parents also expressed this concern with respect to the influences of ICT environments. Paul believed that young people have many challenges to face. “As they set out to sift out what’s good and what’s bad, it’s very hard to work out whether there’s lies and cheats occurring … there is a mix there, they can’t separate them” (Parent interview, 04/03/2014). The next section discusses some positive influences of ICTs on the lives of young people.

6.3.2.1 The positive influence of ICTs

Some participants maintained that ICTs have a positive influence on moral reasoning and behaviour and provide some opportunities for social activism. The findings in Chapter Five show that one member of each participant group suggested that altruism and social activism in the digital world promoted moral behaviour (see 5.3.6). One teacher also spoke about how so many young people want to share their knowledge with others while using ICTs. Another teacher (Robert) spoke about the global online entrepreneurial opportunities taken up by some students. “The doors are opened and they don’t see the barriers if you start a business in Australia” (Teacher focus group, 18/02/2014).

In summary, some of the findings suggest that a lack of integrity, dishonesty, untrustworthiness and inauthenticity mediated the uses of ICTs, indicating challenges to moral reasoning. However, of these four values, inauthenticity appeared to be of most concern for students. Popularity was often cited as a motivating factor for inauthentic and inappropriate digital images. Some students appeared to suggest that digital moral malleability negatively influenced integrity, honesty, accountability and authenticity. Some of the findings also appeared to suggest that emotional states such as moods, a desire to be popular and peer pressure undermined the moral reasoning and behaviours of some young people. These emotions appeared to have a negative effect on how young people portrayed

themselves and portrayed others. Some finding also suggest that diffusion and displacement of responsibility and lessened socioemotional cues encouraged the moral disengagement and anti-social behaviour of young people. Distance to others while using ICTs appeared to affect the level of empathy and concern felt for others. Remorse for hurting others or pirating music was also dampened while using ICTs, however, some participants suggested that ICT environments had a positive influence on communication for some young people. Students also expressed concern about irresponsible behaviours with respect to portraying oneself and others in a detrimental way using ICTs. Young peoples' public identities were undermined because of this behaviour. Some young people deliberately misused ICTs to humiliate others, air disputes, act out revenge and destroy the reputation of others. Some participants considered self-control important for managing what young people posted and did while using ICTs. Characteristics of ICT environments such as persistence, replicability, scalability, distancing and anonymity appeared to have a detrimental influence on the digital shadows and privacy of young people. Other findings suggest that digital moral malleability had an immoral influence on responsibility, justice and respect.

The next chapter (Chapter seven) presents what was learnt through the three iterations of action research with respect to the moral values and abilities that mediated the moral domains of a small group of secondary school students, and how these were and can be fostered.

Chapter Seven: Action research and the Digital Moral Framework

Chapter Five discussed what was learnt from the second iteration of the action research tasks with respect to the moral values and abilities that mediated the use of ICTs by a small group of secondary school students, and how these values and abilities can be fostered. The discussion drew on data from the 2013 and 2014 interviews with students and parents, focus groups with teachers, the researcher's written observations of the student's values listed during the six classroom presentations held in 2014 and the completed student worksheets. An outcome of Chapter Five is the second iteration of the Digital Moral Framework (DMF). Chapter Six discussed the findings with regard to the moral concerns associated with the use of ICTs.

The discussion in this chapter draws on what was learnt from Chapters Five and Six findings, and data from all three iterations of this action research that were not previously analysed, such as what was learnt from a teaching and learning perspective through observation of the classroom activities and the feedback provided by teachers after these activities. Additionally, as part of the third iteration of the reflection and evaluation tasks of action research, feedback was sought from teachers and students in 2017 about the findings shared in Chapters Five and Six. This feedback came from two focus group sessions with three students who took part in the 2014 interviews and two teacher focus group sessions with the five teachers who worked with me throughout this study, from 2013 to 2017. Based on this additional data, the analysis presented in this chapter also includes a further literature review as this was required to help answer for following research questions:

1. How do moral reasoning, moral emotion and moral behaviour mediate secondary school students' uses of Information and Communication Technologies (ICTs)?
2. How to foster the moral values and abilities that mediate the moral domains of students?

This chapter argues that the third iteration of the DMF presented in this chapter provides a teaching and learning tool that can be used to stimulate conversations and reflections with secondary school students about the role of moral values and abilities in the use of ICTs. The analysis presented in sections 7.1 and 7.2 is based on observations of classroom activities with regard to the effectiveness of the first and second iterations of the DMF. In section 7.3 the third iteration of the DMF is presented. In sections 7.3.1, 7.3.4 and 7.3.6 the abilities associated with moral domains are discussed, while in sections 7.3.3, 7.3.5 and 7.3.7, how to foster these abilities is presented.

7.1 The first iteration of the Digital Moral Framework (DMF)

In preparation for the classroom activities, the content of the first iteration of the DMF and the CVS model was presented to the teacher who delivered the classroom activities. The teachers who delivered the classroom activities were also given some teaching materials, such as a lesson plan, a PowerPoint presentation covering the DMF and CVS model, and a student worksheet. The worksheet solicited responses from students about their moral values and the moral domains with respect to their uses of ICTs. Two teachers delivered classroom activities in the first iteration. The teachers used these materials, but also used their own materials and approaches to teaching values and the moral domains. First, one teacher started her class with a discussion about the difference between moral and immoral values. She asked students to write a list of moral and immoral values on a sheet of paper. Two students were then asked to write on the board, the values that students had written, which allowed some shared moral values to emerge, namely, sharing, forgiveness, honesty, appreciation, respect and love. The immoral values listed were judgement, selfishness, rudeness, dishonesty, ignorance and a lack of forgiveness. The teacher then asked students if these values applied to their uses of ICTs. Students provided some examples, such as being overly honest online can be detrimental to themselves and others and respecting others was important for online interactions.

The second approach used by this teacher was using the DMF to depict the values associated with *integrity, heart* and *character* (the labels used for the moral

domains). The teacher suggested to the students that the moral values they listed could be classified and understood using the moral domains. The teacher used the following definitions to explain moral behaviour*:*

> *Character* (moral behaviour) is how we express our values, moral reasoning allows us to have principles and heart (moral emotion) allows us to feel that something is wrong. Heart relates to our feelings, our conscience and empathy. (Research journal, 28/04/2014)

The students appeared to relate to these classifications and definitions.

During a debrief, the second teacher recommended the need to include ethical scenarios relating to student uses of ICTs in order to promote critical reasoning with respect to the values that mediate their uses ICTs (Research journal, 30/04/2014). Using ethical scenarios is closely associated with a critical reflection (moral reasoning) that some students suggested needed to occur with respect to the influence of values on the use of ICTs and the influence of ICTs on values (see 5.1.5 and 6.1.2.1). Critical reasoning and self-reflection are considered an important means of fostering moral reasoning in young people with respect to their uses of ICTs (Davis et al., 2010; Lau & Yuen, 2014; Liua & Yanga, 2012).

As detailed in Chapter Two, the outcome of the initial literature review was a moral framework composed of 20 values (see Figure 2.1). My reflection on the effectiveness of this first iteration of the DMF after the initial classroom presentations is as follows. First, drawing at the onset of this study on truth, beauty and goodness as suitable labels to discuss values associated with the moral domains, *truth* was used to label the values associated with moral reasoning, *beauty* to label the values associated with moral emotion and *goodness* for the values associated with moral behaviour. To label the moral domains, *integrity* was used to label moral reasoning, *heart* for moral emotion and *character* for moral behaviour. My intent for these labels was to improve teaching and learning; however, after my observation of the initial classroom activities, the first step was to remove truth, beauty and goodness, as I judged these to be too philosophical and of no benefit for teaching and learning. During the 2017 teacher focus group, one teacher noted that beauty was particularly problematic, since beauty can be interpreted in so many ways. Second, the values of accuracy, sincerity and transparency associated with moral reasoning were

removed. Based on my observations, these values were closely related to honesty and authenticity, hence they were redundant. In addition, I observed the difficulty of teachers trying to explain transparency to students. Third, integrity and trustworthiness were added as significant values for moral reasoning as these values were listed by students during the initial interviews and classroom activities. Fourth, for moral emotion, compassion was removed, as I judged it to be closely related to empathy. Conscience was also removed because it was made redundant by conscientiousness (guided by the dictates of conscience) and remorse was added because students spoke of this during the first round of interviews. Fifth, for moral behaviour, goodwill was removed as it was closely related to altruism. Additionally, equality, freedom, tolerance, forgiveness and reconciliation were removed because I judged these to be closely associated with justice, hence they were redundant. Responsibility was added because several students spoke about this value in class and during interviews. The addition of integrity, trustworthiness, remorse and responsibility led to a second literature review to investigate the relevance of these values.

7.2 The second iteration of the Digital Moral Framework (DMF)

Four teachers were involved in the second iteration of classroom delivery of the DMF. The CVS model was also used, but to a lesser extent. These teachers also used the teaching materials that were provided for the first iteration, but one teacher who delivered content in the first iteration created his own materials to cover the content of the DMF in the second iteration of classroom activities. First, to teach the moral domains, Robert (teacher) showed students various pictures depicting young people being cyberbullied. Students were asked to write down their reflections about these pictures under the labels of ‘see, think and wonder’. This activity appeared to be particularly effective for discussing moral emotion and for eliciting empathic responses. Research indicates that it is helpful for students to have an emotional connection to the content being taught in schools (Pugh & Phillips, 2011a). The second activity Robert used was to briefly introduce the moral domains and ask students to write down on a Y-Chart what integrity, heart and character in the use of ICTs, ‘sounds like, feels like and looks like’ for them. A Y-Chart is a three-part

graphic organiser used for describing three aspects of a topic. Third, Robert asked students to '*think, pair and share*' about the personal qualities they felt they needed in order to make 'good' choices in their uses of ICTs. Robert then defined the terms personal, moral and immoral values, and told the students that the goal for the lesson was to come up with personal qualities that are important for their uses of ICTs. During the debrief after the lesson, Robert told me that he wanted the students to come up with their own values first before presenting the values associated with the DMF. In the fourth activity, he explained the moral values in the DMF and linked these to the lives of the students. For example, he defined moral values as advancing the greater good of society, which the teacher linked to 'Common Good', a year nine program at the school in which students are required to do community service.

Finally, Robert finished the lesson with three closing activities. Closing activities that reinforce learning are considered an effective teaching and learning practice (Wiggins & McTighe, 2006). First, students were asked to write down the three most important things to remember about the lesson. They were asked to draw a triangle and write important values and abilities on each corner of the triangle. Some examples from student worksheets included: respect, care, reasoning skills, empathy, responsibility and fairness. Second, students wrote down some questions they wanted answered. Some examples included: Why do people have to be mean to each other? Why do some people have no values on the internet? Why is it that some people cannot think about what they do with ICTs? In the final activity, students were asked to write down in a square "something that *squares with my thinking* is …". Some responses included: being honest, looking for the consequences in every action and making good choices (Research journal, 22/07/2014).

During this second iteration, the other three teachers used the Y-Chart and the 'see, think and wonder' activities prepared by Robert and the PowerPoint I prepared on the DMF (see Appendix D). One teacher (Woody) also started the class by discussing the difference between personal values and moral values, noting that personal values are based on individual likes or dislikes, such as one's taste in music, which do not carry the same weight as moral values. The teacher also

explained that immoral values are the opposite of moral values and asked students to think about the values that drive cyberbullying (Research journal, 24/07/2014). Two teachers asked students to define what comprises ICTs, in an attempt to define the term and link it to their own devices, such as mobile phones and iPads. Another teacher, Derrick, used a different approach to discuss values, prompting students with questions like: Do you pirate movies? Do you harass others to get a reaction? How did you respond to harassment online? Derrick used these questions to discuss the importance of self-control, honesty and justice (Research journal, 01/08/2014).

During and after the second iteration of the classroom activities, I again reflected on six changes to the DMF and possible teaching and learning approaches that could improve teaching and learning. First, it became clear to me and two of the teachers that students were very engaged with activities that solicited their views. They seemed excited that they were being consulted about their values and views in relation to their uses of ICTs, as opposed to being told what to think. During classroom activities, some students shared the view that adults did not really understand their experiences in the digital world (Research journal, 22/07/2014). This view was also shared during the student interviews (see 5.1.6). This activity's intent was to engage students with the values they considered important. Research suggests that to develop students' appreciation and engagement with content, they need to see why the content is worthwhile and relevant to their everyday lives (Pugh & Phillips, 2011a), and this activity met this criterion.

Second, although teachers were selective about the content of the PowerPoint they discussed with students, three teachers began their lesson by defining personal, moral and immoral values. This suggests the importance they placed in defining terms. Third, the need to clearly explain the purpose for the lesson at the start became apparent. After the lesson, one teacher commented that the learning objectives of the DMF were not explicit such as the key knowledge and skills that students need to acquire. This suggestion is supported by the literature and was incorporated in the third iteration of the DMF (Pugh & Phillips, 2011b; Wiggins & McTighe, 2006). One learning objective suggested by a teacher, was that students have the power to have a positive influence on others while using ICTs.

Fourth, the title of the presentation ‘Values in the Cyber Age’, was changed by Robert (teacher) to ‘Values in the Cyber World’. The cyber world seemed more relevant to them, because that is the world they experienced on a daily basis. Based on feedback from my supervisors, I adopted ‘Digital Moral Framework’ (cyber, being a dated term) for the third iteration of the moral framework, as opposed to ‘Cyber Moral Framework’.

Fifth, how teachers defined integrity, heart and character was very important, as, based on some student worksheets, some students thought that heart meant ‘warm and fuzzy love’. In this regard, one teacher told students that character determines how we act towards others, which seemed to be a useful and effective way of discussing moral behaviour. This way of defining character is supported by data reported in Chapter Five that suggest that social responsibility in the use of ICTs is underpinned by altruism and justice (see 5.4). Additionally, the link between character and managing oneself can be found in the responses of some students with respect to the need to understand boundaries and manage themselves well (Research journal, 24/07/2014). I combined the way the teachers defined *character* in the third iteration of the DMF, *managing ourselves well and behaving morally towards others* (see Figure 7.1), as this incorporated the two dimensions of moral behaviour very well.

Six, the second iteration of classroom activities also allowed for some shared moral values and abilities to emerge, namely: responsibility, authenticity, honesty, empathy, care and respect for others resilience, self-control, critical reflection of one’s thinking and behaviours and the common good (Research journal, 22/07/2014 and 25/07/2014).

7.3 The third iteration of the Digital Moral Framework (DMF)

In this section, the third iteration of the DMF is discussed. This helps to answer the research questions by outlining the moral values and abilities that mediated the moral domains of secondary school students. Learning objectives, and teaching and learning practices that can be used to foster these moral values and abilities are also

discussed. To begin this discussion, the significance of the nine values that make up the third iteration of the DMF are explained (see Figure 7.1), this is followed by a detailed explanation of the abilities associated with these nine moral values and how these can be fostered.

7.3.1 *Integrity, heart* and *character*

In the third iteration of the DMF, the values that underpin the moral domains are narrowed down from 12, to nine values. The three students who took part in the 2017 focus group said that these nine values identified by them in year nine and other year nine students in 2013 and 2014 were still important for them in year 12, their final year of secondary school (Student focus group, 10/03/2017). In the third iteration, the labels of *integrity, heart and character* that were used to discuss the moral domains, were retained for two reasons. First, some literature suggests that the use of labels to explain values associated with the moral domains is a good teaching and learning practice (Oliver & Dennison, 2013; Sipos et al., 2008). Second, teachers used these labels effectively to frame discussions and activities during classes about the moral domains.

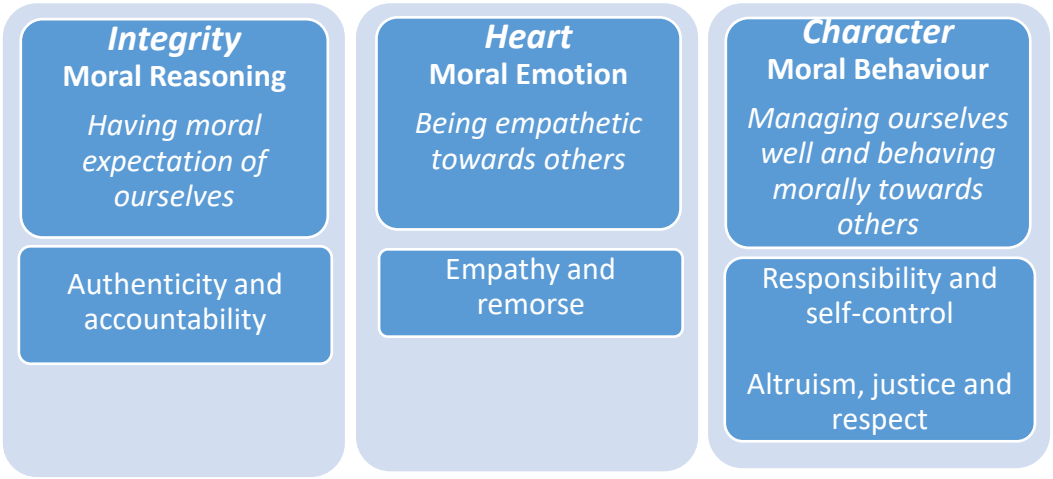


Figure 7.1: The third iteration of the Digital Moral Framework

7.3.1.1 *Integrity*

In the third iteration of the DMF, *integrity* is defined as having moral expectation of oneself while using ICTs, based on the values of authenticity and accountability. Having moral integrity is considered by some moral psychologists as having high moral expectations of oneself (Eby et al., 2013) and living up to one's personal moral values (Laabs, 2011; Volkman, 2015). The 2013 - 2014 findings suggest that authenticity and accountability (associated with integrity in the findings) were the most significant values for moral reasoning (see 5.1.4). The 2017 student focus groups also confirmed this view.

Inauthenticity and a lack of accountability were ranked in third and fourth positions by year nine students with respect to the 14 moral concerns identified by them (see Figure 6.1). However, in 2017, some of these students, now in year 12, noted that having two personalities (inauthenticity), one in the real world and one online, was not as big a concern for them. They argued that being selective in how they portrayed themselves online was not inauthentic, but a mature response to protecting their privacy. During the 2107 teacher focus group, I discussed the rank order of importance of the 12 moral values assigned by students (see Table 5.1). Robert maintained that inauthenticity was still a major issue for year nine students in 2017. He noted, **"**students see ICTs as persuasive channels. They might compromise trust for the positive reputation they might get. Faking, even though they know it's not right" (Teacher focus group, 09/03/2017). Dee shared that students may be influenced by the current trend to present "fake news and "alternative facts". "There seems to be a shift online where you can present things in any way you like" (Teacher focus group, 09/03/2017)

During the 2017 teacher focus group, the teachers seemed particularly concerned about students' low order of importance of honesty (9^{th}), integrity (10^{th}) and trustworthiness (11^{th}). They expressed concern that there was a disconnect between the stated values of students and their actual (perceived) behaviours. These findings are similar to a study that suggests that online interactions may be susceptible to a 'disconnect' between moral reasoning and behaviours (Davis et al., 2010; Flores & James, 2013). However, during the student focus group discussion, Clairie and Baba

disagreed with the teachers. Baba noted, “If you had good values, you would practise them” (Student focus group, 10/03/2017). The maturity of year 12 students may have been a factor, and while their views on this disconnect may be admirable, adults generally recognise that the disconnect between values held and actual behaviours is a common human experience. While commenting on the Chapter Five findings, one teacher said that parents seemed more concerned about their child not breaking the law, than being honest, suggesting another disconnect. Woody (teacher) argued that the problem may be that the current generation of users are growing up with ICTs before they can engage with moral reasoning about values. He noted: “It almost doesn’t matter if students say they have these particular values, when they use the internet those values get turned off” (Teacher focus group, 09/03/2017).

7.3.1.2 *Heart*

Heart is a label that is sometimes used to represent the *emotional domain* (Berkowitz et al., 2002; Brunn, 2014; Goleman, 2004; Volkman, 2015). In the DMF, *heart* is being empathetic towards others while using ICTs. The 2013 – 2014 data suggests that empathy (5.2.1) and remorse (see 6.2.1.2) were the most significant moral emotion for the students, while a lack empathy was ranked sixth out of 14 moral concerns (see Figure 6.1). The 2017 focus groups with students and teachers did not generate any new data with respect to empathy and remorse.

7.3.1.3 *Character*

Character is a label that is sometimes associated with self-regulation of impulses and moral behaviour (Berkowitz et al., 2002; Goleman, 2004). In a study of adolescent morality, character was defined as the psychological and social skills required for moral behaviour (Lau & Yuen, 2014). In the DMF, *character* while using ICTs is managing ourselves based on the values of self-control and responsibility, while behaving morally towards others is based on the values of altruism, justice and respect. This is significant as some research indicates that good self-management

(responsibility, self-control and accountability) plays an important role in moral reasoning and moral behaviour (Baggio & Beldarrain, 2011), and studies have consistently shown that moral self-regulation shapes moral behaviour (Barque-Duran et al., 2016; Berkowitz et al., 2002). On the other hand, social responsibility towards others is underpinned by empathy, altruism and justice (Giner-Sorolla, 2012; Goleman, 2004; Schramme, 2017). With respect to self-management, Chapter Six findings indicate that students ranked a lack of responsibility towards others first out of 14 moral issues, while a lack of self-control was ranked seventh (see Figure 6.1). I asked the students who took part in the 2017 focus group why responsibility was ranked highest by students in year nine. All three students noted that a lack of responsibility by their peers influenced on the digital shadows of young people (Student focus group, 10/03/2017), which is consistent with the 2013 - 2014 findings (see 5.3.5, 6.3.1.1 and 6.3.1.2). The 2013 - 2014 findings (5.3.4) about the importance of self-control also remained consistent in 2017.

With respect to behaving morally towards others based on the values of altruism, justice and respect, the teachers who took part in the 2017 focus group questioned its importance and were critical of the shallowness of online youth altruism. Robert maintained that “students support the value of altruism, like when we talk about community common good, but how many actually do it. It’s easy to get an emotional response on an issue that people are passionate about, but it can be a short-lived thing” (Teacher focus group, 09/03/2017). Derrick agreed and spoke about “slacktivism” or “hashtag activism” (a term that refers to the use of Twitter-hashtags-for-internet activism). He suggested that this type of online activism is shallow and involves a low level of self-gratification. Students in 2017 also suggested that altruism and justice is not generally practised by their cohort. Clairie noted that her peers generally did not stand up for others who were being treated unfairly online. However, John stated, that “if one of our peers crosses the line, people will say something” (Student focus group, 09/06/2017). One student suggested that the importance of peer approval and a reluctance to stand up to others online was greater in year nine, suggesting that this may have been perceived as important by year nine students, as well as, influence the prevalence of online altruism by this cohort. Baba maintained, “In year nine it (approval of one’s peers) was more important, but we are a lot more mature now and I don’t really care for approval”.

The other two students agreed with Baba, but John said that it would still be difficult to stand up to a big group of his peers in year 12 (Student focus group, 10/03/2017). Dee (teacher) also stated that “it’s incredibly hard for them to stand up and have the courage at this age (year nine)” (Teacher focus group, 09/03/2017).

During the 2017 focus groups, students and teachers spoke about a phenomenon called ‘roasting’ which is associated with a lack of justice and respect. Roasting involves a group of students ganging up on one person to ridicule them. Baba (student) argued, it’s funny, it’s okay, it’s banter, no one gets freaked out, because it’s all a joke” (Student focus group, 10/03/2017). However, two teachers dealing with incidents of roasting involving year 10 to 12 students had a different view. Dee, who had a pastoral role at the school, noted that some year 12 boys told her that the pressure from their group to roast others was immense and how uncomfortable they felt about doing this. Some also expressed fear of being the next target of the roasting. Baba (student) noted that cyberbullying on Facebook was not as big an issue in year 12, as it was in year nine, indicating that age is a factor. Research supports this finding, as cyberbullying has been found to peak between 12 and 15 years old (Symons et al., 2017). However, she said that cyberbullying occurred more through texting SMS in year 12. John stated, “You probably realise that you get in trouble for being mean online”. Baba agreed with John, saying, “especially if you have the evidence of being mean online” (Student focus group, 10/03/2017). This finding suggests that social media is not used as much for cyberbullying because of the understanding that year 12 students may have about the public nature of social media postings. The reason for using private messaging services could be to avoid public disapproval. Niland et al. (2015) maintain that a wider audience may mean that young adults are conscious not to interact in an overly emotional way through Facebook status updates because of the more intense surveillance of friends’ activities.

