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Examining the Relationship between Educational Technology and Morality: A Case Study of an American Catholic Middle School

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by

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ABSTRACT

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The growing interest in educational technology is matched by a corresponding increase in concern about its effects on children and adolescents. With demand for implementing technology on one hand, and the moral consequences that could result from it on the other hand, integrating a one-to-one computing program (1:1 program) in Catholic schools remains a subject in need of more thorough study. This study sought to examine the various advantages, challenges, and ethical questions related to implementing the 1:1 program in a Catholic middle school. While several studies demonstrate the positive impact of 1:1 program on students' engagement and academic achievement, this study examines the pros and cons of the 1:1 program for the teachers and students, as well as its possible relationship with the students' moral virtues, which constitute their moral intelligence. In order to examine the integration of 1:1 program and its intersection with morality, a variety of methods were used to collect data, including a survey (quantitative approach), document analysis, classroom observations, and interviews (qualitative approach). In short, this study contributes to a better understanding of how the 1:1 program has been implemented in a Catholic middle school, his advantages and disadvantages for teachers and students, to what extent Catholic leaders are navigating educational technology with morality, and of any possible correlation between students' use of digital devices and their moral growth. *Keywords*: Educational technology, 1:1 program, moral intelligence, Catholic

CHAPTER 1

INTRODUCTION

In today's complex society, digital or cybertechnology is playing such a tremendous role in pedagogy, that the system of education as a whole is undergoing profound changes in order to respond, cope, and to even adjust (Fullan, 2001, 2016; Salomon, 2000). Over the last few years, there has been a rapid growth in computer use in education, or what is otherwise known as educational technology (ET) or screen-based technology. Across the globe, various nations have made huge steps in integrating technology into their educational system. For instance, statistics in the United States have revealed that by 2007, nearly 25% of the school districts in the United States have implemented some form of a one-to-one (1:1) computing (Holcomb , 2009), and that in 2011, "92.3% of secondary students and 85% of adult students used computers in their studies" (Behnke & Greenan, 2011, p. 62). Moreover, Herold (2016) stated that schools have purchased more than 23 million devices for classroom-use only during the years of 2013 and 2014. However, even though many schools and districts are now rushing to buy every student a digital device, several intellectuals are concerned about the potential outcomes of this integration. For example, Uhls et al. (2014) indicated the possible effects of digital media on children's social development by stating that "computers and mobile tablets are rapidly entering classrooms and being put in the hands of every child, beginning as early as kindergarten without sufficient attention to the potential costs" (p. 392). Others, like November (2013), complained that most 1:1 implementation strategies are doomed to waste the schools' resources (e.g., dollars and time), because they are putting enormous focus on the device itself, as well as the

enhancement of the network, and training teachers to use the technology with either limited or zero vision, concerning the learning experience. November explained, “Too many schools are in ‘spray and pray’ mode with one-to-one computing: ‘Spray’ on the technology, and then ‘pray’ that you get an increase in learning” (2013, p. 1).

Catholic schooling is now more than ever concerned with technology changes because many scholars like Dosen and Gibbs (2012) emphasize in their writings that, in this century, Catholic school leaders have to be “technologically savvy.” Actually, the Catholic Church used to consider technological change as a definition of progress (Heidebrecht, 2014), and according to Graham (2012), it appears to be so enthusiastic about “this remarkable technology,” that in its Catholic Social Teaching (CST), it is obligatory for Church leaders to “use the full potential of the ‘computer age' in their ministerial work in order to serve the human and transcendent vocation of every person and thus to give glory to the Father from whom all good things come” (Foley, 2002, § 11). In fact, science and technology are well thought-out by the CST, as the “wonderful product of God-given human creativity,” since they have provided human beings with wonderful possibilities to benefit from them (Catholic Church: Pontifical Council for Justice and Peace, 2004). While the CST, among many others, consider technology as a sign of progress and just a mere tool, which is morally and politically “neutral,” critical theorists like Horkheimer, Adorno, Feenberg, Kellner, and Best, hold that science and technology—or what they call “technoscience”—is not neutral with respect to human values, but rather creates and bears value. In effect, as adherents to what is known as Critical Social Theory, they argue that the tools which people use, shape the ways of life in societies where technoscience has become pervasive. This perspective was actually echoed recently in the Catholic sphere first by Pope

Francis who, in his latest encyclical letter "'*Laudato si'*: On care for our common home" (2015), made a revolution vis-a-vis the Church's teaching about technology by asserting that "we have to accept that technological products are not neutral" (§107). In fact, far from being a Luddite, Pope Francis does think that technological products "create a framework which ends up conditioning lifestyles and shaping social possibilities along the lines dictated by the interests of certain powerful groups" (Reese, 2015). Add to this, Catholic scholars like Jim Caccamo (2015) and Joshua Hochschild (2015) argued that the structures of technology influence the way we live, irrespective of the particular uses to which we put a given technology, and that technology might obscure moral agency and make us "dumber about moral language" (Hochschild, 2015).

Consequently, we could rightly echo Fullan (2016) by saying that "technology and digital media are exploding, bringing much controversy and opportunity" (preface), and henceforward, we could conclude with Graham (2012) that technology is inaugurating a strange era, in which "fundamental anthropological questions will not only be unavoidable, but also vexing" (p.9).

Statement of the Problem

In line with the critical theorists of technology, and after having a particular fancy for technology, psychology, ethics, and for social justice, I have been concerned about the topic of integrating technology in education, especially through what is known as the 1:1 program, and its impact on the mission and role of the Catholic education. As a leader for social justice, I find myself fighting for a constructivist, holistic approach to education, which takes into account the needs of the whole student; hence going beyond the academic and meritocratic assessment of the students' cognitive skills, to include their moral development too. As a Lebanese Catholic priest, I am surprised by the concerns, resistance, and lackluster approach to educational technology and

to digital learning, expressed by a few educational leaders in Lebanon, and that's not just due to a lack of resources—which obviously plays a tremendous role in lot of schools in Lebanon—but also due to a reluctant fear of cultural or even ethical transformation. Some educational as well as religious leaders are still actually afraid of a loss of values caused by integrating technology in schools; I remember a school leader telling me: "Technology is not a pedagogical tool at all; it's a blind instrument which—if we allow it to teach our kids—, will undoubtedly make us lose them because it would be like 'the blind leading the blind' —as Jesus says in Matthew 15:14 (New American Bible Version)." Effectively, I agree with him that technology by itself is "blind", but I believe that putting it aside, or just outside the educational setting is like putting a "blinker" that obstructs oneself from discerning the real effects and benefits of technology in education. Consequently, I have felt the need to engage myself in seeking a critical understanding of the implementation of digital technology in the classroom, and to conduct a study, which addresses the relationship of integrating digital learning, to what Freire (1998) called the students' educational "liberation." In fact, after carefully pondering the matter, we discover that albeit its importance, integrating technology in Catholic schools remains a subject which demands more thorough studies, presents several challenges or "barriers" to overcome, and poses multiple ethical questions.

The current study tries henceforward to discover if the use of digital screen-based technology really constitutes a mere tool, considered as morally neutral, or something more than that, and thus to lift the veil on one of the multiple costs of integrating digital learning in schools, which is the students' moral intelligence development, especially in a Catholic setting where morality—not only academic achievement—is primordial (Cook, 2013). In effect, given the fact

that there is no consensus in literature about the impact of the 1:1 program on student learning, and since most of the literature, which considers the relation between educational technology and ethics, remains either very scarce, difficult to find, or just relates to the policies, rules, and Code of Ethics that govern the ethical use of computers by educators and students (Dosen & Gibbs, 2012; Hunt & Papalewis, 1989; Novick, 1984; Ohler, 2010; Ribble, 2014; Shea, 2011), there is a need to examine the relationship between technology and morality. And since there is an obvious need in the Catholic literature to surpass the traditional "ethic of use" and to consider digital technology as more than a value-neutral pedagogical tool, a study that strives to understand the relationship of the "lopsided" use of screen-based technology by students, and their moral development, is much needed for a Catholic education that plumes itself on being holistic [emphasis added], driven by moral and ethical values, and intending to form the whole person (Cook, 2013). Finally, this study is needed, especially because research conducted by Chung, Bebeau, You, and Thoma (2009) revealed a recent decrease in moral postconventional reasoning (Kohlberg's (1969) stages 5 and 6) among U.S. college students (Narváez, 2010). As technology continues to be present in today's educational system, there is a clear need to examine its relationship with morality.

Research Questions

The purpose of this study is to describe how technology is being implemented in the teaching-learning process in a Catholic middle school, and to investigate whether there is any relationship with the students' morality. The study was guided by the following research questions (RQs):

1. How has the 1:1 program been implemented in a Los Angeles (LA) Catholic middle school?
    a. How do Catholic educators (leaders and faculty) perceive its implications on the school's mission, on the teachers' teaching, and on the students' learning?
    b. How are Catholic educators integrating such an educational technology program, in order to establish a climate supportive of the moral development of adolescents?
2. How do middle school students use and perceive educational technology?
    a. Is there any connection between educational technology and students' moral virtues?

In this study, the variable of *educational technology* was conceptualized as the 1:1 program currently being implemented in the Catholic school setting where the study occurred, and entailed any use of technology (i.e., devices, screens, etc.) regarding the in-class teaching and learning educational process. The variables *moral development* and *moral virtues* are used interchangeably in this study, conceptualized through the work of Borba (2001), Lennick and Kiel (2007), and Tanner and Christen (2014), as moral intelligence. Moral intelligence refers to the dispositional capacity to understand right from wrong, to process moral information, and to manage self-regulation, in order to act according to the value that is believed to be right. As defined, moral intelligence aligns to virtue ethics and Catholic teaching. Finally, the middle school grades are defined as sixth to eighth grade and were selected for this study, because the moral capacity is believed to be stronger and more revealing at this age, especially since the

moral thinking of teenagers is considered more personalized and focused on universal values rather than on self-interest (James, 2014; Narváez, 2010; Supavai, 2014).

Purpose of the Study

The goal of this study was twofold. Firstly, I wanted to investigate how the 1:1 program was implemented in a Catholic middle school setting, in order to understand how teaching and learning practices were impacted by digital devices. Secondly, I wanted to gain a better comprehension of how Catholic schools were negotiating the issue of implementing technology in their schools, along with morality, in order to explore any possible relationship between the use of technology in the classroom, and the growth of the students' moral intelligence. As such, this study sought three interrelated goals. Firstly, it aimed to shed light on the most widespread, dramatic, and costly educational initiatives in the American Catholic classrooms; that is, the educational technology programs. Secondly, this study focused on the evaluation of the one-to-one computing phenomenon, which is "vitally important" for many reasons according to Lei, Conway, and Zhao (2008). Thirdly, it worked toward providing an answer concerning the moral value of digital technology, a concern that was recently expressed by Pope Francis as well as by a few other scholars like Caccamo (2015), Carr (2011), Feenberg (2005), and Hochschild (2015), and also felt by a few educational leaders in Lebanon.

Significance of the Study

A review of literature on the relationship between technology and students' moral intelligence (MI), indicates a need for conducting research in this field, to fill in the gap. In fact, research on the relationship between technology and morality is still at a very early stage and remains scarce (Behnke & Greenan, 2011; Haugen, LaBarre, & Melrose, 2001), in

comparison with the fast and wide range of the screen-based technology's implementation, especially in Catholic schools. In effect, a large part of the current literature on the 1:1 programs, tends to be focused primarily on its academic effects; while its impact on moral skills, which are traits essential for human integrity, are nonetheless limited, or even "neglected," as noticed by Johnson and Rubin (2011).

On the other hand, while some of the research concluded that the effect of technology on the student learning is of "high quality;" others remain either suspicious or just descriptive (Burns, 2012). This is why a study, focusing on the relationship between the students' use of technology and their MI, is much needed especially after taking into account, a holistic and progressive approach of students' success, that liberates them from being just users [emphasis added], or even objects with cognitive skills. Second, the wide range of results for the 1:1 programs, and the diversity of the goals as well as the teaching methods associated to digital technology, and even the theoretical background and biases of researchers toward this field (limitations of qualitative studies), reflect the absence of consent and the difficulty in the overall evaluation of the benefits or weaknesses presented by the 1:1 programs, based on the current literature. This leads to the need for more studies on this topic, in order to establish the real impact that technology presents on the students' academic achievement. Moreover, the fact that students now have their own devices, influences the way they learn and interact, beyond the school setting, which is a critical part of the child's development (Lei, Conway, & Zhao, 2008). Therefore, the following question arises: What would the impact of 1:1 program have on students' development, beyond their academic achievement? For example, the students' moral intelligence actually constitutes an ability, which may not be as easy to

notice/observe, as it would be for the students' attendance or engagement, for example; yet, in the long run, MI is more revealing about the future success of a child, within and beyond the setting of the classroom, or even the school. For instance, trying to examine any correlation that might exist between technology and the learners' MI has further impact on the personal student's success and on the systemic evolution of schooling in the long run (Borba, 2001; Lennick & Kiel, 2007; Clarken, 2010). This idea is dear to the Catholic leader who is aware that the Mission of Catholic education is all-encompassing and goes beyond the limits of the classroom, as beautifully stated by Cook (2013): "It would seem that what goes on outside the classroom is as important as what goes on inside the classroom" (p. 137).

And the third reason lying behind this study, is the fact that there is an obvious need in Catholic literature, to consider educational technology, from a critical perspective, as more than a value-neutral pedagogical tool, and hence to broaden the theological perception of technology, while studying its impact on students' development. Therefore, from a critical point of view, widening the ethical perspective of the use of technology from an individualistic "ethic of use," based on local actions and reactions, to a global, systemic "ethic of virtuosity," based on universal aspects of human character, would be recommended and even seems to be crucial, liberative, and necessary for a true humanization based on social and moral justices, as well as on Catholic theology. In effect, the main goal of the Catholic schooling system, is not merely to educate the students to acquire learning skills that enable them to locate information, process it, and present new knowledge, as suggested by Spektor-Levy, Eylon, and Scherz (2009), nor even to prepare them for college and the business world, but to help them grow emotionally and morally, and consequently acquire the necessary moral

habits or "virtues," for a healthy Catholic life, and hence sanctity. Finally, contemplating the research on the relationship between the learners' use of technology and their MI may be challenging due to the limited number of references found on this subject. But we cannot deny the fact that it remains an indispensable step to make in the path toward progress in education in general, and especially for an effective Catholic school leader. This step will provide a new paradigm for Catholic school principals to reflect upon a unified vision over technology, with a better *conscientizaçio* or or *conscientization* of the different costs of implementing digital technology in classrooms. An advanced and optimal teaching and learning environment will hence be offered to both students and teachers. Caccamo (2015) expressed this idea very well through these words:

> If we are to say—as (Pope) Francis very much did—that technology is to be celebrated, we need to understand exactly why we are celebrating it, and why we might hold off on celebrating at times. . . . Including the nature of our technologies and their complex relationships with society makes the job of assessing technology more complex. But it will also yield a more full understanding of what it means to use technology in a more human way. (Caccamo, 2015, §14)

Theoretical Framework

The current study examined the relationship between technology and morality and will apply psychological, moral, and philosophical traditions of culture and ethics, in order to understand the contemporary challenges that our technological society presents in the school setting. In other words, the theoretical background for this study was constructed upon the interdisciplinary fields of moral psychology, critical theory of technology, and Catholic

morality. The concept of moral intelligence (MI) is effectively derived from a neuro-psychological theory that divides the concept of intelligence into different modalities, instead of conceiving intelligence as a single general trait or ability. This theory is known by the theory of multiple intelligences. MI is also founded on one of the ethical philosophical theories which came back into the realm of Catholic teaching after Vatican II, known by Virtue Ethics (VE) theory.

In short, the conceptual framework of my study brought the lenses of the critical theory of the Frankfurt school, as well as the Catholic moral teaching, into dialogue with Gardner's (1983) theory of multiple intelligences and the VE moral theory, in order to present a Catholic teaching that is critically canalized toward more values of social justice. Thus, I would call this conceptual framework the "Critical Catholic Moral Theory of Technology."

Critical Theory of Technology (CTT)

Due to its association with the Institute for Social Research, which was founded at the University of Frankfurt, Germany, in 1923, critical theory emerged from what is commonly known now as the Frankfurt School. Critical theory is not so much a particular theory as a tradition of thought. The critical theory goes beyond description to examine why things have come to be that way, and how they might otherwise be. In other words, this theory constitutes an effort to criticize, rethink, and reform the mainstream political and intellectual views. It asks whose interests are being served by the status quo, by promoting human liberation, and consequently, by attempting to expose domination and oppression, in their many forms, to better serve social justice. The extent to which science and technology may be associated with domination and oppression has been a major theme of critical theory, which considers

technocracy as perpetuating the elite power structures inherited from the past, and mutilating not just human beings and nature, but also technology as well. Perhaps the most developed contemporary critical theory of technology (CTT) is contained in the works of Andrew Feenberg, who offered a platform for reconciling conflicting strands of reflection on technology, through a synthesis of theoretical and empirical approaches. Feenberg (2005) argued in his overview of CTT, that a different power structure would innovate a different technology, with different consequences. Moreover, he refused the notion of the neutrality of technology, claiming that "there is no such thing as technology as such," but that the existing technology has favored specific ends and obstructed others. He added "Today we employ this specific technology with limitations that are due not only to the state of our knowledge but also to the power structures that bias this knowledge and its applications" (p. 54). Along the same lines, key thinkers like Nissenbaum (2001), asked about the place for values related to democracy and social justice, in designing and developing technological information; a question that goes beyond the technical standards of speed and efficiency. In few words, Feenberg (2005) alerted us that technology "bites back," by shaping two main human positions where some manage, while others are managed, and by generating a wealth of new ethical "values" that could be analyzed in terms of the "instrumentalization theory." In fact, Feenberg (1991) has rightly claimed that computers simplify a person into a detached, decontextualized "user," stripped of body and community, in order to incorporate him or her into the network, as a rational consumer called to exercise choice. Henceforth, according to the members of the Frankfurt School (adepts of Critical Theory of Technology), the way individuals do things determines who and what they are, and the "apparently neutral"

technological development could often hide oppressive or repressive interests and/or could implicitly transform what it is to be human.

Virtue Ethics

Having taken Aristotle (2006) in his famous work *Nicomachean Ethics,* as a source of inspiration, virtue ethics (VE) is a virtue-based ethical system that refers to all the ethical theories that emphasize the role of character and virtue in the moral philosophy. This clashes with Mill's "utilitarianist" (or consequentialist) and Kant's "deontological" action-based theories of morality, which both underscored only the actions performed by a person, relied on rigid rules of morality, and focused on obligations and duties. As opposed to "oppressing" people with norms and duties to follow, virtue-based ethical theories focus, in Austin Cline's (2016) words, on helping people develop good character traits, essential for a good praxis and for a real transformation in the society. In fact, VE's adherents have attempted to determine which virtues ought to be cultivated, both by individuals and by communities, in order to achieve this ultimate goal of human life; namely the union with God. According to recent researchers, VE along with pragmatism, may "offer more psychologically veridical views of moral development than other theories" (Narváez, 2010, p. 11). While VE has been overlooked for a long time in moral philosophy, the works of writers like Anscombe (1958) and MacIntyre (1985), who called for a reformative approach in modern moral philosophy, have put VE again in the list of popular theories in moral psychology, as an important contributor to a new understanding of morality, centered on the role played by emotions and motivations in moral questions. Finally, VE considers education as indispensable for the development of moral character and thus contributing to the integrity of the human being,

since virtues are the fruit of a real consciousness that is developed through critical pedagogy (Freire, 1998). Considered as holistic and character-centered, the VE theory provides a terrain where social justice and critical ethics could flourish.

Catholic Moral Teaching. According to Berry (1999), the Roman Catholic moral theology has been englobing since the Vatican II Council, three main moral approaches, namely; the "deontological" (represented by theologians like Germain Grisez, 1996), the "revisionism" or "proportionalism" (with moralists like Richard McCormick, 1989), and the VE approach which has been also adopted by modern Catholic moral theologians like Keenan (1995), for whom the moral character matters more than actions and the ultimate goal of life in the union with God. As such, VE is aligned with the Catholic moral teaching, and is considered as an appropriate framework for studying morality within the Catholic school setting. In fact, the educational approach of VE—according to whom virtues are developed through education, and moral education is indispensable for the development of the moral character—harmonizes perfectly with the Catholic teaching that states the following: "The moral virtues grow through education, deliberate acts, and perseverance in struggle" (Catholic Church, 1994, #1839). In addition, while VE was criticized as being relativistic, in a sense that it did not offer clear guidance on which values were to be considered virtues, implementing VE into Catholic ethics resolves this issue, since the range of virtues in the Catholic sphere is determined and clear.

Moral Development Theory (MDT)

Belonging to the field of developmental psychology, the moral development theory (MDT) was in Supavai's (2014) words, a theory that explains how people morally develop

and why an adult often finds his or her moral judgment, at a younger age, to be inadequate. This theory focuses actually on the process of growth in moral judgment, which “develops in accordance with various social experiences and his or her cognitive maturity at a particular point in time” (Supavai, 2014, p. 103). According to MDT, "moral judgment develops through a series of cognitive reorganizations, called stages" (Duska & Whelan, 1975, p. 5). These influential stages of moral development were introduced actually for the first time by Lawrence Kohlberg, in his famous stage theory of moral judgment, where he distinguishes six stages of moral development distributed into three main levels, namely; the preconventional, the conventional, and the postconventional (Rest & Narváez, 1994; Supavai, 2014; Vozzola, 2014). The Kohlbergian stages were afterwards transformed into components, and then into schemas with Rest and Narváez (1994) Neo-Kohlbergian approach to moral thinking (Vozzola, 2014). Inspired by the precepts of MDT, Tanner and Christen (2014) built the concept of moral intelligence (MI), as a framework for understanding moral competencies. MI asserts a personal desire to strive for moral goals and to have the moral motivation in order to do what is good for others and for society.

Research Design and Methodology

In order to discover how a 1:1 technology program is being implemented in a Catholic school setting and to examine whether there is any correlation between the use of technology by students in a 1:1 context, and their moral intelligence, a descriptive case study approach with data from mixed methods of investigation was implemented. The study occurred in fact, in a Catholic school setting in the Archdiocese of Los Angeles, California. The study involved (1) interviews with the principal, some faculty members, and the middle school teachers, (2)

classroom observations, (3) document analysis, and (4) a student survey. Faculty members and teachers were interviewed to determine their attitudes toward technology and their views of how technology may be impacting the moral growth of the students. A survey was also presented as well to students, in order to assess their use of technology devices and their moral virtues.

Context

The context of the current study was delimited to the largest system of private schools in the United States, according to McDonald and Schultz (2013), namely; the schools run by the Roman Catholic Church. More specifically, this study dealt with the Catholic schooling system in the Archdiocese of Los Angeles.

Types of Catholic schools in USA. According to McLaughlin and Broughman (1997), Catholic schools in the United States could be distributed into the following three main types: (1) the parochial schools, which are associated with particular parishes; (2) the diocesan schools, which are associated with the diocese or archdiocese to which they belong; and (3) the private order schools, which are associated with specific groups within the Catholic Church, such as the Jesuit, Dominican, Carmelite, and Marianist Orders. The setting for this study was a parochial Catholic school.