The remainder of this chapter discusses the abilities and learning objectives associated with each of the nine values that underpin the moral domains. How these abilities can be fostered are also outlined. This discussion required a new look at the literature based on the synthesis of the findings with respect to the third iteration of

the DMF.

7.3.2 Moral reasoning in the use of ICTs

This section discusses the findings in relation to the abilities and learning objectives associated with authenticity and accountability, and to moral reasoning. The findings suggest that some students had some abilities with respect to authenticity and accountability: 1) identify moral issues and make moral judgements, 2) have moral expectations of themselves, 3) justify moral judgements and 4) determine moral actions.

Although this section deals with abilities associated with authenticity and accountability, and moral reasoning, I have found that these abilities also appeared to apply to the other two moral domains. Children reasoning about moral values through negotiating, justifying and questioning values supports social cohesion (Brownlee et al., 2017). Section 7.3.3 discusses how moral abilities with respect to moral reasoning can be fostered.

7.3.2.1 Identifying moral issues, making moral judgements and having moral expectations

Some computer ethicists maintain that making moral judgements with respect to ICTs requires applying moral values to identify moral issues associated with ICTs (Ess, 2002; Floridi, 1999; Kerta et al., 2012; Stahl, 2004; Volkman, 2015). The findings in this study suggest that some students applied moral values (authenticity and accountability) to identify moral issues associated with the use of ICTs by their peers (see 6.2.2, 6.2.1.2, 6.3 and 6.3.1.2). Some moral psychologists suggest that applying moral values to identify moral issues relies on self-awareness and self-assessment of one's values and reasoning, and an awareness of the influence of one's actions on others (Barque-Duran et al., 2016; Flores & James, 2013; Kerta et al., 2012; Schalkwijk et al., 2016). The findings in this study suggest that some students expressed an awareness of the moral values they held and could, at some level, apply these to make moral judgements about their own behaviours (see 5.1.1).

Some students reported feeling remorse for past misbehaviours on social media (see 5.2.2), while self-control was considered important to manage anti-social behaviours (see 5.3.4), implying some level of self-assessment and awareness of the influence of values and behaviours on others, and some level of moral expectations of themselves.

7.3.2.2 Justifying moral judgements

Making moral judgements also involves justifying moral judgements (Giner-Sorolla, 2012; Gotterbarn, 1992; Mercier, 2011). This justification relies on: a) self-awareness and self-assessment of one's own values (2016; Kerta et al., 2012; Sipos et al., 2008), b) an understanding of the influence of one's values on moral reasoning and behaviour (Godbold & Lees, 2013; Schalkwijk et al., 2016) and c) an evaluation of alternative moral judgements (Kerta et al., 2012; Mercier, 2011; Robbins, Shepard, & Rochat, 2017). The findings on integrity (see 5.1.1), honesty (see 5.1.2.1), authenticity (see 5.1.3) and accountability (see 5.1.4) suggest that some students showed some level of self-awareness and self-assessment of their own values while using ICTs and justified their moral judgments with respect to these values. However, students did not comment on their own evaluations of alternative moral judgements.

7.3.2.3 Determining moral actions

Some computer ethicists and moral psychologists maintain that determining moral actions involves identifying and determining moral actions that are morally justifiable (Kerta et al., 2012; Lau & Yuen, 2014; Richardson, 2009; Robbins et al., 2017; Taherdoost et al., 2011). This determination requires individuals to: a) identify stakeholders (Kerta et al., 2012; Schalkwijk et al., 2016), b) seek to understand the positions and needs of others (Flores & James, 2013; Jonker, 2014), and c) assess the consequences of actions on others (Kerta et al., 2012; Yoon, 2011) to determine the preferred outcome(s) for stakeholders (Kerta et al., 2012; Schramme, 2017).

Some of the findings suggest that students could do one or more of these. For example, with respect to justice, students claimed that they stood up for their peers who were cyberbullied (see 5.3.2 and 6.3.1.2), suggesting that they could understand the experiences of their peers, assess the consequences of actions and determine a moral action (see 5.1.2.1 and 5.1.4). With abilities and learning objectives outlined for moral reasoning, the next section describes how these can be fostered.

7.3.3 Fostering values and moral reasoning

Some of the findings in this study suggest that fostering moral reasoning in regard to secondary student uses if ICTs is influenced in part, by the acquisition of moral values and reasoning about values. Some moral psychologists and computer ethicists maintain that the acquisition of moral values fosters moral reasoning (Brownlee et al., 2017; Liua & Yanga, 2012; Quinn, 2006; Schramme, 2017; Volkman, 2015). The findings in this study suggest that this relies on: a) adult guidance, b) student critical reflection about their experiences while using ICTs, c) student-centred discussions and d) positive peer pressure.

Parental involvement with adolescents promotes moral reasoning with respect to their uses of ICTs (Blair et al., 2015), which is a key factor in preventing cyberbullying (Buelga et al., 2017). In this study, two students, two teachers and all parents maintained that parental values and guidance and school programs foster moral reasoning and moral behaviour (see 5.1.6). However, in the 2017 focus groups, students noted that parental guidance in the use of ICTs was not as significant in year 12 as it was in year nine. The reason given was that their parents were no longer associated with their social media accounts as they were in year nine. However, Clairie, Baba and John argued for the importance of adults engaging children earlier than year nine (Student focus group, 10/03/2017). This finding suggests the importance of early parental and school involvement.

In 2017, while discussing school-based educational programs with respect to proper uses of ICTs with the students, Baba and Clairie questioned the effectiveness of these programs, noting that in their current format they were not engaging. Baba

maintained, “They are irrelevant, they are not in touch with what kids are actually doing online. They can’t give accurate warnings because they don’t know about the social media they are using” (Student focus group, 10/03/2017). The school where this study took place employed external cyber safety presenters. In my observation of such programs, I noted that they used pre-packaged programs that may not have been in touch with the rapidly changing usage of ICTs by young people, particularly with year 10, 11 and 12 students. These findings suggest that education provided by adults must be relevant, timely and age appropriate to be effective. Teaching computer ethics requires special attention to what various audiences care about and the right framework must be deployed to the right audience (Volkman, 2015).

Another concern about cyber safety programs is what Gotterbarn (1992) calls ‘pop computer’ ethics. This teaching approach seeks to sensitise individuals to ethical issues by drawing on horror stories promulgated through the use of ICTs. However, focusing on risks and cautionary tales may leave students with the impression that computer related ethical issues are promulgated by a few individuals, are difficult to solve, or are largely irrelevant to them personally. This approach places the emphasis on the unethical, rather than encouraging students to consider their own moral values and behaviours with regards to their own use of ICTs. The suggested pedagogical approach when using the DMF is that learning can occur when individuals are empowered to change their worldviews and behaviours through reflecting on their values and applying these to their own uses of ICTs.

During the 2017 teacher focus group, teachers made three recommendations with respect to school-based programs. First, fostering values should begin earlier than year nine. Second, students should have opportunities to reflect on their values before they start using ICTs. Third, young people needed to learn empathy through human interactions first, away from the screen, by seeing empathy being modelled around them. Another issue that was raised by the teachers in 2017 is that although parents may have values, they may not necessarily have the language and the skills to teach moral reasoning with respect to the use of ICTs (Teacher focus group, 09/03/2017). The implication of this observation is the need to provide parents with support to acquire the skills to foster moral reasoning.

Some of the findings in this study suggest that students' moral identity was fostered in the context their experiences while using ICTs. For example, the sections on integrity (see 5.1.1), accountability (see 5.1.4), altruism(see 5.3.1) and inauthenticity (see 6.1.1.3) provide some examples of how students could critically reflect about their experiences and reported having moral expectations of themselves. Some researchers maintain that the use of ICTs can provide young people with opportunities to develop a moral identity (Davis et al., 2010; Lau & Yuen, 2014). Providing young people with opportunities to discuss the moral expectations they have of themselves while using ICTs may be a method to foster moral reasoning and to construct their moral identity (Noddings, 2010; Schalkwijk et al., 2016).

Other findings suggest that a critical evaluation by young people of the values and behaviours that mediate their uses of ICTs may be factors in the acquisition of moral values and fostering moral reasoning. Through engagement, commitment and reflection, humans can transform technological practices (Sikka, 2012; Volkman, 2015). Some year nine students said that they needed to be taught how to reason critically with regard to the online content, without specifying what this meant (see 7.3.3), while also suggesting that school programs played a role in their own critical reflections with respect to authenticity on social media (see 5.1.6). Two teachers recommended that fostering critical reasoning could be augmented by classroom discussion on the positive or negative effects of social media and new technologies, and that the moral domains could be fostered through the use of film and discussing the characteristics of the film characters in relation to the moral domains (see 5.1.6). During the 2017 teacher focus group, one teacher maintained that engaging year nine students in his classes by getting them to reflect on whether social media posts would pass the approval of a significant adult got students to think and was very effective. Robert noted, "That one worked well … that is the filter. That is the one that stops us from putting stupid things online" (Teacher focus group, 09/03/2017). Robert's comment is supported by other findings (see 5.1.6). Additionally, it appears that some students were able to reflect critically on the immoral influence of ICTs on truthfulness, responsibility and authenticity (see 6.1.2.1). These findings suggest that encouraging such reflection may be helpful in fostering moral reasoning in the use of ICTs. Young people's actions that involve confronting problems in the world, making sense of them and making choices play a role in fostering morality (Davis et al.,

2010; Flores & James, 2013; Schalkwijk et al., 2016). Some computer ethicists suggest that challenging young people's moral reasoning with regard to their own behaviours and perspective-taking are recommended as a means of fostering morality in the use of ICTs (Lau & Yuen, 2014; Volkman, 2015). Another finding with respect to the importance of critical evaluation is that moral learning occurred through mistakes made by young people while using ICTs (see 5.1.6). Some moral psychologists maintain that learning from mistakes can foster moral development (Malti & Latzko, 2012; Schalkwijk et al., 2016). In line with this view, some studies suggest that while using ICTs, a young person might be confronted with their own behaviour in order to promote moral development (Bats et al., 2013; Davis et al., 2010).

In this study, providing young people with opportunities have a voice with respect to the values that should mediate their uses of ICTs is an important finding. Two students and all teachers suggested providing young people with opportunities to think through their own values and have a voice with respect to the values that should mediate their uses of ICTs is important. Volkman (2015) maintains that developing sensitivity to moral issues is more effective than seeking mere compliance. Studies of ethical decision making while using ICTs indicate that personally held values play a greater role in determining behaviours than formal rules and informal codes that exist in organisational cultures in determining behaviours (Pierce & Henry, 1996; Volkman, 2015; Yoon, 2011). Empowering individuals to have a voice is an important practice in seeking to foster values (Berkowitz & Bier, 2014; Brownlee et al., 2017). This approach was seen by some participants as a means of fostering values and moral reasoning (see 5.1.6 and 7.2). In his 2017 written feedback on the Chapter Six findings, Marcus (teacher) suggested:

> Ownership of online choices needs to be based on relatable norms, to have any impact. I include some norms below that my Self-Discovery class thought were important to keep in mind. They felt self-regulation was the best option, discussing these options for some time and being genuine in this discussion. Would it stop poor choices? They felt it might, but circumstances can change as emotions can get in the way.

> The norms were: Ask, “would I say this face-to-face, to my grandmother? A teacher? Police?” Opt out of chat that is heading towards bullying. Think before posting, “How will this be received?” (Teacher focus group, 23/05/2017).

During the 2017 teacher focus group, Woody, noted that students considered their voice to be significant, considering that “they are used to the idea that adults have less knowledge than they do” (Teacher focus group, 09/03/2017). Vickery (2012) describes this approach as *student-centred space.* Personal choice and decision-making are believed to support the development of self-identity in adolescents. Research on adolescents’ conceptions of the teaching of values has shown that they are more likely to reject the teaching of values in schools by authorities who use top-down means of teaching. Adolescents prefer more autonomy-supportive forms of values teaching, such as open-ended discussions with opportunities for student reflection (Mcneil & Helwig, 2015).

Finally, in this study, peers appeared to play a positive role in fostering moral reasoning. Two students, two teachers and one parent said that young people’s moral use of ICTs was influenced by their peers (see 5.1.6), suggesting that informal peer learning may have played a role in fostering moral reasoning. Some moral psychologists and scholars in the use of new media maintain that relationships in peer groups play a role in fostering morality (Berkowitz & Bier, 2014; Davis et al., 2010; Mercier, 2011; Schalkwijk et al., 2016).

7.3.4 Moral emotion in the use of ICTs

This section discusses the abilities and learning objectives associated with empathy and remorse and how these can be fostered. Some of the findings in this study suggest that students had some abilities in relation to empathy and remorse: 1) moral reasoning*,* 2) experiencing, evaluating and managing emotions, and 3) behaving morally with respect to empathy and remorse. A detailed discussion of these abilities follows.

7.3.4.1 Moral reasoning about empathy and remorse

This section, discusses *cognitive empathy,* which is defined as reasoning with regard to another person's experiences and emotions (Maibom, 2017; Vossen et al., 2015). With respect to *cognitive empathy*, the findings in this study suggest that some students could, at some level, consider the situations of others, understand what others were experiencing and feeling, and understand that moral transgressions had negative consequences on others. Some students said that they considered the situation of others, before blaming them, understood the emotional experiences of their peers (upset and depressed) (see 5.2.1) and that cyberbullying had negative consequences on others (see 6.3.1.2). The moral psychology literature suggests that *cognitive empathy* relies on: a) the ability to take another person's perspective, such as understanding the experiences and emotions of others (Giner-Sorolla, 2012; Malti & Latzko, 2012; Tangney et al., 2007; Vossen et al., 2015), b) discerning the relevant moral factors of a situation (Cameron & Payne, 2013; Goleman, 2004), and c) understanding that moral transgressions have negative consequences on others (Flores & James, 2013; Perren & Gutzwiller-Helfenfinger, 2012). With respect to remorse, students spoke about the remorse they felt because of inappropriate behaviours towards their peers while using social media (see 5.2.2). This finding also suggests that could consider the consequences of their actions on others.

7.3.4.2 Experiencing, evaluating and managing emotions

Experiencing, evaluating and managing emotions is essential for morality (Giner-Sorolla, 2012; Malti & Latzko, 2012; Narvaez & Bock, 2014; Schalkwijk et al., 2016). *Affective empathy* is experiencing another person's emotional state (Vossen et al., 2015) or taking the perspective of another (Maibom, 2017). In this study, there are no findings to suggest that students experienced another person's emotional state while using ICTs, but some reported trying to take the perspective of their peers. This finding was discussed with students during the 2017 focus group. Baba noted

that now she was in year 12, she was better able to “read” if her friends were upset and her friends could do the same for her. However, upon further probing, Baba and John noted that close friends were better equipped to read the emotional cues of friends, suggesting that their close relationship was the key factor in understanding the emotions of their friends while using ICTs, without suggesting that they experienced *affective empathy*. Students agreed with findings that young people can understand what others are experiencing while using ICTs, but not necessarily feel empathy for people. However, the classroom and student interview data were rich with examples reported by students of their own empathic behaviours and that of their peers while using social media (see 5.2.1), which suggests that self-reported *empathic concern* may have been a factor in the empathy and care some students provided their peers. *Empathic concern* is defined as concern for others’ negative experiences (Vossen et al., 2015). Some students maintained that *empathic concern* displayed by young people was beneficial to the emotional wellbeing of their peers in need (see 5.2.1).

Recent findings with respect to cyberbullying show that emotion regulation is a potential target for intervention among young adults who have higher levels of cyberbullying (Wang et al., 2017). Individuals with more educated emotional reactions are better able to discern the morally relevant factors of a situation (Barque-Duran et al., 2016; Cameron & Payne, 2013; Goleman, 2004). Some studies suggest that moral emotions also help adolescents to anticipate the outcomes of socio-moral events and adjust their moral action tendencies accordingly (Barque-Duran et al., 2016; Malti & Latzko, 2012). Tim and Louise (students) appeared to be able to anticipate negative social outcomes for their peers (depression and emotional upset) and identify positive social outcomes when they and their peers intervened to help them (see 5.2.1). However, this also does not suggest that they felt empathy for others.

The level of empathy felt by the individual is also associated with more lenient moral judgments of others (Cameron & Payne, 2013; Giner-Sorolla, 2012), while blaming others is associated with moral disengagement and may override empathic responses in the use of ICTs (Runions & Bak, 2015). With respect to emotion regulation, five students considered it unfair to blame others without “putting yourself

in other people's shoes" (see 5.2.1), which suggests that they tried to discern the morally relevant factors of a situation and sought to adjust their moral judgments of others accordingly. This behaviour is an indication that empathy and/or justice played a role in evaluating and managing their own emotion (blame) and judgement of others.

Conscience relies on self-conscious emotions such as remorse, which plays a role in self-valuation and moral judgement (Schalkwijk et al., 2016). Experiencing remorse indicates an awareness of the consequences of one's inappropriate actions on others (Perren & Gutzwiller-Helfenfinger, 2012). Shouja and Tyrone (students) spoke about the remorse they and their peers felt about inappropriate actions while using social media (see 5.2.2), which suggests not only that they could, at some level, evaluate the negative consequences of their actions on others, but also that they had some ability to take the perspective of others. Additionally, this suggests that Shouja and Tyrone understood the emotion they felt (remorse). This behaviour would therefore suggest that remorse played a role in managing their ability to consider the perspective of others and understand the negative consequences of their actions on others.

7.3.4.3 Behaving morally

In moral psychology, empathy is also associated with treating others fairly, caring for others and seeking to alleviate the suffering of others (see 2.1.3.1). Some students appeared to consider empathy on social media to be beneficial to the wellbeing of their peers and empathy appeared to motivate care for their peers in need. Empathy also appeared to help some students anticipate negative social outcomes and adjust their moral action, leading to more lenient moral judgments of others (see 5.2.1). The next section will cover how empathy and remorse can be fostered.

7.3.5 Fostering empathy and remorse

Some findings in this study suggest that fostering moral emotion relies, in part, on 1)

the acquisition of moral values and reasoning with regard to these values**,** 2) learning to consider the perspective of others, 3) emotional self-awareness, 4) emotion differentiation in moral judgements, and 5) taking an active interest in the concerns of others. However, both parents and teachers argued that fostering empathy in this age group (14 and 15 year olds) was a challenge. Robert (teacher) noted, “This is the ultimate educational challenge, whether you have an impact on their feelings about the issues, so that they will become active thinkers and doers in that regard” (Teacher focus group, 09/03/2017). This view is supported by research (Volkman, 2015). These five points listed above will be unpacked in the next sections.

7.3.5.1 Acquiring moral values and considering the perspective of others

The findings in this study suggest that the empathy and remorse experienced while using ICTs influenced some students’ understanding of the nature of caring and responsibility (see 5.2.1 and 5.2.2). The values held by individuals elicit self-evaluative emotions (empathy and remorse) (Krettenauer & Johnston, 2011). It is possible that empathy and remorse may have been reinforced through events occurring in ICT environments. Encouraging such reflection may be a factor. In this study, students reported experiencing remorse as a result of their own misbehaviours towards others (see 5.2.2). During the 2017 teacher focus group, Robert noted that during his year nine personal discovery classes, students shared about the cyberbullying they participated in and were the victims of. He maintained that some learnt empathy through this and even stood up for others. Robert noted, “To build morality they must have seen or understood the consequences of actions” (Teacher focus group, 09/03/2017).

Some literature in moral psychology suggests that empathy can be taught effectively through school-based programs, where students learn to distinguish between the perspectives of the self and others (Noddings, 2010), and that moral transgressions have a negative impact on others (Malti & Latzko, 2012). In the second iteration, teachers recommended two teaching and learning practices that could be used to foster consideration of the perspective of others. First, linking lessons to students’ own experiences, and second, focusing classroom discussion on the positive or

negative effects of ICTs on others (see 5.2.1 and 5.2.2). During one classroom presentation, the teacher began the lesson by showing students pictures of young people who were affected by cyberbullying (see 7.2). This activity appeared to elicit *empathic concern* in students. Narratives and appeals to emotions have the biggest impact on moral change as children's socio-moral sensitivity can be fostered by discussing conflict situations and the emotions they invoked in students as victim, perpetrator, bystander and observer (Malti & Latzko, 2012).

7.3.5.2 Fostering emotional self-awareness and self-assessment

Some moral psychologists maintain that empathy builds on emotional self-awareness and self-assessment (Cameron & Payne, 2013; Schalkwijk et al., 2016). The findings in this study suggest that some students were aware of their own emotions (empathy and remorse). Five students said that it was not fair to blame others without knowing their situation, suggesting that they could differentiate between fairness/empathy and blame (see 5.2.1). With respect to remorse and self-awareness, some students reported feeling remorse for inappropriate actions and learning from their mistakes (see 5.2.2). It is likely that the emotional self-awareness and self-assessment reported by some students with respect to empathy and remorse may have been a factor in fostering these moral emotions. One study concluded that reducing the reasoning processes that allow adolescents to avoid moral-emotional reactions such as remorse is one important factor in fostering the moral development of young people. As long as harmful effects of behaviours are ignored or distorted, there is little reason for moral self-sanction to be activated (Paciello et al., 2017). The classroom activity where Robert (teacher) showed students various pictures depicting young people being cyberbullied (see 7.2), may be an effective means of reducing the reasoning processes that allow adolescents to avoid moral-emotional reactions.

7.3.5.3 Taking an active interest in the concerns of others

Empathy is linked to an active desire to alleviate another's suffering (Grappi et al., 2013; Malti & Latzko, 2012). Some students appeared to take an active interest in the suffering of their peers while using ICTs (see 5.2.1). A parent (see 5.2.3) and a student (see 5.2.3) suggested that this played a role in fostering empathy. The next section discusses the abilities and learning objectives associated with self-control, responsibility, altruism, justice and respect in relation to moral behaviour and how these can be fostered.

7.3.6 Moral behaviour in the use of ICTs

Morality as an interpersonal (justice, welfare, care and altruism) dimension (Berkowitz et al., 2002; Haidt, 2007) and an intrapersonal one, because morality also involves us defining who we are and how we should be like (values, identity and integrity) (Berkowitz et al., 2002). Floridi (2010a) maintains that the intrapersonal and interpersonal dimensions are critical for the moral use of ICTs. In the DMF, moral self-management (intrapersonal) is based on the values of self-control and responsibility, while moral behaviour towards others (interpersonal) is based on the values of altruism, justice and respect. These values and their associated abilities emerged in this study as the most significant with respect to moral behaviour while using ICTs. Some of the findings suggest that several abilities underpinned moral self-management. Identifying and managing moral issues with respect to moral self-management based self-control and responsibility relies on: a) a self-awareness and self-assessment of one's values and reasoning, b) making and justifying moral judgements, and c) having moral expectations of oneself. These abilities also underpin moral behaviour towards others.

7.3.6.1 Moral self-management – Self-control and responsibility

One study showed that even if young people are able to identify moral concerns, they do not necessarily act morally (Flores & James, 2013); therefore, this is where moral self-management becomes important. During the 2017 teacher focus group, this view was shared by some teachers. For example, Robert noted the lack of moral self-management in year nine students:

> I tried to understand why we see so much cyberbullying. Kids that know it's wrong to do it, but still participate in bullying. We are now reviewing the schools cyberbullying policy and we are trying to figure out how we are going to deal with this in the future. (Teacher focus group, 09/03/2017)

One definition of moral self-management is an individual's set of psychological characteristics that affect that person's ability to function morally (Berkowitz et al., 2002; Hsu, Li, & Pan, 2017) and regulate behaviours (Bandura, Caprara, Barbaranelli, Pastorelli, & Regalia, 2001; Cohen, Panter, Turan, Morse, & Kim, 2014). The findings suggest that self-control and responsibility were considered important for moral self-management and moral actions towards others (see 5.3.4 and 5.3.5), while a lack of self-control (see 6.3.1.3) and responsibility (see 6.3.1.1) was suggested to adversely affect the moral behaviour of students. Self-control is ranked fourth with respect to the 12 moral values studied (see Figure 5.1), while a lack of self-control is ranked seventh with respect to the 14 moral concerns identified by students (see Figure 6.1). Self-control plays an important role in refraining from anti-social behaviours (Bandura et al., 2001; Giner-Sorolla, 2012) and managing inappropriate emotions, desires and actions in favour of appropriate ones (Casey, 2015; Galla & Wood, 2015). Seven out of the eight student interviewees noted that self-control was important to appropriately manage their postings on social media (see 5.3.4 and 6.3.1.3). Some computer ethicists have shown that self-control also plays a role in managing the information individuals reveal to others while using ICTs (Baggio & Beldarrain, 2011). This was also the view of some students in this study (see 5.3.4). Some of the findings in this study also suggest that students could identify some moral issues associated with self-control, noting that it was important

for respecting others, self-respect and treating others justly, which suggests that some students were aware of their own need for self-control when making and justifying moral judgements, and had expectations of themselves based on self-control (in order to not hurt others and oneself), and determining a moral action (see 5.3.4 and 6.3.1.3). However, there are no findings to indicate that self-control actually determined their behaviours.