History of Catholic schools in USA. Among the oldest educational institutions in the US, Catholic schools are distinctly American, and sometimes actively engaged with the world. At other times, they are strongly reacting against it, with a system that "has had no parallel in Europe or, for that matter, anywhere in the world" (Bryk, Lee, & Holland, 1993, p. 15). While Catholic schools might have been viewed as isolated, or racially or religiously segregated in the 1950s, they are nowadays much more inclusive and mostly coeducational, educating a broad

section of students, from all racial, religious and sexual backgrounds. Several distinctive characteristics, common to Catholic schools, could be identified and directly linked to the culture and tradition of the school, for example, the "delimited academic curriculum with a proactive view of what students can and should learn" or the "conception of the school as a community where daily life educates in profound ways" (Bryk et al., 1993, p. 16). According to the same authors, the history of Catholic schools in the United States could be divided into three main periods, the third of which goes from 1960 to the present, creating the "Catholic moment" during which "Catholic social ethics have become a vibrant voice on the national scene" (p. 17). In fact, during the colonial era and forward, religious education used to play a pivotal role in Catholic elementary schools and the separation between the Catholic and public educational systems remained blurry until the twentieth century. After all, the "full intellectual, social, and moral development of all citizens" are indispensable for a humanistic education and "an effective democracy" (Bryk et al., 1993, p. 24). The aforementioned authors argued also that education in America was broadly viewed in the mid-nineteenth century as a moral enterprise where "moral education was the bedrock of schooling" (p. 24). The rise of the Catholic schooling system, as a separate educational system, was forced upon Catholics by a "hostile 'public' system under Protestant control," and by a concern about the formation of the moral character in the absence of proper schooling. At the center of the philosophy of Catholic education, was from that moment forward, the development of the students' morality in addition to their ability to reason, as well as their social mobility. This would make Catholic schools "put the college-preparatory curriculum first, with life studies offerings becoming ancillary" (Bryk et al., 1993, p. 31).

The decline of religious vocations led to the increase of laity in Catholic schools, and consequently, to rising financial problems and a decline in enrollment, or even shutting down many Catholic schools. While the Catholic Church took a defensive and repressive stance toward modernity, progress, and liberalism at the Vatican I Council (1869–1870), the Neoscholasticism encouraged by Pope Leo XIII opened up the Catholic position on social and personal morality and led to a certain rapprochement with modernity. Then came the Vatican II Council (1962-1965), which rejected all forms of distrust existing towards modernity, and recognized the vital role of science and technology, in moving the Church into the future. The embrace of pluralism by the Vatican II Council has conferred the task of renewing the American Catholic schooling on the National Conference of Catholic Bishops (NCCB) who, in Bryk et al.'s (1993) words, directed the goal of Catholic education to "forming persons-in-community" where critical thinking about man, society, and the ultimate purpose of human existence plays a central role in discovering ethical truth and in illuminating "important moral questions particularly salient for adolescents" (p. 53-54).

From the second quarter of the twentieth century forward, the ideas and the work of the educational philosopher Jacques Maritain "represent a significant background to Catholic schooling" in the US (Bryk et al., 1993, p. 37). According to Maritain, a human being is a "person-in-society" who seeks the "common good", through two main social virtues, namely; love and wisdom. Moreover, the "Maritainian" philosopher had the right and the duty to judge, and to stand on various problems of practical concern. Henceforward, inspired by Maritain's philosophy of education, Catholic schools would be best described as institutions of common good, whose mission is to "form in every citizen those basic intellectual, moral, social, and

political dispositions necessary to sustain a free society" (p. 38), and to keep a critical and prudent perspective vis-a-vis the emergent technologies which, despite the enormous significance they could offer from a pragmatic standpoint, would not necessarily benefit the human community on the long run. In other words, Maritain called for a liberal humanistic education, aiming to develop in people, the wisdom and the capacity to think correctly. This way of thinking does not necessarily mean thinking in a new way, because as Hunt, Joseph, and Nuzzi (2001) stated, progress is hindered by "undue confidence in novelty for novelty's sake and by mistaken conceptions of progress" (p. 47).

Pushing forward, according to Bryk et al. (1993), the main academic purpose of Catholic schools in the United States, resides in "developing each student's intellectual capacities to ascertain such (ethical) truth and honing a critical disposition in pursuing it" (p. 54). In fact, in his encyclical *The Christian Education of Youth*, Pope Pius XI (1929) stated that the main goal of Catholic education should be always, the pursuit of "man's last end," and the formation of the "true and perfect Christian," who could be fairly qualified as a true child of God (Hunt, Joseph, & Nuzzi, 2001, p. 35). Said differently, the educational aspects of social welfare, social transformation, prestige, research, or even political power, cannot be but incidental for the Catholic schools, whose primary goal remains spiritual: "What makes Catholic schools Catholic are the theological truths which govern and give guidance to both philosophy and to persons of Catholic faith. These truths have made the Catholic Church a countercultural church" (Hunt et al., p. 31).

Catholic schools in LA. Featuring the largest Catholic school system in the United States, the Catholic schools in Los Angeles are characterized, according to Martin (1996), by the

diversity of their students, as well as by the challenges of shifting demographics, of shortage in religious personnel, and of declining enrollment. In order to face these challenges, the Archdiocese of Los Angeles started training leaders in business planning, strengthening school finances, and integrating further instructional technology. Consequently, the integration of technology in Catholic schools in LA seems to constitute a strategy, aiming primarily to save the schools from closing (integrating technology looks cheaper financially on the long run than traditional ways of teaching and learning), secondly to keep up with the "non-stopping train" of technology, and finally, to compete in this ever-connected world.

Participants and Sampling

The participants in this study were chosen, through what Patten (2016) describes as purposive criterion sampling, from the population of Catholic middle schools, in the Archdiocese of Los Angeles. Saint Maron Catholic School (pseudonym) (SMS) was selected purposively, based on its current implementation of 1:1 program in the middle school grades. The participants consisted of the principal, some faculty members, and the teachers, at the junior high level. Students in the sixth, seventh, and eighth grades (middle school) also participated. These grades were also purposively chosen, because it was assumed that adolescence usually plays a significant role, in the study of developmental morality. In fact, the development of MI appears to accompany the development of identity, which is of great relevance during the adolescent stage (Aalbehbahani, 2015). In addition, according to Kohlberg (1984), at this age, the concept of moral development reaches conventional or post-conventional levels. Lastly, the moral character is fairly considered by Yusuf (2008), as more important and more personalized at adolescence, than during childhood, where morality is mostly influenced by the environment.

Design and Procedure

To answer the research questions and in order to investigate how the 1:1 program has been implemented in the context of a Catholic middle school, and how educational leaders were trying to navigate this implementation with morality, a case study approach was adopted (Miles & Huberman, 1994). In fact, as defined by Yin (1984), a case study is an empirical inquiry that investigates a contemporary phenomenon within its real real-life context, in which multiple sources of evidence are used. Consequently, the case study design brought the current study to a better understanding of the leaders' and the students' perspectives, in regards of the complex issues of integrating the 1:1 program in Catholic schools, and of deciphering any possible relationship between the use of digital technology in classroom and the students' morality. By examining real life situations (Gay, Mills, & Airasian, 2012), this case study served as basis for applying different theoretical ideas concerning the 1:1 programs, and for extending several practices concerning the correlation between technology and morality.

After having received the approval of the Archdiocese, the school itself, and the Loyola Marymount University Institutional Review Board, I visited the school 10 times, during the academic year 2018-2019. First, I interviewed the principal at SMS, the vice principal for technology, the technologist, and the middle school teachers about their experience, as well as their perceptions of the 1:1 program. Then I conducted classroom observations of each middle school grade, and I finished by distributing a relatively short survey to the middle schoolers. The interviews with the educational leaders focused in general on the implementation of the 1:1 program at SMS, its advantages and its disadvantages for the teacher as well as for the student, and on the moral aspect of this integration. Specifically, through those interviews, I learned more

about the school leaders' attitudes towards the 1:1 program, their views of how the students are using the digital devices in class, as well as their opinions on any possible impact the use of technology could have on the students' moral growth. It is noteworthy to state that, after having transcribed the interviews, I requested feedback from the faculty members about their input on the transcriptions before they were finalized.

Following three days of classroom observations, where the actual way of implementing the 1:1 program in the class is observed, the final phase of the study consisted in conducting a survey with the middle school students, in order to better comprehend the students' perspective on the topic of 1:1 program and their moral virtues. The observation data helped triangulate the findings, by comparing the data to the responses collected from the students' survey as well as from the interviews with teachers.

Limitations and Delimitations

This study presented limitations inherent to any case study and was delimited in scope. First, the students being observed were in sixth to eighth grade, aged approximately between 11 and 14 years old. Considering that moral intelligence is developmental in nature, the age of students certainly impacted the findings. Studying this concept among younger children might not have showcased the same findings, especially when it related to moral virtues, and studying this concept among older adults may have yielded different results. The study did not include any responses from other age groups and findings cannot be generalizable to other ages. Next, the scope of this study was delimited to the examination of a 1:1 technology program in one Catholic middle school, affiliated with the Archdiocese of Los Angeles, which hinders the generalizability

of the results to other schools, or different educational contexts. Still, it is my hope that schools with similar programs may still benefit from the findings highlighted by the current study.

Additionally, this study relied on the self-reported data from teachers regarding technology and morality; self-reported data are limited because of relying on the honesty and accuracy of the participants, which is common to all self-reported measures of non-cognitive skills. In other words, the survey results are subject to inaccuracies and possibly to what is known as "social desirability bias" (Fisher, 1993). given that faculty are being asked to describe their opinions of a program already implemented in their school. Finally, I designed the survey and interview protocols based on the literature and research questions. Using a newly crafted measurement instrument also limited the study, by virtue of issues related to validity and reliability in measurement.

Definition of Terms

Educational Technology (ET): There is no unanimous consensus among scholars as to the exact definition of the term ET (Moore, Dickson-Deane, & Galyen, 2011). In fact, the conceptions of ET have been evolving over the years, as a variation of the ways of dealing with learning processes, from abstraction to practice, from a conceptual framework to diverse ethical practices, dealing with technological processes and resources (Hsu, Hung, & Ching, 2013). ET is actually a very wide field, that could encompass many, and even sometimes, conflicting definitions. It refers nonetheless to the area of technology that is devoted to the development and application of tools (including software, hardware, and processes), intended to promote education. Said differently, in keeping with Hsu, Hung, and Ching (2013), ET could be considered as an academic field, referring to a design science or to a collection of different

research interests that address the fundamental issues of learning, teaching and social organization. On the other hand, considered as practice, ET refers generally, to any form of teaching and learning that makes use of technology (Hsu et al., 2013). The most recent conception of ET leads us to define it as follows: “Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources" (Januszewski & Molenda, 2013, p. 1). This definition, which was adopted by the Association for Educational Communications and Technology, implies a continual construction of knowledge, through research and reflective practice, and it underlines a need to understand the ethical concerns, related to its implementation.

Cybertechnology: The term cybertechnology is understood as "a wide range of computing and communication devices, from stand-alone computers to connected, or networked, computing and communication technologies" (Tavani, 2007, p. 3). The scope of this definition ranges from small private computer networks to the Internet, where personal computers, tablet, and smartphones, constitute examples of network devices.

Digital technology or digital devices: This term refers usually to the “electronic tools, systems, devices, and resources that generate, store or process data. These include social media, online games and applications, multimedia, productivity applications, cloud computing, interoperable systems, and mobile devices” (Ramesh & Dibaba, 2017)

Digital learning: Digital learning is “any type of learning that is accompanied by technology or by instructional practice that makes effective use of technology. It encompasses

the application of a wide spectrum of practices including blended and virtual learning ” (Jain, 2019).

For the sake of this dissertation, the terms *Cybertechnology and Digital technology* were used interchangeably, to refer to the screen-based technology used by the students and by the teachers, in the classroom setting.

School connectivity: According to *Collins English Dictionary* (2000), connectivity is a “generic term defined as the ability of a computing device, to connect either to other computer(s) or to the Internet”. Consequently, the term connectivity could entail many aspects of technological advance, from the hardware and the software, to the Internet access and broadband networks.

One-to-one program (1:1): Implemented in education since the 1990s, the one-to-one computing initiative (abbreviated as "1:1 program"), or what was also called by Rockman and Walker (1997), the “concentrated model,” or even the “*One-to-One Technology-Enhanced Learning*” (Chan et al., 2006), refers to the issuing and the use of at least one electronic device, by each enrolled student, for learning. In effect, although the description of a 1:1 program varies somewhat from a location to another, its basic definition refers to the schools or colleges, where each enrolled student and each teacher are provided with their own electronic device (laptop or tablet), in order to access the Internet, the digital course materials and the digital textbooks (Bebell, & Kay, 2010).

Morality: In the general language usage, the term morality refers to the “principles of right and wrong actions and judgments” (Vozzola, 2014, p.3).

Moral Development: According to Rich and DeVitis (1985), moral development is defined as the "growth of the individual's ability to distinguish right from wrong, to develop a system of ethical values, and to learn to act morally" (p. 7). The field of moral development constitutes a special area of morality, that encompasses "(1) the changes across time and experience in how people understand right and wrong; as well as (2) individual differences in moral judgments, emotions, and actions" (Vozzola, 2014, p.3). In addition, moral development is an intricate process, which is believed to receive influence from cognition and social factors as well as from the environment (Oliver, 2002).

Moral Judgment: According to Rest and Narváez (1991), moral judgment is a major component of moral development, and a major determinant of moral behaviors. The development of moral judgment is, in concrete steps, similar to cognitive development (Reimer, Paolitto, & Hersh, 1990), and hence necessitates "greater cognitive maturity, together with a variety of social experiences" (Duska & Whelan, 1975, p. 7).

Moral Competence: This term refers to the ability to resolve problems and conflicts, on the basis of moral principles, through deliberation and discussion, instead of using force and violence. Another definition of moral competence was presented by Dr. Georg Lind (2014) and refers to "the ability to judge arguments by their moral quality rather than other attributes (e.g., opinion agreement)".

Moral Intelligence (MI): MI was introduced as a psychological concept by Borba (2001), and then developed, in 2005, by Lennick and Kiel. According to these authors, MI is understood as the "capacity to understand right from wrong, to have moral beliefs and to behave based on the value that is believed to be right". In Coles' (1998) words, talking about MI gives us a picture

of how people learn to make moral choices in their lives. Building upon the aforementioned descriptions of MI, Tanner and Christen (2014) presented a more complex definition of the term, stating that MI constitutes "the capability to process moral information and to manage self-regulation in any way that desirable moral ends can be attained" (p. 120). This study adopted the last definition of MI presented by Tanner and Christen (2014), since it presents a more detailed approach of the scientific process of the MI and it includes the previous definitions as well. The concept of MI will be studied more in details in Chapter 2.

Organization of Dissertation

This dissertation attempted to discover the way in which the 1:1 program was implemented in the Catholic middle school classroom setting, as well as the perceptions of educators, as to whether technology is related to students' moral growth. This first chapter has detailed (a) a brief background of the topic; (b) a statement of the problem along with the respective research questions; (c) the purpose and rationale of the study; (d) the theoretical framework underlying the issues to be studied; and (e) the design and the methodology to be implemented along with the limitations and delimitations of the research, after defining the main terms around which the study is built. Chapter 2 presents an extensive review of the literature investigating both the ethical and the technological theories, in consort with an overview of the literature concerning the relationship between technology and moral development or MI, with a particular attention on the Catholic moral perspective. Chapter 2 ends with a presentation of the scarcity in the literature about the relationship between the use of technology and morality, which guided the design of the study. Chapter 3 elaborates each step of the mixed-method research design, and the methodology used to measure the

variables, in order to answer the research questions. Chapter 3 shows in detail, (a) the sample and the population selected for this study, (b) how the observations and interviews were conducted, (c) the procedure by which the survey was constructed and administered, (d) the data analysis, (e) the assumptions, as well as (f) ethical considerations. Chapter 4 presents the results of the data, summarized for easier access to the key themes. Finally, Chapter 5 presents a discussion of the findings, including a summary of the study's implications, together with recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

With the increase of the use of technology in daily life in the 21st century, the use of technology has simultaneously become integral to student learning in almost every school in the United States. Over the last decade, the use of technology has become the norm within American society and has emerged in Catholic schools in particular, under the form of one-to-one (1:1) computing, where each student and every teacher have access to a personal device and to broadband connectivity. While 1:1 technology in schools has become the norm, research is still limited in terms of examining its impact on academic and social outcomes for students. Of particular concern to Catholic schools, is the moral development of students. As such, the purpose of the current study was to examine the implementation of 1:1 program in a Catholic school in the Archdiocese of Los Angeles and explore whether there is a relationship between the integration of 1:1 program and the students' moral growth.

This chapter presents an overview of the literature to ground the study. Specifically, the various terms related to technology in education including digital technology, educational technology, school connectivity, after which the 1:1 program will be reviewed, followed by a discussion of the value of technology in education. The history of educational technology in K-12 schooling in USA, especially in relation to the implementation of 1:1 and its impact on the students' learning experience, on academic achievement, and on emotional and moral growth, will then be presented, highlighting the dearth of studies on this topic in the Catholic setting in particular.

The literature review then presents a critical overview of the theories concerning the development of morality and ethics, in a person's life and especially, the theory of moral development, including its historical background, as well as its description of morality at the adolescent level. Afterwards, the recently proposed concept of Moral Intelligence (MI) will be introduced as a framework that was used in the current study, due to its usefulness for a holistic Catholic education, committed to social justice. Through a review of the literature, the similarities and differences between MI and Catholic moral teaching, including mainly the Catholic virtues, will be discussed, before addressing the viewpoint of the Catholic Social Teaching, regarding the use of technology, within an updated moral standpoint. Afterwards, a picture of the current research on the relationship between technology, morality, and ethics, is painted, comparing the different outcomes of the studies, and communicating their importance, as well as their limitations.

Finally, this review concludes with a discussion about the need for research that sheds light on the implementation of the 1:1 program in Catholic schools in Los Angeles, but also offers an understanding about the possible relationship between students' use of technology in a constantly connected world, and the development of the MI necessary for acquiring Catholic virtues. It is argued that these kinds of studies are crucial for a better future in Catholic education, not only in Los Angeles, but also in different parts of this ever-connected global world.

Technology

Screenagers: Ubiquity of Access to Digital Technology

In an era where children, youth, and even adults cannot resist the pull of electronic devices, where the average child in America spends more time on screen (digital media), than on any other type of activity, and where teenagers go "almost constantly" online on a daily basis (Lenhart et al., 2015), the face to face communication, which used to be the primary form of human interaction, appears to be vanishing, and is instead replaced by a new computer-mediated or digitally mediated communication characterized by speed, interactivity, and by constant connectivity (James, 2014). These pervasive digital experiences have also led to human interactions characterized by the "lack of nonverbal emotional cues", and by a discrepancy in imitation, known as the "video deficit" (Uhls et al., 2014). Given the ubiquitous character of digital media, and the prevalence of the Internet use, scholars from different academic fields have shown concern in regards to what Lenhart et al. (2015) called a "frenzy of access," facilitated by mobile devices, and have been trying to study the benefits, as well as the detrimental effects of this "train that will continually move forward," otherwise known as technology. Research has emerged for the purpose of taking "action toward balancing the use of technology with critical factors for development" (Rowan, 2013, n.p.), especially vis-à-vis the youth and children (James, 2014; Lenhart et al., 2015; Rowan, 2013; Uhls et al., 2014). Rowan (2013) expressed best this general concern through his own words:

> While no one can argue the benefits of advanced technology in today's world, the connection to these devices may have resulted in a disconnection from what society should value most; our children. Rather than hugging, playing, rough housing, and

> conversing with children, parents are increasingly resorting to providing their children with more TV, video games, and the latest iPads and cell phone devices, which creates a deep and irreversible chasm between parent and child. (n.p.)

The question hence remains, whether this concern involving parents and children could be also expanded to include educators in schools who are spending increasing amounts of money purchasing computers, and are providing children with their own digital devices, and allowing them to an unrestricted access to technology inside and outside of the classroom setting (during recess and lunch for example).

Value of Digital Technology Use: Between Enthusiasm and Skepticism

When spotlighting on the broader implication of the digital life and of the constant connectivity it entails, scholars are divided into two conflicting groups: the optimists and the skeptics. The former have shown enthusiasm over technological advances and emphasized the multiple assets of being connected and using the Internet, namely the great learning potentials (Ito et al., 2009), the enhancement of the capacity for collaboration and teamwork (Shirky, 2010), the cognitive surplus, and even the elevation of human intelligence (Thompson, 2013). The latter, however, have shown wariness in regard to the "troubling consequences of our increasingly digital lives on our attention, thinking, identities, and relationships" (James, 2014, p.12). Taylor (2012) expressed this idea best by stating that "the effects of technology on children are complicated, with both benefits and costs" and this depends on "what specific technology is used and how and what frequency it is used in" (n.p.).

In effect, while Lenhart et al. (2015) focused in their report on how smartphones' technology has facilitated shifts in the teens' communication landscape, and while Carr (2011)

observed that the rise of the Internet has strengthened the person's ability to scan information rapidly and efficiently, the over-stimulation that children were facing with the exposure to electronic devices has been highly criticized by several professionals from the medical field, who have mentioned several disadvantages of exposure to screens, including brain cell alteration, attention deficit, overwhelmed thinking, heightened stress levels, depression, impaired cognition, and children's executive function (Lillard & Peterson, 2011; Richtel, 2010a, 2010b, 2010c, 2010d; Small & Vorgan, 2008). Similarly, the appraisals, as well as the critiques, have appeared in the anthropological, sociocultural, emotional, and even ethical contexts (Caccamo, 2013, 2015; Carr, 2011; Gardner & Davis, 2013; Lanier, 2010; Silverstone, 2003; Taylor, 2012; Turkle, 1995, 2008; Winner, 1986). Whereas research has shown that video games and screen-based technologies help children develop a better attention span, increase their reaction times, and enhance their visual-spatial capabilities (Bavelier, Green, Pouget, & Schrater, 2012; Green, & Bavelier, 2007). Additionally, according to Taylor (2012), the pervasive use of Internet search engines is contributing in having children "different," which refers to children who are more inclined to engage in critical thinking, problem solving, and in remembering "where to find things" rather than children who remember things and retain information. Winner (1986) was among the first scholars to argue that technology affects the relations between people by monopolizing a specific activity over another, and by developing in the youth, the sense that "life would scarcely be thinkable without technology." This narrowed philosophy of technology has led us, according to Winner (1986), to believe that all technologies are neutral in moral standing, especially when technology is reduced to an abstract notion, focused on usage. In a similar vein, Lanier (2010) argued that the design of digital technologies has been impactful on our sense of

humanity because it has locked our thinking and action in few particular modes only, and Graham (2012) also stated that "technopoly" has offered people "the privilege of having a wider range of their desires satisfied", driving them to become less compassionate and more "sophisticated adult versions of spoiled little kids" (p.17). Furthermore, it has been suggested also that "Digital Natives make payoff versus patience decisions every minute" (Prensky, 2006, p. 4) and that overuse of technology can affect children's mood as well as their ability to empathize (Willard, 1998; 2002). As for Carr (2011), he has also expressed concern about actual human thinking that has become frequently scattered and shallow due to the Internet, and pointed out that digital technologies, or as he called them "intellectual technologies", are shaping and altering the human's process of thought by "chipping away (our) capacity for concentration and contemplation" (p. 6), by "preventing our minds from thinking either deeply or creatively" (p. 119), and by turning human beings into "something like a high-speed-data-processing machine, a human HAL" (p. 16). Moreover, one of the few empirical studies directly related to technology and emotional intelligence, is rooted in what Sproull and Kiesler (1991) refer to as the "Cues-Filtered-Out theory." This theory claims that computer-based communication lacks social norms and standards, which leads users to be more aggressive and impulsive, and could lead to uninhibited behaviors. A study conducted by UCLA in 2014 with sixth graders in a camp setting, concluded that computers might have a negative impact on human social and emotional skills. It has appeared that children's "nonverbal emotional cues" may be declining when they have less time for face-to-face interaction due to their increased use of screen-based devices (Uhls et al., 2014). Hence, this study effectively succeeded in echoing what the aforementioned researchers

have reported about the limitations of connectivity and the digital lifestyle (Haugen et al., 2001; Oblinger, Barone, & Hawkins, 2001).

Both excited and reluctant groups agree on the fact that connectivity and digital technology present a unique setting and a platform, different from all the kinds of technologies that have preceded it (Supavai, 2014). Additionally, almost all of their studies share the qualities of being majorly theoretical, qualitative, and analytical. A need for more empirical, quantitative, and experimental research on this scarcely explored topic is henceforward crucial for a deeper understanding of the correlation that might exist between digital technology and human moral development. The current study therefore contributed to this needed line of research, by launching an empirical investigation of the implementation of technology in the classroom, a step that is crucial, in order to establish any possible correlation between technology and morality, necessary for an experimental study in the future.

Educational Technology

As mentioned earlier in Chapter 1, there is real concern about the effects of implementing technology in classrooms at a very fast pace, and about how to make this implementation meaningful for the student's growth, as well as for the school's mission. In fact, ET encompasses the theory and practice of educational approaches to learning, where different tools and/or mobile technologies are used, among which the 1:1 computing represents a contemporary initiative for several schools. But firstly, looking at the definition and the impact of ET on student learning seems indispensable and beneficial.

ET and Student Learning (K-12 setting)

During the last decade, the use of ET by the American public, as well as Catholic K–12 schools has increased by approximately more than 65%, according to the statistics made by the Office of Educational Technology in the United States (U.S. Department of Education, 2014). While the majority of ET is taking place inside the school, and even classroom boundaries, several cyber-schools have begun to offer fully online virtual platforms, allowing students who may not to go to traditional brick and mortar schools, for different reasons (medical issues, fear of school violence and school bullying, etc.,) to attend synchronous and/or asynchronous classes from home, or anywhere an Internet connection is available. However, this study was limited to the ET used in traditional schools.

School Connectivity

In order to meet the challenge of a global economy and a connected world, where students are "expected to engage and interact with peers and experts online, create and design with digital tools, and be exemplary digital citizens" (U.S. Department of Education, 2014, p. 66), the K-12 community of schools has been recently striving to enhance connectivity and networking structures in classrooms so that school students and educators would have broadband access to the Internet, and to computing devices. In fact, the team of "Education Superhighway", whose mission is to narrow the K-12 digital divide in America, has asserted in 2015 that there has been a "47 percent increase in the number of schools that brought their broadband speed up since the last report two years ago," and that in 2019, "44.7 million students, 2.6 million teachers, and 81,000 schools are now achieving the minimum connectivity goal of 100 kbps per student that gives students equal access to digital learning opportunities"

(EducationSuperHighway, 2019). In a few words, connectivity has become an essential and indispensable component of the learning process, and leaders have been making it a priority. The office of educational technology in the United States has considered it effectively, "like water and electricity, foundational to creating an effective learning environment" (Office of Educational Technology, n.d.). Likewise, the former U.S. secretary of education Duncan has described, back in 2013, the absence of connectivity in schools as educationally unsound and morally unacceptable (U.S. Department of Education, 2014). While the term connectivity could entail many aspects of technological advance, from the hardware and the software, to the Internet access and broadband networks, our use of the term would be limited to what is known as the 1:1 computing, which has made the connectivity in classrooms, actual and concrete. Said differently, the implementation of 1:1 computing is intrinsically linked to the initiative of delivering cutting-edge connectivity to teachers and students, inside as well as outside of the classroom setting.

One-to-one Computing Program (1:1 computing)

Few modern educational initiatives have been as widespread, dramatic, and costly, as the integration of computer technologies into American classrooms. Both proponents and opponents of educational technology agree that the full effects of computers in school cannot be fully realized until the technology is no longer a shared resource (Oppenheimer, 2003; Papert, 1992, 1996). Implemented in the American education since 2002, the 1:1 computing initiative answers this concern and; thus, provides a better realization of the computers' effect in schooling (Lei et al., 2008). Although the description of a 1:1 varies somewhat from one location to another, its basic definition refers to schools or colleges, where each enrolled student, and each teacher is provided with their own electronic device (laptop or tablet), in order to access the Internet,

digital course materials and digital textbooks (Bebell & Kay, 2010). Nowadays, more and more schools are implementing 1:1 programs. Holcomb (2009) affirmed that by 2007, nearly 25% of school districts in the United States have implemented some form of a 1:1 computing, and Herold (2016) stated that schools purchased more than 23 million devices for classroom use in 2013 and 2014, contributing to the emergence of a new vision and mindset in education, experienced by students as well as by teachers and administrators (Rockman, Chessler, & Walker, 1998). In addition, Russell, Bebell, and Higgins (2004) designed a two months mixed-method study, in order to compare teaching and learning activities, in two different class environments, that create a 1:1 laptop environment, on either a temporary (shared laptop classrooms), or permanent basis (1:1 classrooms). This research compared the differences in instructional practices and learning activities (teacher-student interactions, student-student interactions, uses of technology, and student engagement), between both settings, concluding that the full implementation of 1:1 program in the classroom has contributed to a smaller group instruction, and an increase in technological use by students at school, and at home as well.

However, as mentioned earlier, few scholars were unconvinced about the worth of the program, and were complaining that 1:1 program implementation strategies are doomed to waste the schools' resources (dollars and time), because they are putting enormous focus on the device itself, the enhancement of the network, and on training the teachers to use technology with limited or no vision in the learning experience (November, 2013). Moreover, the observed addiction of many children to surfing the Internet, playing computer games, and chatting online has revealed potential impairments that could be caused by the 1:1 program (Lei et al., 2008).

Impact of 1:1 program on student learning. Despite the growing interest, in and around 1:1 program, relatively little empirical published research has focused on teaching and learning in these intensive computing environments (Penuel, 2006). As previously mentioned, there is still much debate in the literature on technology's influence on human culture in general, and on learning in particular. Said differently, whether computers play a significant role in modeling the pedagogical view positively or negatively is still debatable. In fact, comparisons between "computing and non-computing" classrooms have been made since the late 1970s and the investigation between technology and student learning has been researched since 1980 (Tamim, Bernard, Borokhovski, Abrami, & Schmid, 2011). While some earlier studies have argued that technology is a "mere vehicle" that does not influence learning or students' achievements under any condition (Clark, 1983; Dixon & Judd, 1977; Tjaden & Martin, 1995), or is just not worth the cost of its implementation, because no significant difference in the students' test scores, was verifiable (Garner, 2008; Hu, 2007; Warschauer, 2006), multiple recent research studies (Johnson & Rubin, 2011; Krentler & Willis-Flurry, 2005; Serin, 2011) have revealed the opposite by stating that there is a statistically significant increase in the academic achievement, attitudes, and learning skills of the students who receive a 1:1 education. For example, Spektor-Levy and Granot-Gilat (2012) declared that 1:1 programs provide "tools that allow more accessibility to contemporary, media-rich, digital content that embraces flexible teaching and learning processes" (p. 84); Silvernail and Gritter (2007) reported improvements in writing scores; Lowther, Ross, and Morrison (2003) indicated positive impacts on problem solving skills; and other researchers confirmed the benefits of 1:1, in regards to literacy studies, science, as well as GPA (Suhr, Hernandez, Grimes, & Warschauer, 2010). On the opposite side,

a recent study by the Organization for Economic Cooperation and Development, has found that countries where 15-year old students use computers most in the classroom, have scored the worst on international reading and math tests (Herold, 2016). Consequently, the aforementioned data reveal the lack of agreement among scholars on the impact of 1:1 program on student academic achievement.

Academic achievement has not been the only variable studied in the literature. A fair number of studies have actually been conducted, in order to examine the impact of 1:1 learning on student outcomes from "several different angles", from score achievement, to interest and motivation, and from the level of attendance (Holcomb, 2009) to classroom participation, and students' engagement, and interaction with their peers or teachers (Rockman et al.,1998, 2000; Rockman & Walker, 1997; Fisher & Stolarchuk, 1998; Harris & Smith, 2004; Shaver, 2004). For example, Harris, Al-Bataineh, and Al-Nataineh (2015) concluded from a quantitative study that 1:1 could be a factor in students' academic achievement and motivation. Their examination was; however, limited to one grade level, from one school. A much larger study would be necessary to more appropriately gauge the degree to which the 1:1 program impacts the achievement and the motivation of students.

To sum up, the literature which has addressed student motivation, teaching, and learning activities, or even that which has addressed bridging the digital divide through 1:1 programs, was mainly based on qualitative studies, focusing exclusively on the cognitive skills of students, and/or their apparent social skills, related exclusively to the classroom setting, such as student motivation, disruptive classroom behavior, classroom participation/engagement, and students' interactions with their peers or with their teachers (Rockman et al., 1998, 2000; Fisher &

Stolarchuk, 1998; Harris & Smith, 2004; Shaver, 2004). This lack of comprehensiveness in dealing with 1:1 programs, demonstrates the need for further studies that document 1:1 program initiatives, and takes into account the impact of 1:1 program on variables, such as, the emotional, social, and moral growth of the students. Those variables go effectively beyond the classroom setting, while constituting, at the same time, an indispensable part of the education of the whole child.

1:1 and Catholic schools. Studies on 1:1 programs within the Catholic school context, to which this study belonged, were still limited. In fact, Gibbs, Dosen, and Guerrero (2008) focused on the perception of principals, at K-12 Catholic schools, with regards to the use and effectiveness of technology on their campuses. Many principals observed that a large portion of their faculty failed to use technology, as a means for student engagement. The following year, Gibbs, Dosen, and Guerrero (2009) conducted an evaluative study of the Bridging the Digital Divide Program (BDDP); an educational technology intervention program that was implemented in 2001-2003, by an Illinois university, with funding provided by the state. In order to assess the effectiveness of the program, the researchers relied upon pre-and post-intervention surveys, completed by students and teachers. Overall, students reported an increase in their use of technology, specifically the use of email, PowerPoint presentations, and spreadsheets. The teacher surveys, on the other hand, focused on perception of technological skill, attendance at the BDDP professional development workshops, and the use of technology for classroom assignments and lessons. Recently, Cho (2017) published a seminal work related to 1:1 implementation in the Catholic educational context. His study took into account a school's mission, and the implementation of a 1:1 program. Cho (2017) sought to measure feelings related

to the implementation of technology, and the frequency of its instructional use. The study found that the Catholic values have informed the readers, how the school supports teachers, and helps students to navigate the transition into the 1:1 program, personally and socially.

Along with the aforementioned literature, this study took into account how the 1:1 computing is implemented in Catholic schools, in the Archdiocese of Los Angeles, and which strives to understand how teaching and learning practices are impacted, when students and teachers have their own laptops or digital devices. That would add an additional component to be evaluated, in relation with the 1:1 computing, which is students' morality. Given the importance placed on moral formation, and on moral personhood in Catholic schools (McLaughlin, 1996), this context is ideal for examining the intersection of technology and morality.

Morality, Ethics, Moral Development, and Moral Intelligence

Ethical Theories

According to Fieser (2000, 2009), the study of ethics could be divided into three main categories: metaethics, normative ethics, and applied ethics. The first category is interested in the origin of ethical principles and their significance; the metaethical answers focus "on the issues of universal truths, the will of God, the role of reason in ethical judgments, and the meaning of ethical terms themselves" (Fieser, 2009, §1). The applied ethics, as its name suggests, is concerned more in specific real-life situations, such as abortion, capital punishment, and homosexuality. As for the normative ethics, it investigates the rules and obligations that one should follow, the virtues that he/she should acquire, the values in which he/she should believe, and finally, the consequences of one's behaviors on others. Despite the fact that the three

aforementioned areas of ethics are separate, the line of distinction between them remains blurry, because they could easily overlap while studying any moral issue (Fieser, 2009, §2).

Morality and Ethics

Searching for a clear distinction between morality and ethics in the literature seems a quasi-impossible endeavor, especially since the etymology, the definition, and the usage of ethics are closely related to that of morality. The terms "ethical" and "moral" are often used interchangeably to refer to the same reality, which refers to what is good and bad, right and wrong (Annas, 2001; Becker & Becker, 2001; Diem, 2009; Quinn, 2014; Supavai, 2014). However, a meticulous analysis of how researchers are trying to define ethics and morality, leads to the conclusion that the majority of scholars applied the word ethics, in a broader notion than morality. Ethics, or moral philosophy as it is called by Fieser (2009), has been mostly used to denote what is universal, global, abstract, rational, and philosophical, while the use of the term morality, has involved mostly the moral behaviors and emotions that are particular, concrete, and practical (James, 2014; Quinn, 2014; Supavai, 2014). In fact, based on Rest, Narváez, Thoma, and Bebeau's (1999) notions of micromorality—or what Gardner (2011) later called "neighborly morality"—and macromorality, James (2014) defined morality as "a disposition to care, to share empathy, or to engage a principal in one's interactions with a known individual or a small group" (p. 5). James used nonetheless the word ethical, to suggest "a more abstract consideration of the effects of one's actions on a wider, often distant community or public" (p. 5), a consideration that is based on impartiality and disinterest rather than on empathy. Another distinction between the two terms was offered by Quinn (2014), who considered morality a guideline to describe standards of moral behaviors; whereas ethics is the "rational examination" that encompasses a

theory or multiple theories supporting a particular view of what is right or wrong. Tanner and Christen (2014) defined "morality" very broadly through the following words:

> Morality is set of norms, principles, values, and virtues that are governed by an orientation towards the good. As such, they reflect a respect and concern for oneself and for other entities (persons, animals, environment) and are embedded in a justification structure. (p. 122)

The current study examined the implementation of technology in Catholic schools, and whether there is a relationship with students' moral intelligence, more specifically their moral motivation and; thus, their practical actions, suggesting a closer tie to the general concept of morality, as defined by Tanner and Christen (2014), rather than ethics or even entering into the philosophical differentiation made by James (2014), between morality and ethics. To fully understand moral intelligence, which is relatively new, its history including moral development needs to be reviewed.

Moral Development (MD)

From a scientific perspective, the majority of theorists and researchers agree that the ways of moral thinking and moral acting are informed by developmental factors (Damon, 1990; James, 2014; Kohlberg, 1984; Rest, 1986; Rest et al., 1999), and thus, prefer to use the term moral development, in order to refer, not only to the course of moral development, but also to the developmental status or level of morality attained by a person, at a particular time (Beißert, & Hasselhorn, 2016). In effect, several researchers in moral philosophy consider individuals as agentic operators, or moral agents (e.g., Bandura, 1991), whose moral agency is grounded on

multiple abilities and evolves along with individual and cultural experiences (Chambers, 2011; Narváez, 2010; Nichols, 2004; Prinz, 2007; Rest, 1986).

MD and adolescence. Most of the moral development studies assert that moral thinking grows in parallel with the development of cognitive and/or emotional skills in the individual. In fact, Reimer, Paolitto, and Hersh (1990) confirmed that the development of moral judgment is similar to cognitive development and Oliver (2002) built on this idea, by stating that MD is an intricate process, influenced by cognition, and by social factors as well. Consequently, the moral thinking is believed to evolve from a subjective and egocentric way of thinking, as well as from a rudimentary sense of empathy in the preschool and elementary school-age children, to a more objective and abstract understanding of ethical principles, as well as to a more robust capacity for empathy during late childhood and adolescence (James, 2014). Accordingly, adolescents in whom the current study was interested, should have stronger ethical capacities than younger children, and thus should realize how their actions might affect not only themselves or their close family members or friends, but also the larger society and strangers. Said differently, in the normal course of MD, teenagers are to start building their ethical thoughts as well as their moral behaviors upon global and universal values and principles, rather than on pragmatic or self-interests (James, 2014; Supavai, 2014). In Narváez's (2010) terms, adolescents should be acquiring more moral or "ethical expertise" than younger children; hence, they are to possess "more content knowledge and more process knowledge, more implicit and explicit conceptual and emotional knowledge" (p. 9).

Theoretical background of MD. Söderhamn, Bjørnestad, Skisland, and Cliffordson (2011) considered that there are two main psychological types, or views of moral reasoning in

the literature. One of them is built upon Lawrence Kohlberg's notion of justice, and the other on Carol Gilligan's (1982) notion of care. In effect, Kohlberg (1984) presented first a stage model of MD, through a theory grounded on a cognitive approach, stating that the moral behavior of an individual rests mainly upon the logic of a person's reason, along with his/her judgment. Gilligan (1982) offered a relational approach to morality, grounded on emotions and empathy, and that "is more representative of the moral experience of women" (Söderhamn, Bjørnestad, Skisland, & Cliffordson, 2011, p. 165). Another important issue stressed by Malti, Gasser, and Buchmann (2009), as well as by Gibbs (2013), was that MD was not limited to moral cognitions (i.e., moral judgments and moral reasoning), but that moral cognition establishes only one dimension of morality. In fact, most developmental researchers would agree that moral development includes both cognitive and emotional aspects, which are closely connected, and in continuous interaction, as the emergence of moral emotions is dependent on moral cognitions (Dentici & Pagnin, 1992; Malti & Latzko, 2010). Beißert, and Hasselhorn (2016) recently added in the introduction of their book, that many facets or patterns of the children's moral development have been traced by scholars, namely stemming from moral judgment (e.g., Kohlberg, 1969), moral reasoning (e.g., Eisenberg, Lennon, & Roth, 1983), moral emotions (e.g., Eisenberg, 2000), or moral motivation (e.g., Nunner-Winkler, 2007). However, each facet constitutes only one piece of the whole puzzle. This leads us to look beyond the capacity of moral reasoning. Rest et al. (1999) launched a post-conventional, neo-Kohlbergian approach to MD, which is more critical and more comprehensive than its predecessors. In fact, Rest and his colleagues took Kohlberg's and Gilligan's views as "complimentary to each other with Gilligan's work more regarded as an expansion of Kohlberg's theory, than merely a critique" (Söderhamn et al., 2011, p. 165), and

presented a theory of MD grounded on Rest and Narváez's (1994) four psychological components of the process of moral behaviors, namely the abilities to identify moral issues (moral sensitivity or awareness), to make moral judgments (moral judgment), to establish and prioritize moral intent (moral motivation), and to exhibit moral courage in behavioral identity (moral character or action).

Building on Rest and Narváez's (1994) multi-stage model of moral functioning, Tanner and Christen (2014) presented a different model of moral decision-making, which places "moral motivation" as an overarching component, linked to the three other components (perception, judgment, and action), as well as to the moral reference system (moral compass). The mentioned model takes into account the possibility that morality can be based, not only on thoughtful reasoning, but also on intuitive judgments and spontaneous routinized reactions to particular situations. This new model or moral framework was called by Tanner and Christen (2014): "Moral Intelligence".

Moral intelligence (MI)

Beyond the concept of moral development, MI was introduced into the literature by Coles (1998), who used it to reflect upon what it means to be a "good person", and how children learn to make moral choices in their lives. This reminds us of Franciso Varela (1999), who wrote that a "wise (or virtuous) person is one who knows what is good and spontaneously does it" (p. 4). For Coles (1998), MI is not acquired or developed only by memorization of rules, but by witnessing others' morality (or lack of morality), and by "learning how to be with others, how to behave in this world" (p. 5). MI was then presented as a psychological concept by Borba (2001), and then developed by Lennick and Kiel (2007). According to these authors, MI is grounded in emotion

and reason, and refers to the capacity to understand right from wrong, have moral beliefs, and to behave, based on the value that is believed to be right. Establishing her Triune ethics theory (TET), Narváez (2010) asserted that a high MI is related to "greater emotional self-awareness"; hence, to "higher levels of social experience", which are developed in the "intersubjectivity of child and caregiver" (p. 5).

Inspired by the previous works of Lennick and Kiel (2007) and of Rest and Narváez (1994), Tanner and Christen (2014) developed the concept of MI, into a framework that helps to explain moral functioning through a better understanding of the moral competencies underlying moral functioning, as well as the moral transitions or changes involved. In fact, according to Tanner and Christen (2014), MI is defined as "the capability to process moral information and to manage self-regulation in any way that desirable moral ends can be attained" (p. 120). In other words, a morally intelligent person is, for Tanner and Christen (2014), someone who highly regards moral goals and strives to practice moral principles in his/her life, in order to do what is good for others and for society. After all, moral transitions "do not just require new moral content, they also require agents who are skilled in how to deal with moral issues, once identified, and how to turn moral standards into actions" (Tanner & Christen, 2014, p. 120). In keeping with Tanner and Christen's (2014) ideas, this study conceived MI as a *dispositional* entity that is driven not only by mere capacity or reasoning, but also by intuition and motivation. MI is hence conceived as grounded in self-regulation, information-processing, and affection, in order to understand the individual differences between people with high MI, and people with low MI (Bandura, 1991; Tanner & Christen, 2014).

MI and education. MI has been often associated with the business world, since Lennick and Kiel (2007; 2011) have argued its necessity to enhance business performance and leadership success. However, Borba (2001) and Clarken (2009; 2010) linked it to the field of education and showed how it constitutes an essential part in learning, in order to raise children and teach them to do the right thing (Borba, 2001). In addition, Clarken (2010) showed how MI contributes to a holistic education that takes into consideration the student as a whole, not merely their cognitive skills. This author actually argued that education is a "moral endeavor" which influences both the individual and the collective moral development. Schools should thus define and teach universal moral values, as part of their curriculum, in order to develop their students' MI, and henceforward contribute to their success in life. As to Narváez (2010), she also viewed the education of children as the development of moral expertise, whose mission is to "foster moral reasoning and moral intuitions simultaneously within particular contexts" (p. 10).

MI and Catholic schools. The moral training and character formation, especially the ability to mold and form habits, exist at the very heart of any type of education, among which the American one (Dewey, 1934). In the Catholic realm, those habits are called moral virtues, and are reduced to four virtues, namely prudence, fortitude, justice, and temperance. In addition, as mentioned in the previous chapter, Catholic education is characterized by being holistic and by forming the moral character of its students in order to be good "Disciples of Christ." Since Clarken (2010) has demonstrated that MI is important for a holistic education, it follows that MI forms an indispensable topic for successful Catholic schools where morality is prime, as well as for Catholic leaders who ought to do their utmost to offer a holistic education to their students.