All student interviewees noted the importance of moral responsibility for ones' actions while using ICTs (see 5.3.5 and 6.3.1.1). Some students could identify some moral concerns relating to moral responsibility for one's actions, noted holding themselves accountable to their own values (see 5.1.1) and were able to both make some moral judgements with regard to moral responsibility and determine some moral actions (do the right thing, get along with others and be more cautious) (see 5.3.5). Additionally, irresponsible behaviours with respect to portraying oneself and others in a detrimental way were noted as the greatest moral concern, which suggests some level of self-awareness and self-assessment of one's values (responsibility) and ability to identify stakeholders and understand the consequences of actions on others (see 6.3.1.1 and 6.3.2). In this study, there were some self-reported instances of students feeling responsible for others in situations of cyberbullying, and they reported that they acted responsibly in such situations (see 5.3.5 and 5.3.2); however, whether they actually intervened is not known.

A study of adolescent moral attitudes to online behaviours found that individualistic thinking (focusing on consequences for oneself) dominated participants' thinking. The study also found that moral thinking (considering known others) was somewhat prevalent and ethical thinking (acknowledging unknown others and communities) was least prevalent (Flores & James, 2013). The findings in this study are similar to Flores and James, as responsibility appeared to be important because it affected themselves and their peers, while students never noted their concerns for unknown others. The findings with respect to moral behaviour towards others are now discussed.

7.3.6.2 Moral behaviour towards others – Altruism, justice and respect

Some of the findings suggest that determining moral actions and having moral agency underpin moral behaviour towards others. These abilities rely on 1) identifying and critically assessing moral issues and the consequences of actions on others (stakeholders) and 2) behaving morally towards others.

Findings with regard to altruism, justice and respect suggest that these values were important with respect to identifying and critically assessing moral issues, and the consequences of actions on others while using ICTs (see 5.3.1. 5.3.2 5.3.3 and 6.3.1.2). Moral psychologists maintain that identifying and critically assessing moral issues, and the consequences of actions on others relies on directing one's attention to the needs others (Paciello et al., 2017). Studies of adolescent bullying have shown that it is mainly justified from a self-centred point of view (Perren & Gutzwiller-Helfenfinger, 2012), indicating the importance of critically assessing moral issues based on other-centred values such as altruism, justice and respect.

With respect to behaving morally towards others, all student interviewees noted that altruism is important in the use of ICTs and caring for their peers seemed to be a motivating factor. Altruism was ranked second by students with respect to the 12 moral values studied, suggesting its importance with respect to behaving morally towards others (see Table 5.1). There were also some self-reported instances of students acting altruistically (see 5.3.1 and 5.3.2) and standing up to cyberbullies (see 5.3.2), suggesting that some students were capable of having moral agency (caring for and helping peers in need), but these behaviours cannot be verified.

Justice is considered by some computer ethicists to play an important role in analysing moral issues associated with the use of ICTs (2008; Floridi, 1999; Yoon, 2011). The findings suggest that for some student interviewees, justice played a role in identifying and making some moral judgements with regard to fairness and cyberbullying (see 6.3.1.2). They also appeared to be able to justify these moral judgements (assigning importance to acting justly online), determine a moral action and acting on it (standing up for others) (see 5.3.1 and 5.3.2), but these moral behaviours also cannot be verified.

Several students in this study considered respect to be an important behaviour for both themselves, and their peers. Some student and parent participants also noted their concern with regard to the need for young people to respect the privacy of their bodies and the privacy of others while using ICTs (see 5.3.3). This finding is line with other research that found young people are concerned with online privacy (boyd, 2014) but often lack the skills to manage their privacy (Vickery, 2012). Two teachers also suggested respect for cultural diversity and gender were important (see 5.3.3). This view is echoed by a computer ethicist (Ess, 2002) and the Victorian Curriculum (2016). The findings suggest that for some students, respect plays a role in identifying and making some moral judgements with regard to self-respect and respect for others. They also appeared to be able to justify these moral judgements ('respect others and they'll respect you'), and determine some moral actions (assigning importance to showing respect and self-respect) (see 5.3.3). The next section discusses the findings in relation to fostering moral behaviour.

7.3.7 Fostering values and moral behaviour

The findings suggest that fostering moral self-management (self-control and responsibility) and moral behaviours in relation to others (altruism, justice and respect) while using ICTs relies, in part, on 1) the acquisition of moral values and reasoning with regard to these, 2) development of self-awareness and self-assessment, 3) learning from a critical evaluation of the values and behaviours that mediate the use of ICTs, and 4) behaving morally. This study adopts the view that values education involves fostering moral reflection and moral habits (Colby & Damon, 2015). In this study, the greatest influences on fostering moral self-management and moral behaviour are parents, peers and self-reflection.

Three students, four parents and two teachers suggested that parental values and guidance were important influences on the acquisition of moral values, moral reasoning and moral behaviour of young people with regard to their uses of ICTs (see 5.3.6). For instance, parents and their children had many shared values when it came to the use of ICTs (see 5.1.6), suggesting the importance of parental influence. Some research has shown that parental involvement and connection with

adolescents promotes moral reasoning and behaviour (Padilla-Walker & Christensen, 2011) and influences their child's uses of ICTs (Symons et al., 2017).

Some research has shown that behaviour can be positively reinforced by peers (Barlett, 2017; Lashbrook, 2000). In this study, some students, parents and teachers noted that peer pressure played a role in fostering and reinforcing the importance of moral behaviours (see 5.3.6, 7.3.1.3). Participants also suggested that altruistic causes promoted through ICTs can foster altruism, while school based programs were also suggested by students to play a role in fostering moral reasoning and moral behaviour (see 5.3.6). The following two sections discuss strategies that were identified to foster moral self-management and moral behaviour towards others.

7.3.7.1 Fostering moral self-management

Self-awareness and self-assessment of one's actions while using ICTs was noted by some students and teachers as a means of fostering self-control (see 5.3.6). Some students also appeared to critically evaluate their own behaviours and the behaviours of their peers with respect to a lack of self-control and responsibility (see 6.3.1.3 and 6.3.1.1), suggesting that such evaluations can play a role in fostering these values. Moral behaviour requires a certain level of self-awareness (Cameron & Payne, 2013; Goleman, 2004) and self-reflection of one's values and behaviours (2016; Kerta et al., 2012; Malti & Latzko, 2012; Narvaez & Bock, 2014; Sipos et al., 2008). Therefore, student discussions that centre on evaluating their own behaviours and the behaviours of their peers could be used to foster moral self-management. A particular focus could be put on the consequences of a lack of self-control (see 6.3.1.3) and responsibility (see 6.3.1.1). Colby and Damon (2015) maintain that reflection influences the formation of habits.

7.3.7.2 Fostering moral behaviour in relation to others

In this study, moral behaviours in relation to others rely on fostering moral values and moral reasoning, self-reflection, and young people engaging in prosocial activities while using ICTs. Acquiring moral values is important for moral behaviour since in adolescents, internalised moral values have been shown to be associated with prosocial engagement (Krettenauer & Johnston, 2011). The findings in this study suggest that some students reflected on the need for altruism, justice and respect (see 5.3.1, 5.3.2, 6.3.1.1 and 6.3.1.2); therefore, encouraging such reflections that relate to students' life experiences may be important in fostering a sense of responsibility for others. A study of cyberbullying recommended that teaching moral reasoning may help foster a sense of responsibility for others (Price et al., 2013). Conversely, disengagement with moral reasoning directly predicted cyberbullying intentions of adolescents (Lazuras et al., 2013). Fostering altruism relies on encouraging individuals to consider the needs of others (Paciello et al., 2017), while fostering a sense of responsibility for others may help foster moral agency (the ability to make moral judgments and act on these) in young people who witness cyberbullying (Price et al., 2013).

Self-reflection and assessment of one's actions while using ICTs was also seen by some students and teachers as a means of fostering respect (see 5.3.6) and justice (7.3.1.1 and 7.3.1.3). Emphasizing the value of justice in students' everyday experience is suggested as an important teaching practice (Liua & Yanga, 2012; Pugh & Phillips, 2011b). A critical evaluation of the values and behaviours that mediate the use of ICTs is argued by computer ethicists and scholars of new media as a means of fostering moral behaviour in relation to others (Davis et al., 2010; Floridi, 1999; Jones, 2016). As most student interviewees considered that justice and respect played a role in identifying and making some moral judgements with regard to fairness and cyberbullying (see 5.3.2 and 6.3.1.2), it could be argued that these reflections can be used to foster justice and respect towards others. An inquiry-based teaching approach (Volkman, 2015) that encourages reflections about the harmful effects of misbehaviours towards others and defining the problems associated with misbehaviours are considered effective teaching methods (Watson,

2014), because self-reflections and assessments influence how we treat others (Barque-Duran et al., 2016; Malti & Latzko, 2012).

Research suggests that many examples of adolescent social activism and prosocial behaviour involving the use of ICTs can be found (Vickery, 2012). The use of ICTs can facilitate civic engagement and promote social responsibility (Davis et al., 2010). This was also true in this study, as there were examples of empathy for others, standing up for justice (see 5.2.1, 5.3.1 and 5.3.2) and online activism (see 5.3.6). Some moral psychologists maintain that moral behaviours allow moral values to be internalised (Berkowitz et al., 2002; Krettenauer & Johnston, 2011), and that engaging in moral behaviours increases satisfaction and self-esteem (Allison & Bussey, 2017). Young people engaging in prosocial experiences with peers can enhance altruistic attitudes that can lead to these becoming part of their moral identity (Paciello et al., 2017). It is not enough just to lecture about values; young people need to practise them so that they can build essential emotional and social skills (Goleman, 2004). For example, community service is argued to be an effective way of developing civic commitment in young people, as it promotes doing, rather than merely studying values (Berkowitz et al., 2002). There is a current trend for secondary schools to implement mandatory community service programs (Mcneil & Helwig, 2015). The secondary school in which this study took place also had such a program, called ‘the Common Good’. These prosocial programs are seen as beneficial for fostering moral reasoning and moral behaviour. Recent research has found that adolescents are not simply self-focused but they also balance and coordinate considerations of autonomy and community in their reasoning about community service programs (Mcneil & Helwig, 2015). Therefore, community service programs supplemented with classroom discussion and personal reflection are considered to be a means to enhance the positive outcomes of service programs (Berkowitz & Bier, 2014; Mcneil & Helwig, 2015). Some moral psychologists maintain that individuals need to see themselves as part of a community, as it allows individuals to acknowledge the responsibility of their decisions and behaviours in the context of broader social values (Goleman, 2004; Malti & Latzko, 2012; Nucci & Powers, 2014). It is suggested that encouraging young people to seek ‘the common good’ in their uses of ICTs may be an effective way to foster moral reasoning and moral behaviour. One member of each participant group suggested that altruistic

causes promoted through ICTs foster altruism. Dee (teacher) provided an example of social activism initiated by students at the school in the form of a website set up to discuss young suicide (see 5.3.6). Additionally, findings on justice (see 5.3.2) and respect (see 5.3.3) suggest that online peer pressure appeared to be at work to foster these values in students. Based on these findings and the literature, encouraging young people to see themselves as part of their online communities, and acting altruistically, justly and respectfully can be a means to foster moral behaviour in relation to others. Additionally, employing structured reflection in the classroom could enhance learning with regard to students' own behaviours while using ICTs.

7.3.8 Conclusion

In summary, this chapter helps to answer the research questions by identifying both some values, abilities and learning objectives, and some teaching and learning practices that underpinned the moral domains. The findings suggest that authenticity and accountability were the most significant values for moral reasoning, while empathy and remorse were the most significant values for moral emotion. Self-control and responsibility underpinned moral self-management, while behaving morally towards others relied on the values of altruism, justice and respect. Some students appeared to have the ability to 1) apply moral values to identify moral issues in the use of ICTs and reflect on practices, 2) justify moral judgements, 3) determine moral actions and 4) behave morally. These abilities appeared to support all three moral domains. Some students also showed some level of self-awareness and self-assessment of their own values, emotions and behaviours while using ICTs. Adult guidance, their own experiences, a critical evaluation of the values and behaviours that mediate the use of ICTs, learning from mistakes, student-centred dialogue and positive peer pressure were all identified as possible means of fostering the moral domains. The findings also suggest that values education must be targeted differently to different age groups because age is a factor with respect to values and the particular ways ICTs are used by young people.

Chapter Eight: Action research and the Cyber Values Systems model

This chapter argues that the third iteration of the CVS model presented in this chapter provides a teaching and learning tool that can be used to stimulate conversations and reflections with secondary school students about the role of values in the use of ICTs. The CVS model draws on the cybernetic modelling processes of negative and positive feedback, and circularity to understand and explain the role that values played in moral reasoning (section 8.1.1), moral emotion (section 8.1.2), and moral behaviour (section 8.1.3) with respect to the use of ICTs by secondary school students. The discussion also focusses on how these processes can foster moral reasoning (section 8.1.1.4), moral emotion (section 8.1.2.4), and moral behaviour (section 8.1.3.4). Some researchers argue that young people need to be able to articulate their understanding of how media shapes perceptions, the socialising effects media is having and what ethical standards should shape their practices as participants in online communities (Ito et al., 2010; Jenkins et al., 2009). The CSV model provides a means to discuss these issues with young people. Some of the findings in this study suggest that the processes of negative and positive feedback, and circularity played a role in fostering the moral values that underpin the moral domains, as these three processes were involved in critical reasoning shown by some students with respect to the use of ICTs.

Additionally, the CVS model contributes to theory by providing a model to analyse the reciprocal influences of human values on ICT environments and the influence of ICT environments on human values. The third iteration of the CVS model presented in this chapter draws on the findings from Chapters Five, Six and Seven, and the 2017 student and teacher feedback group data. The CVS model that is outlined in this chapter is not a definitive model of the role of values in *sociotechnical* interactions, but one of many possible models. However, it is hoped that it can promote further investigation and scholarly debate. The suggested pedagogical approach when using the CVS model is that learning can occur when individuals are empowered to change their worldviews and behaviours through a critical evaluation of values that mediate the moral domains while using ICTs. The next section explains the constructs that make up the third iteration of the CVS model.

8.1 The CSV model and teaching and learning

The CVS model (see Figure 8.1 and Tables 8.1, 8.2 and 8.3) summarises the role that negative feedback, positive feedback and circularity played in mediating and fostering the moral values and abilities that underpin the moral domains. These are unpacked after explaining the CVS model.

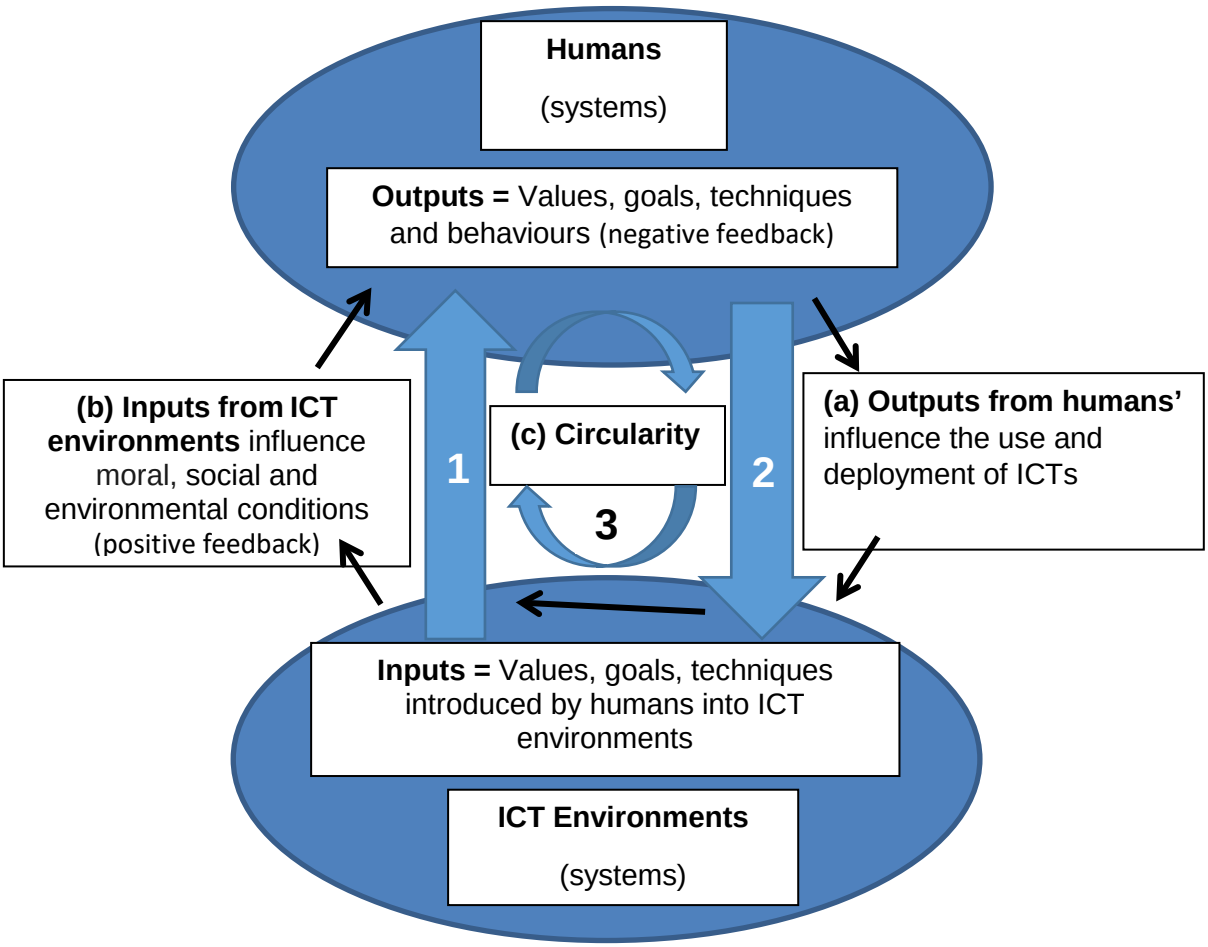


Figure 8.1 Cyber Values Systems (CVS) model

In the CVS model:

(a) Human values (moral and immoral) and techniques influence ICT environments. When humans act in ICT environments, they do so based on their preferred values. Outputs (goals, preferred values and behaviours) are the influences that humans (a system) have on ICT environments (also systems). Outputs can also be the values,

goals and techniques that organisations deploy into ICT environments. Negative feedback is when inputs coming from ICT environments are assessed and resisted, based on the preferred values of the individual system.

(b) Values and events (inputs) that occur in ICT environments influence human values and social conditions. Inputs are values, goals and techniques that are part of, and coming from, ICT environments. Humans seek to manage these inputs, which is the process of self-maintenance and goal-directed behaviour (Gurman & Kniskern, 1991). Positive feedback is when inputs coming from ICT environments cause human values (a system) to change, which can lead to an increase in a behaviour.

(c) Humans and ICTs have a reciprocal moral influence on each other. Circularity is the process where an effect feeds back onto its very cause. Outputs that come from human systems feedback to humans in the form of inputs coming from ICT environments.

Using Figure 8.1, the role of values can be understood in the following way:

(1) A human observes the inputs (values and events) in the ICT environment. This perception creates a representation (a model) of what is happening in the ICT environment. The information is processed to determine in what way these values and events influence the values and goals of the human system, and the best way to safeguard the preferred values of the human system. Based on this information, the human system makes a decision on what actions need to be taken.

(2) An action is taken by a human system that seeks to affect some part of the ICT environment (the other system).

(3) Because of circularity, outputs from human systems into ICT environments feed back to human systems in the form of inputs from the ICT environment.

8.1.1 The CVS model and moral reasoning

This section explores the role of negative and positive feedback, and circularity in moral reasoning with respect to students uses of ICTs. Additionally, to moral abilities and the teaching and learning methods that can be used to foster moral reasoning

are discussed. Tables 8.1 summarise these processes, abilities and methods. The findings suggest that these processes played a role in both fostering and undermining moral values and moral reasoning. Understanding how these processes foster and undermine moral reasoning is important when seeking to foster morality in the use of ICTs.

8.1.1.1 Moral reasoning and negative feedback

Negative feedback is when inputs coming from ICT environments are assessed and resisted, based on the preferred values of the individual system. The characteristics of learning with respect to negative feedback include the ability to monitor and understand meaningful deviation of norms, and the ability to correct the environment in which these variations exist (Akram, Ali, Nemati, & Ali, 2014). A study of ethical decision making by young adults demonstrated that personally held values (negative feedback) are the most significant factors for determining moral or immoral behaviours (Yoon, 2011). All students in this study could apply some moral values to identify moral issues associated with the use of ICTs such as, dishonesty, inauthenticity (see 6.1.1.2) and disingenuous friendships (see 6.1.1.4) and, in some, instances, resisted the values coming from ICT environments based on their preferred values (see 5.1.2.1, 6.2.2, 6.2.1.2, 6.3 and 6.3.1.2). Seven out of eight student participants also spoke about their own moral expectation of themselves (see 5.1.1), suggesting that negative feedback played a beneficial role in moral reasoning. However, these findings also indicate that inappropriate values and behaviours had a detrimental influence on ICT environments.

8.1.1.2 Moral reasoning and positive feedback

Positive feedback is when inputs coming from ICT environments cause human values (a system) to change, which can lead to an increase in a behaviour. Some findings suggest that positive feedback had both, a detrimental and a beneficial influence on moral reasoning. Certain characteristics of ICTs such as, diffusion,

displacement, anonymity and instrumentality appeared to have a detrimental influence on the values and moral reasoning of some young people. For example, these characteristics appeared to influence moral reasoning with respect to cyberbullying, disrespect (see 6.3.2), disingenuous friendships (see 6.1.1.4), dishonesty, inauthenticity (6.1.2.5) and a lessened sense of accountability (6.1.2.3) and moral responsibility (see 6.3.2). Additionally, during the 2017 student feedback, John maintained that it was difficult to determine if a person was honest because cues, such as body language, were not present (Student feedback group, 09/06/2017). Positive feedback from peers in the ICT environment also appeared to encourage inauthentic and inappropriate social media postings (see 6.1.1.2). During the 2017 teacher feedback group, some teachers suggested that moral reasoning can be undermined by anonymity and instrumentality, and that there was often some kind of acceptance/justification of this by some students. Robert (teacher) suggested that students were aware of the risks of their inappropriate online behaviours to themselves, but looked for avenues to avoid detection such as anonymity. Robert provided an example of year nine students using Snapchat to bully others. Students would nominate to a friend one of their peers to be attacked using a closed discussion texting application on their mobile phones. The friend was encouraged to share their criticism about the nominated peer. The de-identified screen shot was then sent out to a larger group of students on Snapchat (Teacher feedback, 23/05/2017).

The recognition by some students of the detrimental influences of certain characteristics of ICTs (positive feedback) that are part of ICT environments suggests that this type of feedback played a role in the moral learning of students. For example, some students appeared to recognise that the outputs from ICT environments, such as diffusion and displacement (see 6.2.1.2), instrumentality (see 6.1.2.3) and anonymity (see 6.3.2) had an influence on moral reasoning and moral behaviour with respect to dishonesty, a lack of accountability (see 6.1.2.3) and a lack of moral responsibility (see 6.3.2). Also, during the first iteration of classroom activities, one teacher used the CVS model to discuss the role of values in the use of ICTs. Three students noted that it was easy to lie on the internet, suggesting that some students understood the influence ICTs had on their values and behaviour

after the teacher's explanation. Other findings suggest that in some instances, the actions of peers in ICT environments (positive feedback) had a beneficial influence on moral reasoning with respect to honesty (see 5.1.6).

8.1.1.3 Moral reasoning and circularity

Some findings suggest that circularity also played a role in moral reasoning. Some students recognised that the creation of inauthentic digital images (outputs), which come with the approval of their peers (inputs), encourages this behaviour. This finding suggests some level of understanding with respect to the influence of circularity on values (see 6.1.1.2), where outputs feed back onto their very cause. Another example of circularity in moral reasoning is remorse. One student noted that a lack of accountability while using ICTs led him and his peers to experience remorse for actions on social media (see 5.1.4). Some students also appeared to be aware that inappropriate actions while using ICTs could easily feed back onto them (see 6.1.2.2). The Snapchat example in section 8.1.1.2, suggests that students were aware of the detrimental influence of circularity (that inappropriate actions while using ICTs could feed back onto them) because they used anonymity to cover their tracks. Whether any moral learning occurred in this instance is unknown.

8.1.1.4 Fostering moral reasoning

Davis et al. (2010) maintain that moral reasoning plays an important part in fostering media literacies. With respect to this study, some findings suggest that student awareness and reflections about the influences of negative and positive feedback, and circularity indicate that these processes may have played a role in fostering moral reasoning. Section 8.1.1.1 discussed students' awareness (negative feedback) of the detrimental influences of ICTs on moral reasoning, suggesting that such an awareness may have played a role in moral learning. During the 2017 student feedback, Clairie and John suggested that inappropriate behaviours by their peers

(outputs) highlighted what not to do while using ICTs, maintaining that they could learn from other people's mistakes (Student focus group, 10/03/2017).

Bats, Valkenburg and Verbeek (2013) maintain that because of the potential disconnect between behaviours and the consequences of behaviours while using ICTs, the link between moral reasoning and the consequences of one's behaviours needs to occur. In Swierstra's (cited in Sharon, 2017) framework, conscious moral deliberations can lead to new fits being forged between morality and technology, during which values are modified and can settle. Some students described the critical evaluation of their own values and behaviours (see 5.1.5, 6.3.2 and 6.1.2.2), while two students and two teachers noted that young people could learn moral lessons from past mistakes while using ICTs (see 5.1.6), suggesting that conscious deliberation about circularity played a role in moral learning. During the first iteration of classroom activities, one teacher used the CVS model to foster moral reasoning. After getting students to write down the values that were important for them, she asked them to consider how these applied to their usage. The teacher used the CVS model to explain how their values influenced their use of ICTs and how the values they enacted feedback onto to them, for better or for worse (Research journal, 28/04/2014). Some academics in the field of education maintain that these types of reflection can lead to the re/construction of knowledge based on life experiences, which can result in new ways of thinking and being (Sipos et al., 2008). In 2017 written feedback on the Chapter Six findings, Robert (teacher) expressed concern about the influence of diffusion, displacement, anonymity and instrumentality (inputs) on moral reasoning, suggesting the need for student reflections on circularity and positive feedback:

> The moral reasoning in our lives comes from lessons learnt through experience (circularity) and role modelling from adults (positive feedback). This generation does not have many active adult role models in their technological world and have developed expectations of behaviour that reflect expectations of peers (positive feedback). Being a good cyber citizen is just lip service until there is an experience to shape that understanding. (Teacher feedback, 23/05/2017)

The findings in this study suggest that discussions with students that stimulate a critical reflection of the values that mediate the use of ICTs with respect to negative and positive feedback and circularity may be a means of fostering moral reasoning.

Table 8.1 Cybernetics modelling processes and moral reasoning

Moral Domains	Processes	Abilities and learning objectives	Teaching and Learning
Moral reasoning	Negative feedback Inputs from ICT environments are assessed and resisted based on preferred values	Apply moral values to identify moral issues such as dishonesty, inauthenticity and disingenuous friendships. Having moral expectations of oneself.	Discussions and activities that stimulate a critical reflection of the values that mediate the use of ICTs by young people.
	Positive feedback Inputs from ICT environments cause human values to change	Identify the detrimental influences of positive feedback coming from ICT environments on moral reasoning such as: diffusion, displacement, anonymity and instrumentality. Identify how these inputs influenced on disingenuous friendships, dishonesty, inauthenticity and a lessened sense of accountability and responsibility. Identify how positive feedback from peers may encourage inauthentic and inappropriate postings, but may also encourage moral reasoning and moral behaviour.	Discussions and activities that stimulate critical reflections on the influences of positive feedback on moral reasoning.
	Circularity Actions taken in ICT environments feed back onto its very cause	Being aware of circularity when peer approval of inauthentic public profiles leads to an increase in this behaviour. Critically evaluate the inappropriate actions that feed back onto individuals while using ICTs.	Discussions about the influence of circularity on values and behaviours while using ICTs. Discussions and activities that focus on learning from one's mistakes and those of others.

8.1.2 The CVS model and moral emotion

In this section, findings with regard to the influence of negative and positive feedback, and circularity on moral emotion are discussed. I maintain that these

processes played a role in fostering moral values and abilities and moral emotion, as well as, undermining these. Table 8.2 summarises the role of positive feedback, negative feedback and circularity with respect to moral abilities and the teaching and learning methods that can be used to foster moral emotions.

8.1.2.1 Moral emotion and negative feedback

Negative feedback is when inputs from ICT environments are resisted based on the preferred values of the individual. Empathic concern (negative feedback) appeared to be a factor in the self-reported empathy and care some students provided their peers who were cyberbullied or in distress (see 5.2.1). Empathy also appeared to play a role in evaluating and managing their own emotions, such as not blaming others (see 5.2.1). The findings also indicate that some students recognised and understood the harmful emotional experiences of their peers in ICT environments (cognitive empathy) based on their values (see 6.2.1 and 5.2.1).

8.1.2.2 Moral emotion and positive feedback

Positive feedback in social relations leads to strengthening the likelihood that behaviours will continue (Crago, 2006). Some findings in this study suggest that positive feedback in some instances appeared to affect empathy in a favourable way. For example, the recognition of the harmful emotional experiences of their peers (inputs coming from ICT environments) (see 6.2.1 and 5.2.1) is suggested to be a factor in the empathy shown by some students towards their peers (see 5.2.1). Other findings suggest that ICT environments had a beneficial influence on communication because the anonymity provided by ICTs enabled a greater freedom of expression for some young people who were less confident in communicating within the real world (see 6.2.3). During the 2017 student feedback this view was also reiterated. Baba and Clairie maintained, that some girls had completely different personalities online. Baba also noted that “this one girl was sarcastic, witty and

maybe a bit obnoxious online, but at school she was really shy. Some students can express themselves more easily online" (Student feedback, 09/06/2017).

With regard to positive feedback in social relations which can lead to strengthening particular behaviours, one study found that when young people become overly dependent on the validation of their peers, it undermined how they portrayed themselves online (Davis et al., 2010). Positive feedback from ICT environments also appeared to have some detrimental influence on moral emotion. Several students argued that peer pressure undermined the moral domains of some of their peers (see 6.2.1.2). Some students also noted the dampening of emotional cues while using ICTs and its influence on the empathy felt for others (see 6.2.2). This view was reiterated during the 2017 student focus group (10/03/2017). Woody (teacher) also suggested that "now they learn to interact with others via a device that removes all empathy" (Teacher focus group, 09/03/2017). Other findings suggest that remorse for hurting others or pirating music were also dampened while using ICTs (see 6.2.2).

8.1.2.3 Moral emotion and circularity

Circularity is when an effect feeds back onto its very cause. Some students spoke about the remorse they and their peers felt about inappropriate actions while using social media (see 5.2.2), suggesting that circularity played a favourable role in the evaluation of students' behaviours towards others. The role of emotions in circularity also appeared to undermine moral reasoning and moral behaviour. For example, during a 2017 student focus group, Clairie claimed, "If you are emotional, you may make rash decisions" (Student focus group, 09/06/2017). Some students also indicated that their peers would post pictures of themselves that were revealing (outputs), to get more likes on Facebook, suggesting that peer approval (inputs) of these postings played a role in reinforcing this behaviour (see 6.2.1.2). This finding is in line with other research that found that the need for popularity was a predictor for whether adolescents posted sexual pictures of themselves online (Baumgartner et al., 2015). Some students suggested that it was easier to lie and hurt others because of the distance between individuals while using ICTs (see 6.2.2), suggesting that

circularity can undermine moral domains. The characteristics of ICTs that make it easier to lie and hurt others (positive feedback) influenced the values of some young people, which led to an increase in these values being enacted in ICT environments (negative feedback).

8.1.2.4 Fostering moral emotion

This section discusses the influence of negative and positive feedback, and circularity on fostering moral emotion. Emotional experiences in real-life situations can be used as a basis for children's moral learning (Berkowitz et al., 2002; Goleman, 2004; Malti & Latzko, 2012). The use of ICTs is a reoccurring, real-life setting for young people to reflect on and practise empathy (Davis et al., 2010; Lazuras et al., 2013). The literature suggests that fostering moral emotions is influenced in part by 1) reasoning with regard to empathy and remorse**,** 2) learning to consider the perspective of others, 3) self-awareness and self-assessment of one's behaviours, and 4) taking an active interest in the concerns of others (see 7.3.3.3). Some findings suggest that the processes of negative and positive feedback and circularity while using ICTs had an influence on eliciting/fostering self-evaluative emotions such as empathy and remorse. With respect to negative and positive feedback, some students appeared to have the ability to assess inputs coming from ICT environments based on empathy and remorse, and reported taking some actions (outputs) based on these values. Some students also reported taking an active interest in the suffering of their peers (see 5.2.1). These processes may have played a role in fostering these values. Taking the perspectives of others (Noddings, 2010; Vossen et al., 2015) and understanding that moral transgressions have a negative influence on others (Malti & Latzko, 2012; Schalkwijk et al., 2016) is seen by some moral psychologists as factors that foster empathy and remorse. Students' perception of the experiences of their peers (positive feedback from ICT environments) appeared to influence some student's ability to take their peers perspective, understand what they were experiencing and feeling, and understand that moral transgressions had negative consequences on them (see 5.2.2). Circularity also played a role in fostering self-assessment of one's action towards

others with respect to empathy and remorse (see 7.3.3.2).

Table 8.2 Cybernetics modelling processes and moral emotion

Moral Domains	Processes	Values and Abilities	Teaching and Learning
Moral emotion	Negative feedback Inputs from ICT environments are assessed and resisted based on preferred values	Cognitive empathy relies on (a) taking another person's perspective, (b) understanding what others are experiencing and feeling, and (c) recognising the harmful emotional experiences of others in ICT environments. Caring for others who are bullied or in distress. Identifying and describing the factors that influence your emotional responses.	Discussions and activities with regard to inputs coming from ICT environments based on the values of empathy and remorse.
	Positive feedback Inputs from ICT environments cause human values to change	Recognising the harmful emotional experiences of others in ICT environments. Recognising that peer pressure can undermine the moral domains. Being aware of the dampening of emotional cues and its influence on empathy and remorse while using ICTs.	Discussions and activities with regard to inputs coming from ICT environments based on the values of empathy and remorse in order to take another person's perspective and understand what others are experiencing. Discussions and activities about the dampening of emotional cues while using ICTs and its influence on empathy and remorse.
	Circularity Actions taken in ICT environments feed back onto its very cause	Understanding the role of circularity in how inappropriate behaviours feedback on to oneself based on the values of empathy and remorse. Understanding that peer approval can play a role in reinforcing both inappropriate and appropriate behaviours. Understanding how the characteristics of ICTs can influence empathy and lead to inappropriate behaviours towards others.	Discussing the role of circularity with respect to a self-assessment of one's action towards others with respect to empathy and remorse.

8.1.3 The CVS model and moral behaviour

With moral reasoning and moral emotion discussed above, this section discusses the influence of negative and positive feedback and circularity on moral behaviour. These processes had both a beneficial and detrimental influence on the moral values and moral behaviours of some young people. In this study, moral behaviour is analysed based on two dimensions: moral self-management, which relies on self-control and responsibility, and moral behaviour towards others, based the values of altruism, justice and respect. Table 8.3 summarises the role of positive feedback, negative feedback and circularity with respect to moral abilities, and the teaching and learning methods that can be used to foster the moral behaviour.

8.1.3.1 Moral behaviour and negative feedback

Findings indicate that some students appeared to be able to determine some moral actions based on self-control (see 5.3.4) and responsibility (see 5.3.5) (negative feedback based on values). A self-awareness of a lack of self-control (see 6.3.1.3) and responsibility (see 6.3.1.1) indicates the beneficial role negative feedback played in the moral use of ICTs for some students, as students were able to reflect on the importance of these values for their behaviours. There were also some self-reported instances of students behaving altruistically (see 5.3.1 and 5.3.2) and standing up to cyberbullies (see 5.3.2), suggesting that negative feedback (moral agency) played a role in how some students responded to inputs coming from ICT environments. Negative feedback also appeared to influence moral reasoning with respect to the welfare and rights of others, which had a beneficial influence on moral behaviour (see 5.2.3 and 5.3.2). However, a lack of self-control (see 6.3.1.3) and responsibility (see 6.3.1.1) was suggested by some students to adversely affect moral behaviour. While discussing self-control with Clairie in 2017, she said that self-control was important because some her peers used social media to personally attack others when an argument broke out about the year 12 formal, which suggests that these inappropriate values and behaviours (negative feedback) had a detrimental influence on ICT environments.

8.1.3.2 Moral behaviour and positive feedback

In this study, digital moral malleability (positive feedback) refer to the virtual and logically malleable characteristics of ICTs that have an immoral influence on human values and behaviours. Characteristics such as diffusion, displacement, anonymity, distancing and instrumentality (positive feedback) appeared to have a detrimental influence on the values and moral behaviour of young people, resulting in behaviours of being 'overly honest', disrespectful (see 6.1.2.1), dishonest (see 6.1.2.3) and creating digital shadows (see 6.3.2). Some students spoke of ICTs being like a 'shield', which appeared to detrimentally influence the sense of moral responsibility of some students (see 6.3.2). In 2017, John (student) referred to this characteristic as "the shield and the sword" because of the ability provided by ICTs to attack others anonymously (Student feedback group, 09/06/2017). He also liked the term digital moral malleability because "ICTs allow you to bend your morals". However, the students in the focus group, who were in year 12 in 2017, noted that anonymity was not used by year 12 students to undermine others because doing this was considered immature (Student feedback group, 09/06/2017). Additionally, persistence, replicability and scalability appeared to affect the social wellbeing of some young people (see 6.3.2).

Other findings suggest that positive feedback also had a beneficial influence on moral behaviour. For example, there were some self-reported instances of students responding to cyberbullying (see 5.3.5 and 5.3.2), suggesting that positive feedback may have played a role in reducing the impact of cyberbullying. Also, findings on justice (see 5.3.2) and respect (see 5.3.3) suggest that online peer pressure may have played a role in fostering these values. Finally, promoting the common good using ICTs was suggested as a means of fostering altruism (see 7.3.7.2).

8.1.3.3 Moral behaviour and circularity

Students' awareness and self-assessment of the impact of a lack of responsibility and self-control suggest that some students understood the detrimental influence of

circularity on moral behaviour, indicating that some moral learning occurred through the process of circularity. Conversely, some examples also suggest that circularity had a detrimental influence on moral behaviour. A study of young peoples' uses of ICTs suggests that the creation of digital images can lead to deceptive and inappropriate representations that can lead to self-reflection being undermined by self-promotion, which can undermine personal autonomy (Davis et al., 2010). Some students suggested that a lack of responsibility and self-control of some of their peers, accompanied by a desire to be popular resulted in self-made digital shadows (see 6.3.1.1 and 6.3.1.2), which appeared to undermine personal autonomy and public identities of some of their peers (see 6.3.2). This concern about one's digital shadow was brought up again during the 2017 student feedback. Baba claimed digital shadows could affect future employment prospects. Additionally, one's positive digital image was considered important in year 12. Baba shared an example of a new girl who joined one of her classes at school. Baba and her friend, immediately looked up the new girl's Instagram account to determine the type of person she was; "That happens a lot. You get an impression of who they are. For example, if they post a racy picture, or they have pictures with a lot of friends, they appear sociable" (Student focus group, 09/06/2017).

Another example of the detrimental influence of circularity is how the injustices and disrespect shown to others online can feedback onto its very cause. Circularity appeared to apply to cyberbullying. A phenomenon that emerged in this study is that students reported that their peers would stand up to bullies, only to bully others themselves (see 6.3.1.2). A teacher provided an example of the importance of self-control with respect to circularity, suggesting that students who lacked self-control perpetuated argument and anger, while those who had self-control, short-circuited arguments and anger. Woody noted that "students who have self-control, they might say, 'okay, I am angry now. I won't respond, so I'll come back to my computer in about half an hour when I'm calmer and I will type out a response that will be much more effective'" (Teacher focus group, 09/12/2013). The characteristics of ICT environments (positive feedback) listed in 8.1.3.2 are also examples of circularity, because moral disengagement is not only dependent the characteristics of the individual, but also on the context in which an individual is acting (Runions & Bak,

2015). Peer approval also appeared to play a role in reinforcing inappropriate and appropriate behaviours (see 5.3.2 and 5.3.3).

8.1.3.4 Fostering moral behaviour

The findings on negative feedback suggest an awareness of the importance of self-control, responsibility, altruism, justice and respect (see 5.3.1, 5.3.2, 6.3.1.1 and 6.3.1.2). Additionally, negative feedback (moral agency) appeared to play a role in how some students responded to inputs coming from ICT environments. For instance, moral reasoning about the welfare and rights of others appeared to encourage moral behaviour (see 5.2.3 and 5.3.2). Values education research has found that moral and social knowledge emerges from the child's interactions in the social world (Nucci & Powers, 2014). In this study, some students' awareness of their values (negative feedback) and their perceptions of their peers' experiences while using ICTs (positive feedback) may have played a role in fostering moral reasoning and moral behaviour, which suggests that a critical evaluation of the values and behaviours that mediate the use of ICTs may be a factor in fostering moral behaviour. A recent study of the harmful psychological effects of trolling also suggests this (Craker & March, 2016).

Since the findings on positive feedback suggest an awareness on the part of some students, that persistence, replicability, scalability, distancing and anonymity had an impact on behaviours and the social wellbeing of young people, discussing these with students can be viewed as a means of fostering moral behaviour. A study of the use of ICTs by young people found that positive feedback from peers can also play a role in fostering moral behaviours (Davis et al., 2010). Additionally, the findings on justice (see 5.3.2) and respect (see 5.3.3) indicate that online peer pressure (positive feedback) appeared to be at work to foster these values in some students.

Some computer ethicists maintain that a critical evaluation of the values and behaviours that mediate the use of ICTs can be used to foster moral responsibility (Gotterbarn, 1992; Liua & Yanga, 2012). A study of morality in the use of ICTs by secondary school students, found that while using ICTs, the consequences of actions (circularity) appeared to provoke a shift in moral reasoning with regard to considering others (Bats et al., 2013). These studies therefore point to the role of circularity in moral learning. In this study, some students appeared to understand the consequences of their actions (see 6.3.1.1 and 6.3.1.3), suggesting a shift in moral reasoning. Also, a self-awareness of a lack of self-control (see 6.3.1.3) and responsibility (see 6.3.1.1) indicates that circularity may have played a role in fostering moral reasoning and moral behaviour in some students. The importance of student reflections with respect to the detrimental influence of ICTs on the values and moral behaviour of young people (see 6.1.2 and 6.1.2.1) are also evident in the findings. Self-awareness and self-assessment of one's actions while using ICTs was stated by some students and teachers as a means of fostering self-control (see 5.3.6). This finding is supported by some research that indicates that remorse supports self-control (Schalkwijk et al., 2016). The findings on moral behaviour discussed in this section suggest that applying moral values to identify moral issues in the use of ICTs for self-assessment, determining moral actions and having moral agency fostered moral reasoning and moral behaviour.

Table 8.3 Cybernetics modelling processes and moral behaviour

Moral Domains	Processes	Values and Abilities	Teaching and Learning
Moral behaviour	Negative feedback Inputs from ICT environments are assessed and resisted based on preferred values	Being aware of the influence of a lack of self-control and responsibility on moral behaviour. Applying self-control and responsibility to manage and determine moral behaviours. Having moral agency by behaving altruistically and standing up to cyberbullies.	Discussions and activities that promote an awareness of one's values and experiences of peers. Discussions and activities that focus on learning from a critical evaluation of the values and behaviours that mediate the use of ICTs.
	Positive feedback Inputs from ICT environments cause human values to change	Being aware of the influence of persistence, replicability, scalability, distancing, diffusion and displacement, anonymity and instrumentality on moral behaviour and the wellbeing of others. Exerting positive peer pressure with regard to justice and respect. Using ICTs to promote altruism.	Discussions and activities about the influence of persistence, replicability, scalability, distancing and anonymity on the social wellbeing of young people. Discussions and activities about the role of positive peer pressure in moral behaviour.
	Circularity Actions taken in ICT environments feed back onto its very cause	Being aware of the detrimental influence of circularity with respect to a lack of self-control, responsibility, justice and respect. For example, a lack of self-control and responsibility can feedback onto its very cause in the form of self-made digital shadows.	Discussions and activities that focus on assessing the consequences of one's actions on others. Consequences of actions provoke a shift from self-centred thinking, to considering the welfare of others. Discussions and activities that focus on applying moral values to identify moral issues in the use of ICTs, determining moral actions and having moral agency.

In summary, the findings suggest that the processes of negative and positive feedback and circularity were helpful in understanding and explaining the role that values played in the moral domains with respect to the use of ICTs by some secondary school students. The findings also suggest that these processes had beneficial and detrimental influences on the moral domains. These processes also played a role in fostering values and abilities that underpin the moral domains.

Chapter Nine: Conclusion

A central aim of this chapter is to show how the study extends understanding of the role of values in sociotechnical phenomena in three areas:

1. The moral values and abilities that mediated the moral domains of a small group of secondary school students uses of ICTs.
2. The moral challenges they faced while using ICTs and how they responded to these challenges.
3. How to foster the moral values and abilities that mediated the moral domains.

The purpose of this understanding is to provide a moral framework (DMF) and a model (CVS) that provides a means to understand the reciprocal influence of human values on ICT environments and the influence of ICT environments on human values. I maintain that the DMF and CVS model can be used by teachers and parents to discuss and foster moral values and abilities to help secondary school students meet the moral challenges they may face while using ICTs. The intent is to indicate how this study, in part, achieves some understanding of this.

The chapter is divided into five main sections. The first two each deal with a separate research question (9.1 and 9.2). The study pursued the following research questions to achieve these aims:

1. How do moral reasoning, moral emotion and moral behaviour mediate secondary school students' uses of Information and Communication Technologies (ICTs)?
2. What are the moral challenges that students face while using ICTs and how they responded to these challenges?
3. How to foster the moral values and abilities that mediate the moral domains of students?

The final three sections (9.3, 9.4 and 9.5) deal with limitations of the study, areas for further research and the concluding remarks, respectively.

9.1 Summary of findings - Research question one and two

This section discusses the conclusions drawn about the first and second research question. Each moral domain is discussed separately, beginning with moral reasoning.

9.1.1 ICTs and moral reasoning

This section discusses the influence of moral reasoning on ICTs and the influence of ICTs on moral reasoning with respect to integrity, accountability and authenticity. The findings suggest that for some students, having integrity while using ICTs meant having moral expectations of themselves (see 5.3.1) and being authentic (see 5.1.3). However, integrity did not appear to be associated with honesty or trust. Students ranked authenticity fifth in importance (see Table 5.1), while enactments of inauthenticity are ranked third out of the 14 moral concerns (see Figure 6.1). Accountability was ranked sixth and all student interviewees noted its importance (see 6.1.2.1 and 6.1.2.2). A lack of accountability was fourth in the order of importance of the 14 moral concerns. The data suggests a link between integrity, authenticity, and accountability because some students appeared to have moral expectations of themselves.

With respect to moral reasoning abilities and the moral agency that students showed, the findings on integrity (see 5.1.1), authenticity (see 5.1.3) and accountability (see 5.1.4) suggest that some students showed some level of self-awareness and self-assessment of their own values while using ICTs. Some students resisted inappropriate values coming from ICT environments based on their preferred moral values (negative feedback) (see 5.1.2.1, 6.2.2, 6.2.1.2, 6.3 and 6.3.1.2). The findings also suggest that some students were aware of the influence of their actions on others (see 5.1.1, 5.2.2 and 5.3.4), suggesting that circularity played a role in moral reasoning. Table 9.1 below summarises the moral reasoning abilities that the literature suggests are important and that some students appeared to have. Additionally, the abilities and learning objectives associated with authenticity and accountability, the influences in the students' lives that foster values, and the teaching and learning practices used to foster moral reasoning are summarised.