Connectivity and Morality

Moral Influence on Technology

Yamano (2006) explored the increased use of technology by younger children, and the increasing societal concerns about who bears the responsibility of guiding these children in the appropriate use of the technology. Developing cyberethics or responsible use of technology, at the start of children's exposure to technology use, may be the answer to minimizing the growth of cyber-crimes and unethical behavior (Rowan, 2013). For many children, school is the access point for technology. Teachers are the key to cyberethics among young children. What teachers know, and what they are implementing regarding the responsible use of technology, constitute only one facet of the foci of this paper. However, as mentioned earlier as well as Graham (2012) noticed, most of the literature considering the relation between educational technology and morality, are still looking essentially at the policies, rules, and Code of Ethics, in regards to the ethical use of computers by educators and students (Dosen & Gibbs, 2012; Hunt & Papalewis, 1989; Novick, 1984; Ohler, 2010; Ribble, 2014; Shea, 2011). Longford (2005) has realized that, next to the rapid rise in communication technologies, school administration has been facing a threefold challenge which involves regulating and governing users, enabling and cultivating proper conduct, as well as constraining and neutralizing adverse actions. Willard (1998) tried to categorize the “kinds of behavioral issues” with which parents and educators have to deal, when their children or students go online. She found five main categories of Internet ethics issues, grounded on respect: the respect for property, the respect for territory and privacy, the respect for others and common courtesy, the respect for institution, and finally the respect for self.

Catholic Schools, Ethics, and AUPs

Multiple terms have been applied to discussions or analysis of the legal, ethical, and moral issues raised by the emergence of information technologies, such as "Internet ethics," "cyberethics," "cyberlaw," "netiquette," and "appropriate use" (Willard, 1998). The most current term that is used both in Catholic and public schools, is “Acceptable Use Policies” (AUPs). The latter refers to the written policies that outline how a school expects its community members to behave with technology, more specifically, the connectivity tools. AUPs usually change from one school site to another, yet multiple aspects are common to the majority of them.

In the same line, Shea (2011) established ten core rules of netiquette among which the following rules: “Rule 1: Remember the Human”; “Rule 2: Adhere to the same standards of behavior online that you follow in real life”; “Rule 5: Make yourself look good online”; and “Rule 8: Respect other people’s privacy” could be applied to a school-site. These rules, in particular, lend themselves to the necessary behavior of the young users, and form an important rubric to be considered by the students when they are using digital devices. Similarly, the nine elements, presented by Ribble (2014), explored the over-arching realm of what is necessary for the AUPs to be effective. In particular, the elements of digital access, digital communication, digital literacy, digital rights and responsibilities, digital health and wellness, and digital security, are highlighted as primary components. To summarize these ideas, students should be educated not only on the appropriate academic uses of technology, but they also need to learn how to contribute positively to the electronic community in general. Of particular importance, while boundaries are removed, the established expectations should continue to flourish among students with high moral values, regardless of direct or indirect monitoring.

An article by Ohler (2010) stressed positive behavior and personal ethics even further. He writes that "Digital Citizenship is a concept which helps teachers, technology leaders and parents to understand what students/children/technology users should know to use technology appropriately" (p. 3). Moreover, the issue of using downloaded material, has emerged as a flagship Digital Citizenship issue for many educators. In a large part, it served as a metaphor for our confusion about balancing our rights, responsibilities, personal boundaries, and pursuit of the social good, in the hyper-connected ether of the digital domain. Of particular interest, Ohler (2010) indicated that each of us has a challenge to balance the connections and the disconnections offered in the digital community, and to develop a personal ethical core which is indispensable to guide us, in areas of experience that are, in many ways, unfamiliar to the majority of people.

A major proponent for defined AUPs, was outlined in the International Society for Technology in Education's (ISTE) National Education Technology Standards (NETS) (Alberta Education, 2012). Three primary components have been actually derived from their provided "Digital Citizenship Policy Development Guide." The first component is that educational administrators ought to promote, model, and establish policies, for a safer, legal, and more ethical use of the digital technology. Following their lead, teachers would develop the cultural understanding and model the global awareness of the school's community, by using digital-age communication and collaboration tools, in order to engage with their colleagues as well as with the students of other cultures. In other words, the second component targets the very essence of effective AUPs, which usually begins with teachers, under the proper direction of the administration. The last major component is that students would demonstrate personal

responsibility for lifelong learning. Taken in a multifaceted manner, this was understood as an involvement in all types of learning, and especially in the moral character of online presence. Reverting back to one of Ribble's (2014) elements of digital literacy, Chase and Laufenberg (2011) were quick to acknowledge the inherent "fluidity" of this very new concept. In other words, with technology advancing at such a radical pace, it is necessary to embrace change with open arms. This, in turn, will create confidence and comfort, which will allow not just a school administrator to change, but also the rules and regulations incorporated at the school, to be updated.

While the incorporation of the above-mentioned pieces were necessary, the integration of Catholic moral elements, is also essential to build AUPs in Catholic schools. A key article in the establishment of this piece would be Dosen and Gibbs' (2012) article, which examined technology and the role of the principal, on one hand, and encouraged the integration of technology in curricular plans, on the other hand. Graham (2012) also included a necessary point that technology ought to become a subject of considerable interest in Catholic circles.

Finally, the AUPs in Catholic schools remind us that the end purpose of technology should not be implementation of "stuff" (Richardson & Postman, 2013), but rather a primary and functional means of gathering knowledge, attaining personal growth, and preparing students for their current standing, as virtuous scholars, as well as for their future roles, as active contributing members of the society. In addition, Catholic AUPs should aim to raise wise and faithful Disciples of Christ, who are prone to know what is right, and act toward the common good of all. Away from constituting a guideline for punishment, the AUPs are therefore to be considered as a compass for proper directions, in the vast desert of technology.

Technology's influence on moral reasoning. According to *Stanford Encyclopedia of Philosophy*, the opacity of computer systems hinders the ability of users to assess the validity and the relevance of the information, offered to users. It consequently constitutes an impediment to the realization of someone's actions' outcomes (Noorman, 2016). Moreover, Supavai (2014) averred that many philosophical arguments, such as Floridi and Sanders (2004), Spinello and Tavani (2004) and Wiener (1950), as well as several empirical studies (i.e., Jung, 2009; Willard, 1998; Yamano, 2004), indicated the "influences of the online environment on moral reasoning and moral behavior" (p. 118).

The uniqueness of the Internet. According to Supavai (2014), the results from empirical studies led some people, to assume that the computer setting, more specifically the online environment, presented a unique setting for a person in regard to morality. In effect, Friedman, Khan, and Howe (2000), Jung (2009), and Shin (201 0) traced the difference in perception, between online and offline moral dilemmas, and they thus pointed out the impact of the online environment on the person's moral judgment. As to Willard (2002), she referenced the impediment of the students' moral reasoning in an online environment, to the fact that, in cyberspace, individuals usually receive limited tangible feedback on their actions, perceive themselves as invisible, and consequently fail to perceive the potential negative consequences of their actions to others. Supavai (2014) built upon these findings, to propose the development of the *cyberethics scale*, an "instrument that is specifically designed to measure cyberethics" (p. 12).

1:1 and moral development. Given that emotion, cognition, and behavior are highly interdependent (Cornelius, 1996; Planalp & Fitness, 1999), students' interactions can be understood from an emotional dimension, as well as from a moral one. Given the fact that the

relationship between the environment created by 1:1 program, and the emotional and social growth of the student was still at her debut, the current study, which was interested mainly in examining the relationship between the implementation of 1:1 program and the moral growth of students—more specifically the development of the adolescent's moral intelligence or moral virtues—would be clearly facing a scarcity of resources. In effect, Willard (1998) admitted on one hand, that "the impact of interactions in this kind of an environment (environment shaped by the information technology) on the development of moral reasoning is unknown" (p. 218), and on the other hand, how online interactions would impact youth, especially that "they are in the process of developing their moral reasoning framework" (p. 220). He added that digital technology constitutes a complicated, yet a very significant endeavor, which provides educators with different tools, to "effectively guide our young people in the development of a moral reasoning framework that is based on principles of justice, rights, and welfare" (Willard, 1998, p. 220). Since the current study strove to answer this question, it was important beforehand, to understand the way morality—and the virtues of MI in a specific way—were understood, developed, and enhanced among young children, according to the different prominent theories and frameworks hitherto present in the literature.

Literature, concerning 1:1 program and MI, was very scarce and difficult to find, especially from the critical perspective that this study is intending to use. This could be attributable to the decline of the researchers' interest in morality, and/or to the fact that the concept of MI itself was recently added into the field.

Catholic Social Teaching (CST), Digital Technology, and Morality

At first glance, the Pontifical Council for Social Communications seemed to be "so enthusiastic about 'this remarkable technology' that they make it obligatory for Church leaders to use the Internet's full potential as part of their ministerial work" (Graham, 2012, p. 13). In fact, the Catholic Social Teaching (CST) considers science and technology, as the "wonderful product of God-given human creativity, since they have provided us with wonderful possibilities, and we all gratefully benefit from them" (Catholic Church: Pontifical Council for Justice and Peace, 2004, in Foley, 2002). What is more, according to the Message for the 24th World Communications Day (John Paul II, 1990), Church leaders are obliged to use "the full potential of the 'computer age' to serve the human and transcendent vocation of every person, and thus to give glory to the Father from whom all good things come." Moreover, as noted earlier in the first chapter, technological change has been mostly regarded, in the Catholic sphere, as an indication of evolution and growth (Dosen & Gibbs, 2012; Heidebrecht, 2014). However, this enthusiasm for technology seems to fail in evaluating the *rhetoric on technology* itself, from a critical progressive perspective that takes into account the impact of ET on the student relationships to one another, and to the natural world (Darder, 2015a). The Catholic Church appears therefore, to neglect that the technological advance could constitute "a main bastion of capitalism" (Freire, 1998, p.56), might enhance "the ideological support for material power" (Freire, 1998 in Darder, 2015b, p.29), or at least, in Feenberg's (2005) words, could "favor specific ends and obstruct others" (p. 54).

As it relates to the moral realm, the Catholic social teaching on technology has generally argued that technologies are not to be judged as good or evil, but as morally neutral: "There is

nothing intrinsically good or intrinsically evil about advertising. It is a tool, and instrument: it can be used well, and it can be used badly" (Catholic Church: Pontifical Council for Social Communications, 1997, #9). Said differently, in light of the various philosophical models of technology, the Catholic approach would be "instrumentalist" (Caccamo, 2015). It is also noteworthy to state, in this regard, that Dosen and Gibbs (2012) invited Catholic educational leaders to provide adequate access to technology, to the students and the school's staff. They argued that this shall be accomplished by implementing a new way of practicing teaching and of planning the curriculum, as well as by "redirecting technology from its more isolating and individualistic approaches" (p. 37), and making it a source of enrichment, of social interaction, of collaborative learning, and of support for all school's members. In response to the *potential pitfalls* of technology for the school community, Dosen and Gibbs (2012) mentioned the need for policies, in order to promote a proper use of technology. However, they did not propose any guideline on the ethics of technology by itself. In sum, from a Catholic moral perspective, what really determines whether technology is good or bad, seems to be just the personal or the individual way by which the technology is utilized.

Nevertheless, the official Catholic enthusiasm, as well as the moral neutrality in regards to technology, have been recently questioned by few Catholic scholars, like Jim Caccamo of the Department of Theology and Religious Studies, at Saint Joseph's University, Philadelphia, and Joshua Hochschild, the associate professor of philosophy and Dean of the College of Liberal Arts at Mount St. Mary University, Los Angeles, especially after Pope Francis' (2015) latest encyclical letter "*Laudato si'*: On care for our common home", in which he revolutionized the Church's teaching on technology, by arguing that technologies are not morally neutral

instruments. In fact, according to Caccamo (2015), by stating in his encyclical, that "we have to accept that technological products are not neutral" (para. 107), the Pope insinuated that the structures of technology itself, might influence the way that we live, irrespective of the particular uses to which we put a given technology. In effect, founding his claims on Carr's (2011) book, and on David Cloutier's review of it, Hochschild (2015) showed how technology obscures moral agency, and how the technological changes make us "dumber about moral language," especially after the machine has supplanted the world of human action, in the moral sense of the term: "the policy of mutual assured destruction supplants diplomacy; the contraceptive pill supplants chastity; the cinema supplants recreation, especially prayer; managerial and propaganda techniques replace older practices and virtues of loyalty" (n.p.). Hochschild actually built his argument upon the statement of Hittinger (2003), who understands technology not as just a tool per se, but rather as "a new cultural pattern in which tools are either deliberately designed to replace the human act or at least have the unintended effect of making the human act unnecessary or subordinate to the machine" (Hittinger, 2003, p. 83). Lewis (2001) has made a very similar point about technology in his book, by inferring that technology can disguise from us the possibility of evaluating our actions, in terms of good and bad, which constituted for this study, the heart of MI. Furthermore, technology could present a threat to some of the values and virtues that used to be admired in the Catholic culture. For example, due to the acceleration of the acquisition of knowledge, many students are experiencing lack of "temperance" or "patience" in their attitudes. Another example was the lack of resolve, hyperactivity disorders, stress, and anxiety, which could be observed among children who spend more than 50% of their time on technological devices without supervision (Morrison-Valfre, 2017, p. 145).

All the aforementioned imply the need to evaluate technology in a new way—a way that is different from the Catholic traditional moral way of evaluation, or what is known as "ethics of use". Considering how technology might change peoples' brains (Carr, 2011), or alter their desires, skills, expectations, and behaviors (Morrison-Valfre, 2017), Catholic schools are thus invited to be cautious, and to implement technology in their curriculum, according to a strategy that is more critical and communal, taking into account the critical theory of technology, the virtues ethics framework, and the values enhancing educational and social justice.

Conclusion

To sum up, most research involving 1:1 programs in schools, seeks to identify its impact on the students' academic achievement, and on their imminent observable behaviors in the classroom. These studies imply the need for research that takes into account the skills and the traits that are considered to be very important, for a more progressive education of the whole child, which is committed to social and moral justices. The moral development, or what we have called in this research, the MI of the students, are one of these traits. MI constitutes in fact, an essential trait for human integrity, as well as for an education that strives to be holistic (Clarken, 2010), what is more truly Catholic (Bryk et al.,1993). Nonetheless, Johnson and Rubin (2011) noticed that research on morality in education is still limited, or even "neglected." This has resolved into having meritocracy and quantified grade point averages (GPAs) as the only measures of student success. This would noticeably conflict with the progressive principles of an education for social justice, which call for fighting the mainstream mindset, and implementing a culturally relevant pedagogy that takes all aspects of the student's culture, particularly its moral aspects, into account. This education for social justice requires also a comprehensive approach of

student success, according to the Freirean principle of humanization, which transforms the student from being just a "user," or even an object of cognitive skills, into a full human person (Freire, 1998), created in the image and likeness of God (Genesis 1: 27).

On the other hand, an overview of the literature concerning the relation between 1:1 programs and students' MI, in Catholic schools, illustrates a need for more research on this narrowly studied topic. This topic is well aligned to be analyzed according to a social justice standpoint, along with Catholic moral perspectives, because of the wide range of the goals, and the teaching methods, and the results, associated with the implementation of 1:1 programs. As such, there is confusion about the impact of 1:1 program on student learning, in the literature, and very little investigating its relationship with morality, due to the value-neutral perspective that many Catholic leaders have adopted in regard to technology. This underlines the importance of conducting more studies on this crucial topic, from a critical perspective, in the Catholic sphere.

Finally, there is an obvious need in the educational setting, to answer the leaders' concern, if the seductive image of every child having his or her own computer, can truly lead to better education. In effect, as stated by Lei et al. (2008), the cost-effectiveness analysis of 1:1 program, is not straightforward as we would desire, because the cost of implanting 1:1 program, surpasses the expense of providing and maintaining the device. Not to mention that the use of devices might include "potential psychological and developmental harms" and "opportunity cost in terms of child and adolescent development" (preface, loc. 134). Consequently, endeavoring a research on 1:1's potential effects on the learners' MI, remains indispensable for Catholic

educators, who strive to provide their students, with the best classroom's conditions, under which moral maturity and good behaviors are more likely to occur.

CHAPTER 3

METHODS

Given the fact that students' achievements are assessed not only through academic results but through moral and behavioral attitudes as well, integrating a 1:1 computing program in schools remains a subject which demands more thorough study, presents several challenges, and poses multiple ethical questions. This idea has even more merit in the Catholic sphere, inasmuch as Catholic schooling is concerned, more than any other system, with changes implied by high-technology on one hand, and the moral consequences that could result from it on the other hand

While several studies have studied the implementation of 1:1 program in public schools, this study sought first of all to examine the way(s) in which 1:1 program has been implemented in a parochial Catholic school in the Archdiocese of Los Angeles. Secondly, diverging from the studies that dealt with the 1:1 computing's impact on the students' engagement and academic achievement, the current study strove to understand if there is any correlation between the students' use of digital devices and the growth of their moral virtues, which constitute their MI—an ability-based characteristic, that is believed to be as much important as the intellect for a holistic education (Clarken, 2010).

Most scholars consider effectively the MI as a skill, rather than a trait-based ability, which grows according to invariant qualitative stages that describe the structures of moral reasoning, as opposed to the content of the moral judgment (Rich & DeVitis, 1985; Supavai, 2014). Conversely, inasmuch as the moral reasoning is presumably affected by a myriad of socio-educational factors (Supavai, 2014), Tanner and Christen (2014) stressed the need for further work, in order to better understand the factors affecting the growth of MI, to define the

proper standards and values lying behind it, and to ascertain how the educational environment should be designed, in order to facilitate and cultivate the development of MI. The current study attempted to contribute to this much needed work, by trying to identify if the digital technology, or more specifically, what is known as 1:1 program, could be considered as one of these unidentified factors or educational designs that facilitate or hinder the development of the children's MI in the school.

Broadly speaking, the major goal of this study was, first, to measure the extent and the way in which teachers and students are using the digital devices in the classroom, in order to determine if the costly technological reform effort, known as 1:1 program, was being genuinely adopted and morally adapted by the educational leaders, in a Catholic middle school. The study aimed secondly to identify any possible relationship between the use of digital devices by Catholic middle schoolers and the development of their MI.

In order to effectively answer the purpose of this study, a descriptive case study with a mixed methods approach was applied. Qualitative data were collected through classroom observations as well as through interviews conducted with the educational leaders. To provide quantitative data, a survey was created in order to measure students' screen time, their ways and their perceptions of using digital devices, as well as some aspects of their MI. For the purpose of measuring the students' self-reported morality, the last part of the survey consisted actually of six different question items that were adapted from Borba's (2001) essential virtues of MI. In fact, Borba (2001) listed seven essential virtues that contribute to a morally intelligent person, which are empathy, conscience, self-control, respect, kindness, tolerance, and fairness. The only virtue that was dismissed from the survey was the virtue of self-control. This virtue was observed

in the classrooms, however. The data from the variety of sources were then analyzed and compared in order to get a preliminary idea about the implementation of 1:1 in a classroom and its connection with students' morality.

Research Questions

In order to achieve the purpose of this study, which was to discover how 1:1 program is being implemented in a Catholic school setting, and if there is any relationship between using digital technology in the classroom and the students' moral intelligence, the current study attempted to answer the following research questions:

1. How has the 1:1 program been implemented in a LA Catholic middle school?
    a. How do Catholic educators (leaders and faculty) perceive its implications on the school's mission, on the teachers' teaching, and on the students' learning?
    b. How are Catholic educators integrating such an educational technology program, in order to establish a climate supportive of the moral development of adolescents?
2. How do middle school students use and perceive educational technology?
    a. Is there any connection between educational technology and students' moral virtues?

As seen in the questions above, the primary variables of interest include educational technology and moral development or virtues. In this study, the term *educational technology* referred to the 1:1 program initiative, currently implemented in the Catholic school setting, and the expression *moral development* or *moral virtues* was conceptualized as the capacity to

distinguish right from wrong, to process moral information, and to act according to moral principles in order to behave correctly and honorably. To answer these questions, I selected a parochial Catholic school, with a 1:1 program in place, where I interviewed the principal, the vice principal for Information Technology (IT) planning and operations, the technologist, the Junior High homeroom teachers, as well as the religion teacher for the middle school. I then conducted one-day classroom observations in each middle school's class, before I surveyed the students.

Context

The context of the current study was delimited to the largest system of private schools in the United States according to McLaughlin and Broughman (1997), namely the schools run by the Roman Catholic Church. More specifically, this study was focused on Saint Maron's school (a pseudonym), a parochial Catholic co-educational school in the Archdiocese of Los Angeles, with particular focus on sixth, seventh, and eighth grade. Saint Maron's School (SMS) is a Catholic Kindergarten through Eighth grade school, whose mission is to develop and educate the whole child by instilling in the students the knowledge, faith, and love necessary for academic growth, acceptance of others, accountability as well as for an active Catholic faith.

Established in 1949, SMS has kept its enrollment almost steady serving today a total of 312 students with a principal, two vice principals, a religion coordinator (forming the administrative faculty), 17 teachers, eight instructional aides, a librarian, resource specialist, and four people composing the office staff. At the middle school level though, there are five classroom teachers who teach six different academic subjects (Art and Religion are taught by the same teacher) to the 103 students enrolled in sixth through eighth grades. The school has adopted

a nondiscrimination policy which made the student population a racially and ethnically integrated community that includes White (66%), Hispanics or Latinos (16.7%), Filipino (7.3%), Asians (6.5 %), African Americans (1.3%), mixed races, and other (2.2%.). However, from a religious standpoint, despite the few non-Catholic students enrolled in elementary grades, all middle school students are Catholic. Finally, the 103 middle school students are comprised of 68 boys and 35 girls.

Considering technology as an important part of children's lives and as a significant tool to expand the breadth and depth of education, SMS introduced the 1:1 iPad pilot program in the 2014 to 2015. This implementation occurred after a poll was conducted among the school community and after testing the program within a pilot room for a Math class during one school year. At the middle school level, iPad Carts with a device for each child were implemented and all academic subjects were supplemented with several resources such as the Google classroom, the Digital assignment submissions, the online curriculum, the curriculum apps, the writing tools, etc.

Participants

In order to understand how teachers and students were using educational technology and its connection with morality, the focus of this case study was on the middle-school grade levels (sometimes called junior high school). On one hand, as mentioned earlier in this study, Catholic schools are supposed to be more attentive to the moral wellbeing of their students according to the Catholic moral teaching. On the other hand, from a moral standpoint, adolescence is fairly assumed to be the most revealing stage of the development and of the growth of any individual. That said, the current study involved three groups of participants. The first consisted of the

principal and the vice principal for Information Technology (IT) planning and operations, and the technologist who assists the teachers in integrating the 1:1 program in their curriculum. The second group was formed by the middle school teachers, who are teaching academic subjects in grades six through eight. As to the third group of participants, it included the middle schoolers, who are currently enrolled at SMS, in grades six through eight.

Educational leaders

In order to gain a better understanding of (1) the implementation of the 1:1 program at SMS, (2) the perceptions of the leaders and the teachers in regards to this program, at the middle school level, (3) the implications of technology on the teaching and the learning processes, and (4) a sense of whether technology and student morality might be related, eight leaders from SMS were selected to be interviewed. Those leaders were the principal, the vice principal for IT planning, the technologist, the middle school Religion/Art teacher, as well as the homeroom teachers of grades six, seven, and eight. The following table (Table 1) provides a better picture of the interviewees, their gender, their occupation, their tenure, as well as their self-identified technological savviness.