Table 9.1 Moral reasoning, and teaching and learning

Moral Reasoning			
Values	**Abilities and learning objectives**	**Influences on fostering values and moral reasoning**	**Teaching and learning practices**
Authenticity and accountability	(1) Make moral judgements. (2) Have moral expectations of themselves based on authenticity and accountability, which relies on self-assessment and awareness of the influence of values and behaviours on others. For example, critically reflecting if one is being true to one's values and consistent with one's self-presentations while using ICTs. (3) Justify moral judgements relies on (a) self-awareness and self-assessment of one's own values, (b) an understanding of their influences on one's moral reasoning. (4) Identify moral issues with respect to a lack of authenticity and accountability. Applying moral values to identify existing or potential moral problems associated with the use of ICTs. (5) Critically assess the detrimental influence of ICTs on authenticity and accountability. 4 and 5 rely on (a) self-awareness and self-assessment of one's values and reasoning, and (b) an awareness of the influence of one's actions on others. (6) Determine moral actions relies on (a) identifying stakeholders, (b) seeking to understand the experiences, positions and needs of others, and (c) assessing the consequences of actions on others.	(1) Parental and adult values and guidance (2) Positive peer pressure	(1) Student-centred dialogue such as: (a) Soliciting the views of students about significant values and the role peers played in the practices. (b) Linking discussions about values to the lives of young people. (c) Using ethical dilemmas related to students' life experiences. Use the 'see, think and wonder' approach. (d) Critical evaluations of values and behaviours that mediated the uses of ICTs. (e) Learning from mistakes Start lessons by defining terms, the reason for the presentation and the goals of the lesson. Explore *integrity, heart and character* in the use of ICTs using Y charts 'sounds like, feels like and looks like'.

Some findings also suggest some moral issues and challenges faced by young people with respect to moral reasoning. The literature suggests that instrumentality and the remote nature of actions while using ICTs may restrict moral evaluations of harm done, and, thus, undermine a sense of moral accountability (see 6.1.2.2). Additionally, it is argued that the virtual and logically malleable characteristics of ICTs detrimentally influence moral responsibility (Davis et al., 2010; Heesen, 2012; Mason, 1986; Runions & Bak, 2015; Van Den Hoven, 1994). Therefore, some of the findings in this study suggest that some characteristics of ICTs affected the moral reasoning of students with regard to integrity, accountability and authenticity (see 6.1.2, 6.1.2.3 and 6.1.2.2).

Students raised the issue of being alienated from one's true self, suggesting that having different representations, one in real life and one in cyberspace, could lead to having split personalities (see 6.1.2.4). Additionally, self-made inauthentic digital images led to detrimental digital shadows for some students (see 6.1.1.3). Peer approval (positive feedback) also played a role in lapses in moral reasoning (see 6.1.1, 6.1.1.1 and 6.1.1.2) with respect to inauthentic and inappropriate social media postings (see 6.1.1.2) and an increase in inauthenticity, suggesting the detrimental influence of circularity on moral reasoning (see 6.1.1.2). With respect to how students responded to these moral challenges, some of the findings also indicate that some students could critically assess the influence of ICTs on the inauthenticity and inappropriate nature of digital images and disingenuous online friendships. Some also noted the moral reasoning they applied to these challenges (see 5.1.3, 5.1.5 and 6.1.1.3). These findings suggest the importance that educators help students reflect on these detrimental influences.

9.1.2 ICTs and moral emotion

This section discusses the influence of moral emotion on ICTs and the influence of ICTs on moral emotion with respect to empathy and remorse. Some of the findings suggest that students had some abilities in relation to empathy and remorse (see Table 9.2). Empathy (negative feedback) appeared to be beneficial for the wellbeing of young people while using ICTs (see 5.2.1 and 8.1.2.1). Some students appeared

to understand the emotional experiences of peers (see 6.2.1 and 5.2.1), and empathetic awareness led to more lenient moral judgments of others and supported self-regulation (see 2.1.3.1). However, the findings suggest that year nine students did not have highly developed levels of empathy, and it was not ranked very high by students. The findings suggest that some students experienced remorse for inappropriate actions while using ICTs (see 5.2.2), indicating a process of circularity in the remorse experienced by students. In addition, the self-reported remorse suggests that, at some level, some students could evaluate the negative consequences of their actions on others, therefore, they appeared to have some ability to take the perspective of others and understand the emotion they felt (remorse) (see 5.2.2).

Certain characteristics of ICTs (positive feedback) appeared to have a detrimental influence on moral emotions. Students often noted that ICTs acted as a “barrier” that distanced their peers from their actions, which dampened remorse and empathy (see 6.2.1.1 and 6.2.1.2). These findings also suggest that some students could critically discern the detrimental influence of ICTs (positive feedback) on empathy and remorse. However, it is not clear whether these discernments influenced the empathy they showed to others.

Table 9.2 Moral emotion, and teaching and learning

Table 9.2 summarises the abilities and learning objectives associated with empathy and remorse, the influences in the students' lives that foster these values, and the teaching and learning practices used to foster moral emotion.

Moral emotion			
Values	**Abilities and learning objectives**	**Influences on fostering values and moral emotion**	**Teaching and learning practices**
Empathy and remorse	1. Moral reasoning in relation to empathy and remorse A. Taking another's perspective understanding the experiences and emotions of others (*cognitive empathy*). B. Discerning the morally relevant factors of a situation such as depression. C. Understanding that moral transgressions have negative consequences on others. 2. Experiencing moral emotions A. Experiencing empathy and remorse. Experiencing remorse helps: > Evaluate the consequences of one's behaviours on others. >Influences one's ability to take the perspective of others. 3. Evaluating and managing emotions A. Understanding emotions felt and how this influences behaviour. B. Understanding how inappropriate emotions undermine the use of ICTs (peer approval). C. Managing the impulse to blame others by understanding how blame influences on our judgements of others and adjust our judgements accordingly. D. Understanding the detrimental influence of ICTs on empathy. E. Evaluating the negative consequences of actions on others (remorse). 4. Showing empathic concern A. Empathy helps anticipate negative social outcomes and adjust one's moral actions. B. Empathy fosters more lenient moral judgments of others.	The acquisition empathy, remorse and moral reasoning while using ICTs is based on: (a) Learning to consider the perspective of others recognising that moral transgressions have a negative influence on others. (b) Emotional self-awareness. (c) Emotion differentiation in moral judgements. (d) Taking an active interest in the concerns of others. (e) Empathy shown by significant adults	1. Teaching moral values. 2. Discussions around student's own experiences and considering the perspective and experiences of others while using ICTs. 3. Narratives and discussions that appeals to emotions. 4. Self-awareness and self-assessment of one's values, emotions and behaviours - Learning from one's mistakes. 5. Encouraging students to take an active interest in the concerns of others.

9.1.3 ICTs and moral behaviour

This section discusses the influence of moral behaviour on ICTs and the influence of ICTs on moral behaviour with respect to responsibility, self-control, altruism, justice and respect. Some findings suggest that students considered self-control and responsibility important for moral self-management and moral behaviours towards others (see 5.3.4 and 5.3.5). Some students appeared to understand the importance of self-control and responsibility in short-circuiting impulsive behaviours such as perpetuating arguments, anger and self-made digital shadows (see 8.1.3.3).

Table 9.3 Moral behaviour, and teaching and learning

Table 9.2 summarises the abilities and learning objectives associated with self-control, responsibility, altruism, justice and respect, the influences in the students' lives that foster these values, and the teaching and learning practices used to foster moral behaviour.

Moral behaviour			
Values	**Abilities and learning objectives**	**Influences on fostering values and moral behaviour**	**Teaching and learning practices**
Self-control and responsibility	Moral self-management (1) Identifying and managing moral issues in the use of ICTs based on self-control and responsibility relies on (a) a self-awareness and self-assessment of one's values, and reasoning, (b) making and justifying moral judgements based on self-control and responsibility, and (c) having moral expectations of oneself. Self-control: managing inappropriate emotions, desires and actions in favour of appropriate ones. Managing posting about self and others, and responses to others. Responsibility for ones' actions. Applying moral values to identify moral issues relating to moral responsibility for ones' actions.	Moral self-management (a) The acquisition of moral values (personally held values and parental values). (b) Self-awareness and assessment of one's actions (self-control and responsibility). (c) Critical evaluation of the values and behaviours that mediate the use of ICTs (self-control and responsibility).	Student-centred dialogue by: Soliciting the views of students about significant values and the role peers played in the practices. Discussions of the role of self-awareness and assessment of one's actions (self-control and responsibility) Discussions of the role of critical evaluation of the values and behaviours that mediate the use of ICTs (self-control and responsibility).
Altruism, justice and respect	Moral behaviour towards others (1) Determining moral actions and having agency relies on: (a) identifying and critically assessing moral issues and the consequences of actions on others based on altruism, justice and respect (making and justifying moral judgements) and (b) behaving morally towards others. Caring for peers in need. Behaving justly. Showing and earning respect. Respecting cultural diversity and gender. Respecting one's privacy and that of others. Critically assessing the influence of techniques of morality.	Moral behaviour in relation to others (a) Parental values. (b) Altruistic causes promoted through the use of ICTs. (c) Positive peer pressure. (d) The acquisition of moral values. (e) Self-assessment of one's actions while using ICTs (altruism, justice and respect). (f) Critical evaluation of the values and behaviours that mediate the use of ICTs (altruism, justice and respect). (g) Behaving morally.	Structured reflection within classroom settings about: The critical evaluation of justice and respect in the use of ICTs. Community service in the digital world and the role of positive peer pressure with respect to altruism, justice and respect.

Students ranked responsibility as the most important value, while a lack of responsibility, such as portraying oneself and others in a detrimental way, was noted as the greatest moral concern by students (see 6.3.1.1 and 6.3.2). The findings suggest that for some students, responsibility meant being socially responsible by standing up for others, being responsible for their peers and managing their own behaviours responsibly (see 5.3.5). Some could also understand the consequences of actions on others with respect to a lack of responsibility (see 6.3.1.1 and 6.3.2), suggesting that circularity played a role in assessing the issues involving responsibility.

Altruism, justice and respect were important in the moral behaviour of some students towards others (see 5.3.1, 5.3.2 and 5.3.3), suggesting that some students showed moral agency (negative feedback) with respect to these values in their own uses of ICTs. With respect to the moral challenges they faced, justice played a role in identifying and making some moral judgements with regard to fairness and cyberbullying (see 6.3.1.2). They also appeared to be able to justify these moral judgements, determine a moral action and reported acting on these judgements (see 5.3.1 and 5.3.2). Having self-respect with regard to how they portray themselves and respecting the privacy of others where noted student concerns (see 5.3.3). The next section discusses the critical moral evaluation of the use of ICTs that some students showed with respect to the influence of ICTs on moral behaviour. These findings reinforce the importance of responsibility, self-control and justice with respect to how students responded to moral challenges.

Some findings suggest that circularity played a role in moral behaviour because some students appeared to be aware that inappropriate behaviours while using ICTs could easily feed back onto them (see 6.1.2.2). The findings suggest that a lack of responsibility with respect to self-made digital shadows and those created by others undermined the online identities of young people (see 5.3.5, 6.3.1.1, 6.3.1.2 and 7.3.1.3). These actions, in part, explain why responsibility and irresponsibility were ranked the highest by students.

The literature maintains that the remote and virtual nature of interactions, anonymity and instrumentality influences moral disengagement, and can lead to anti-social behaviours (see 3.1.1, 3.5.2.1, 3.5.2.4 and 6.2.1). Several students noted that this was the case with regard to responsibility, justice, respect and self-control. Some noted that anonymity was used to undermine the digital images of others and to cyberbully (see 6.3.2). Techniques such as persistence, replicability, searchability and the scalability of detrimental content posted online increase the emotional duress of cyberbullying (boyd, 2014; Flores & James, 2013). Some students and parents noted their concern about the persistence, replicability and scalability of digital shadows, which undermined the personal autonomy and formation of adolescents' public identities (see 6.3.2). Most students suggested that remote and virtual nature of interactions, and anonymity played a role in undermining self-control because of the lack of boundaries and repercussions for actions taken while using ICTs (see 6.3.1.3). The findings on self-made digital shadows and those created by others, and the influence of digital moral malleability suggest that some students could identify and critically assess these influences. However, it is not clear whether the identification and assessment of the influence of certain characteristics of ICTs on morality would influence future behaviours.

9.2 Summary of findings - Research question three

The following section discusses the contributions made in this study to knowledge of the influences on the moral domains, and the teaching and learning practices that can be used to foster values and abilities associated with the moral domains (see Tables 9.1, 9.2 and 9.3 for a summary of these). Each moral domain will be discussed separately, beginning with moral reasoning.

9.2.1 Fostering moral reasoning

Research indicates that young people exert agency while using ICTs, but do so, in part, in the context of structures set by parents and teachers (Vickery, 2012). This study found that parental guidance and school programs are important in fostering values and moral reasoning (see 5.1.6). However, students noted the importance of

adults engaging children earlier than year nine (14 to 15 year olds) (see 7.3.2.4) and that programs needed to be age appropriate. Some moral psychologists maintain that relationships in peer groups play a role in fostering morality (Berkowitz et al., 2002; Mercier, 2011). Some of the findings suggest that young peoples' moral use of ICTs was influenced in a positive way by their peers (see 5.1.6). This finding suggests the importance of including peers in school programs.

Another finding, is that student-centred dialogue could be an effective means of fostering moral reasoning. Such a dialogue could be led by teachers, but also students. Vickery (2012) describes this approach as *student-centred space,* where both student and adult interests and concerns are integrally incorporated. In this study, classroom activities that solicited the views of students with respect to the values they considered important while using ICTs appeared to be engaging (see 7.2). In 2017, some students (17 and 18 year olds) questioned the effectiveness of school-based cyber-safety programs. For example, Baba noted that "they [school based programs] are not in touch with what kids are actually doing online" (Student focus group, 10/03/2017). These findings suggest that students want to have a voice in the values and practices that are considered important by adults, and that there is a need to design programs that incorporate student input, are relevant to students and age appropriate.

Challenging young people's moral reasoning with regard to their own behaviours and perspective-taking are recommended as a means of fostering morality in the use of ICTs (Lau & Yuen, 2014). Linking discussions of values to the lives of young people (see 7.1 and 7.2) and discussing the detrimental effects of unethical behaviours (see 5.1.6, 7.1 and 7.2) emerged in this study as effective teaching and learning methods. Some students' awareness and critical reflections of the influences of negative and positive feedback and circularity suggest that these processes may have played a role in fostering moral reasoning (see 8.1.1.4). This study indicates that some students also appeared to develop their moral identity, as some students were able to reflect critically on the immoral influence of ICTs on truthfulness, responsibility and authenticity (see 6.1.2.1). Additionally, the findings on integrity (see 5.1.1), accountability (see 5.1.4) and inauthenticity provide examples of how students reported having moral expectations of themselves (see 6.1.1.3), suggesting that

encouraging such reflection may be helpful in fostering the moral domains. Some of the findings also suggest that moral learning occurred through mistakes made while using ICTs (see 5.1.6).

Being explicit about the 'big ideas' of the lesson is an important pedagogical practice (Pugh & Phillips, 2011b; Wiggins & McTighe, 2006). The need to explain the purpose and learning objectives of the lesson well emerged from this study as an important practice (see 7.1 and 7.2). Some of the findings in both this study and the literature indicate that the use of labels associated with the moral domains (cognitive, affective and action based) are an effective means to frame discussions about morality (Oliver & Dennison, 2013; Sipos et al., 2008). The following section discusses the influences on moral emotions and the teaching and learning practices that can be used to foster values and moral emotions. Table 9.2 is a summary of these.

9.2.2 Fostering moral emotion

Some moral psychologists maintain that values held by individuals, elicits self-evaluative emotions such as empathy and remorse (Krettenauer & Johnston, 2011), suggesting the importance of the acquisition of moral values in fostering moral emotion (Colby & Damon, 2015). The findings suggest that negative and positive feedback, and circularity while using ICTs had an influence on eliciting empathy and remorse in some students (see 8.1.2.3). Some students also appeared to show some self-assessment of their actions towards others (circularity) with respect to empathy and remorse (see 7.3.3.2).

Moral psychology also suggests that an awareness of another's situation is associated with empathy (see 2.1.3.1). It is likely that empathy may have been fostered through students considering the perspective of others while using ICTs (see 5.2.1), while remorse was experienced as a result of reflecting on one's misbehaviours towards others (see 5.2.2). These findings also suggest that moral reasoning played a role in fostering these emotions. Teachers recommended some teaching and learning practices to foster the ability to consider the perspective and experiences of others. The first practice is to link lessons to student's own lived

experiences and initiate classroom discussion on the positive or negative effects of ICTs on others (see 5.2.1 and 5.2.2). The second practice is to use pictures depicting young people being cyberbullied and ask students to write down their reflection under the labels of ‘see, think and wonder’. This activity appeared to be particularly effective at eliciting empathic reflections (see 7.2). These findings concur with the suggestions of some psychologists that narratives that appeal to emotions and group discussions are a means of fostering moral reasoning and moral emotion (Casey, 2015; Mercier, 2011; Noddings, 2010).

Some moral psychologists maintain that empathy builds on emotional self-awareness and self-assessment (Cameron & Payne, 2013; Goleman, 2004; Schalkwijk et al., 2016). In support of this view, five students said that it was not fair to blame others without knowing their situation, suggesting they understood that blame influenced their responses (see 7.3.3.2). Therefore, the emotional self-awareness and self-assessment reported by some students with respect to empathy and remorse may have been a factor in fostering empathy. Some students also appeared to suggest that their own empathetic behaviours fostered empathy, because of the emotional reward this action brought (see 5.2.3).

The next section presents a summary of the influences on moral behaviour, and the teaching and learning practices that can be used to foster values and moral behaviour (see Table 9.3).

9.2.3 Fostering moral behaviour

In this study, parental values, peer pressure, school programs and altruistic causes promoted online, emerged as factors in fostering moral behaviour. Research suggests that parental involvement with adolescents promotes moral reasoning and behaviour (Padilla-Walker & Christensen, 2011), and some of the findings suggest that such was the case for some students with respect to the use of ICTs (see 5.3.6). Research has also shown that peer pressure can play a positive role in the behaviour of teenagers (Davis et al., 2010), and some students, parents and teachers in this study noted that such was the case with respect to the moral use of ICTs. Participants also suggested that altruistic causes promoted through ICTs can

foster altruism. Year nine students (14 and 15 year olds) noted that school based programs played a role in fostering moral reasoning and moral behaviour (see 5.3.6); however, year 12 students (17 and 18 year olds) did not consider their school's program relevant for them (see 7.3.2.4), which suggests the importance of developing more age-appropriate programs.

Several of the findings suggest that personally held values played a role in the moral use of ICTs by students (see 5.1.6, 5.3.2, 5.3.3, and 5.3.6), which indicated the need to foster values (Colby & Damon, 2015). Some moral psychologists maintain that moral behaviour requires a certain level of self-awareness and self-assessment of one's values and behaviours (see 7.3.4.3.1). Self-assessment of the impact of one's actions, on oneself and others while using ICTs was seen by some students and teachers as a means of fostering respect and self-control (see 5.3.6).

Floridi (1999) argues that encouraging a critical evaluation of the values and behaviours that transact in the use of ICTs can play a role in fostering moral behaviour in relation to others. As most students considered that justice and respect played a role in identifying and making some moral judgements with regard to fairness and cyberbullying (see 5.3.2 and 6.3.1.2), it could be argued that these reflections can be used to foster justice and respect. Also, as the findings on positive feedback suggest an awareness on the part of some students that persistence, replicability, scalability, distancing and anonymity had an influence on behaviours and the social wellbeing of young people (see 6.1.2.1 and 6.1.2.2), discussing these issues with students can be viewed as a means of fostering moral behaviour.

Some moral psychologists suggest that moral behaviours play a role in moral values being internalised (see 2.1.5), while research shows that adolescent social activism involving the use of ICTs is not uncommon (Vickery, 2012). One member of each participant group suggested that altruistic causes promoted through ICTs (social activism) foster altruism (see 5.3.6). Based on these findings and the literature, encouraging young people to see themselves as part of their online communities and act altruistically, justly and respectfully, can be a means to foster these values and behaviours.

9.3 Reflections and limitations

This section reflects on some of the limitations of this study in terms of theory, policy and practice. First, I embraced the position that the theories, background, knowledge and values of the researcher influence what is observed and how it is analysed (Zink, 2010). Another researcher seeking to address the very same research questions could have used another set of values and come up with different findings. In seeking to identify moral values to underpin the moral domains, this study started with a particular design made up of 20 values that the literature suggested were important. The final version of the DMF suggests the importance of nine values. However, there are other values that could have been studied, such as inclusion, resilience, tolerance, confidence, forgiveness, cooperation, commitment, humility, gratitude, self-esteem and optimism, to name a few. If these values had been included in this study, the suggested moral framework would have been quite different. Second, the DMF and CVS model identified roughly 30 abilities that underpin the moral domains. However, other abilities such as conflict resolution, communication skills, online collaboration, assertiveness and resilience did not form part of the study. Hence, this study provided a limited snapshot of values and abilities.

Third, the artificial assignment of values to particular domains is another limitation. The values that the DMF suggests underpin each particular moral domain can easily underpin multiple domains; therefore, restricting the discussion of the role of particular values associated with each of the moral domains, may have restricted the inquiry and the analysis. Having said that, this study did suggest overlapping abilities that apply to all three domains. Further connections could have emerged if the interviews and discussions had allowed the studied values to be discussed within all moral domains, although these discussions did occur to some extent.

Fourth, after the first iteration of the classroom activities, two teachers suggested the need to follow up later in the school year with the classes that received the content to determine the learning that had occurred with respect to their uses of ICTs (see 7.1). This is a suggestion that was not implemented.

Fifth, the scope of the study was large. From the outset, the academics who guided me suggested that I was taking on a project that was large in scope. For instance, investigating the moral values that mediated the use of ICTs by the students would have been enough to answer the research questions. However, I argued that investigating the influence of immoral values on the use ICTs and the influence of ICTs on values provided insight that would assist with answering the research questions. However, this larger scope required more analysis and a broader literature review.

Sixth, in this study, I adopted the view that social research can lead to the creation of theories that are explored in a study to produce greater generalisability of a phenomenon (Bauer et al., 2017; Packer, 2011). However, the small number of students, parent and teachers did not provide enough data to generalise beyond these participants. Hence, the other major limitation was the limited sample size of participants. The location of the study was another limitation. The data that were gathered in this study represented one particular ‘story’ embedded in particular social and historical moment. The data that were drawn from participants associated with a middle class secondary school composed of Australians of predominately European descent. Collecting data from a different socio economic background could have provided a broader sample of responses to further support and enrich the findings. Finally, the knowledge and understanding of the student and parent participants about values was another challenge. Questions about values are not always easy to formulate or understand. This topic is difficult for adults, let alone adolescents.

9.4 Direction and areas for future research

This section discusses the implications of the work for future research with respect to theory, policy and practice. As far as moral reasoning is concerned, the findings suggest that students did not consider honesty and trustworthiness to be highly important while using ICTs. However, teachers expressed concern about the disconnect between these two values and student practices. Further research is

needed to determine why such a disconnect exists, the significance of these values and integrity in the use of ICTs for secondary school students.

With respect to moral emotion, further research is needed to understand the significance of empathy and how to foster empathy in adolescent uses of ICTs. This is particularly challenging when it comes to practice, namely how to foster empathy in young peoples' uses of ICTs. Gratitude and forgiveness are often associated with moral emotion. Like empathy, gratitude is important for nurturing relationships (Elfers, 2016) and plays a role in how individuals respond to situations (Desteno, Li, Dickens, & Lerner, 2014). Some students mentioned that gratitude and pride were important, but these statements and beliefs were not investigated in this study. Forgiveness is a value that was not investigated, yet, like justice it is considered an important value (Colby & Damon, 2015).

With respect to moral behaviour, resilience, conflict resolution and collaboration may need further study in the development of policy and practice. Resilience is considered by some researchers to be important for the wellbeing of adolescents (Guilera, Pereda, Pa, & Abad, 2015), and its role in the moral domains while using ICTs is an area that also needs further research. Additionally, the role of conflict resolution and collaboration with respect to moral behaviour could be very important for the wellbeing of young people, particularly for senior secondary school students (14 to 18 year olds). The findings suggest that some student could identify and assess the influence of certain characteristics of ICTs on morality, however, it is not known whether these assessments would influence future behaviours. Because well-learned habits become routine and launch without hesitation (Colby & Damon, 2015). Further study is needed is needed to understand the role of moral habits (virtues) in the use of ICTs by secondary school children.