Table 1
List of Interview Participants

Pseudonym	Gender	Occupation	Tenure at SMS	Technology savviness based on self-identified description
Dr. Grace	Female	Principal	16 years 6 years (principal)	Leaned toward expertise
Ms. Smith	Female	Vice Principal (IT Planning & Operations)	23 years	Expert
Ms. Scott	Female	Technologist/Webmaster/Communications	17 years	Expert
Ms. Yang	Female	Vice Principal (Curriculum & Instruction) Jr. High Math/Science	24 years	Average (in the middle)
Ms. Jackson	Female	Sixth Grade Jr. High Language Arts	4 years	Average (in the middle)
Ms. Moreno	Female	Eight Grade/Jr. High Math/Science and Math	10 years	Leaned toward expertise
Ms. Ora	Female	Art (5-8)/Jr. High Religion/Org. Skills	29 years 13 years (full time)	Novice
Mr. Cohn	Male	Seventh Grade/Jr. High Social Studies	2 years	Leaned toward expertise

Students

There were 102 students enrolled in the middle school at SMS, during the 2018-2019 school year; almost 34 students in each grade from grade six through eight. All of those students were selected in order to provide quantitative data for this study, gathered via a survey about their attitudes toward technology, their technology use, and their moral virtues. From these 102 students, informed consent by parents was returned for 49 students, who were then enrolled in the study. A total of 49 students completed the survey portion of the study. Of the respondents, 67% (32 students) were male and 33% (16 students) were female, with one missing answer. The average age of the respondents was 12.8 years old with an SD of .70. Twelve and a half percent of the respondents (six students) were enrolled in grade six, another 12.5% (six students) were in grade seven, and the remaining 75% were eighth graders. The average time spent with a 1:1 program experience showed a categorical mean of 2.79 years with a standard deviation of .66. All (100%) of the participants also indicated having access to a computer at home.

Design and Procedure

Recruitment

The school participating in the case study was selected through what Patten (2016) named purposive criterion sampling, in that the school had an educational technology program in place and was open to a researcher spending time, conducting observations, and interviewing faculty to learn about their views of technology and its relationship with morality. The sampling was purposeful because it is more appropriate for the scope and the purpose of the study (Tongco, 2007). Although there were limitations with looking at only one Catholic school, this case study was the few to provide insight into understanding how 1:1 initiatives were being

implemented in the Catholic sphere, from a moral standpoint, and could possibly establish a framework for additional future research about 1:1 program and morality in Catholic schools. In fact, the purposeful sampling was generally used to discover, to gain insight into understanding what is occurring in a given setting, and to extract tremendous amounts of information about issues of critical import to inquiry (Patton, 2002; Merriam, 2009).

Qualitative Procedures

After having emailed the principal and the vice principal for IT planning and operations, I received approval to conduct the study. First, I interviewed the vice principal followed by the principal. Second, I attended a faculty meeting, where I met the teachers and introduced them to the purpose of the study. Third, I conducted classroom observations for three consecutive days, one observation per grade. Finally, I interviewed the selected sixth, seventh, and eighth grade teachers, including the religion teacher, as well as the technologist.

Interviews. In-depth interviews were conducted with the principal, the vice principal for IT planning and operations, and afterwards with the teachers and the school technologist, in order to understand better their perspective towards the 1:1 program, its advantages and disadvantages for the teachers and the students. While the length of the interviews varied from one teacher to another, a typical interview lasted an hour, on average. The interview with the principal was the longest and lasted around two hours. The interview process consisted of three main parts: introduction to the interview, scripted questions, and the concluding session, as shown in Appendix A. During the introduction, the purpose of the interview and the overall study was explained to each participant. I then provided the consent form to receive consent for their participation and to record their answers, emphasizing the anonymity and confidentiality of

their responses. After receiving approval from each interviewee, all interviews were recorded and handwritten field notes were taken as well to improve accuracy in data gathering. Then, I asked open-ended questions about their perception of the 1:1 program and their view of technology interacting with morality. Before concluding the interview, I thanked participants for their collaboration and their active participation in the study.

These semi-structured interviews entailed predetermined questions about the topic to support the data collected through classroom observations. I individually transcribed the interviews and analyzed the data following Gay, Mills, and Airasian's (2012) three-step process: namely (a) reading the material multiple times, (b) examining the data describing key details, and (c) coding the emergent themes. Said differently, in order to allow for patterns to emerge, the coding and recoding phases were done cyclically in the following way: I pre-coded the transcripts, whereby I circled and highlighted participant quotes that seemed significant. During the following reading, I began to apply descriptive quotes to different quotes and passages. Finally, after noticing patterns, I noted these to categorize them into emergent themes, looking at the same time for ideas to help explain why those patterns exist in the first place (Saldaña, 2016).

It is worth mentioning that I sought written feedback from faculty members to gather their input on the transcription, which made the findings of the study shaped more by the respondents than by myself as the researcher, lessening the limitations of my personal bias, and enhancing the trustworthiness of the study.

Observations. Observations are usually an important component of any qualitative research, and they were appropriate for this study in order to obtain more objective data. In fact, as mentioned by Gay et al. (2012), obtaining accurate information only through surveys can be

problematic, especially as it may be difficult for participants to remember exactly what they did versus what actually occurred, and the researcher cannot always ascertain the truthfulness of self-reported data. In addition, conducting observations in the classrooms is often considered an important piece in social science, which "fundamentally depends on watching people in their own territory and interacting with them in their own language, on their own terms" (Krefting, 1991, p. 214).

After finishing the interviews with the vice-principal and the principal and before interviewing the teachers, I began conducting school-day long observations for a duration of one day per grade. Twelve observations in total, for three consecutive days, were conducted to gather data about the classroom dynamic of the 1:1 program. The observations were planned ahead of time with the teachers in collaboration with the principal and the vice-principal. On each day of observation, my presence as observer and the goal of my observation, were announced briefly by the teacher in question, at the beginning of the class. As observer, I was sitting in an unobtrusive spot in the classroom without any interaction with the classroom environment in order to not influence the lesson. In other terms, as a nonparticipant observer, I was less intrusive in the classroom, and I was able to gather primary data about the learning environment, the students' as well as the teachers' behaviors and attitudes, without direct interaction with the participants and without interfering with the dynamic of the already-formed relationships in each of the classes, as recommended by Gay et al. (2012).

Document analysis. Various documents about the school's mission and philosophy, the creation of the technology advisory committee (TAC), the implementation of the 1:1 program at SMS, as well as the Western Catholic Education Association (WCEA) accreditation report, the

2018 WCEA Annual Report of Progress (WARP), and two Western Association of Schools and Colleges (WASC) annual reports, were provided to me, as lead researcher, by the principal and by the vice principal for technology. I spent approximately two to three hours each day, for a period of seven days, looking at those documents, gathering evidence to support my research study, and identifying words, statements, policies, and procedures, that are related to themes and patterns associated with the implementation of 1:1 program and morality. Some copies were obtained to maintain proof for presenting the results of this study.

Quantitative Procedures

The quantitative data in this study consisted of a survey distributed to the students during the art and language classroom hour, after having conducted the classroom observations and having finished the interviews with the teachers.

Student survey. After receiving the principal's permission, the parents' consent, and the students' assent, middle school students were asked to fill out a relatively short survey (see Appendix B), for 15 to 20 minutes. The student survey constituted a cross-sectional survey in order to gather data from the students about their technological and moral standpoints, inside as well as outside the classroom setting. This student survey aimed to allow students to describe their attitudes toward technology, their frequency of technology use, and provide a sense of their moral virtues (as defined by Borba, 2001). The student survey was created and administered through Qualtrics software (Qualtrics, Provo, UT, 2019), and was composed of three main sections, focusing respectively on the students' background and their relationship with technology, on their attitudes towards the 1:1 program at their school, and on their level of

morality through six items inspired by Borba's (2001) moral virtues. Most of the items were measured on a Likert scale (Appendix B).

Prior to announcing the study to students, an announcement was placed in the parent newsletter informing the parents of the study. Following the parent newsletter, students were notified of the study by each homeroom teacher. Students were given a packet to take home to their parent(s) and/or guardian(s), which included an overview of the research, the Loyola Marymount University's Experimental Subjects Bill of Rights (see Appendix C), and a parental consent form. Two weeks later, only 49 students, which represented 48.03% of the total number of middle schoolers at SMS, had submitted their parental consent, and hence were allowed to complete the survey, which occurred during the language arts classroom hour. Of those with parental consent, a total of 49 responses to the survey were received, for a 100% response rate.

Measures

Interviews

In order to fully understand how students were using their digital devices, how teachers were implementing the 1:1 program in their instruction, and how they were negotiating technology along with morality, information was gathered by conducting interviews with teachers. This approach was based upon the assumption that while observations could provide general information about the implementation of 1:1 program in SMS, as well as about the individual use of digital technology by the students, richer information could be collected through extensive interviews with the participants, where more specific questions were posed, with more time allowed for participants to respond. In other words, the qualitative data resulting

from the interviews served to illuminate greater meaning in the data collected through the observations.

The interview questions were developed through the combination of two common approaches to developing interview questions, which—according to Rubin and Rubin (2011)—were usually utilized in qualitative research. These approaches are respectively my experience and knowledge as a researcher, and the literature. In addition, a number of probing questions were used throughout the interviews to make sure that there were no flaws or misunderstandings in the captured information, or to gain additional data from the interviewees.

As for the questions, they were elaborate although the focus remained the same. Each interview included questions like: (a) What are the main advantages presented by 1:1 program?; (b) What are the main difficulties you encounter as a teacher in 1:1 classroom?; (c) How does your teaching style now differ from your teaching before you had 1:1 program in your classroom?" or (d) "How do you consider student learning with 1:1 has been different/ similar from how students used to learn before the 1:1?, or even (e) Why do you believe that technology bears (bears no) moral values or presents (presents no) implications on the development of moral or ethical character of the student?

Few specific questions were linked to the data already collected through the classroom observations and tried to probe for deeper explanation to understand better the findings from the observations. In some cases, selected teachers were asked questions like "how do you explain this behavior?" For an exhaustive list of the interview questions, please refer to Appendix A.

Observations

As mentioned above, one day of classroom observations with each grade were conducted, for a period of three consecutive days. These observations provided a sense of the scope to which teenagers are using their digital devices for education on one hand, and the extent to which teachers are genuinely or symbolically adopting the 1:1 program in their class, on the other hand. I was simply observing typical classroom behaviors without attributing any behavior to a specific student. As observer, I referred to an observation form (refer to Appendix D), to record findings about the teachers' behaviors, and about the students' interactions in the classroom, including academic and moral interactions. The observation form englobed items like the classroom setting, the amount of time spent using digital devices, students' actions and behaviors, especially from a moral standpoint. These behaviors were specifically described and they connoted the same virtues that were measured in the students' survey. For example, the virtue of empathy was measured through three observed behaviors, namely (a) "Showing concern about the wellbeing of others", (b) "actively caring about others", and (c) "expressing easily own feeling(s) to others." Another example would be measuring the virtue of self-control through the following behaviors "displaying signs of physical or psychological aggression, "interrupting or blurting out answers or questions", "in need for reminders or reprimands to behave appropriately", and "tempted to open off task webpages when left alone for a short time."

On the other hand, teachers' actions and attitudes related to the same aforementioned virtues were also noted during the observation. For example, actions expressed by the teacher, like "fostering emotional vocabulary", "enhancing sensitivity to feelings", or "providing

opportunities for students to express and to listen to different points of view" were counted in order to measure the virtue of empathy.

Survey

The student survey encompassed questions related to the students' background, the time they spend on their devices, and how they used technology. Additional questions focused on their attitudes towards the 1:1 program at their school. Finally, survey questions sought to assess students' moral attitudes or behaviors through six items inspired by Borba's (2001) moral virtues (cf. Appendix B).

Background. The student survey contained an introductory section that emphasized anonymity, encouraged honesty, and introduced the scope of the following questions. This section was presented along with a student assent form, giving each participant the option to continue the survey or not. Eight demographic questions followed, in order to provide background information on the respondents, along with their self-reported level of comfort in using digital devices, their average time spent using a computer/tablet per day, and the amount of time spent on a computer for school work or other activities. Finally, time spent on a device in school was measured along a 5-point Likert scale ranging from "never" to "always" for each of the different classes in school.

Attitudes toward Technology. Attitudes toward technology were measured along a 5-point Likert scale ranging from "strongly disagree" to "strongly agree." For example, items included: (a) "I believe that I can learn better when I use my tablet/laptop in the classroom." and (b) "I believe using my tablet/laptop in the classroom easily distracts me" (cf. Appendix B).

Morality. Students' morality was measured through a set of seven 5-point Likert scale items that were adapted from six of Borba's (2001) seven virtues for building moral intelligence and character. These virtues were empathy, conscience, respect, kindness, tolerance, and fairness. Borba's virtue of self-control was not measured via the survey. Ranging from "never" to "always", these items included questions like: (a) "I feel for others and show it so they know I care about them" to measure the virtue of empathy, and (b) "I accept that other people do mistakes" or even (c) "In general, I am able to forgive and forget" to measure the virtue of kindness (cf. Appendix B).

Analytical Plan

The method of analysis for the quantitative data could easily be described as "descriptive statistics", to provide a rich picture of SMS leaders' attitudes toward technology along with their beliefs as to how technology might influence the moral development of the students. Descriptive statistics are actually appropriate to the case study approach, and address best the first research question, concerning the way of implementing the educational technology program, known as 1:1 program, in a Catholic middle school. Henceforward, the method of analysis chosen for the qualitative part of my study was an emergent approach of thematic analysis. Qualitative interviews were the primary method in the study, yielding various perspectives on the research questions, related to the use of digital technology by students and the perceived consequences of this use, especially from a moral standpoint. Direct naturalistic (non-participant) observations of classrooms constituted the other qualitative technique in which I observed the processes of teaching and learning in the 1:1 program setting. As for the quantitative part of the study, albeit with a small sample, multiple correlations were run between the different items of the student

survey, to see if any relationship exists between the students' moral virtues, and their attitudes toward technology use on one hand, and the kind of activities that they spend behind the screen, on the other hand.

Interviews

To analyze the interview data, the constant comparative method (Merriam, 2009) with an emergent approach was employed because it allows for determining the similarities and differences among the collected data, hence for the identification and the elaboration of patterns or categories in the data. Said differently, the analytical process of the interviews included first of all the transcription of the interviews, then the coding of the data collected, followed by the analysis of the emerging themes and trends, in relation to the research questions. In order to accomplish the transcription phase, the responses to interviews were transcribed with the assistance of a software called "Transcribe". After being transcribed, each interview was analyzed and studied to determine the presence of the major themes. The study of all the interviews enabled me as researcher, to determine the codes based on the recurring themes. I analyzed afterwards all the data collected from the different interviews, in order to determine the recurrence of the codes, creating thus different analytical memos, in the major areas which arose from the code analysis.

Observations

The analysis of observational data included coding the verbal and behavioral interactions that were observed, then analyzing those codes according to their recurrence. Applying the moral framework of Borba (2001), the observation protocol form borrowed from her seven essential virtues of MI, to measure morality among students. As such, the analysis of the observations of

the students' behaviors as well as the teachers' attitudes, followed Borba's (2001) essential virtues, leading the researcher to evaluate student behaviors under one category or more from the virtues listed below, according to the frequency of behaviors or attitudes observed:

- Empathy
- Conscience
- Self-Control
- Respect
- Kindness
- Tolerance
- Fairness

In addition to this deductive approach to coding observations, emergent themes were also captured to provide a more inductive look at the data as well. Taken together, the findings accounted for the use of technology in the classroom and for the different virtues composing the concept of MI as defined by Borba (2001).

Survey

While research suggests that survey studies generally can expect a response rate near 20% (Visser, Krosnick, Marquette, & Curtin, 1996), asking the parents' consent through the teachers allowed for a response rate of 48.03 %. In effect, 49 out of 102 students had parental consent to complete the survey. Students were also presented with an assent form at the start of the survey, to which all participants agreed to participate. Prior to completing any analysis, the raw survey data were examined to ensure that only fully completed surveys were incorporated

into statistical tests. Interestingly, all of the 49 students who began the survey completed it. Consequently, all of the survey data were included in subsequent analysis.

Secondly, using the Statistical Package for the Social Sciences (SPSS) statistical software, Version 24.0 (IBM Corporation, 2019), the data collected were analyzed to determine the reliability of measures. The survey data suggested that the six items related to the participant's attitude toward technology had a moderate internal reliability, with a Cronbach alpha of 0.65 ($\alpha = .65$). Only one item was dismissed. Therefore, a mean composite was created across the five items to constitute a single variable representing students' attitudes towards technology. This composite was used in subsequent analyses. To examine students' use of technology, each of the six items (classroom work, homework, group projects, social media, games, and others) were examined individually, and no mean composite was thus created to represent student technology use. Next, the six moral virtues were also measured by single items on the survey and therefore no composite was created. Henceforward, to answer the second research question, Pearson correlations were calculated based on the mean composites representing students' attitude towards technology, their ways of using the devices, and their moral values. Given these variables, correlational analysis were utilized to assess whether a positive or negative correlation existed between each pair of variables, and to determine the strength of such a correlation, if any existed.

Trustworthiness, Validity, and Credibility

Inasmuch as the current study adopted a mixed methods approach, both quantitative and qualitative validity strategies were considered in a way that best works to build credibility, validity, and trustworthiness of the data, data collection, and outcomes of the study.

Protection of Human Subjects

According to McMillan and Schumacher (2001), researchers are bound by legal and ethical considerations in conducting studies on human beings by protecting the privacy and the rights of the participants in the study. In order to ensure and maximize protection of the participants in this study and henceforth to increase the validity and trustworthiness of the data, different strategies were used.

First, as the lead researcher, I was a doctoral student who have completed the course on Human Subject Research and have sought the approval of Loyola Marymount University's Internal Review Board (IRB) before collecting the data. Second, I pursued a letter of recommendation from the superintendent of Catholic schools in the Archdiocese of Los Angeles (LA) to facilitate and encourage gaining access to Catholic schools in LA. Third, as interviewer, I used previously prepared questions in order to interview the participants. The protocols used included setting up an interview at the time convenient to the interviewer and interviewee. The interview was recorded to ensure accurate transcription and objective analysis. Fourth, the adult interviewees were asked to sign consent letters. Fifth, pseudonyms were used for all the names that were used in the study, and the school's name was changed as well, to ensure anonymity and confidentiality.

All these measures were taken into consideration during the entire process of data collection, analysis, and interpretation. In adopting these strategies, the validity and the credibility of the study increased, and its integrity was preserved.

Reliability and Validity of the Surveys

In order to assure a strong internal reliability among the different items in each survey, especially those related to the students' attitudes toward technology use, a Cronbach's alpha measure (α) was computed using the statistical software SPSS. For example, to reduce measurement error in the variable of attitudes toward technology, the last item was taken out from the analysis in order to assure a moderate internal reliability, with a Cronbach alpha of 0.65 ($\alpha = .65$).

Content validity was achieved by linking the survey items concerning the moral virtues to Borba's (2001) book about moral intelligence. In fact, each item measuring morality in the survey was based on the explanation of each moral virtue found in Borba's work (2001). In addition, I worked with my dissertation committee, who provided feedback on the items in the survey to improve content validity. In fact, my dissertation committee provided input on the clarity and the appropriateness of each statement in the survey to create a better survey instrument.

Trustworthiness

According to Lincoln and Guba (1985), a qualitative research study is considered trustworthy if it meets the criteria of credibility, transferability, dependability, and confirmability. The current study answered the first and the last criteria through what has been called "triangulation" given the fact that first, it adopted a mixed-method approach, and second, it examined the data from different sources (faculty and students) as well as through different analytical methods (i.e., observations, interviews, surveys). In fact, these types of triangulation were identified by Denzin (1978) as well as by Patton (1999), as methods for validation or

trustworthiness of qualitative research. Also, aware that “a researcher’s background and position will affect what they choose to investigate, the angle of investigation, the methods judged most adequate for this purpose, the findings considered most appropriate, and the framing and communication of conclusions" (Malterud, 2001, p. 483-484), I kept with the standard of reflexivity, as an ongoing analysis of the research data collection, as well as a continuous process of examining myself, as researcher. In fact, I always reflected upon the research process, in order to assess the effect of my different perspectives, as a Lebanese Catholic priest, as a psychologist, and as an educator, on the nature and the extent of the data that I collected. Hence, in Lincoln and Guba’s (1985) words, the confirmability has been established and the trustworthiness of the study had increased.

Limitations

There were several limitations within this study. The first was the limited number of participants, the majority of them having the same religious background and residents of the same region of the greater Los Angeles, was typical of any case study. A second one was my personal bias as Lebanese Catholic priest whose culture would be different than those of the participants. These limitations and others presented by this study will be discussed more thoroughly in the following paragraphs.

Sample Selection

Given the fact that the sampling of this study was purposeful, this case study was limited to one Catholic school, in one geographic area in the Archdiocese of Los Angeles. While purposeful sampling presented several limitations to the study, especially in regard to the generalizability of the study’s outcomes, it also provided in Merriam’s (2009) words, a

tremendous amount of information, about the implementation of 1:1 program, through an in-depth analysis of the teachers' perspectives as well as of the students' standpoint. Henceforth, despite its limitations, the purposeful sampling of this study contributed to establishing a framework for additional future research on the 1:1 program, by offering insight into understanding how this educational technological program is occurring in the Catholic classroom.

Personal Bias

The critical view I have adopted toward educational technology molded my interest as well as my choice of this study's topic. While some assume that this could have led to bias or skewedness in the research data, I believe that my personal preconceptions were not biased, as long as I kept a reflexive attitude toward all the data that I collected. After all, Malterud (2001) has expressed beautifully this idea, when he stated "preconceptions are not the same as bias, unless the researcher fails to mention them" (p. 49).

Qualitative Data

As for the observations, I have conducted naturalistic observations, by sitting in an unseen area of the classroom, without any interaction with the participants, which permitted to measure behaviors in the classroom as naturally happening, thus minimizing the "Hawthorne effect" (Cook, 1962). However, this kind of observation still offered the limitation of being incapable, as a researcher, of exploring the actual causes of behaviors. Consequently, it was impossible to determine if the observed interactions were really representative of what normally occurs in 1:1 classrooms. The data collected from the surveys and the interviews are used to

close the aforementioned gap, presented by the information collected through the classroom observations.

Quantitative Data

The students' survey data presented few limitations too. First, the self-reported aspect of all survey studies presented a limitation by itself. The students had been actually asked to respond to items measuring for example their attitudes toward technology, or their moral virtues, thus relying on their accurate and honest self-report. In other words, the social desirability bias, or even what was known as reference bias, was a very possible limitation in this context. Furthermore, inasmuch as the timeline for this study was very limited, the temporal stability of the survey test, which referred to the degree to which the subjects' scores were similar to their scores on the same instrument administered later, could not be assessed. The full set of criteria for scale reliability could not hence be satisfied.

An additional limitation of the survey was the small sample size of respondents. While all middle school students at SMS were asked to participate, more than 50% of them did not have their parental assent, which could be interpreted in many different ways. This fact magnified the difficulty of generalizing the findings of this study, a normal effect of a low rate of participants to the survey. However, the case study design required that all members of the setting share in the data collection. As such, the purpose of the study was less concerned with generalizing findings, and more interested in documenting a rich and descriptive narrative of how this school implements technology, and whether there was a perceived relationship with morality. Using a newly crafted measurement instrument could be also considered as a limitation to the survey

instrument, especially in a field where many scales and inventories existed. However, adapting a pre-existing measure of morality limited the negative side-effects of this limitation.