With respect to teaching and learning (policy and practice), a look at the effectiveness of current school-based cyber-safety programs needs to occur. For senior students in particular, these programs need to be well designed to meet their needs and interests. Additionally, how to incorporate values as part of a cyber-safety program should be investigated.

Parental guidance appeared to be important for some students; however, finding the right balance between parental mediation and the autonomy of the child is important,

and more attention should be paid to the ways in which parents define their role in relation to their children's internet use (Symons et al., 2017).

Researchers should also be concerned with examining the technological process as it unfolds in schools and its relationship to larger society. Researchers in the field should broaden their investigation beyond the implementation of means (tools) (Amiel & Reeves, 2008). The values surrounding the deployment of ICTs in schools and values that are promoted and embedded in the way society deploy ICTs (Buckingham, 2007; Hirschheim et al., 1991; Holmstrom, 2007; Latour, 1994; Weiner, 1960) may influence the values perspectives of students (Amiel & Reeves, 2008) which has implications for broader social concerns (Feenberg, 2002; Heath, 2010; Kim, 2007). When schools introduce new ICTs, they must also consider the environmental consequences. Students quickly notice these concerns or simply adopt commercial 'values' associated with owning ICTs. There is clear evidence of ever-increasing 'user-generated' and 'peer-networked' learning with respect to digital skills (McDougall & Sonia Livingstone, 2014); however, little is known about the role of peers when it comes to fostering the moral domains in the use of ICTs by young people. Finally, moral identity is an area of increasing interest to researchers (Narvaez & Bock, 2014), but they are not well researched with respect to the use of ICTs by secondary school students.

9.5 Concluding remarks

This study contributes in three areas, theory, policy and practice. With respect to theory, the DMF and the CVS model can be used as the basis for further research in the role of values in sociotechnical phenomena. Additionally, the DMF and the CVS model contribute to an understanding of the moral values and abilities that should mediate young people's uses of ICTs (policy) and the teaching and learning practices to foster these values and abilities.

With respect to further research, the literature review and the findings in this study suggest that studying the role of values in the use of ICTs can be framed using the constructs that make up the DMF and CVS model. With respect to the DMF, using the moral domains allows for a holistic and comprehensive view of the role of values

in the use of ICTs. The way this study associated particular moral values and abilities that have been identified in moral psychology with each of the moral domains adds to the study of the moral values and abilities that computer ethics and the sociotechnical literature consider important for the use of ICTs. In some instances, the literature indicates a link between some moral values and abilities and the moral domains, and the use of ICTs, while in other instances, this link is not shown. The findings in this study either reinforce the findings of other studies or suggest some links to the moral domains and the use of ICTs that were not previously identified.

With respect to the CVS model and research, the sociotechnical literature suggests that an exploration of the role of values can be achieved within three contexts: the influence of values on ICT environments, the influence of ICT environments on values and their reciprocal influence on each other (see 3.1.6). The CVS model shows that the three cybernetic processes and the three sociotechnical contextual approaches listed above can be combined to analyse the influence of values (outputs/negative feedback) on ICT environments, the influence of ICT environments (inputs/positive feedback) on values and their reciprocal influence on each other (circularity) (see Figure 8.1). The resulting model can be used to analyse these influences on the moral domains (see Tables 8.1, 8.2 and 8.3).

With respect to policy and practice, this study provides further understanding of adolescents' moral development by considering the relationship between morality, ICTs and pedagogy. The thesis began with a search for a digital moral framework for secondary schools. This moral framework suggests that the moral domains play an important role in the moral use of ICTs by secondary school students. In this study, students showed some abilities with respect to having moral agency in all three moral domains. The two key abilities that stand out are self-awareness and critical reflection with respect to moral reasoning based on values, with both the literature and the findings suggesting that self-awareness is an important foundation for morality. Students also showed critical evaluation abilities with respect to their own immoral uses of ICTs and that of their peers. The DMF and the CVS model provide teaching and learning tools that can be used to stimulate conversations and reflections with secondary school students about the moral self-awareness and the

moral critical reflection they need to have with respect to their use of ICTs. This study also suggests learning objectives, influences, and teaching and learning practices that teachers can use in the classroom and parents can use in their conversations with their children. Learning can occur when young people have a voice in the values that are important for their uses of ICTs, engage with content that they consider to be relevant for them and can critically reflect on the values that mediate the use of ICTs and apply moral values to their uses of ICTs.

Appendices

Appendix A

Moral reasoning and teaching and learning

Moral Domains	Moral Psychology (MP)	Moral Philosophy (MPh)	Computer Ethics (CE)	Australian Curriculum (AC)	Abilities	Fostering Abilities
Moral Reasoning	Integrity, authenticity and honesty.	Moral duties, honesty and integrity.	Authenticity, integrity, honesty, trust and accountability.	Duties	Producing and evaluating moral judgements, and decision making (MP, MPh, CE, AP). Self-examination (MPh, AP). Moral reasoning with respect to the wellbeing of others (MPh).	Fostering moral values (MP, CE). Discussions and critical reasoning (MP, CE, AP). Parental involvement (MP). Foster engagement with diverse cultural values (CE, AP). Moral behaviours allow moral values to be internalised (MP).

This table is a summary of the values and abilities that underpin moral reasoning and the teaching and learning practices that are used to fosters moral reasoning.

Moral emotion and teaching and learning

Moral Domains	Moral Psychology (MP)	Moral Philosophy (MPh)	Computer Ethics (CE)	Australian Curriculum (AC)	Abilities	Fostering Abilities
Moral Emotion	Empathy, compassion and conscientious-ness.	Conscience and empathy.	Empathy	Conscience	Experiencing appropriate emotions (empathy and conscientiousn ess) and managing them well (MP, MPh). Empathy – understanding what others are experiencing and feeling, and that moral transgressions have negative consequences on others (MP). Seeking to alleviate the suffering of another (MP). Conscientious ness feeling committed to and accountable for one's moral values (MP, MPh). Emotional self-awareness (AC) and self-assessment (MP, MPh).	Experiencing appropriate emotions and managing them well (MP, MPh). Narratives and appeals to emotions (MP). Learning to distinguish between the perspectives of the self and others recognising that moral transgressions have a negative influence on others (MP). Modelling moral values in the life of the child (MP). Cultivating conscientiousn ess by sharpening our attention to it (MPh). Identifying and describing the factors that influence emotional responses (AC).

This table is a summary of the values and abilities that underpin moral emotion and the teaching and learning practices that are used to foster these values and abilities.

Moral behaviour and teaching and learning

Moral Domains	Moral Psychology (MP)	Moral Philosophy (MPh)	Computer Ethics (CE)	Australian Curriculum (AC)	Abilities	Fostering Abilities
Moral behaviour	Responsibility and self-control (moral self-management). Justice, fairness, freedom, equality and benevolence (behaviour towards others).	Integrity, self-control and courage (moral self-management). Altruism, love and justice (behaviour towards others).	Responsibility (moral self-management) Altruism and justice (behaviour towards others).	Self-control and perseverance (self-management). Altruism, justice, equality, respect, tolerance and responsibility (behaviour towards others).	Self-control delay gratification and achieve goals (MP, MPh, AP) and perseverance (AC). Self-awareness and self-management of emotions (MP, MPh).	Moral excellence is an art won by training and habituation (MPh). Identifying strategies to manage themselves in a range of situations and persist in completing tasks (AC).

This table is a summary of the values and abilities that underpin moral behaviour and the teaching and learning practices that are used to foster these values and abilities.

Appendix B Questions asked of participants

Research Questions for parents and students

1. Do values influence on the ethical or unethical use of ICTs?

2. What are the current values and ethical practices of secondary school age children when using ICTs?

3. Is the acquisition of values and ethical practices when using ICTs important for the wellbeing of secondary school age children?

4. Which values and ethical practices are important to the wellbeing of young people?

5. Which values influence ethical judgments and behaviours of secondary school age children when using ICTs?

6. How can we foster values and ethical practices when using ICTs in secondary school age children?

7. What makes some students act more ethically when using ICTs?

8. Can we predict what sort of people will behave unethically when using ICTs?

9. Measures of ethical decision making, demographics, personal characteristics and gender.

10. Do values influence the ethical or unethical use of ICTs?

11. Why is the acquisition of values and ethical practices important for the wellbeing and learning of secondary school age children and society?

12. What are the values and ethical practices (good/bad) of secondary school age children when using ICTs? Does a vacuum of values and ethical practices exist?

13. What is the influence of values and ethical practices (good/bad) when using ICTs on secondary school age children?

14. What factors influence the values, ethical decision making and practices of secondary school age children when using ICTs?

15. How are these values and practices in ICT acquired? Where (in what context) are these values and practices in ICT acquired?

16. Are values and ethical practices when using ICTs the same as any other moral situation or does ICT carry with it its own special considerations? Are they different than those practised in the “real world”?

17. What values and ethical practices are important for secondary school age children when using ICT?

18. How can we implement and foster the digital values and practices?

19. What model (support structures) can be used to foster (social capital) values and ethical practices when using ICTs in secondary school age children?

Research Questions for teachers

1. Does the proposed digital moral framework cover enough moral content to address the needs of students?

2. What needs to be included in the moral framework to foster morality in young people while using ICTs?

3. What is the best method to foster morality in young people?

4. How would you deliver this content?

5. What kinds of activities would you use to deliver this content?

6. Do values impact on the ethical or unethical use of ICTs?

7. What are the current values and ethical practices of secondary school age children when using ICTs?

8. Is the acquisition of values and ethical practices when using ICTs important for the wellbeing of secondary school age children?

9. Which values and ethical practices are important to the wellbeing of young people?

10. Which values influence ethical judgments and behaviours of secondary school age children when using ICTs?

11. How can we foster values and ethical practices when using ICTs in secondary school age children?

12. What makes some students act more ethically when using ICTs?

13. Can we predict what sort of people will behave unethically when using ICTs?

14. What are the measures of ethical decision making, demographics, personal characteristics and gender.

15. Do values influence the ethical or unethical use of ICTs?

16. Why is the acquisition of values and ethical practices important for the wellbeing and learning of secondary school age children and society?

17. What are the values and ethical practices (good/bad) of secondary school age children when using ICTs? Does a vacuum of values and ethical practices exist?

18. What is the impact of values and ethical practices (good/bad) when using ICTs on secondary school age children?

19. What factors influence the values, ethical decision making and practices of secondary school age children when using ICTs?

20. How are these values and practices in ICT acquired? Where (in what context) are these values and practices in ICT acquired?

21. Are values and ethical practices when using ICTs the same as any other moral situation or does ICTs carry with it its own special considerations? Are they different than those practised in the “real world”?

22. What values and ethical practices are important for secondary school age children when using ICTs?

23. How can we foster values?

24. What model (support structures) can be used to foster (social capital) values and ethical practices when using ICTs in secondary school age children?

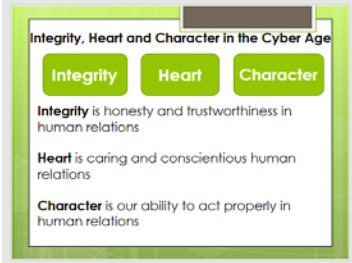
Appendix C Themes template

Cyber Values Systems Themes **CVS 1-** Human values, goals and techniques influence and determine how humans deploy and use ICTs. **CVS 2 -** ICTs have an influence on moral and social conditions **CVS 3 -** Values influence the use of ICTs and ICTs influence values, reciprocally.
Technologically Mediated Moral Issues (TMMI) Themes **TMMI 1-** The Loss of Autonomy and Self-Definition - Cyber Shadow **TMMI 2-** Cyber Moral Malleability – Its Impact on our Cyber Image **TMMI 3-** Digital moral malleability and Anonymity **TMMI 4-** Digital moral malleability and the Instrumental Mindset **TMMI 5-** Cyber Moral Malleability and Moral Disengagement **TMMI 6-** The Global Reach of Individuals **TMMI 7**- The Need for a Moral Framework in the Cyber Age **TMMI 8-** Violations of Truth **TMMI 9-** Violations of Empathy **TMMI 10-** Violations of Goodness
Digital Moral Framework Themes
DMF - 1 Integrity **DMF 1.1** Honesty and Accuracy and Trust **DMF 1.2** Authenticity and Sincerity **DMF 1.3** Accountability and Responsibility **DMF – 2 Fostering Truth and Moral Reasoning** **DMF 2.1** The Link Between Moral Values and Moral Reasoning **DMF 2.2** The Link Between Moral Reasoning and Moral Emotions **DMF 2.3** The Link Between Moral Reasoning and Moral Behaviour **DMF 2.4** Inappropriate Moral Reasoning **DMF – 3 Heart** **DMF 3.1** Empathy and Compassion **DMF 3.2** Conscience and Conscientiousness **DMF – 4 Fostering Empathy and Moral Emotions** **DMF 4.1** The Link Between Moral Emotions and Moral Judgements **DMF 4.2** The Link Between Moral Emotions and Moral Behaviours **DMF 4.3** Fostering Empathy **DMF – 5 Character** **DMF 5.1** Goodwill and Altruism **DMF 5.2** Self-control **DMF 5.3** Respect and Justice

DMF – 6 Fostering Goodness and Moral Behaviours
DMF 6.1 The Link Between Moral Behaviours and Moral Values
DMF 6.2 The Link Between Moral Behaviours and Moral Emotions
DMF 6.3 Fostering Self-Control
DMF 6.4 Fostering Justice, Respect, and Self-Respect
DMF 6.5 Fostering Goodwill and Altruism

DMF – 7 A Holistic Approach to Fostering Values in the Cyber Age
DMF 7.1 Individual Moral Agency and ICTs
DMF 7.2 The Interconnectedness of Moral reasoning, Emotion and Behaviour
DMF 7.3 Individual and the Public Aspects of Morality
DMF 7.4 Proactive Ethics First Approach
DMF 7.5 Universal Intercultural Moral Values
DMF 7.6 Moral Theory
DMF 7.7 Values and Family
DMF 7.8 Values and Peers
DMF 7.9 Positive Cyber Image
DMF 7.10 Positive influence of ICTs on Individuals
DMF 7.11 Values and Teachers
DMF 7.12 Cyber Safety
DMF 7.13 Moral Values are Present and Resilient

Appendix D Extracts from presentation



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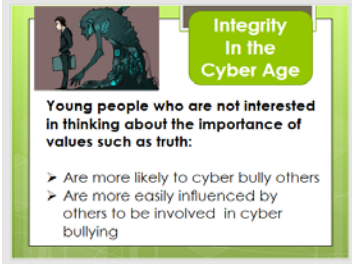
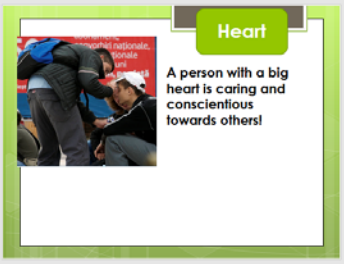


16

17



18

References

ACARA. (2016). Personal and Social Capability - Key Ideas. Retrieved from http://www.australiancurriculum.edu.au/generalcapabilities/personal-and-social-capability/introduction/key-ideas

ACARA. (2017). Ethical Understanding. Retrieved from https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/ethical-understanding/

Ajzen, I. (2011). The theory of planned behaviour: Reactions and reflections. *Psychology & Health, 26*(9), 1113-1127.

Akbulut, Y., Sendag, S., Birincib, G., Kılıcerb, K., Sahin, M. C., & Odabası, H. F. (2008). Exploring the types and reasons of Internet-triggered academic dishonesty among Turkish undergraduate students: Development of Internet-Triggered Academic Dishonesty Scale (ITADS). *Computers & Education, 51*, 463-473.

Akcay, B. (2008). The Relationship Between Technology and Ethics; From Society to Schools. *Turkish Online Journal of Distance Education, 9*(4).

Akram, T., Ali, A., Nemati, A., & Ali, M. (2014). The effect of cybernetic pattern on the characteristic of learning organization in university: a case study of Iran. *Arabian Journal of Business and Management Review, 3*(10), 28-36.

Alessi, N. E. A. V. A. (2008). New Media and an Ethics Analysis Model for Child and Adolescent Psychiatry. *Child Adolescent Psychiatric Clinics, 17*, 67-92.

Allison, K. R., & Bussey, K. (2017). Individual and collective moral influences on intervention in cyberbullying. *Computers in Human Behavior, 74*, 7-15.

Alvarez, C., Alarcon, R., & Nussbaum, M. (2011). Implementing collaborative learning activities in the classroom supported by one-to-one mobile computing: A design-based process. *The Journal of Systems and Software, 84*, 1961- 1976.

Amiel, T., & Reeves, T. C. (2008). Design-Based Research and Educational Technology: Rethinking Technology and the Research Agenda. *Educational Technology & Society, 11*(4), 29-40.

Andrews, C. (2016). *The technology of consent: American science fiction and cultural crisis in the 1980s.* (Doctor of Philosophy), Trent University, Ann Arbor, MI.

Angney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High Self-Control Predicts Good Adjustment, Less Pathology, Better Grades, and Interpersonal Success. *Journal of Personality, 72*(2), 271-324.

Anyon, J. (2009). Introduction: Critical Social Theory, Educational Research, and Intellectual Agency. In *Theory and educational research: Toward critical social explanation.* (pp. 1-23). New York: Routledge.

Areepattamannil, S., & Khine, M. S. (2017). Early adolescents' use of information and communication technologies (ICTs) for social communication in 20 countries: Examining the roles of ICT-related behavioral and motivational characteristics. *Computers in Human Behavior, 73*, 263-272.

Arıcak, O. T., Dündar, Ş., & Saldaña, M. (2015). Mediating effect of self-acceptance between values and offline/online identity expressions among college students. *Computers in Human Behavior, 49*, 362-374.

Atkins, J. W. (2014). Euripides's Orestes and the Concept of Conscience in Greek Philosophy. *Journal of the History of Ideas, 75*(1), 1-22.

Bagchi, K. K., Udo, G. J., Kirs, P. J., & Choden, K. (2015). Internet use and human values: Analyses of developing and developed countries. *Computers in Human Behavior, 50*, 76-90.

Baggio, B., & Beldarrain, Y. (2011). *Anonymity and Learning in Digitally Mediated Communications: Authenticity and Trust in Cyber Education*. Hershey, PA: IGI Global.

Baker, R. K., & White, K. M. (2010). Predicting adolescents' use of social networking sites from an extended theory of planned behaviour perspective. *Computers in Human Behavior, 26*, 1591-1597.

Bandura, A., Caprara, G. V., Barbaranelli, C., Pastorelli, C., & Regalia, C. (2001). Sociocognitive Self-Regulatory Mechanisms Governing Transgressive Behavior. *Journal of Personality and Social Psychology, 80*(1), 125–135.

Bard, R. (1930). The Virtues. *The Journal of Education, 112*(20), 515.

Barlett, C. P. (2017). From theory to practice: Cyberbullying theory and its application to intervention. *Computers in Human Behavior, 72*, 269-275.

Barque-Duran, A., Pothos, E. M., Hampton, J. A., & Yearsley, J. M. (2017). Contemporary morality: Moral judgments in digital contexts. *Computers in Human Behavior, 75*, 184-193.

Barque-Duran, A., Pothos, E. M., Yearsley, J. M., & Hampton, J. A. (2016). Patterns and evolution of moral behaviour: moral dynamics in everyday life. *Thinking & Reasoning, 22*(1), 31-56.

Baskervillea, R., & Pries-Hejeb, J. (1999). Grounded action research: a method for understanding IT in practice. *Accounting, Management & Information Technology, 9*(1), 1-23.

Bats, J., Valkenburg, R., & Verbeek, P.-P. (2013). *Mediating Technology: How ICT Influences the Morality of the Digital Generation*. Paper presented at the International Confrence on Engineering Design, Seoul, Korea.

Bauer, R., Himpsl-Gutermann, K., Sankof, M., & Szucsich, P. (2017). Brave New Digital Tools for Action Research in Education: A Beginner's Guide. In S. N. Ş. M. Ebner (Ed.), *Digital Tools for Seamless Learning* (pp. 42-64). Hershey, Pennsylvania: IGI Global, publisher.

Bauman, D. C. (2013). Leadership and the three faces of integrity. *The Leadership Quarterly, 24*, 414-426.

Baumgartner, S. E., Sumter, S. R., Peter, J., & Valkenburg, P. M. (2015). Sexual self-presentation on social network sites; Who does it and how is it perceived? *Computers in Human Behavior, 50*, 91-100.

Beer, S. (1985). *Diagnosing the system for organizations*. Chichester, England: John Wiley and Sons.

Benkler, Y. (Producer). (2008, 23 September 2010). The Wealth of Networks: How Social Production Transforms Markets. *Amateur cultural production - Video Lecture*. Retrieved from http://networkedpublics.org/amateur_cultural_production

Berger, F. R. (1975). Gratitude. *Ethics, 85*(4), 298-309.

Berkowitz, M. W., & Bier, M. C. (2014). Research-Based Fundamentals of the Effective Promotion of Character. In L. P. Nucci, D. Narváez, & T. Krettenauer (Eds.), *Handbook of moral and character education*. New York, NY Routledge.

Berkowitz, M. W., Colby, A., Kristol, I., Power, C., Schwartz, A. J., Sherman, N., . . . Walker, L. (2002). *Bringing in a New Era in Character Education*. Stanford: Hoover Institution Press.

Berkowitz, M. W., & Grych, J. H. (1998). Fostering Goodness: Teaching Parents to Facilitate Children's Moral Development. Retrieved from http://tigger.uic.edu/~lnucci/MoralEd/articles/berkowitzfostering.html

Berniūnas, R., Dranseika, V., & Sousa, P. (2016). Are there different moral domains? Evidence from Mongolia. *Asian Journal of Social Psychology, 19*(3), 275-282.

Beycioglu, K. (2009). A cyberphilosophical issue in education: Unethical computer using behavior – The case of prospective teachers. *Computers & Education, 53*, 201-208.

Biesta, G. (2007). Why "What works" Won't Work: Evidence-Based Practice and the Democratic Deficit in Educational Research. *Educational Theory, 57*(1), 1-22

Blair, S. L., Claster, P. N., & Claster, S. M. (2015). *Technology and youth growing up in a digital world*. Bingley, U.K.: Emerald

Blasch, J., & Ohndorf, M. (2015). Altruism, moral norms and social approval: Joint determinants of individual offset behavior. *Ecological Economics, 116*, 251-260.

Blau, I., & Eshet-Alkalai, Y. (2017). The ethical dissonance in digital and non-digital learning environments: Does technology promotes cheating among middle school students? *Computers in Human Behavior, 73*, 629-637.

Boden, R., Kenway, J. and Epstein, D. . (2005). *'The research process' in Getting started on research*. London: Thousand Oaks/New Delhi: Sage Publications.

Boyce, G. (2008). The social relevance of ethics education in a global(ising) era: From individual dilemmas to systemic crises. *Critical Perspectives on Accounting, 19*, 255-290.
boyd, d. (2014). *It's Complicated: The Social Lives of Networked Teens*. New Haven and London: Yale University Press.
Bozkurt, A. (2017). Augmented Reality with Mobile and Ubiquitous Learning: Immersive, Enriched, Situated, and Seamless Learning Experiences. In S. N. Ş. M. Ebner (Ed.), *Digital Tools for Seamless Learning* (pp. 27-41). Hershey, Pennsylvania: IGI Global, publisher.
Bradley, J. (1993). Methodological issues and practices in qualitative research. *Library Quarterly, 63*(4), 431-449.
Bradley, K. (2005). Internet lives: social context and moral domain in adolescent development. *New Directions for Student Leadership, 11*(2), 57-76.
Brady, M. (2011, 10 July). Teen Sexting: It's illeal, but it's in every school. *The Sunday Age,* pp. 1,4.
Braunstein, D. (2014). Values: The Foundations for Negotiating Digital Citizenship. Retrieved from http://www.huffingtonpost.com/danya-braunstein/values-the-foundations-fo_b_4754133.html?utm_hp_ref=technology&ir=Technology
Brey, P. (2000). Method in Computer Ethics: Towards a Multi-Level Interdisciplinary Approach. *Ethics and Information Technology, 2*(2), 125- 129.
Brey, P. (2010). *Values in technology and disclosive computer ethics*. New York: Cambridge University Press.
Bromley, H. (1997). The social chicken and the technological egg: Educational computing and the Technology/Society Divide *Educational Theory, ProQuest Education Journals, 47*(1), 51-65.
Brown, G. (2007). Is there an Ethics of Computing? In J. Weckert (Ed.), *Computer Ethics* (pp. 49 - 56): Ashgate Publishing Limited.
Brownlee, J. L., Johansson, E., Walker, S., Scholes, L., & Cobb-Moore, C. (2017). *Teaching for Active Citizenship : Moral values and personal epistemology in early years classrooms*. Abingdon, Oxon ; New York, NY Routledge
Brunn, P. (2014). The Developmental Studies Center's Approach to Academic, Moral, and Character Education In L. P. Nucci, D. Narváez, & T. Krettenauer (Eds.), *Handbook of moral and character education*. New York, NY Routledge.
Buckingham, D. (2007). *Beyond Technology, Children's Learning in the Age of Digital Culture*. Cambridge: Polity Press.
Buckingham, D. (2008). *Youth, identity, and digital media*. Cambridge, Mass. : MIT Press
Buelga, S., Martínez-Ferrer, B., & Cava, M.-J. (2017). Differences in family climate and family communication among cyberbullies, cybervictims, and cyber bullyevictims in adolescents. *Computers in Human Behavior, 76*, 164-173.
Bulfin, S., Johnson, N. F., & Bigum, C. (2015). *Critical Perspectives on Technology and Education*. New York, NY: Macmillan.
Bulfin, S., & Joseph, M. L. R. C. (2010). *Reading, Interpreting and Communicating Research Introduction to Quantative Research Methods Qualitative Approaches to Research*. Clayton: Faculty of Education Monash University.
Burgess, A. B. R. (1994). *Analyising Qualitative Data*. London and New York: Routledge.
Busch, C. (2016). *The Internet as a playground: Exploring the effects of social networking sites on the early adolescent female self.* (Doctor of Psychology in Clinical Psychology), California Institute of Integral Studies, ProQuest Dissertations and Theses
Bynum, T. W. (2007). Ethical Challenges to Citizens of "the Automatic Age': Norbert Wiener on the Information Society. In J. Weckert (Ed.), *Computer Ethics* (pp. 4-15): Aldershot: Ashgate Publishing Limited.
Bynum, T. W. (2008). Computer and Information Ethics. In *The Stanford Encyclopedia of Philosophy*: Stanford University.

Cameron, J. D. D., & Payne, K. (2013). Morality in high definition: Emotion differentiation calibrates the influence of incidental disgust on moral judgments. *Journal of Experimental Social Psychology, 49*(4), 719-725.
Carlson, T. D., & Erickson, M. J. (1999). Recapturing the Person in the Therapist: An Exploration of Personal Values, Commitments and Beliefs. *Contemporary Family Therapy, Human Sciences Press, Inc., 21*(1).
Carter, S., & Little, M. (2007). Methods in Qualitative Research Justifying Knowledge, Justifying Method, Taking Action: Epistemologies, Methodologies, and Methods in Qualitative Research. *Qualitative Health Research, 17*(10), 1316-1328.
Casey, B. J. (2015). Beyond Simple Models of Self-Control to Circuit-Based Accounts of Adolescent Behavior. *Annual Review of Psychology, 66*, 295-319.
Chakroff, A., Dungan, J., & Young, L. (2013). Harming Ourselves and Defiling Others: What Determines a Moral Domain? *PloS one, 8*(9).
Chan, D. (2008). *Moral Psychology Today - Essays on Values, Rational Choice, and the Will*: Springer Science+Business Media B.V.
Chebat, J.-C., Kerzazi, L., & Zourrig, H. (2010). Impact of culture on dissatisfied customers: An empirical study. *City, Culture and Society, 1*(1), 37-44.
Chen, G. M. (2017). *Online incivility and public debate Nasty Talk*. Cham, Switzerland: Palgrace McMillan.
Cherkasova, E. V. (2007). Virtues of the Heart - Feodor Dostoevsky and the Ethic of Love. In A.-T. Tymieniecka (Ed.), *Virtues and passions in literature excellence, courage, engagements, wisdom, fulfilment*. London : Springer Dordrecht.
Cho, V. (2017). A study of negative emotional disclosure behavior in social network media: Will an unexpected negative event and personality matter? *Computers in Human Behavior, 73*, 172-180.
Christie, C., & Dill, E. (2016). Evaluating peers in cyberspace: The impact of anonymity. *Computers in Human Behavior, 55*(292-298).
Clarke, A. (2006). Young Children and ICTs – current issues in the provision of ICT technologies and services for young children. Retrieved from
Clarke, A., & Robertson, A. (2001). Lifting a corner of the research rug: a case for meta-interviews in qualitative studies. *Teaching and Teacher Education, 17*(7), 773-782.
Cocking, D., & Matthews, S. (2001). Unreal Friends. *Ethics and Information Technology, 2*(4), 223-231.
Cohen, T. R., Panter, A. T., Turan, N., Morse, L., & Kim, Y. (2014). Moral character in the workplace. *Journal of Personality and Social Psychology, 107*(5), 943-963.
Colby, A., & Damon, W. (2015). *The Power of Ideals The Real Story of Moral Choice*. New York, NY: Oxford University Press.
Costabile, A., & Spears, B. (2012). *A review of initiatives using technology to promote cyber-safety and sigital citizenship*. New York, NY: Routledge.
Crago, H. (2006). *Couple, Family and Group Work, First Steps in Interpersonal Intervention*. New York: Open University Press.
Crain, W. C. (1985). *Kohlberg's Stages of Moral Development*. New York: Prentice-Hall.
Craker, N., & March, E. (2016). The dark side of Facebook: The Dark Tetrad, negative social potency, and trolling behaviours. *Personality and Individual Differences, 102*, 79-84.
Davis, K., Gardner, H., Rundle, M., Francis, J. M., Flores, A., Pettingill, L., & James, C. (2010). Young People, Ethics, and the New Digital Media. *Contemporary Readings in Law and Social Justice, II*(2), 215-284.
Dekkers, R. (2017). *Applied systems theory 2nd Edition*. Switzerland: Springer.
Desteno, D., Li, Y., Dickens, L., & Lerner, J. S. (2014). Gratitude. *Psychological Science, 25*(6), 1262-1267.

Diaz, J., Arroyo, D., & Rodriguez, F. (2014). Fair anonymity for the Tor network. *Cornell University Library*. Retrieved from http://search.lib.monash.edu/primo_library/libweb/action/display.do?tabs=detailsTab&ct=display&fn=search&doc=TN_arxiv1412.4707&indx=1&recIds=TN_arxiv1412.4707&recIdxs=0&elementId=0&renderMode=poppedOut&displayMode=full&frbrVersion=&dscnt=0&frbg=&scp.scps=scope%3A%28catelec%29%2Cscope%3A%28catau%29%2Cscope%3A%28MUA%29%2Cscope%3A%28catcarm%29%2Cprimo_central_multiple_fe&tab=default_tab&dstmp=1427935285188&srt=rank&mode=Basic&&dum=true&ac=O3%3D484%26O6%3D9%26O9%3D2%26&vl(freeText0)=anonymity%20network&vid=MON

Dick, B. (1997). Action learning and action research [On line]. http://www.scu.edu.au/schools/gcm/ar/arp/actlearn.html

Dillena, L. F. V., Enter, D., Peters, L. P. M., Dijka, W. W. v., & Rotteveel, M. (2017). Moral fixations: The role of moral integrity and social anxiety in the selective avoidance of social threat. *Biological Psychology, 122*, 51–58.

Dingle, A. D., & Stuber, M. L. (2008). Ethics Education. *Child Adolescent Psychiatric Clinics of North America, 17*(1), 187-207.

Dorrestijn, S. (2017). The Care of Our Hybrid Selves: Ethics in Times of Technical Mediation. *Foundations of Science, 22*(2), 311–321.

Dow, T.-I. (2007). Historical and Contemporary Virtues as Reflected in Chinese Literature. In A.-T. Tymieniecka (Ed.), *Virtues and passions in literature excellence, courage, engagements, wisdom, fulfilment*. London : Springer Dordrecht.

Dransfield, P. (1994). *Systems and Controls Part 1 : Systems*. Clayton: Department of Mechanical and Aerospace Engineering, Monash University

Durant, W. (1926). *The Story of Philosophy*. Garden City, New York: Garden City Publishing.

Eason, K. (2014). Afterword: The past, present and future of sociotechnical systems theory. *Applied Ergonomics, 45*(2), 213-220.

Eby, R. A., Hartley, P. L., Hodges, P. J., Hoffpauir, R., Newbanks, S., & Kelley, J. H. (2013). Moral Integrity and Moral Courage: Can You Teach It? *The Journal of nursing education, 52*(4), 229-233.

Edgerton, D. (2007). *The shock of the old: Technology and global history since 1900*. New York: Oxford University Press ix-27.

Edwards, S., Nolan, A., Henderson, M., Skouteris, H., Mantilla, A., Lambert, P., & Bird, J. (2016). Developing a Measure to Understand Young Children's Internet Cognition and Cyber-Safety Awareness: A Pilot Test. *An International Journal of Research and Development, 36*(3), 322-335.

Eivy, A. (2017). Be Wary of the Economics of "Serverless" Cloud Computing. *IEEE Cloud Computing, 42*(2), 6-12.

Elfers, J. (2016). *The spectrum of gratitude experience*: Springer International Publishing.

Ent, M. R., Baumeister, R. F., & Tice, D. M. (2015). Trait self-control and the avoidance of temptation. *Personality and Individual Differences, 74*(February), 12-15.

Ess, C. (2002). Computer Mediated Colonisation, the Renaissance, and Educational Imperatives for an Intercultural Global Village. *Ethics and Information Technology, 4*(1), 11-22.

Ess, C., & Thorseth, M. (2010). *Global information and computer ethics*. Cambridge, UK Cambridge University Press

Feenberg, A. (2002). *Transforming Technology A Critical Theory Revesited*. New York: Oxford University Press.

Feenberg, A. (2012a). Critical Theory of Technology. Retrieved from http://www.sfu.ca/~andrewf/ctt.htm

Feenberg, A. (2012b). Toward a Critical Theory of the Internet. In A. Feenberg & N. Friesen (Eds.), *(Re)Inventing the internet critical case studies*. Rotterdam ; Boston: SensePublishers

Flores, A., & James, C. (2013). Morality and ethics behind the screen: Young people's perspectives on digital life. *New Media Society, 15*(6), 834-852.
Floridi, L. (1999). Information Ethics: On the philosophical Foundations of Computer Ethics. *Ethics and Information Technology, 1*(1), 33-52.
Floridi, L. (2010a). *The Cambridge Handbook of Information and Computer Ethics*. New York: Cambridge University Press.
Floridi, L. (2010b). *Information Ethics*. New York: Cambridge University Press.
Ford, D., Atkins, R., & Hart, D. (1998). Urban America as a Context for the Development of Moral Identity in Adolescence. *Journal of Social Issues, 54*(3), 513-530.
Frede, D. (2009). Plato's Ethics: An Overview. *The Stanford Encyclopedia of Philosophy (Summer 2009 Edition).* Retrieved from http://plato.stanford.edu/archives/sum2009/entries/plato-ethics/
Freeman, M., Marrais, K. d., Preissle, J., & Roulston, K. (2007). Standards of Evidence in Qualitative Research: An Incitement to Discourse. *Educational Researcher, 36*(1), 25.
Fuller, U., Keim, B., Fitch, D., Little, J. C., Riedesel, C., & White, S. (2009). Perspectives on Developing and Assessing Professional Values in Computing. *Computers and Education*.
Gahegan, M., & Weaver, S. D. (2007). Constructing, Visualising, and Analysing a Digital Footprint. *The Geographical Review, 97*(3), 324-350.
Galla, B. M., & Wood, J. J. (2015). Trait Self-Control Predicts Adolescents' Exposure and Reactivity to Daily Stressful Events. *Journal of Personality, 88*(1), 69-83.
Gardner, H. (2000). *The Disciplined Mind*. New York: Penguin Books.
Garland, V. E. (2010). Emerging Technology Trends and Ethical Practices for the School Principal. *EDUCATIONAL TECHNOLOGY SYSTEMS, 38*(1), 39-50.
Gee, J. P. (2009). Digital media and learning as an emerging field, part 1: How we got here *International Journal of Learning and Media, 1*(2), 13-23.
Gibbs, A. (1997). Focus Groups. *Social Research Update.* Retrieved from http://sru.soc.surrey.ac.uk/SRU19.html
Giner-Sorolla, R. (2012). *Judging Passions Moral Emotions in Others and Groups* London and New York: Psychology Press.
Godbold, R., & Lees, A. (2013). Ethics education for health professionals: A values based approach. *Nurse Education in Practice, 13*(6), 553-560.
Goleman, D. (2004). *Emotional Intelligence and Working With Emotional Intelligence*. London: Bloomsbury Publishing.
Goodwin, G. P. (2015). Moral Character in Person Perception. *Current Directions in Psychological Science, 24*(1), 38-44.
Gorniak-Kocikowska, K. (1996). The Computer Revolution and the Problem of Global Ethics. *Science and Engineering Ethics, 2*(2), 177-190.
Gotterbarn, D. (1992). The Use and Abuse of Computer Ethics. *Journal of Systems and Software, 17*(1), 75-80.
Gotterbarn, D. (2001). Informatics and Professional Responsibility. *Science and Engineering Ethics, 7*(2), 221-230.
Gotterbarn, D., & Moor, J. (2009). Virtual decisions: video game ethics, Just Consequentialism, and ethics on the fly. *Computers and Society, 39*(3), 27-42. doi:http://doi.acm.org/10.1145/1713066.1713068
Grappi, S., Romani, S., & Bagozzi, R. (2013). Consumer response to corporate irresponsible behavior: Moral emotions and virtues. *Journal of Business Research, 66*(10), 1814-1821.
Greenfield, K. S. P. (2008). Online Communication and Adolescent Relationships. *The Future of Children, 18*(1), 119-146.
Greenwood, B., Burtch, G., & Carnahan, S. (2017). Economic and Business Dimensions: Unknowns of the Gig-Economy. *Association for Computing Machinery. Communications of the ACM, 60*(2), 67.
Griffin, P., & Bell, M. A. L. (2007). *Teaching for Diversity and Social Justice*. New York, NY: Routledge.

Guilera, G., Pereda, N., Pa, A. O., & Abad, J. (2015). Assessing resilience in adolescence: The Spanish adaptation of the Adolescent Resilience Questionnaire. *Health and Quality of Life Outcomes, 13*, 100.

Gurman, A., & Kniskern, D. (1991). *Handbook of Family Therapy Volume 2*. New York: Brunner/Mazel.

Hackett, R. D., & Wang, G. (2012). Virtues and leadership; An integrating conceptual framework founded in Aristotelian and Confucian perspectives on virtues. *Management Decision, 50*(5), 868-899.

Haidt, J. (2007). The New Synthesis in Moral Psychology. *Science, 316*(5827), 998-1002.

Han, H. (2016). How can neuroscience contribute to moral philosophy, psychology and education based on Aristotelian virtue ethics? *International Journal of Ethics Education, 1*(2), 201–217.

Heath, J. (2010). Methodological Individualism. Retrieved from http://plato.stanford.edu/entries/methodological-individualism/

Heesen, J. (2012). *Computer and Information Ethics*. London: Elsevier Inc.

Heidegger, M. (1997). *The Question Concerning Technology and Other Essay*. New York: Harper and Row Publishers. Inc.

Heirman, W., & Walrave, M. (2008). Assessing Concerns and Issues about the Mediation of Technology in Cyberbullying. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace,, 2*(2).

Hewson, K. (2013). What size is your digital footprint? A powerful professional learning network can give a boost to a new teaching career. *Phi Delta Kappan, 97*(7), 14-17.

Heylighen, F., & Joslyn, C. (2001). *Encyclopedia of Physical Science & Technology (3rd ed.) Cybernetics and Second-Order Cybernetics*. New York: Academic Press.

Heylighen, F., Joslyn, C., & Turchin, V. (1999). What are Cybernetics and Systems Science? Retrieved from http://cleamc11.vub.ac.be/REFERPCP.html

Hildebrandt, C., & Zan, B. (2014). Constructivist Approaches to Moral Education in Early Childhood. In L. P. Nucci, D. Narváez, & T. Krettenauer (Eds.), *Handbook of moral and character education*. New York, NY Routledge.

Hirschheim, R., Klein, H. K., & Newman, M. (1991). Information systems development as social action: Theoretical perspective and practice. *Omega, 19*(6), 587-608.

Holmstrom, S. (2007). Niklas Luhmann: Contingency, risk, trust and reflection. *Public Relations Review, 33*(3), 255-262.

Hoshiar, M., & Friedel, J. D. J. L. J. N. (2014). Examining the Effectiveness of Student Authentication and Authenticity in Online Learning at Community Colleges. *Community College Journal of Research and Practice, 38*, 337-345.

Houck, C. D., Barker, D., Rizzo, C., Hancock, E., Norton, A., & Larry K. Brown. (2014). Sexting and Sexual Behavior in At-Risk Adolescents. *Pediatrics, 133*(2), 276–282.

Hsu, W.-T., Li, H.-H., & Pan, Y.-H. (2017). Student misbehavior in physical education: the role of 2 x 2 achievement goals and moral disengagement *Journal of Sports Science and Medicine, 16*(3), 302-309.

Hursthouse, R. (2010). Virtue Ethics. Retrieved from http://plato.stanford.edu/archives/win2010/entries/ethics-virtue/

Hursthouse, R. (2012). Virtue Ethics. *The Stanford Encyclopedia of Philosophy (Summer 2012 Edition).* Retrieved from http://plato.stanford.edu/entries/ethics-virtue/

Ilie, C. (2006). Rhetoric, Classical. In B. Keith (Ed.), *Encyclopedia of Language & Linguistics* (pp. 573-579). Oxford: Elsevier.

Introna, L. (2011). Phenomenological Approaches to Ethics and Information Technology. Retrieved from <http://plato.stanford.edu/archives/sum2011/entries/ethics-it-phenomenology/>.

Ito, M., Baumer, S., Bittanti, M., boyd, d., Cody, R., Herr-Stephenson, B., . . . Tripp, L. (2010). *Hanging Out, Messing Around, and Geeking Out - Kids Living and Learning with New Media*. Cambridge, Massachusetts: The MIT Press.

Jefferies, P., Carsten-Stahl, B., & McRobb, S. (2007). Exploring the relationships between pedagogy, ethics and technology: building a framework for strategy development. *Technology, Pedagogy and Education, 16*(1), 111-126.
Jenkins, H. (2008). *Convergence culture: Where old and new media collide*. New York: New York University Press.
Jenkins, H., Purushotma, R., Clinton, K., Weigel, M., & Robinson, A. J. (2009). Confronting the Challenges of Participatory Culture: Media Education for the 21st Century. Retrieved from http://wheatoncollege.edu/president/files/2012/03/Confronting-Challenges-of-Participatory-Culture.pdf
Jocson, K. M. (2015). New Media Literacies as Social Action: The Centrality of Pedagogy in the Politics of Knowledge Production. *Curriculum Inquiry, 45*(1), 30-51.
Johnson, N. F. (2007). *Teenage Technological Experts: Bourdieu and the Performance of Expertise.* (Doctor of Philosophy), Deakin University,
Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come *Educational Researcher, 33*(7), 14-26.
Jones, S. (2016). Doing the right thing: computer ethics pedagogy revisited. *Journal of Information, Communication and Ethics in Society, 14*(1), 33-48.
Jonker, A. H. P. W. C. (2014). Designing for Self-Reflection on Values for Improved Life Decision. *Interacting with Computers, 26*(1), 27-45.
Jung, I. (2009). Ethical judgments and behaviors: Applying a multidimensional ethics scale to measuring ICT ethics of college students *Computers & Education, Volume 53*(3), 940-949.
Juthberg, C., & Sundin, K. (2010). Registered nurses' and nurse assistants' lived experience of troubled conscience in their work in elderly care—A phenomenological hermeneutic study. *International Journal of Nursing Studies, 47*(1), 20–29.
Kahn, P. H., & Friedman, B. (1992). Human Agency and Responsible Computing: Implications for Computer System Design. *Journal of Systems Software, 17*(1), 7-14.
Kant, I. (1952a). Fundamental Principles of the Metaphysics of Morals. In R. M. Hutchins (Ed.), *Great Books of the Western World* (Vol. 42). Chicago: Encyclopedia Britannica.
Kant, I. (1952b). Transition from the common rational knowledge of morality to the philosophical In R. M. Hutchins (Ed.), *Great Books of the Western World* (Vol. 42). Chicago: Encyclopedia Britannica.
Kerta, S. B., Uza, C., & Gecu, Z. (2012). Scenarios for computer ethics education. *Procedia - Social and Behavioral Sciences, 46*, 2706 - 2710
Kılıçer, K., & Odabaşı, H. F. (2006). *Bilgisayar öğretmenliği: Etik bunun neresinde?* Paper presented at the The 6th International Educational Technology Conference
Killian, K. (2012). Development and Validation of the emotional self-awareness questionnaire: A measure of emotional intelligence. *Journal of Marital and Family Therapy, 38*(3), 502-514.
Kim, S. H. (2007). Max Weber. Retrieved from http://plato.stanford.edu/entries/weber/
Kincheloe, J. L., & McLaren, P. (2002). Rethinking Critical Theory and Qualitative research. In Y. Zou & E. T. Trueba (Eds.), *Ethnography and Schools: Qualitative Approaches to the Study of Education*. Marylan, U.S.A: Rowman & Littlefield.
King, N. (2004). Quality checks and reflexivity. Retrieved from http://www.hud.ac.uk/hhs/research/template-analysis/technique/quality-and-reflexivity/
King, N. (2007a). Defining themes and codes. Retrieved from http://hhs.hud.ac.uk/w2/research/template_analysis/technique/themesandcodes.htm
King, N. (2007b). Interpretation. *Template Analysis.* Retrieved from http://hhs.hud.ac.uk/w2/research/template_analysis/technique/interpretation.htm
King, N. (2014a). Quality Checks. *Template Analysis.* Retrieved from http://www.hud.ac.uk/hhs/research/template-analysis/technique/quality-and-reflexivity/
King, N. (2014b). What is Template Analysis? Retrieved from http://www.hud.ac.uk/hhs/research/template-analysis/what-is-template-analysis/