Lastly, the research findings of this study might have been skewed toward the faculty's perceptions of the topic. That was, due to the time allotted for data collection, students could not have the opportunity to convey their perspectives on the implementation of 1:1 program and its connection to morality, but only through the survey responses. Thus, the complete scope of the participants' voices was limited, which gives path for future research to close this limitedness.

This chapter has described the methodology I planned and used in order to gather and analyze the data. The findings are presented and discussed in the next chapter, before I offer few recommendations for future studies, in the last chapter.

CHAPTER 4

FINDINGS

Study Background

The goal of this case study was twofold. First, it explored how an educational technology program, known as the 1:1 program, was implemented in the junior high grades at Saint Maron School (SMS), and how the teaching and learning processes were impacted by the use of digital devices. Second, SMS is a Catholic middle school and as such, the study aimed to better comprehend how SMS was negotiating the issue of implementing technology in the school, along with the issue of morality, in order to explore any possible relationship between the use of digital devices and students' moral virtues. Hence, the two research questions which guided this descriptive case study are:

1. How has the 1:1 program been implemented in a LA Catholic middle school?
    a. How do Catholic educators (leaders and faculty) perceive its implications on the school's mission, on the teachers' teaching, and on the students' learning?
    b. How are Catholic educators integrating such an educational technology program, in order to establish a climate supportive of the moral development of adolescents?
2. How do middle school students use and perceive educational technology?
    a. Is there any connection between educational technology and students' moral virtues?

To address these two research questions, I engaged in an exploratory case study approach (Yin, 2014; 2017). In fact, Yin (2014) defined the case study research as "an empirical inquiry that investigates a contemporary phenomenon (the 'case') in depth and within its real-world context" (p. 16), with a "linear but iterative process" (p. xxii). He added that a case study usually includes six elements, namely: the plan, design, preparation, data collection, analysis and reporting. In line with Yin's (2014) logic model analytic tool, I implemented a sequential mixed method design (Creswell, 2014), where I collected qualitative and quantitative data independently, from several sources, in order to triangulate the data (Flick, 2018), and thus to gain more insights on the implementation of the 1:1 program and to look for patterns in relation to the use of digital devices in the classroom with the students' morality.

Qualitative data were gathered through document analysis, classroom observations, and interviews with the principal, the vice principal for Information Technology (IT) planning and operations, the technologist, and the Junior High homeroom teachers. In fact, I conducted three full consecutives days of classroom observations in junior high classes (for a one-day observation per grade), where I observed the dynamic of the class, starting with the time devoted for the use of the iPads by the students, then the students' behaviors from an academic as well as from a moral standpoints, and ending with the teachers' attitudes and behaviors concerning the students' use of iPads, also on the academic and moral levels. The observation data are presented in the following section according to the themes that emerged from the interviews on one hand, and from the survey on the other.

Interviews with faculty and school leaders emphasized how the 1:1 program has been implemented, and shed light on the participants' backgrounds, their relationships with

technology, their attitudes towards the educational technology program, and their conceptions of its impact along with morality. The qualitative interviews were conducted with almost all the junior high leaders at the school providing a wealth of qualitative data to answer the first research question regarding the way leaders implemented the 1:1 technology program, and their navigation of this implementation, with the moral mission of the school. These interviews also produced data that addressed the second research question, by highlighting the perspectives of the faculty members and the junior high teachers, in regard to both the implementation of the 1:1 and the possible connection between the use of digital devices and moral values in students. Because the experiences and reflections of the educational leaders are important to this study, they were quoted extensively, so that these leaders' individual voices can be heard (Denzin & Lincoln, 1994). Below I present a reminding table of the interviewees along with their biographical information.

Table 2
List of Interview Participants

Pseudonym	Gender	Occupation	Tenure at SMS
Dr. Grace	Female	Principal	16 years Six years (principal)
Ms. Smith	Female	Vice Principal (IT Planning & Operations)	23 years
Ms. Scott	Female	Technologist/Webmaster/Communications	17 years
Ms. Yang	Female	Vice Principal (Curriculum & Instruction) Jr. High Math/Science	24 years
Ms. Jackson	Female	Sixth Grade Jr. High Language Arts	Four years
Ms. Moreno	Female	Eight Grade/Jr. High Math/Science and Math	10 years
Ms. Ora	Female	Art (5-8)/Jr. High Religion/Org. Skills	29 years 13 y. (full time)
Mr. Cohn	Male	Seventh Grade/Jr. High Social Studies	Two years

Quantitative data were gathered through a through a 15-minute, anonymous survey, that was administered to the sixth, seventh, and eighth graders, during their Language Arts class. The survey data shed light on the students' use of digital technology, and on their level of morality through six items inspired by Borba's (2001) virtues of the Moral Intelligence. The studied virtues were empathy, conscience, tolerance, respect, fairness, and kindness. The survey data provided insights about the second research question, which attempted to learn about students' use and perceptions of technology. The second research question was therefore investigated via the results obtained from the students' input on the survey and from classroom observations.

In this chapter, I will elaborate the findings from both qualitative and quantitative data, classifying them according to the two primary research questions, where I will highlight the

corresponding themes and patterns that emerged from the data. Results from the documents, the classroom observations, the interviews, and the survey were triangulated to provide a picture of what the 1:1 program looked like, in a Catholic Junior High classroom at SMS, as well as its impact on academics and discipline from the leaders' perspective, and the moral aspect of its implementation, in addition to any possible connection between the use of screen and the students' moral values. To that end, both quantitative and qualitative data provide a rich picture of the "case" of the 1:1 educational technology program at SMS Catholic middle school.

The Case: Technology at SMS

Located in the suburb area of Los Angeles, SMS is a parochial Catholic co-educational Kindergarten through Eighth Grade School. Since the school opened in 1949, the enrollment has been steady with almost 300 students in grades one through eight. According to the United States Census Bureau (2019), the median household income in SMS' location has a current average of $67.169, which is 1.17 times higher that the U.S. Median household income, and 82.6% of households are subscribed to the broadband Internet. This connotes actually that SMS community is a relatively wealthy one. The faculty at SMS is formed by the principal who has been there for 16 years, two vice principals, and a religion coordinator. There are also five junior high classroom teachers, and 103 students who are enrolled, in sixth through eighth grades. The mission of SMS states explicitly that "as part of a nurturing community with a strong sense of family and parental involvement, (SMS) fosters Catholic values, academic excellence, and community pride. The administration, faculty and staff are committed to the school-wide learning expectations, "Living By the A's," so that all SMS graduates are Active in Catholic Faith, Academically prepared, Accepting of others, Accountable for all actions, and Articulate

communicators. SMS was selected for this case because technology has taken a great deal of interest in the students' education at SMS, and because they have implemented a 1:1 technology program in the classroom three years ago.

Because the 1:1 program term is vaguely used to indicate the diverse ways of using digital technology in the classroom, I wanted to begin by learning from the faculty and teachers at SMS, about their process of implementing 1:1, and of using the iPads in their school. As such, my first research question was:

1. How has the 1:1 program been implemented in a LA Catholic middle school?
    a. How do Catholic educators (leaders and faculty) perceive its implications on the school's mission, on the teachers' teaching, and on the students' learning?
    b. How are Catholic educators integrating such an educational technology program, in order to establish a climate supportive of the moral development of adolescents?

This research question covered three different areas of study; namely, the way of implementing 1:1 program at SMS in general, the impact of this implementation on the teachers, as well as on the students, and finally, the leaders' way of navigating the use of 1:1 program with morality.

Overview of the Implementation of 1:1 Program at SMS

The document analysis, along with the data that emerged from the interviews with Dr. Dr. Grace (the principal), Ms. Smith (the vice-principal for IT planning and operations), and Ms. Scott (the technologist), revealed important steps in the implementation of 1:1 program at SMS.

Accordingly, a quick note on the history of technology at the school is necessary, before addressing the 1:1 device program.

History of technology at SMS. According to a letter called "Path of Implementation of Technology with iPads" (PIT), which was addressed by Dr. Grace to the parents in 2015, technology has always been an important part of the children's lives at SMS, ever since middle of the first decade of the 21st century, when the computer lab and network infrastructure were built. Ms. Smith also provided a timeline, detailing the history of the technology program at SMS, per each year. According to this timeline, the parents first received access to grade link in 2009, then the smart board technology and fiber optic connectivity were launched in 2010-2011. After damages caused to the school's auditorium by a flood in January 2012, a three-tier infrastructure plan, including the installation of a new server, fiber optic bandwidth, and wireless access, was introduced, in order to ensure a successful implementation of the 1:1 device initiative in the classrooms. This three-tier plan also included the need to create a technology advisory committee (TAC), along with a digital citizenship/student phone plan, before handing the devices to the students. Therefore, after installing a new server and fiber optic lines (in order to connect the two buildings of SMS and to ensure wireless access for all classrooms), teachers, students, and parents were asked, in the beginning of 2014, to attend professional development sessions, on the use of the device and the digital citizenship, with a program called the "C3 Ignite Program." In fact, using Title IIA funding, the school collaborated with the "C3 professional development team to ensure that key technology skills were not lost with the transition of devices to the classroom" (Annual Report of Progress, 2018).

It is worth mentioning that the 1:1 program was thoroughly thought of, carefully planned, and tested, before it was fully implemented at SMS. Actually, before the 1:1 program was implemented, computer classes were taught in the computer lab for many years, as part of the curriculum. At that time, computer skills, such as word processing, desktop publishing, spreadsheet coding, web literacy, as well as the value of responsible use and digital citizenship, were the main skills to be trained for. According to Ms. Smith, when the idea of 1:1 program emerged, the faculty members started visiting schools that had already implemented 1:1, in order to see how it was working. Then, they surveyed the community and staff to get their feedback on the subject. The response to the survey was overwhelmingly positive. Consequently, a decision was made to begin implementing a 1:1 device program in junior high level.

The idea of implementing 1:1 program at SMS emerged, according to Dr. Grace, from a personal passion, which the school principal had at that time towards technology. Additionally, Ms. Smith revealed that the 1:1 program was the result of an interest, expressed by many parents, in providing technology to students in the classroom, as well as of a "big push" made by the need to get students ready for High school, especially when the local High School decided to use iPads with their students as noticed by Ms. Scott. Moreover, it was noted in the PIT (2015) that many high schools, attended by SMS graduates, were using the iPads and laptops in the classroom back then. This PIT letter actually traces the main steps of the implementation of 1:1 program at SMS, along with the major reasons that were lying behind this decision.

The technology plan at SMS. Having a technology plan for the school was considered necessary and imperative, for Ms. Smith and for Ms. Scott, in order to make the implementation of the technology program easy and successful. For example, Ms. Smith shared that a technology

program plan was critical, “so you can budget for it, prepare your faculty, prepare your students, and prepare your families for what is coming.” SMS updates its technology plan every five years, in parallel with the accreditation process of the Western Association of Schools and Colleges (WASC), and Ms. Smith is the one responsible for the updating process. The current technology plan at SMS has actually emerged from the action plans included in the 2009 WASC and the 2015 WASC accreditation reports. This current plan called for further integration of technology into classrooms, and for developing the technology skills of the faculty, staff members, and students, in order to respond to the school’s mission; which is to ensure high achievement for all students. In effect, the 2009 technology action plan instigated the creation of a “technology station” (SMART Board, technology cabinet, etc.) in every classroom, and provided iPads to the teachers to use with the SMART Boards, along with a preparation for a full integration of a 1:1 device program in all the classrooms. According to Ms. Smith, the 2015 WASC document came afterwards, to emphasize more on how to “complete and maintain the implementation of 1:1 program,” by finishing the infrastructure, by raising the funds to procure and maintain the devices, and by working on integrating technology with the curriculum. Given the fact that the implementation of 1:1 program had already been finished at SMS, almost a year earlier to what was planned for in the initial plan (at least concerning the fundraising and the infrastructure), the only remaining issue was the accomplishment of the curriculum and the digital citizenship, under the supervision of Ms. Smith and Ms. Scott. In effect, the 2018 WARP report, which referred to the Western Catholic Educational Assocaition Annual Report of Progress, that is sent to the diocese on a yearly basis, acknowledged the fact that the infrastructure, as well as the second and final year of capital campaign, were completed, raising

the funds up to a total of $187,688. This sum of money was obtained thanks to a strong fundraising program, specifically with regards to the festival, walk-a-thon, scrip program, and personal, communal, or even archdiocesan grants. In addition to that, some families in the school contributed in the amount of $1000 per family. The final step would be to put a plaque of recognition for donors, after having posted them on the school website. From a curricular perspective; however, the technology plan at SMS has taken into consideration the incorporation of technology in the teachers' lesson plans, in their ways of assessing students (i.e., STAR testing), and in their use of the devices during classroom hours.

Ms. Smith pointed out that the technology plan took into account, before anything else, the technical piece of the implementation of the technology program. However, the school leaders agreed that the academics, the financials, the student discipline, the professional development for the teachers and the parents, and the morality and ethical considerations, were all included in the technology plan, because, as Dr. Grace shared, "all of them are equally important" and need to be present for the plan to work well. Dr. Grace also stated that the elements of morality, or what is known as digital citizenship, outlined in the school's electronic Acceptable Usage Policies (AUPs), were a "huge" consideration for Ms. Smith because according to her, "you can't hand a child a device and hope they do what you're asking them to do at all times; you have to guide the child." Launched in the fall of 2018-2019, these AUPs addressed students and families to be mindful for example, of online privacy, media balance, digital footprints, cyberbullying, etc. SMS' AUPs integrated actually the Archdiocesan AUP, and included also several guidelines for the use of electronic and mobile devices, the prohibited practices as well as the consequences of the policies' violations (cf. Appendix E).

Technology advisory committee (TAC). During the interview, Dr. Grace called the TAC, the "Technology Campaign Committee" or TCC, which "consisted of parents who were experts in technology, and who have worked in different corporations, and are experts in getting grants and fundraising, as well as experts in communication" along with a few of the teachers. In addition to the information acquired from the interviews with Dr. Grace, Ms. Smith, and Ms. Scott, I was provided with a document titled "History of the Technology Advisory Committee" (HTAC), in which an overview of the formation of TAC and its history was detailed. TAC meeting minutes, over the years 2013-2015, were also summarized at the end of this 2015 dated document.

The different aforementioned resources revealed that the TAC was formed, back in 2013, from members, appointed by the school administration, with a main goal to work in congruence with the administration and faculty, in order to: (1) expand the smart classroom technology program at the school (by bringing input and help from the parent community), and (2) assist the community, the faculty, and the staff in this endeavor, and (3) ensure a timely and successful implementation of the 1:1 program. In fact, according to HTAC, it was stated that "the general purpose of the Technology Advisory Committee is to serve as a knowledge base for the implementation and utilization of educational technologies" (HTAC, 2015, p. 2) at SMS, through two main functions, namely; "to meet the needs set forth, identified, and established by the school administration" on one hand, and to identify and analyze the current trends and issues as they relate to the achievement of the school and the students, on the other. Said differently, according to Leslie, the TAC was not formed to make decisions, but to implement a personal vision, offered by Ms. Smith, to assist the faculty with the evaluation of new technology

initiatives, and to make a fundraising campaign in order to realize these initiatives. While Ms. Smith and Ms. Scott considered the primary work of the TAC to consist mainly of the launching of a capital campaign to implement the 1:1 program, Dr. Grace explained more thoroughly, the different aspects of the TAC's job, which could be also found in the HTAC. According to the principal, there were actually three interconnected "arms" to the TAC. The first arm was about researching, "about what is going to be right for the school, in terms of the curriculum and the device we're going to use [. . .] what technology we want to implement 'cause we didn't know if we were gonna do laptops or google books or whatever book." Dr. Grace, the principal, continued to explain that arm by enumerating considerations such as "BYOD (Bring Your Own Device), purchase versus leasing, not repeating the mistakes of other schools, did iPads help academics, would they benefit learning or test scores?" The second arm was more related to the technical aspects of the 1:1 program, in terms of dealing with issues like the infrastructure, the design and upgrade of the Wi-Fi network, the configuration, the security, and the management of the program, and the purchasing of apps. The third arm was the fundraising arm, which was responsible of launching a capital campaign, in order to raise money, in the amount of $250,000, from parents and private donors, from fundraisers, or even from grants coming from the Archdiocese, in order to supply the whole school with devices and technology carts. HTAC added a fourth arm, referred to as *communications*, which was composed of two persons, whose job was not explicitly stated, but who were most likely responsible for communicating the campaign needs and the suggestions made by the TAC, to the school community, and to the outside world.

Once the money had been raised and the different goals of the TAC accomplished, the TAC was disbanded at the end of 2016, because it no longer needed to meet, since "everything was launched then" as shared by Dr. Grace, and since there are two dedicated staff members, responsible for the technology piece at the school, according to Ms. Scott. The ultimate decision making, concerning technology, had always been in the hands of the principal and the pastor. Concerns related to technology issues have been handled by Ms. Smith, and the integration of technology into the curriculum has been mainly the job of Ms. Scott.

Burgeoning of 1:1 program at SMS. According to the interviews and based on a document called "Technology Campaign" (TC), written in 2015, with the signature of the principal and the pastor, I have come to the conclusion that the implementation of 1:1 program started effectively at SMS in 2015, with the execution of the 1:1 iPad and e-textbook pilot program. The teacher who was responsible for this pilot implementation was a Math teacher, who utilized the iPads to supplement the Math curriculum for eighth graders. Then, a set of 40 iPads, with a charging cart, was installed in the science lab, in order to be utilized by junior high and K-5 students, as a pilot classroom. At that time, the TAC, whose main mission was to raise money to support the wireless structure and the 1:1 program initiative, was formed. In 2015, the 1:1 pilot program was expanded to cover all junior high grades, after care, preschool, and grades K, one, and two. While the children in aftercare and preschool got to purchase their own iPads, students from kindergarten to grade two were using three leased carts and a station of eight iPads. As for junior high students, they were assigned personal email addresses, and started using Google classroom for their academic work, in class or even at home. In 2016, the "School Speak

Student information portal" with a single username and password, was launched, in order to secure and facilitate the access of students and parents to classes, and to the school website.

In order to succeed in the process of 1:1 program integration, teachers were given iPads, since 2013. In the school year 2014-2015, the teachers started attending professional development sessions, on how to use the iPads, how to do research curriculum, and how to create lesson plans on those devices. In effect, since the beginning of the idea of 1:1 program, the faculty and staff at SMS started to meet on a weekly basis, in what has become known afterwards, as "Tech Tuesdays." During these meetings, the teachers who have attended training on 1:1 program would share differentiated instruction methods with their peers (in mini-workshops), and the technology coaches; Ms. Smith and Ms. Scott, would help the leaders in designing lessons about digital citizenship, as well as about iPads' related resources.

Reasons for the 1:1 program at SMS. The integration of technology at SMS, especially the 1:1, was considered as an obvious initiative that "makes sense" for SMS, which was inherent to the academic philosophy, the vision, and the mission of the school. In fact, the school's mission stated that SMS is a Catholic K through Eight grade school, which develops and educates the whole child to be *living by the A's*, namely, being "active in Catholic faith, academically prepared, accepting of others, accountable for all actions, and articulate communicator" (mentioned on the school's website). In other words, considered as a stimulus for high achievement for all students as mentioned in TC (2015), the implementation of 1:1 program at SMS, was aligned with the mission and the vision of the school.

In fact, the 1:1 program was considered as an indispensable factor of updating and upgrading the learning experience at SMS, to meet the needs of the 21st century world.

Henceforth, the 1:1 program was considered a stepping stone for SMS leaders, towards realizing the mission of the school, which is to equip the millennial students with the "best quality educational tools to advance curriculum" (TC, p.3), according to the students' respective grade levels, because after all, "preschool, primary, elementary, and junior high classroom have different device needs" (PIT, p.2).

Second, the 1:1 program was believed to answer the vision that the leaders had, of improving overall student learning at the school, through the enhancement of their existing pedagogical methods, but also through adding to their programs, the technology factor. In fact, both Dr. Grace and Ms. Smith were convinced that 1:1 program would contribute to an increase in student learning. According to Dr. Grace, the idea of 1:1 program provided a better student learning experience, through what is known as individualized learning and differentiated instruction. It also enhanced the collaboration among teachers from different grades, as well as among those teaching diverse academic subjects.

Third, it was acknowledged in the PIT (2015), that a curriculum infused with technology could significantly expand the breadth and depth of education. In effect, implementing the 1:1 program in the classroom redefined the role of the teachers, transforming them from mere lecturers into guiding coaches, from symbols of distant authority to supportive mentors and learning mediators. Hence, as shared by Dr. Grace, Ms. Jackson, and Mr. Cohn, by teaching kids to acquire not only information but also skills, the teachers would be more involved in reaching all different learners, as well as in meeting the daily classroom needs of the students. In PIT (2015), the principal actually asserted that, following the integration of 1:1 program in the classroom, teachers became "now responsible for assessing crucial communication skills and

technology literacies," skills which were integrated into the curriculum and into the daily classroom work.

Finally, it was assumed that the 1:1 program could play an "imperative role in the process of developing a well-rounded citizen who is prepared for high school and beyond"; that is, "for life's challenges and opportunities after elementary school" (PIT, p.10). In other words, the implementation of 1:1 program was a crucial part for SMS leaders, in preparing the students to serve, compete, and lead in an ever-changing world"; thus, catering to the "generation of post-millennial digital native students who will become (the) future global leaders" (PIT, p. 12).

Impact of 1:1 Program on SMS Community (Teachers, Students, and Parents)

Data from school documents, interviews and classroom observations illuminated the impact of the 1:1 program on the SMS community. Most of the teachers and faculty members praised the 1:1 program for its easiness and practicality but were also somewhat critical of the way it is implemented. The following section will address both positive and negative emerging themes, beginning with those that speak of more positive perceptions, and then moving on to those that address more critical perceptions of the program. Findings from the document analysis, the classroom observations, and from the interviews conducted with the leaders, as well as with the junior high teachers, suggested that the implementation of 1:1 program at SMS has presented both positive and negative implications for the teachers, as well as for the students.

Advantages of 1:1 program at SMS. An interview question was asked to the respondents, to identify the different advantages or benefits, as a result of the implementation of the technology program at the school. The following data reveal what the participants shared about the benefits of implementing 1:1 program at SMS. The themes that emerged included

topics like, *speed and easiness of education, ubiquity of access, enthusiasm,* and *impact on learnin*g. They are classified in the sections that follow as advantages for teachers, for students, and for both.

Advantages for teachers. The interviewees were convinced that the 1:1 program has offered multiple advantages to the teacher's lifestyle in the classroom. These advantages are summarized as follows:

Easiness. For Ms. Smith and Ms. Moreno, the 1:1 program has made the teacher's role much easier regarding teaching, as well as planning. In effect, Dr. Grace shared that the use of digital devices has relieved the teachers from the load of paperwork that they used to carry. Georgette shared that it has also lessened the probability of losing the students' papers by the teachers. As to Mr. Cohn, he stated that the 1:1 program has been a good support for the teachers when searching for, finding, and getting clarification on any topic, or even finding supplemental resources online. In addition to this, thanks to the 1:1 program, the teachers have been easily able to post and keep track of the students' assignments, as declared by Ms. Yang, and to manage in an easier way their classroom by getting "it all in just a tablet" according to Ms. Jackson. Furthermore, Ms. Moreno revealed that the teachers were able to prepare, in a simpler and faster way, their lesson plans. They would also "easily use their old work and re-paste and copy and make it new and remix it," according to Ms. Scott.

Time saving. For many teachers like Ms. Smith and Ms. Yang, the implementation of the 1:1 program has been primarily a time saver, since the students can get assignments faster and the teachers can access students' work, mark it, assess it, and ask for revision, all in real time. Ms. Moreno shared that the 1:1 program has helped with "the speed of the class" and helped the

teachers in “immediately having the answer” they need to get back to the students. She also mentioned that the 1:1 program had also minimized time waste during class hours. Ms. Scott added to that, by stating that the 1:1 program has spared time from the classroom session, for discussion and interaction between the students and the teacher, through what is known as the *flipped classroom* experience.

Instantaneous access to information. Most of the interviewees, like Ms. Ora and Ms. Scott, acknowledged the fact that the digital technology has helped teachers in having immediate access to not only information that used to take more time to reach, but also to recent lesson plans, outside sources, and to so “many current resources at their fingertips.” Ms. Yang shared that these sources assisted the teachers in the classroom by supplementing their skills and enhancing their goals and objectives for the students.

*Better lessons***.** The teachers were considered to teach *better lessons* than before, thanks to the tools they have acquired through ET, which they did not have back in the time. In fact, Dr. Grace shared that thanks to the ET, teachers have been able to make the material “really come alive” for kids, bringing up the image and the sound of any place or anything in the world, into the classroom setting.

Limitless information. Ms. Ora mentioned the fact that thanks to ET, more resources have been available to the teachers, which has helped them be more creative and comprehensive in their teaching. Mr. Cohn seconded this opinion by pointing out the limitless quantity of information assembled together for the teacher, in order to supplement the education of students.

Lifelong learning. Mr. Cohn unveiled the fact that ET has encouraged the teachers to stay up-to-date in acquiring of information, and to become lifelong learners; henceforth, showing it to

the students. In effect, the observational data revealed that Mr. Cohn looked very confident in using technology in the classroom. He actually used a specific "quiz maker" software in order to give his students an e-test which corrects automatically the answers for the teacher, and which scrambles the questions for students in order to lessen the chance of cheating.

Advantages for students. The teachers were not the sole beneficiaries of using the devices in the classroom, because according to the teachers who have been interviewed, the students too, have been taking advantage of the 1:1, even more so than the teachers sometimes. These benefits are summarized as follows:

Enthusiasm. For Ms. Smith, students just *loved* devices and always preferred them to using pen and paper. As digital natives, they also showed enthusiasm and engagement in using what Ms. Moreno described as, "something that they desire and want and love," because "the transition to the device seems to cater to what they are comfortable with on a daily basis." In the same context, Ms. Yang noticed that the students were being more focused and more responsive to things, as a result of using devices with which they are familiar and accustomed to.

Better academic performance. Dr. Grace confirmed that the school data had shown a significant increase in students' scores on the California's STAR (Standardized Testing and Reporting) test. As for Mr. Cohn, technological advances have created in students a hunger for more learning: "As far as students, they're hungry. Everybody is so hungry for information and immediate gratification."

*Learning long term skills for the students' future***.** There is no doubt that using the 1:1 program, at the middle school level, would be beneficial for the future of the students after graduation. According to PIT (2015), Dr. Grace, and Ms. Scott, the 1:1 program could actually

provide the students with *good skills* for high school, as well as for the workforce later on. In fact, since too much information has always been available online for everyone, thanks to the technology, the focus in learning has now become more on "other high order function skills," such as summarizing and analyzing, with tools, graphic organizers and writing prompts, rather than on memorization or spending energy on retaining data. Mr. Cohn shared that many skills, like the capacity of diagramming, dissecting, analyzing, and debating, along with the *smart tools*, which are offered by the digital technology, are more important nowadays to any person's success on the long run.

More accountability. For both Ms. Yang and Ms. Jackson, the integration of the 1:1 program has led to a greater accountability from the students' part; kids are getting their assignments immediately, so "there's no excuse for them" to not accomplish their assignments or to make up excuses for not knowing about them, or to not turn them in on time.

*Global awareness***.** Ms. Smith emphasizes that the use of 1:1 program, in and outside of the classroom, has made students "more globally aware," especially thanks to educational activities, like the "electronic field trips, global partnerships with students outside of their classroom, student news and digital resources," where students are able to learn, share, and collaborate with their peers.

***Advantages for both teachers and students*.** There are some benefits resulting from the 1:1 program for both teachers and students, which could be expressed by the following:

Ubiquity and speed of access. "I enjoy the amount of information that the 1:1 offers because the kids have access to that 24/7," declared Mr. Cohn. Ms. Scott also made sure to point out the importance of having everything relating to academic work placed in the cloud, so that

students can access their work from anywhere, and stay updated on what is happening in class, even if they had to miss a class, notions that are emphasized mainly by Ms. Jackson and Ms. Moreno. At the same time, according to Ms. Scott, teachers wouldn't have to do the extra work to send homework to the absentees. This availability of having academic homework online has also resolved the issues that arise, when kids forget their homework or books at home.

Differentiated teaching/learning at a better price. Differentiated learning is also one of the benefits that are now possible thanks to the use of technology in the classroom. Dr. Grace and Georgette were the only ones among the interviewees to mention the importance of the 1:1 program in providing more opportunities for more *differentiated or individualized learning*. Actually, according to Ms. Jackson, ET has offered the educators an opportunity for better, differentiated learning, suitable to each student's personal needs, and the teachers have been able to "just teach individual students at their individual learning levels." Consequently, as shared by Dr. Grace, the students "who are at the high end" would get challenged, and "kids with special needs" i.e.,dyslexia, would get real help, through techniques that are way cheaper than before. Having "everybody working at their individual level and their need level" was eventually considered by the principal, the "Number one most incredible thing" offered by the 1:1 program.

Parents' involvement and accountability. Ms. Jackson was unique in considering that the integration of technology at the school created an option for the parents to be more involved in their children's education. In effect, once invited by the teacher, the parents can see what their children are doing and watch their progress levels, which makes them more involved in the education of their child(ren); thus, more accountable than before, for their success. Additionally,

Ms. Jackson assumed that this could also be a way of making up for the lack of conversation that is typically found between teenagers and their parents.

Next to all the aforementioned benefits, the 1:1 program has provided in general, for most of the interviewees, a better learning experience for students and teachers combined. According to my observations, integrating the 1:1 program properly into the classroom, was also noticed to be very helpful for both students and teachers, in terms of timeliness and classroom management. In other words, thanks to the monitoring app provided to the teachers, every teacher could now easily manage their classrooms by having access to all of the students' screens, each one at a time. On the other hand, the devices have replaced the physical burden that the students used to have, by carrying a load of books and notebooks every day to school, or even the mental burden of remembering to bring in their homework to classroom the next morning.

Disadvantages of 1:1 program at SMS. The following data reveal what the participants shared about the challenges or disadvantages of the 1:1 program at SMS presented to the teachers and the students. Some of the challenges included things the teachers had to face personally, or are still encountering, while implementing 1:1 program at SMS, and include academic and disciplinary issues. In fact, all participants were asked to respond to a similar interview question about the challenges of implementing the 1:1 program and the teachers provided more specific examples regarding academics and classroom management. Meanwhile, the challenges that the students could be facing when using digital devices came from the perception of the principal Dr. Grace, the vice principal Ms. Smith, and the technologist, Ms. Scott.

The themes that emerged include teachers' training, fundraising, technical infrastructure, need for control, classroom management, and impact on learning. These themes are classified as disadvantages for teachers, which in turn are distributed between academic and disciplinary (related to classroom management), disadvantages for students, and disadvantages for both teachers and students.

Disadvantages for teachers: Academic Issues. According to Ms. Scott, the 1:1 program "is not the perfect system", because despite the many advantages that the program has to offer to the teachers, the following challenges were noted from the interviews.

Overwhelming training. The teachers were bombarded with professional training sessions, starting with professional development classes taught by Apple Education, according to Ms. Smith, and other trainings along the way as well. Furthermore, the devices were given to the teachers as far as two years ahead of time, in order to get more familiar with them. "They did do a lot of training," said Ms. Scott, as she explained that they would go off-site sometimes, as well as have trainers come in to teach them, at other times.

Additional preparation. When asked about the challenges that the teachers have faced upon the 1:1 program implementation, a common point stood out about the need of the teachers to be prepared ahead of time, even more so than when using the conventional ways of teaching. "You need to be prepared. In whatever you're teaching, in the content, you need to be prepared," said Ms. Jackson, concerning the ways her teaching style has differed from before the 1:1 program implementation. She went on to say that:

> I don't want them to focus on the iPads and start looking it up themselves. I think the discipline is making sure that they don't look it up, and making sure that, for me, I always present it to them, because that's discipline in my part.

Ms. Smith also agreed with this by pointing out to the teachers about the need to have a backup plan, in case anything goes wrong with the devices. She shared that

> I always say to them: you have a plan A, and you must have a plan B, so you don't lose your teaching time. So if your hardware is not working, or you have any issues, just be ready on the other side.

Technical challenges. Another aspect which has caused some difficulty with the 1:1 program was the technical glitches experienced by the teachers when using the devices and tools provided to them. According to Ms. Smith, "there is always something that is going to go a little *glitchy*," so teachers would often call her asking for help when they experience a glitch using the devices, or in order to ask her how to access a certain aspect or function of it. In fact, the observational data revealed few technical challenges that occurred during my observations; for example, the sound was intermittent and the video rendering was delayed during the social studies video presentation, most of the students did not have their *Popplet* app (Popplet, 2013) updated during the science period, three students forgot to charge their iPads during the art/language class, etc. In most of the cases, the teacher was to provide a back-up plan to continue their class.

When asked about the difficulties that teachers face in the classroom, from a technical standpoint, Ms. Moreno said: "technical issues are, to me, my biggest (difficulty)". She also

pointed out that the technical issues that are beyond her control can really have a negative impact on her classroom, and could be time-consuming if not fixed immediately; Ms. Moreno added:

> If the Internet goes out, or when we had a power outage a few weeks ago, that kind of throws me off for a second because I have to wait. I have to use a board and I have to write; you know, it kind of slows me down.

Mr. Cohn also noted the need for every teacher to be flexible and technologically savvy, and to have a personal backup in case he/she encounter a technical defect. Ms. Scott, the technologist, admitted that "an iPad is not the best tool for using (only to get your work done); it's not as productive. . .because all the apps, like Excel; those apps are not as detailed or as complicated as the ones on the computer." In other words, according to Ms. Scott's own experience, the apps in the iPad are not as detailed as those on the computer, which is why she got frustrated sometimes, when asked to help out with a lesson on the iPad, and she had to "kind of dumb it down a little bit," because the apps are not that good.

Teaching students with disparate skills in technology. One of the academic challenges with which the 1:1 program could have impacted the teacher's mission in the classroom, is the need for teachers to differentiate their instructions and meet the needs of students with different and sometimes disparate backgrounds in technology. According to Mr. Cohn, this could be very time consuming. In fact, the social studies teacher pointed out this dilemma through these words:

> What's most challenging is the differentiation between the student skills; trying to keep everybody on pace with the same projects. And I think that's what takes time: to get everybody on the same page at the same time. But technologically, everybody is different: you got the people who are very savvy, tech savvy[. . .], and then you have

other students who are skittish —don't have access at home—so their technological skills are weaker.

Limiting screen time and ensuring balance in the classroom. "You want to make sure that there is a balance" shared Dr. Grace. The school principal considered balance to be an important aspect of running the classroom nowadays; balance between technology and hands-on activities like "cutting and doing art and building and moving around *very consciously*." Since the program was first implemented, the needs of the classroom have changed; she shared that "first it was like 'oh that's cool; the 1:1 program device'. Now, we have to balance all this other stuff". She continued to say that the 1:1 program has divided the classroom needs into half technology and half hands-on skills; "we're in a place where I feel we're getting a good half of this and a good half of that." As a matter of fact, I observed that technology even came second to the manual activities that the students were required to perform in class, because according to Dr. Grace, teachers must organize and "put a lot of hands on, like constructivist type of projects in, and then technology in." Not to mention the continuous work that the teachers did with the students during this journey, "it has been a nine-year process to get us where we are," shared the principal. Even Ms. Ora, the religious class teacher, who doesn't use 1:1 program due to a lack in resources, but uses the smartboard in her classes, added to this point by saying that:

> Students lose relation skills over the years because it's always this [referring to screen touching], and so I think a mix of both is a greater advantage to the student than when solely being focused on the iPad.

Disadvantages for teachers: Disciplinary Issues. In addition to the academic disadvantages listed above, teachers shared several disciplinary issues they viewed as

disadvantages of having a 1:1 program, including too much screen time, lack of focus, and monitoring students.

Limiting screen time. For Ms. Jackson, the arts teacher at SFDS, limiting screen time for students could sometimes be challenging also from a disciplinary standpoint, especially since they request to use their iPads, even after she had given them directions to open up their composition notebooks. She defended her position by arguing that since the students have been using the devices and typing all week, "I want them to understand that; 'no. You don't need to use technology all the time'." She also complained that even when she gave them remarks on their need to improve their writing skills, they would still say "we can change the font."

Keeping students on track. According to Ms. Jackson, a major challenge that she faced in class was losing students' focus when lecturing, if they are on their iPads.

> I think the biggest problem for me is listening: when they're so in tune with their screens, and I'm talking and giving directions, and then they'll look up and be like *oh what did you say?*

Even when she had explained it three times, so she would ask them to listen, again! But they would have been distracted because they were logging in or looking at something or doing something on their iPads; "the biggest issue I have is the listening part," stated Ms. Jackson.

Mr. Cohn expressed the same concern by asserting that, with technology, it has been so difficult to keep "everybody on track, on task". In fact, he related this difficulty to the fact that the use of devices has facilitated "some latitude (among students) to work independently," without the need for the teachers.

Ms. Yang found that students "need to have multiple ways to get information, and they need to have it come from me at times and from each other at times, and from the technology at times" which is why she struggled to find a balance to provide all these options for students, a mission on which she said that she "still have a ways to go." In fact, for Ms. Yang, the access to multiple sources and ways of information, that has been made possible thanks to digital technology, has led the children to never be content about one way of teaching, and consequently get easily distracted. As a result, she had to utilize different strategies within a single class period, because "they will not listen to you at all, if all you're doing is talking the whole time." This was confirmed actually by the observational data where Ms. Yang made sure to have the students keep their iPads down when she is explaining the lesson, and limited their use of the devices to the time where they are supposed to play a Kahoot game.

Setting clear limits. The principal shared that "setting limits is very important." This is achieved through giving clear and precise instructions to the students as to what should be done with the task at hand when it comes to the devices. This includes how to start and finish it, and how to move on to another task; all while maintaining the balance between technology and the old school hands-on approach. Another way of achieving the limits in the classroom is, according to Dr. Grace, through "training the kids" to follow these directions when using the devices until they get the hang of it. Ms. Moreno, on the other hand, had another trick to make sure that students are not using their iPads; "I have things in place that I think help". In addition to keeping an eye on their screens through her iPad, she made sure to having her students keep their iPads flat on the table when they are not using them:

> I don't let their screen look up at all if we're not using the iPads. They have to be face down, because I know [with emphasis] they're not doing anything… I would never let a kid do that (putting an iPad in an upright position) because I don't know what's on their screen.

Not only are teachers having to set limits in their own classrooms, but also when they are substituting for another teacher at a different class, where rules regarding 1:1 program are slightly different, and they would sometimes have a hard time controlling the class. Ms. Moreno, for example, said that she has had "issues" with kids sharing that

> Sometimes I (she) am brought into someone else's (class-) room, and if they don't have the same rules that I have, then I have more disruption, and I have to stop (and say) "these are the rules because I'm here today."

Monitoring the classroom. When it comes to monitoring the classroom, after the 1:1 program, it is noticed that the teachers somewhat feel the need to overcompensate for the ways in which technology can provide a fast way for students to go off track. For example, Ms. Jackson shared:

> They have more freedom with the iPads […] but we also have the iPads on our desk where we can see each child's screen, so if they're off task we can lock them out […] it's just a continuance of *this is what you need to do, do this, we need to do that*.

Ms. Moreno, the math teacher, expressed that she struggled mostly with monitoring kids in the classroom:

> Sometimes they want to go and play a game that they're not supposed to be playing, or do something that they're not supposed to be doing, so for me that comes down to like classroom management.

She explained that she usually monitors the students' screens using her iPad, and also walks around to observe them and help when needed. She also mentioned an encounter with a student who was logged into a different app, and how he was trying to find a way to get around reading the chapter; "they're trying to find the fastest way around something, so the main difficulty for me is to have them monitored," shared Ms. Moreno. She went on to talk about the additional need for monitoring and setting rules for managing the classroom and said that:

> The kids are smarter than us at the technology, so the kids can find a way around really fast. But if you have the rules set up, they're not going to try it as often… definitely, we need rules and monitoring from the teacher.

She mentioned a situation she had with a student, where she had to keep turning off the Internet from his device, using her own iPad, every time she would notice that he was off task.

Additionally, before the 1:1 program was implemented, the teachers were able to relax at times a little more, for example when giving students class work, they would simply assign it and get to work on something else, while nowadays, whenever they assign a task, they have to also be on their iPads to make sure that everyone is on it and that they are not getting distracted with other things on their devices. This point was brought up by Ms. Yang, Ms. Jackson, as well as by Ms. Moreno who said that "now, with technology, if they have it in front of them, I have to be on it… it has made me more conscious or more aware that I have to actually see their screen". When asked about whether her job was truly more relaxing before 1:1, Ms. Moreno replied:

Group work was more fun. It was like do your work and I would get something done. But now group work is okay "I'm watching you", "I'm monitoring you", and "I'm on you". When it comes to Ms. Yang monitoring her class, she revealed that "it's become more pertinent to do so, like you can't get away with just standing in the front of the classroom anymore," especially if her students were engaged in an online activity. She also felt that, although the monitoring app that teachers had on their iPads, would certainly assist her in monitoring students' work, she still wasn't very comfortable using it, but preferred to walk around and "see what's happening" instead; "You can't replace that with an app," she said.

While being observed checking his iPad on a regular basis to monitor the students' screens, Mr. Cohn underlined the danger of making monitoring "the teacher's goal"; because in spite of being advantageous, the monitoring screen could transform the teacher into a *Big Brother*, and hence take away, from the students, the option "to make good choices." He also mentioned that monitoring has been more challenging for the teacher thanks to the technology, because the latter has led "kids make creative ways now to go off task." As a general disadvantage to technology, Ms. Smith believed that the main challenge for the teachers, lies in making sure that the students are on track, because they might have a tendency to stray on the device sometimes.

Therefore, in order to rise up to the challenge, this demanded that teachers take the time, according to Ms. Scott, to "walk around the room, and look, and see what's on the iPads." Otherwise, she believed that "they might get the kids more used to the idea that they can go play a game or something instead".

It is noticed actually, through the classroom observations, that the teachers who expressed more disadvantages of the use of technology for students, either use it less in their lessons, or spend more classroom time into monitoring the students' screens. For example, Ms. Yang and Ms. Ora, who spent more than 10 minutes talking about the disadvantages of the technology, were rarely allowing their students to use technology in their classroom. On the other hand, Ms. Jackson and Ms. Moreno who, during the interview, pointed out more to the disadvantages of technology use, than to its advantages, were observed spending the most of time into monitoring students' screens and/or reminding the students of the digital citizenship rules.

Flexibility in executing policies. Despite the clear school policy of taking away the iPad from the student when caught off task or caught dishonoring the netiquette rules, Mr. Cohn found it very challenging to always execute this policy especially when the iPad constitutes the only mode of input for the students. This would be exemplified in his class where he doesn't have a book, nor any resources for learning the material, other than on the device itself.

Disadvantages for students. In addition to disadvantages experienced by teachers, the data illuminated disadvantages for the students also.

Addiction to technology. Ms. Jackson, the arts teacher at SFDS, said that "kids are just so used to technology," that even when she asks them to take out their notebooks, they would respond by asking her if they could use their iPads instead. Ms. Ora also believed that technology is highly addictive to students. She even said:

> I watch the kids and they're like "I spent 6 hours last night playing . . ." or staying up all night and checking Instagram and sending messages to each other at two, three, four in

the morning, and they can't let go of it, and if you take their phone away . . . they can't stand to be separated from it.

Mr. Cohn added to that by stating that "this culture now, is very smartphone dependent". When asked if she felt that students were developing an addiction to technology, Ms. Yang was in total agreement of this idea. She also felt that "kids have become very accustomed to having that information at their fingertips", and that she doesn't post the powerpoint of her lectures until she finishes her class so that students are more engaged in learning instead of just becoming complacent; "I still need them to make the effort," she said.

Another fear Ms. Yang talked about was that students "just assume that what they're looking at is true," and that they don't put in the extra effort to make sure that the information they got was everything they needed. Ms. Yang also noted that "people are not using it as just a tool; it's become the center of their existence," and she goes on to explain what goes on with students when they forget their phones at home, for example.

Cursive writing. "A lot of them are struggling with cursive writing," said Ms. Jackson, the arts teacher at SFDS. For example, in one of her classes, she shared that only one student has good penmanship "his penmanship is beautiful, cursive," while the others "they can't do it". She also expressed her concern regarding the art of writing, since it falls into the category of language arts; "They're losing the art of writing".

When asked if she would let the students take notes on their iPads instead of using a notebook in her class, Ms. Ora said she would refuse, explaining that "they do so much of that in other classes. I want pencil and paper, just so they have the experience of doing that. Ms. Ora

shared that the students "do so much on their iPads and the handwriting is atrocious for many of them because of that."

Hand placement. Ms. Jackson had to constantly remind the students to correct their hand placement, sharing: "you need to understand that you can get carpal tunnel if you just keep doing this (touching the screen), or different problems with your hand". The educational program for Ms. Jackson's class even included a placement for keyboarding once a week, because according to her "they get lazy," so she observed them during these keyboarding lessons, in order to correct their hand placement.

Weakness in retaining information. Another concern expressed by some teachers, such as Ms. Jackson, Ms. Yang, and Grace, was that students these days "tend to forget". In fact, according to Ms. Jackson, the students aren't memorizing enough vocabulary for creative writing, since they are able to get all their vocab and synonyms from the iPads; "when they're typing, they can just copy and paste, use spell check, google the word and then change the synonym to whatever". She went on saying that teachers need to be aware of the students' lack of focus or of attention when they are "having the screens on," which hinders their need for memorization and necessitates much more reminders on what to do than before. She also commented saying "that part was really difficult because they get sneaky about it, but then we have a record of it".

Ms. Moreno justified that memorization issue by the fact that middle schoolers need more reminders, since "in middle school, they're still learning to police themselves, especially the Eight graders. They're so excited, and [. . .] they might forget and get distracted." The need for reminders was actually observed in almost all the grades, and was mentioned by almost all the

participants when talking about technology and morality, which could relate in a way or in another with the students' weakness in retaining information.

Distraction. When asked about the effects of technology on students' learning abilities, Ms. Jackson responded "I think it's more like a distraction. I've seen it where kids should be on task but they get really tempted to open up a different screen and start playing games." She also mentioned that the school has had to block a lot of games and websites that the students were going on when they were bored, because kids were trying to hide the fact that they were off task during lessons, while in reality they were playing games or just having non-educational related fun with them. Ms. Jackson actually commented saying:

> I think that once you limit the use of iPads for curriculum use, they're less likely to be bored and do other things with it.