Kline, R. R. (2001). Technological Determinism. In N. J. Smelser (Ed.), International Encyclopedia of the Social & Behavioral Sciences (pp. 15495-15498). Amsterdam: Elsevier Retrieved from http://www.sciencedirect.com/science/referenceworks/9780080430768.
Knigge, L., & Cope, M. (2006). Grounded visualization: integrating the analysis of qualitative and quantitative data. *Environment and Planning A, 38*(11), 2021-2037.
Kohlberg, L. (1984). *The psychology of moral development : the nature and validity of moral stages*. San Francisco: Harper & Row
Krettenauer, T., & Johnston, M. (2011). Moral self and moral emotion expectancies as predictors of anti- and prosocial behaviour in adolescence: A case for mediation? *European Journal of Development Psychology, 8*(2), 228-243.
Krettenauer, T., & Malti, T. (2013). The Relation of Moral Emotion Attributions to Prosocial and Antisocial Behavior: A Meta-Analysis. *Child Development, 84*(2), 397-412.
Kritzinger, E. (2017). Cultivating a Cyber-Safety Culture among School Learners in South Africa. *Africa Education Review, 14*(1), 22-41.
Kuflik, A. (1999). Computers in Control: Rational Transfer fo Authority or Irresponsible Abdication of Autonomy? *Ethics and Information Technology, 1*(3), 173-184.
Kushlev, K., & Proulx, J. D. E. (2016). The Social Costs of Ubiquitous Information: Consuming Information on Mobile Phones Is Associated with Lower Trust. *PloS one, 11*(9).
Kuzu, A. (2009). Problems Related to Computer Ethics: Origins of the Problems and Suggested Solutions. *The Turkish Online Journal of Educational Technology, 8*(2).
Laabs, C. (2011). Perceptions of moral integrity: Contradictions in need of explanation. *Nursing ethics, 16*(3), 431-440.
Lashbrook, J. T. (2000). Fitting In: Exploring the Emotinal Dimensions of Adolescent Peer Pressure. *Adolescence, 35*(140), 747.
Latour, B. (1994). On Technical Mediation - Philosophy, Sociology, Genealogy. *Common Knowledge, 3*(2), 29-64.
Lau, W. W. F., & Yuen, A. H. K. (2014). Internet ethics of adolescents: Understanding demographic differences. *Computers & Education, 72*, 378–385.
Lazuras, L., Barkoukis, V., Ourda, D., & Tsorbatzoudis, H. (2013). A process model of cyberbullying in adolescence. *Computers in Human Behavior, 29*(3), 881–887.
Leonard, A. (2009). The Viable System Model and Its Application to Complex Organizations. *Systemic Practice and Action Research, 22*(4), 223-233.
Levine, A. O. D. (1989). *Foundations of Education*. Boston: Houghton Mifflin Company.
Li, D., Li, X., Zhao, L., Zhou, Y., Sun, W., & Wang, Y. (2017). Linking multiple risk exposure profiles with adolescent Internet addiction: Insights from the person-centered approach. *Computers in Human Behavior, 75*, 236-244.
Lim, J. S., Nicholson, J., Yang, S.-U., & Kim, H.-K. (2015). Online authenticity, popularity, and the "Real Me" in a microblogging environment. *Computers in Human Behavior, 52*, 132-143.
Lin, T.-B., Chen, V., & Chai, C. S. (2015). *New media and learning in the 21st century : a socio-cultural perspective*. Singapore: Springer
Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic Inquiry*. Newbury Park, CA: Sage Publications.
Lind, G. (2016). *How to teach morality*: Logos Verlag Berlin.
Liua, C. J., & Yanga, S. C. (2012). Applying the Practical Inquiry Model to investigate the quality of students' online discourse in an information ethics course based on Bloom's teaching goal and Bird's 3C model. *Computers & Education, 59*(2), 466-480.
Liua, D., & Baumeister, R. F. (2016). Social networking online and personality of self-worth: A meta-analysis. *Journal of Research in Personality, 64*, 79-89.
Livingstone, S. (2009). *Children and the Internet*. Cambridge: Polity Press.
Livingstone, S., Mascheroni, G., & Murru, M. F. (2014). Social networking among European children: new findings on privacy, identity and connection. In *Utilisation des réseaux socionumériques*

par les jeunes Européens. Nouveaux résultats sur la vie privée, l'identité et les connexions sociales" Paris, France: Les Essentials d'Hermès.
Livingstone, S., & Smith, P. K. (2014). Annual Research Review: Harms experienced by child users of online and mobile technologies: the nature, prevalence and management of sexual and aggressive risks in the digital age. *Journal of Child Psychology and Psychiatry, 55*(6).
Lopes, B., & Yu, H. (2017). Who do you troll and Why: An investigation into the relationship between the Dark Triad Personalities and online trolling behaviours towards popular and less popular Facebook profiles. *Computers in Human Behavior, 77*, Computers in Human Behavior.
Lowe, A. (2012, 14 January). Porn blamed fro chidren's problem sexual behaviour. *The Age,* p. 3.
Mackenzie, N., & Knipe, S. (2006). Research dilemmas:paradigms, methods and metodologies. *Issues in Educational Research, 16*(2), 193-205.
Macrae, D. G. (1951). Cybernetics and Social Science. *The British Journal of Sociology, 2*(2), 135-149.
Maibom, H. (2017). *The Routledge Handbook of Philosophy of Empathy*. Florence, UNKNOWN: Taylor and Francis.
Malti, T., & Latzko, B. (2012). Moral Emotions. In *Encyclopedia of Human Behavior (Second Edition)* (pp. 644-649): 2 Elsevier Inc.
Marett, K., George, J. F., Lewis, C. C., Gupta, M., & Giordano, G. (2017). Beware the dark side: Cultural preferences for lying online. *Computers in Human Behavior, 75*, 834-844.
Mark, L. (2014). *Reducing cyber victimization through home and school partnerships: The effects of a cyber safety workshop on parent and educator perceptions of self-efficacy and attitudes toward family-school collaboration.* (Doctorat), University of Hawai, Ann Arbor, MI. (3582934)
Mason, R. (1986). Four Ethical Issues of the Information age. *Management Information Systems Quarterly, 10*(1), 5-12.
Masrom, M., Ismail, Z., & Hussein, R. (2009). Ethical Awareness of Computer Use Among Undergraduate Students. *Computers and Society, 39*.
McDougall, J., & Sonia Livingstone. (2014). Media and information literacy policies in the UK. Retrieved from
McGeer, V. (2004). Developing Trust on the Internet. *Analyse and Kritik, 26*(1), 91-107.
McGinn, R. E. (1997). Technology, Demography, and the Anachronism of Traditional Rights. In K. S.-F. L. Westra (Ed.), *Technology and Values* (pp. 167 - 186). United States of America: Rowman & Littlefield Publishers INC.
McKenna, K., & Bargh, J. (2000). Plan 9 From Cyberspace: The Implications of the Internet for Personality and Social Psychology. *Personality and Social Psychology Review, 4*(1), 57-75.
Mcneil, J., & Helwig, C. C. (2015). Balancing Social Responsibility and Personal Autonomy: Adolescents' Reasoning About Community Service Programs. *The Journal of Genetic Psychology, 176*(6), 349-368.
Mercier, H. (2011). What good is moral reasoning? *Mind & Society, 10*(2), 131-148.
Minton, A. J. (1976). *Philosophy: Paradox and Discovery*. United States of America: McGraw-Hill.
Mishna, F., Khoury-Kassabri, M., Gadalla, T., & Daciuk, J. (2011). Risk factors for involvement in cyber bullying: Victims, bullies and bully–victims. *Children and Youth Services Review*.
Montaigne, M. d. (1952). *Bood the First* (Vol. 25). Chicago: Encyclopedia Britannica.
Moor, J. H. (1985). What is Computer Ethics? *Metaphilosophy, 16*(4), 266-275.
Morales-Sa´nchez, R., & Cabello-Medina, C. (2013). The Role of Four Universal Moral Competencies in Ethical Decision-Making. *Journal of Business Ethics, 116*(4), 717-734
Muir-Cochrane, J. F. E. (2006). Demonstrating Rigor Using Thematic Analysis: A Hybrid Approach of Inductive and Deductive Coding and Theme Development *International JOurnal of Qualitative Methods, 5*(1), 80-92.
Nagel, C. (2008). Democratizing Technology: Andrew Feenberg's Critical Theory of Technology by Tyler J. Veak. *Technology and Culture, 49*(2), 519-521.

Narvaez, D., & Bock, T. (2014). Developing Ethical Expertise and Moral Personalities. In L. P. Nucci, D. Narváez, & T. Krettenauer (Eds.), *Handbook of moral and character education*. New York, NY Routledge.
Nedeleca, J. L., & Beaver, K. M. (2014). The Relationship between Self-Control in Adolescence and Social Consequences in Adulthood: Assessing the Influence of Genetic Confounds. *Journal of Criminal Justice, 42*(3), 288-298.
Nguyen, J. (2016). *Creative Makings of the Digital Generation.* (Doctor of Philosophy), University of California, Ann Arbor, MI. (10165864)
Nielsen, M. I. S. W. (2017). Computer-mediated communication and self-awareness. A selective review. *Computers in Human Behavior, 76*, 554 - 560.
Niland, P., Lyons, A. C., Goodwin, I., & Hutton, F. (2015). Friendship Work on Facebook: Young Adults' Understandings and Practices of Friendship. *Journal of Community & Applied Social Psychology, 25*, 123-137.
Nissenbaum, H. (1994). Computing and Accountability. *Communications of the ACM, 37*(1), 72-79.
Nissenbaum, H. (1998). Protecting Privacy in an Information Age: The Problem of Privacy in Public. *Law and Philosophy, 17*(5), 559- 596.
Noddings, N. (2010). Moral education and caring. *Theory and Research in Education, 8*(2), 145–151.
Nucci, L., & Powers, D. W. (2014). Social Cognitive Domain Theory and Moral Education. In L. P. Nucci, D. Narváez, & T. Krettenauer (Eds.), *Handbook of moral and character education*. New York, NY Routledge.
O'Toole, J., & Beckett, D. (2010). *Educational Research - Creative Thinking and Doing*. South Melbourne: Oxford University Press.
Oliver, P. E., & Dennison, W. C. (2013). The integration of heart, hands and head. Retrieved from http://ian.umces.edu/blog/2013/09/03/the-integration-of-heart-hands-and-head/
Onwuegbuzie, A. J., & Weinbaum, R. (2017). A framework for using qualitative comparative analysis for the review of the literature. *The Qualitative Report,, 22*(2), 359+.
Pacey, A. (1983). *The culture of technology* Cambridge, MA: MIT Press 1-12.
Paciello, M., Muratori, P., Ruglioni, L., Milone, A., Buonanno, C., Capo, R., . . . Barcaccia, B. (2017). Personal Values and Moral Disengagement Promote Aggressive and Rule-Breaking Behaviours in Adolescents With Disruptive Behaviour Disorders. *International Journal of Offender Therapy and Comparative Criminology, 61*(1), 46-63.
Packer, M. (2011). *The Science of Qualitative Research*. New York, NY: Cambridge University Press.
Padilla-Walker, L. M., & Christensen, K. J. (2011). Empathy and Self-Regulation as Mediators between Parenting and Adolescents' Prosocial Behavior toward Strangers, Friends, and Family. *Journal of Research on Adolescence, 21*(3), 545-551.
Paraskeva, F., Mysirlakia, S., & Papagiannia, A. (2010). Multiplayer online games as educational tools: Facing new challenges in learning *Computers & Education, 54*(2), 498-505
Parker, D. (2007). Rules of Ethics in Information Processing. In J. Weckert (Ed.), *Computer Ethics* (pp. 17 - 24). Aldershot: Ashgate Publishing Limited.
Parsons, T. (1959). Values and the control of social behavior: The case of money *Acta Psychologica, 15*, 84.
Paton, H. J. (1979). Conscience and Kant. *Kant-Studien, 70*, 1-4.
Perren, S., & Gutzwiller-Helfenfinger, E. (2012). Cyberbullying and traditional bullying in adolescence: Differential roles of moral disengagement, moral emotions, and moral values. *EUROPEAN JOURNAL OF DEVELOPMENTAL PSYCHOLOGY, 9*(2), 195-209.
Piaget, J. (1965). *The Moral Judgment of the Child*. New York: The Free Press.
Pierce, M. A., & Henry, J. W. (1996). Computer ethics: The role of personal, informal, and formal codes. *Journal of Business Ethics, 15*(4), 425-437.
Pojman, L. P. (1997). What is Moral Philosophy? In L. Westra (Ed.), *Technology and Values* (pp. 11 - 23). United States of America: Rowman & Littlefield Publishers INC.

Price, D., Green, D., Spears, B., Scrimgeour, M., Barnes, A., Geer, R., & Johnson, B. (2013). A Qualitative Exploration of Cyber-Bystanders and Moral Engagement. *Australian Journal of Guidance and Counselling*, 1-17.

Price, D., Spears, B., Green, D., Scrimgeour, M., Barnes, A., Geer, R., & Johnson, B. (2014). A Qualitative Exploration of Cyber-Bystanders and Moral Engagement. *Australian Journal of Guidance and Counselling, 24*(1), 1-17.

Price, M., & Dalgleish, J. (2010). Cyberbullying - Experiences, impacts and coping strategies as described by Australian young people. *Youth Studies Australia, 29*(2), 51-59.

Pugh, K. J., & Phillips, M. M. (2011a). Helping students develop an appreciation for school content. *Theory Into Practice, 50*(4), 285–292.

Pugh, K. J., & Phillips, M. M. (2011b). Helping Students Develop an Appreciation for School Content. *Theory Into Practice, 50*, 285-292.

Quinn, M. J. (2006). On Teaching Computer Ethics within a Computer Science Department. *Science and Engineering Ethics, 12*(2), 335-343.

Rauers, A., Blanke, E., & Riediger, M. (2013). Everyday Empathic Accuracy in Younger and Older Couples. *Psychological Science, 24*(11), 2210-2217.

Reynolds, R., & Caperton, I. H. (2011). Contrasts in student engagement, meaning-making, dislikes, and challenges in a discovery-based program of game design learning. *Educational Technology Research and Development, 59*(6), 267–289.

Richardson, H. S. (2009). Moral Reasoning. *The Stanford Encyclopedia of Philosophy (Summer 2009 Edition).* Retrieved from http://plato.stanford.edu/entries/reasoning-moral/

Robbins, E., Shepard, J., & Rochat, P. (2017). Variations in judgments of intentional action and moral evaluation across eight cultures. *Cognition, 164*, 22-30.

Roberts, J. A., & Wasieleski, D. M. (2012). Moral Reasoning in Computer-Based Task Environments: Exploring the Interplay between Cognitive and Technological Factors on Individuals' Propensity to Break Rules. *Journal of Business Ethics, 110*(3), 355-376

Roschelle, J., Rafanan, K., Estrella, G., Nussbaum, M., & Claro, S. (2010). From handheld collaborative tool to effective classroom module: Embedding CSCL in a broader design framework. *Computers & Education, 55*, 1018-1026.

Roulston, K. (2010). *Reflective Interviewing: a Guide to Theory and Practice*. London: SAGE Publications Ltd

Runions, K. C., & Bak, M. (2015). Online Moral Disengagement, Cyberbullying, and Cyber-Aggression. *Cyberpsychology, Behaviour and Social Networking, 18*(7).

Rusmann, E., Bruggen, J., Sloep, P., & Koper, R. (2010). Fostering trust in virtual project teams: Towards a design framework grounded in a Trust Worthiness Antecedents (TWAN) schema. *International Journal of Human-Computer Studies, 68*, 834-850.

Ryan, J. (2010). Week Two Outline. In: Department of Education Monash University.

Sari, S. V. (2016). Was it just joke? Cyberbullying perpetrations and their styles of humor. *Computers in Human Behavior, 54*, 555-559.

Schalkwijk, F., Stams, G. J., Stegge, H., Dekker, J., & Peen, J. (2016). The Conscience as a Regulatory Function: Empathy, Shame, Pride, Guilt, and Moral Orientation in Delinquent Adolescents. *International Journal of Offender Therapy and Comparative Criminology, 60*(6), 675–693.

Schramme, T. (2017). Empathy and Altruism. In H. Maibom (Ed.), *The Routledge Handbook of Philosophy of Empathy*. Florence, UNKNOWN: Taylor and Francis.

Schumann, S., Klein, O., Douglas, K., & Hewstone, M. (2017). When is computer-mediated intergroup contact most promising? Examining the effect of out-group members' anonymity on prejudice. *Computers in Human Behavior, 77*, 198 - 210.

Seising, R. (2010). Cybernetics, system(s) theory, information theory and Fuzzy Sets and Systems in the 1950s and 1960s. *Information Sciences, 180* (23), 4459-4476.

Selwyn, N. (2012). Making sense of young people, education and digital technology: the role of sociological theory. *Oxford Review of Education, 33*(1), 81–96.

Selwyn, N., Bulfin, S. N. S., & Johnson, N. F. (2018). *Everyday Schooling in the Digital Age High School, High Tech?* : Routledge.
Sharon, T. (2017). Towards a Phenomenology of Technologically Mediated Moral Change: Or, What Could Mark Zuckerberg Learn from Caregivers in the Southern Netherlands? *Foundations of Sceince, 22*(2), 425–428.
Shrader-Frechette, K., & Westra, L. (1997). Overview: Ethical Studies about Technology. In K. S.-F. L. Westra (Ed.), *Technology and Values* (pp. 3 - 10). United States of America: Rowman & Littlefield Publishers INC.
Sikka, T. (2012). A critical theory of technology applied to the public discussion of geoengineering. *Technology in Society, 34*(2), 109-117.
Sipos, Y., Battisti, B., & Grimm, K. (2008). Achieving transformative sustainability learning: engaging head, hands and heart. *International Journal of Sustainability in Higher Education, 2008, 9*(1), 68-86.
Spafford, E. H. (1992). Are Computer Hacker Break-ins Ethical? *Journal of Systems and Software, 17*(1), 41-47.
Stahl, B. C. (2004). Information, Ethics, and Computers: The Problem of Autonomous Moral Agents. *Minds and Machines, 14*(1), 67-83.
Starks, S. (2016). *Moral Values in Moral Psychology? A Textual Analysis.* (Doctor of Physisophy), Brigham Young University An Harbor, Michigan. (10179168)
Steenbeek, H., & Geert, P. v. (2008). An empirical validation of a dynamic systems model of interaction: do children of different sociometric statuses differ in their dyadic play? *Developmental Science, 11*(2), 253-281.
Strassberg, D. S., Cann, D., & Velarde, V. (2017). Sexting by High School Students. *Archives of Sexual Behavior, 46*(6), 1667–1672.
Straussfogel, D., & Schilling, C. V. (2009). *Systems Theory*. Minneapolis, MN, USA: Elsevier Ltd.
Street, J., Palmer, N., & Braunack-Mayer, A. (2012). *Technology, Ethics of: Overview*: Elsevier Inc.
Symons, K., Ponnet, K., Walrave, M., & Heirman, W. (2017). A qualitative study into parental mediation of adolescents' internet use. *Computers in Human Behavior, 73*, 423-432.
Taherdoost, H., Sahibuddin, S., Namayandeh, M., & Jalaliyoon, N. (2011). Propose an educational plan for computer ethics and information security *Procedia - Social and Behavioral Sciences, 28*, 815-819.
Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007). Moral Emotions and Moral Behavior. *Annual Review of Psychology, 58*, 345-372.
Tatone, J. (2016). *Integrating contemplative learning into new media literacy: Heightening self-awareness and critical consciousness for enriched relationships with and within new media ecologies.* (Masters), University of Oregon, Ann Arbor, MI. (10142284)
Tavani, H. T. (2001). The state of computer ethics as a philosophical field of inquiry: Some contemporary perspectives, future projections, and current resources. *Ethics and Information Technology, 3*(2), 97-108.
Tavani, H. T. (2002). Appying an Interdiciplinary Approach to Teaching Computer Ethics. *IEEE Technology and Society Magazine, 21*(3), 32-38.
Tavani, H. T. (2004). Balancing intelectual property rights and the intelectual commons: A lockean analysis. *Journal of Information, Communication and Ethics in Society, 2*(2), S5 - S14.
Thomas, D. R. (2003). A general inductive approach for qualitative data analysis. Retrieved from University of Auckland, Faculty of Medical and Health Sciences website: http://www.fmhs.auckland.ac.nz/soph/centres/hrmas/_docs/Inductive2003.pdf
Thompson, L. (2010). The Global Moral Compass for Business Leaders. *Journal of Business Ethics, 93*(1), 15-32.
Tillquist, J. (2002). Rules of the game: constructing norms of influence, subordination and constraint in IT planning. *Information and Organization, 1*(12), 39-70.

Topsfield, J. (2010). Fear keeps schools from social media. *The Age.* Retrieved from http://www.theage.com.au/victoria/fear-keeps-schools-from-social-media-20100723-10owx.html

Uschold, M., & Grunninger, M. (1996). Ontology: Principles, Methods and Applications. *Knowledge Engineering Review, 11*(2), 93-136.

Valkenburg, P. M., Koutamanis, M., & Vossen, H. G. M. (2017). The concurrent and longitudinal relationships between adolescents' use of social network sites and their social self-esteem. *Computers in Human Behavior, 76*, 35-41.

Van Den Hoven, J. (1994). Towards Ethical Principles for Desighning Politico-Administrative Information Systems. *Information in the Public Sector, 3*(2), 353-373.

Van Den Hoven, J. (1999). Privacy and the Varieties of Informational Wrongdoing. *Australian Journal of Professional and Applied Ethics, 1*(1), 30-44.

Van Den Hoven, J. (2010). *The use of normative theories in computer ethics*. New York: Cambridge University Press.

Van Den Hoven, J., Vermaas, P. E., & Poel, I. v. d. (2015). Design for Values: An Introduction. In J. v. d. Hoven, P. E. Vermaas, & I. v. d. Poel (Eds.), *Handbook of Ethics, Values, and Technological Design - Sources, Theory, Values and Application Domains* (pp. 1-7). Heidelberg, New York, London: Dordrecht : SpringerReference

VCAA. (2016). Victorian Curriculum - Ethical Capabilities. Retrieved from http://victoriancurriculum.vcaa.vic.edu.au/ethical-capability/curriculum/f-10#level=9-10&search=a8e87400-d53c-46f1-b18a-d49a6e35bb50

Vera-Estay, E., Dooley, J. J., & Beauchamp, M. H. (2015). Cognitive underpinnings of moral reasoning in adolescence: The contribution of executive functions. *Journal of Moral Education, 44*(1), 17-33.

Versenyi, L. (1974). Can Robots be Moral? *Ethics, 84*(3), 248-259.

Vickery, J. R. (2012). *Worth the Risk: The Role of Regulations and Norms in Shaping Teens' Digital Media Practices.* (Doctor of Philosophy), The University of Texas, Austin.

Volkman, R. (2015). Computer ethics beyond mere compliance. *Journal of Information, Communication and Ethics in Society, 13*(3/4), 176-189.

Vossen, H. G. M., Piotrowski, J. T., & Valkenburg, P. M. (2015). Development of the Adolescent Measure of Empathy and Sympathy (AMES). . *Personality and Individual Differences, 4*, 66-71.

Wang, X., Yang, L., Yang, J., Wang, P., & Le, L. (2017). Trait anger and cyberbullying among young adults: A moderated mediation model of moral disengagement and moral identity. *Computers in Human Behavior, 73*, 519-526.

Warburton, N. (2004). *Philosophy - The Basics Fourth Edition*. New York, NY: Routledge.

Watson, M. (2014). Developmental Dicipline and Moral Education. In L. P. Nucci, D. Narváez, & T. Krettenauer (Eds.), *Handbook of moral and character education*. New York, NY Routledge.

Weber, R. P. (1990). *Basic content analysis*. Newbury Park, California: Sage Publications.

Weckert, J. (2000). What is so bad about Internet content regulation? *Ethics and Information Technology, 2*(2), 105-111.

Weckert, J. (2007). *Computer Ethics*. Aldershot: Ashgate Publishing Limited.

Weckert, J., & Miller, S. (2000). Privacy, the Workplace and the Internet. *Journal of Business Ethics, 28*(3), 255-265.

Wee, J., Jang, S., Lee, J., & Jang, W. (2017). The influence of depression and personality on social networking. *Computers in Human Behavior, 74*, 45-52.

Weiner, N. (1960). Some Moral and Technical Consequences of Automisation. *Science, 131*(3410), 1355-1358.

Weldon, P. (2011). Sexting. *The National Education Magazine,* 56-59.

Wellman, B., Quan-Haase, A., Boase, J., & Chen, W. (2003). The Social Affordances of the Internet for Networked Individualism. *Jounal of Computer-Aided Communication, 8*(3).

Wiener, N. (1961). *Cybernetics: Or Control and Communication in the Animal and the Machine*. Cambridge, MA: MIT Press. John Wiley & Sons Inc.
Wiggins, G., & McTighe, J. (2006). *Understanding by Design*. New Jersey: Person Merill Prentice Hall.
Willner, D. (2009). Managing your digital footprint *Talent Development, 63*(6), 84(82).
Winner, L. (1980). Do Artefacts have Politics? *Daedalus, 109*(16), 121.
Winner, L. (1997). Frankenstein's Problem: Autonomous Technology. In K. S.-F. L. Westra (Ed.), *Technology and Values* (pp. 133 - 166). United States of America: Rowman & Littlefield Publishers INC.
Winter, J. d., & Vie, S. (2008). Press Enter to "Say": Using Second Life to Teach Critical Media Literacy. *Computers and Composition, 25*(3), 313-322.
Wong, E. Y. W. (1995). How should we teach computer ethic? A short study done in Hong Kong. *Computers Education, 25*(4), 179-191.
Wong, L.-H., Boticki, I., Sun, J., & Looi, C.-K. (2011). Improving the scaffolds of a mobile-assisted Chinese character forming game via a design-based research cycle. *Computers in Human Behavior, 27*, 1783–1793.
Wren, T. (2014). Philosophical Moorings. In L. P. Nucci, D. Narváez, & T. Krettenauer (Eds.), *Handbook of moral and character education*. New York, NY Routledge.
Wrzesien, M., & Rayaa, M. A. (2010). Learning in serious virtual worlds: Evaluation of learning effectiveness and appeal to students in the E-Junior project *Computers & Education, 55*(1), 178-187.
Xie, Y., & Sharma, P. (2011). Exploring evidence of reflective thinking in student artifacts of blogging-mapping tool: a design-based research approach. *Instructional Science: An International Journal of the Learning Sciences, 39*(5), 695-719.
Yoon, C. (2011). Ethical decision-making in the Internet context: Development and test of an initial model based on moral philosophy. *Computers in Human Behavior, 27*(6), 2401-2409.
Zajácz, R. (2013). WikiLeaks and the problem of anonymity: A network control perspective. *Media, Culture & Society, 35*(4), 489-505.
Zink, R. (Producer). (2010). Embarking on Research.