In fact, the observational data confirmed Ms. Jackson's statements, where few students were observed going off task by opening websites pages or painting apps, especially during the periods where the devices are used for a long time, and where the teachers are assumed not to look at their monitoring screens a lot.

Furthermore, the 1:1 program now allows students who are in the same class but learning on a different book, to follow along with their lessons by watching a video online of the teacher explaining the lesson. While this option has many obvious advantages, it might also prove to be a source of distraction, unless "they're monitored." Technology offered students, according to Ms. Moreno a new outlet for distraction, which they never had access to; she effectively shared that "there is a level where it's not monitored, it could have more repercussions." According to Ms. Moreno, technology has presented more temptations for kids nowadays to go off task or lose

focus, especially “if they are not being monitored.” She shared that during “the first year we had our pilot 1:1, there was more (distractions), because the teachers didn’t know how to monitor and we didn’t have that ‘looking at the screen’ app.”

Not only have the teachers noticed the students being distracted when asked to use their iPads, but even Ms. Ora (the religious class teacher), who does not use the iPads in her class, thought that the main difficulty teachers face when using 1:1 program, is “having them go off task and not paying attention to what they’re supposed to be paying attention to.” She went on stating that

> The kids; they’re very used to it because the use it a lot. I have observed that frequently they go off task, and they sneak off to some place where they’re not supposed to be.

From a teacher’s perspective, she continued saying that

> You’re not going to have their attention, you can see there’s no continuity with what you’re doing, because they’re someplace else.

Ms. Ora believed that technology is taking away from students’ attention when they are on a task. In fact, when asked about note taking and whether she would allow them to use their iPads, she said that she wouldn’t allow it, and added that

> I don’t want them going off task and doing something else. By having them put the iPad down and just focus on what we’re doing, I keep their attention.

In Ms. Yang’s class, she has minimized the time spent on the iPads, because she thought that with time, students would “veer off and start to get off task.” She also had students put their iPads face down when they were not using them in order to minimize distractions. In fact, Ms. Yang noticed that students “don’t have the ability to stay focused on one task for as long as they

used to." She also said that she believed that students' attention span has lessened through the years, and that they are now less able "to focus on a single task for an extended period of time," which is why she believed that they now need a constant change throughout the class.

Lack of discipline when using the iPad. According to Ms. Jackson, students were overwhelmed when starting junior high, after finishing fifth grade, in terms of discipline, when using the iPad. She expressed her concern through these terms

> They (students) have not grasped the ability to discipline themselves having their own iPad… they start searching for things and taking selfies and they still pass notes, but now they like to pass notes via iPad. That part was really difficult because they get sneaky about it, but then we have a record of it.

Punishment also plays an important role according to Ms. Jackson, concerning students' discipline when using the iPads. She actually stated:

> In the beginning when it's loosey-goosey, kids think they can get away with it. But the more you remind, and the more kids get in trouble or detention, or they get write-ups, they're like "ok, I need to stop." So I think that's where it comes from; it's like they get away with things and once they get punished for them, then they stop. But they have to see some kid getting punished before they can stop.

Concerning students' discipline, Ms. Yang said that:

> I do notice that they get into trouble a bit more… The technology seems to be a central component in disciplinary issues that we have now, and it all leads to accessibility.

She added that she has to work harder to get the respect and compliance from her students than she ever had to.

Overwhelming load of information. Students were sometimes noticed to be having a hard time with managing all of their accounts, according to Ms. Jackson;

> It's a lot more, it's also a little stressful I think because we expect them to be able to access all their accounts to complete their assignments, and not just give them a folder with their assignments for the entire week for all the subjects.

She went on to describe students' inability to juggle different accounts when accessing their lessons:

> I had to remind them that their keyboard account is different is the same as your IXL. Some kids are logging onto a different account because they have so many different accounts.

Time consuming. Ms. Jackson explained about the stress that students endure after the 1:1 program: "you (referring to a student) have a soccer game, but no you have to finish IXL; that's required." She also touched on the subject of spending time with family and extracurricular activities:

> It's a lot for the kids, and I think it's a lot . . . you know at the end of the day you just want to go home and you just want to spend time with your family. . . . I think it's just the time that children have, for even one activity, while before a child had seven.

Technical challenges. Especially for older students, Ms. Scott expressed concern that they are not learning how to get things done in a detailed or in a deeper way, which is why she said that maybe it would be better to have high school students use a laptop instead of an iPad;. She shared that

> If you're going out in the workforce, I think that the computer; you should be familiar with it. The iPad is more to serve as a stepping stone.

Losing real life interaction. In her interview, Ms. Scott talked about her fear of how students might lose touch with the real world, because, even outside of school, she noticed that kids barely look up from their devices, and that they are missing out on experiencing human interaction. "I don't think that you'd understand how to deal with other human beings unless you deal with real people," said Ms. Scott, who also touched on the subject of how students need to be more aware of their surroundings and the need to have more human contact in order to develop connections with other people. She continued saying that

> If I am interacting with you through the screen, it's different than when I am interacting without the screen . . . if you know something yourself, you care about it more.

In fact, according to the observational data, it was observed that, when the students are using their devices, the interactions among each other were very minimal, and were limited to non-academic issues. This was noticed in the different grades and the different class periods, especially in Math class, when the students were given the option to work on the devices or not. In the latter case, students were observed interacting much more, between each other, and on the topic given by the teacher.

Disadvantages for both teachers and students. Some final disadvantages uncovered by the data affected both teachers and students.

Web safety. When it comes to web safety, Ms. Scott, the technologist, thought that teachers ought to raise more awareness on that subject, out of the concern that the students might not be fully aware of all the pitfalls and dangers present on the Internet, and "because there's a

lot of spam and viruses and things that kids don't necessarily know about." When it comes to the teachers though, Ms. Scott also felt that they were not fully aware themselves on the ideas of digital citizenship and web safety, and that they should take time to be educated themselves so that "they can kind of pass that along every day when they're using technology, to be able to remind students how to pick a good website, or just interacting with somebody else online, and what's appropriate and what's not."

Furthermore, Ms. Yang talked about how students now "have so much access; free access, to immoral and inappropriate content," adding that "what they have access to is frightening." She also mentioned that "we're constantly having to work really hard to keep our kids safe from technology," because of the irreversible effect that technology has on kids, and how we are unable to take back the images they are exposed to on the Internet.

Lack of control by parents. Dr. Grace considered that the control and the limits that are set in the classroom should be applied at home as well, because "in fact, a lot of the problems that happen, happen at home because the kid is on the device." She referred to restricting the screen time of the devices to kids when saying

> A lot of the parents would just let them get into the car and hand them the thing to watch… it is like we don't even do that in a year.

Reluctance by parents. According to Ms. Smith, some parents were reluctant to have their kids use the devices, "they were afraid there was going to be a solid use," and a few of them were saying that "the children need handwriting or they need to be playing outside and should not be on the iPad." This disadvantage not only affected the encouragement of 1:1 program by the parents, but also the funding for this system.

Unification of teaching about ET. Ms. Yang said that one of the struggles that the teachers encountered, which have also affected the students is having to come up with a unified way of teaching about ET, because, according to her,

> Every household has a different acceptance level of technology at their household, and what's good for one family isn't good for another.

She also mentioned the generation gaps between parents, and that digital immigrant parents are more accepting of technology, while older generations showed reticence to have their children work on their devices. She continued to say that:

> I'm always amazed when I hear these kids and the things they do online, and I think "oh my gosh", we need to educate the parents better about what their kids are doing online.

Transitioning from the lecture to working on the iPad. Another issue that both the teachers and the students struggle with, is transitioning from the lecture to working on the iPads. Ms. Jackson actually shared that "the transition part is a 'miss' for them; it's like (they are) getting lost in the transition." Ms. Jackson also remarked that students tend to lose their focus on whatever she is explaining once they are on their screens. "Because the listening, they just lose it once they are on the screen," which is why, she usually asks them to turn off their iPads while she is explaining,

> There are some kids that are struggling . . . so that's why it's always good for a teacher, especially for me, to tell them that your iPads need to be closed right now. You listen to me first, and then when I say go, that's when you get started.

Lack of resources. "I would love to have the right resources online so that they can use them," said Ms. Ora, the religious class teacher, who still teaches her class with regular books

and not with the iPad, despite “trying to find something for religion where they (students) could be using their iPads, and I (Ms. Ora) found nothing,” because there aren’t any eBooks that she can use to teach her class using the 1:1 program. Ms. Ora shared:

> I think it would enable them to be more focused because that’s what they’re used to, and I think they would be more responsive to things because that’s what they’re used to.

Another lack in resources is observed in the math class, where students are not using an online book; this time due to a lack in funding, as Ms. Moreno stated when asked if she would prefer using an online book, had she had the opportunity to do so, she said,

> I would love it… It would be more work for me… but I would totally be for it and try and allow it, but we still don’t have the money yet.

The aforementioned disadvantages presented by the implementation of the 1:1 program in the classroom, could be classified between technical, academic, and socio-moral challenges. Given the fact that I am concerned more in the moral aspect of the implementation of 1:1, the next section will take into consideration precisely how the leaders at SMS are navigating the implementation of the 1:1 program along with the moral mission of a Catholic school.

Navigation between Catholic Education, Morality, and Technology at SMS

School documents and interviews were also important to explore the way educational leaders were navigating the 1:1 program implementation at SMS with the moral mission of Catholic education.

Catholic Education and Morality. During the interviews, a question was asked to all of the participants: "To what extent do you consider education should play a role in the moral growth of the student?" All of the interview participants agreed on the fact that the moral piece

should play an important role in the education of the students at schools, especially at the Catholic private ones. For example, according to Ms. Jackson, morality should be "first and foremost" in education due to the peer pressure from which the kids usually learn. In fact, during the classroom observations, she was observed (1) fostering emotional vocabulary (virtue of empathy), (2) pointing out right from wrong and inviting the students explicitly to practice virtues (conscience), (3) reminding them to control their urges, before starting to type (self-control), and (4) emphasizing good manners and courtesy (respect).

In Ms. Scott's opinion, the school has a moral role, which is to remind kids of what is right and what is wrong, this "set of moral rules that most people follow." As to Ms. Smith, she described the connection between education and morality as "huge" and "extremely important," yet challenging for the teachers and for the parents as well, especially once the kids have the devices in hand. She also mentioned that morality in the school is to be "guided by our Catholic teaching, digital citizenship and student learning expectations."

In my interview with the Math teacher, Ms. Moreno, she asserted that:

> I think especially at our school—because it's a Catholic School—[morality] should be 99%. Morality should be incorporated all around. That doesn't mean they have to have it in every class; you don't have to say Jesus's name or you don't have to do something specifically towards religion. . . . But each teacher should be representing morality in the way they teach and answer questions —I know sometimes I'm harsh when I do it on my own —but that should always be through a moral way especially at a private school. Public schools are kind of a little bit harder, but I still think the morality is still there, it's still important to be, you know, good and kind people. So I think really it [morality]

should be a huge point. So even if it's not a Catholic school, morality is not religious. Still choosing kindness should still be taught and exemplified and expected.

She further explained that schools are usually considered as "the place where kids learn how to make our world nicer" (Ms. Moreno) and that people go often into teaching "because they want to help" (Ms. Moreno), which connotes a morality tone to the educational setting.

Another interviewee, Ms. Ora, believed that there is a "tremendous connection" between education and the individual moral development of the students, because "learning is not just book learning but social learning," and "the more you read . . . you really learn a lot about life and morality and pain and joy." After all, according to Ms. Ora, the education broadens the students' development, and "everything you learn comes back around." She added that, even in public schools, the basic values such as to not cheat, hurt, or kill, "should still be there."

As for Mr. Cohn, he said that the schools ought to tell students what is right and wrong, by focusing on the positives. He assumed that "if we focus on their goals, focus on the positives and not on the negatives, then I think the kids will align themselves with that concept, you know: *do what's right. Do it right, don't do it over*." However, he found that there is sometimes a "good moral compass" which students get from school, but which could be confusing when they get back home. He gave "smoking" as an example, stating that:

> [The] school says "Don't smoke . . . Red Ribbon Week . . . Stay away from drugs", and yet sometimes, parents and grandparents came from a different scenario, and they smoke, you know. So I'm [referring to the student] getting two sides of the story so it can be confusing.

Two of the interview participants; Ms. Yang and Ms. Scott, noticed that while Catholic and public schools are quite similar, in terms of their duty in teaching morality to the student, it is often intimately connected to the religion in Catholic schools, where the religious angle is usually used as "a means of identifying immoral or inappropriate behavior," as stated by Ms. Yang. Ms. Scott actually confirmed that idea by stating that "as Catholics, we can always use the religion as a Touchstone, as an example of why you should do right or wrong."

Dr. Grace shared also that schools should take into consideration the moral growth of the student, "completely, 100%," and "now more than ever." In fact, when asked to explain why the morality factor is now much more important than before, to get a good education, the principal replied:

> The academics change . . . but what hasn't changed, and what is more essential than ever, especially with the growth of technology, is this moral component and this social interaction component. We're having to teach them more in the classroom now than ever before and even more important than ever. We're finding ourselves doubling and tripling down these elements. . . . It's not as important now to go to school for academics as it is for these other things.

Finally, according to my classroom observations, most of the teachers were observed focusing on enhancing actions from the students that relate mainly to the virtues of self-control (i.e., reminders to behave appropriately, to follow the netiquette rules, etc.), of conscience (i.e., pointing out right from wrong), and of respect (respect for authority and for others, good manners and courtesy).

SMS and Morality. The importance of the interconnection between morality and the Catholic teaching at SMS was very obvious through the ADLA Religion standards, with which the school complies on one hand, and on the other hand, through the Assessment of Catholic Religious Education (ACRE) test, for the school year 2017-2018, in which the eighth graders have achieved high scores. In fact, while "sixth grade connects morality to the role of society" (Vertical Progression, April 2018), the moral formation of the students was supported, in Grades seven and eight, through a deep analysis of the Ten Commandments, along with several moral issues that are facing the society today. These aforementioned standards were usually assessed through what is known as ACRE test; a test that is based upon the Catechism of the Catholic Church (Catholic Church, 1994), which assesses the knowledge, beliefs, behaviors, attitudes and practices of the student's faith. According to Part 1 in the ACRE test, which is called "Faith knowledge," and under the pillar of "Life in Christ (morality)," the greater majority of eighth graders at SMS (99.3 %) showed strengths in morality, scoring an average of 98.7 %, versus a national average of 79 %. The second part of ACRE, under the title of "affective statements," revealed, however, some interesting points or weaknesses among students, from a moral standpoint. In fact, 23% of the students do not think euthanasia wrong, 19 % of them do not find waiting for marriage as important in order to have sex, and 3% consider that it is acceptable for a couple to live together before marriage, and most importantly for this study, 6% of the eighth graders found that it is okay to copy someone else's homework and call it their own.

Morality and technology at SMS. The final question in the interview aimed to discover how the educational leaders at SMS were considering the school's role in developing moral values in their students, during the implementation of the 1:1 program in the classroom. In fact,

all the interviewees were asked to reply to this question: “What implications on the development of moral or ethical character of the student do you think educators need to consider, when they implement technology in their classrooms?” The majority of the respondents mentioned, one way or another, the need for control and explicit regulation, as well as the importance of AUPs or digital citizenship material, in order to bring awareness or *conscientization* (Freire, 1998) to the children. This was due to the fact that, first of all, technology and morality, “need to be hand and hand,” and technology “would be chaotic without the morals and values,” as stated by Ms. Smith. Second, because “not all students can handle the responsibility of using technology in the classroom”, and third, because, technology constitutes a “temptation” for people, according to Ms. Moreno, or, in Ms. Jackson’s words, technology could be “very tempting for students to go away, to go off task, to get distracted or even to make disruption.” After all, Ms. Smith shared that the “Catholic teaching, digital citizenship, and student learning expectations are guiding our use of technology at (SMS).”

Need for monitoring. Classroom management needs good control from the part of the teacher. Multiple concerns of losing this control arose during the interviews that I have conducted with the leaders at SMS. In fact, Ms. Yang expressed her reluctance of implementing the 1:1, in a solid way in her classroom, out of fear of losing her control; she actually shared that:

> I'm not sure that I will ever get to the point where I will use it 100% in the classroom. I do think that my personal philosophy on teaching will probably keep me from completely relinquishing all of my control.

The same reluctance was observed in Ms. Ora’s attitude when she stated: “I don't know if I would even want them to see it on their iPad because I want them all directed to it at the same

time and I have control over when we advance." She also considered monitoring the students' screens to be crucial, in order to counteract the negative effects of technology.

When describing the ways she would usually set the limits in her classroom, Ms. Moreno mentioned "turning off their (the students) Internet, or making them put their screens face down when they're not using them, or walking around the room or looking at their iPads."

We noticed the same fear in Dr. Grace's interview as well. Yet for the principal, the lack of control was more related to using the BYOD form of 1:1, versus when the school would provide the devices to the students. She actually asserted:

> I think have it in control helps. It does, because like I said, when we actually controlled the devices here when we had them, we were able to limit those screens and that kind of thing. . . . People are forced to all follow a code of conduct that everybody has to do, employees and kids and everybody. And that makes a big difference. . . . It does make a difference who's leading and controlling the conversation. And I think one problem with social media and the websites, you've got all these different voices controlling the conversation and it's not necessarily all positive voices.

Ms. Jackson went on to say that the control should be the fruit of the collaborative work of all the teachers, and also pointed out that teachers give the students parameters when assigning homework, as to what certain websites can be accessed for that assignment, and which ones will be blocked, or will cause them to be blocked. Also, if they can use their own home devices at home to research other things. As a consequence of students going off task in the classroom while using the iPad, Ms. Jackson shared that several websites have been blocked by the school, such as "Dodgers' scores or football players in sports channels and websites, especially boys.

But with girls, if anything, it's like Forever 21; the clothing store." And she revealed that with every passing year, the school blocks more websites; "we're learning that there are all these different sites we need to start blocking." Eventually, a WIN time card was created, which stands for "What I Need to do." Ms. Jackson explained the importance of WIN card saying:

> This piece of paper is placed on all the students' desks, and contains "a lot of things that they can do that one—you don't need your iPad for, or two—you need your iPad for a limited time for that WIN time, and it's usually 5 to 6 minutes. And it's usually used for the transition time.

Without limiting the screen time or explicitly expressing this concern during the interview, Mr. Cohn was observed making sure to keep control over the students, by spending almost half of his time moving around and monitoring the students' screens through his iPad.

Need for constant reminders. During my classroom observations, I have noticed that Ms. Moreno and Ms. Jackson always made sure, to remind students to turn on their Bluetooth connection, along with some AUP tips, before letting them use their iPads. In fact, during the period of social studies, where the students use their devices during the whole class time, the need for reminders or reprimands to behave appropriately—which connotes a weakness in the virtue of self-control according to Borba (2001)—was observed for an average of a dozen of times in each class, with more occurrences, especially during the periods where the devices were used for a longer laps of time than in others. In fact, during the period of social studies where the students are on their devices for almost all the time, the need for reminders was observed more than 12 times in each grade. During the period of language/ arts, where the use of iPads covers more than 50% of the class time, the students were in need to be reprimanded four times in grade

six, seven times in grade seven, and eight times in grade eight. As to the period of science, the need of students to be reminded how to behave and how to use the devices, was observed more than four times with the sixth graders who used their devices only for seven minutes, three times for the seventh graders, and three times as well for the eighth graders, who both were using the iPads for a brief moment during class time.

According to the principal, students nowadays always need to be taught and reminded explicitly, about the impact of their actions online, because "they don't realize that what they are making is inappropriate . . . or they don't realize the impact of it." Dr. Grace actually attributed that to the immaturity of their "prefrontal cortex" and explained it in the following way:

> You try to explain to them why something is not appropriate or what impact it's gonna have, and it's like it doesn't click for them. They're like "yeah, right!", unless it happens to them. And when it happens to them, it's very singular in moment and time, and they can't believe how this impacts all these other things. It's hard for them to get that to click, because it's not developed up there, in their head.

Ms. Scott also agreed on the fact that the students need to "just to keep a running dialogue about it (digital citizenship)." According to Ms. Moreno, the need for reminders was found, especially with students who are just starting junior high school, because they are still fresh to the technology and the use of iPads, which creates a need for constant reminders from teachers that the iPads were solely for academic use, and that they needed to be careful when searching for things, and know how to handle them. She actually stated that:

> We just have to keep reminding them: "You have to be keep in mind, you need to be safe, you need to be secure when you're searching, it has to be academics, you need to be careful, and you need to use it for education."

Furthermore, Ms. Moreno shared that teachers now feel the need to have "big talks" with students, at the beginning of each year, after Christmas, and after spring break as well, in order to "review all the technology rules with them: 'don't go off task' and all that stuff."

Need for awareness of pitfalls. As stated by Ms. Scott, teachers "need to help students know pitfalls that are out there," in a way that is appropriate to their age level. According to Ms. Smith, monitoring constituted "a tremendous tool in assisting students to stay on task," and to help guide their morality.

Even though she confessed her love for technology, Ms. Moreno also acknowledged that it is primordial to bring awareness to the child on how to use technology devices, because she believed that the use of technology, especially when going online, has contributed in having children take moral issues less seriously than before. On the word of Ms. Moreno, kids have been actually missing the real impact of their actions online, due not only to their young age, but also to the fact that they were being exposed to digital devices very early on. She elaborated on that last point when she said:

> A lot of kids think when they are mean to somebody online, or they leave a mean comment—and this isn't necessarily in the classroom—they don't have to look at that person's face: "If I text someone something mean, I don't then get sad because I said it." … They cannot see the other part, so they don't realize the impact of it, and they think it's no big deal.

In order to counter this effect of technology, Ms. Moreno underlined the necessity of bringing awareness on the need for patience and "personification," into the online environment. That would be accomplished by having "someone monitoring them and explaining it to them and not punishing," which, at least for her, would reduce or even stop online immoral behaviors: "people would stop writing mean things on Facebook if they considered this is up going to a person," shared Ms. Moreno.

Dr. Grace asserted that an emphasis on a few values like kindness, inclusiveness, perseverance, and forgiveness, was indispensable to lessen the negative impact of technology on students. She said:

We need to double down on the compassion and the kindness and being accepting and being forgiving. We need really to double and triple down on these values right now because of the way that the society as with the media popping up every 10 seconds, the news every 10 seconds, you know they watching their leaders saying inappropriate things and that's hard when the leader says inappropriate things.

However, Ms. Yang noticed that the use of digital devices has not induced more immoral people in the world, but has accelerated and enlarged the impact of their immoral behavior much more than before; she actually stated: "I don't think more kids are being mean; I think the same number of kids are being mean and it's is getting spread faster," and that "the people who were more predisposed to say something mean, now have the whole world listening."

Importance of AUPs. Most of the teachers mentioned the importance of teaching the responsible use of technology to the students, by setting clear rules for students, on how to use properly the iPads, and then holding them accountable for keeping these rules. In fact, Ms. Scott

stated that educators "just need to teach about the digital citizenship and web safety […] they still need to teach the kids". Ms. Yang seconded Ms. Scott by expressing plainly that teachers need to give their students "positive interactions with the technology," and to "be very careful" in using "opportunities in the classroom to teach our kids how to use technology responsibly." In Dr. Grace's opinion, it is indispensable to teach students "these character programs whether it is *Character counts* or *Second STEP*."

As for Ms. Smith, she considered that "the student needs the moral guidance to help them navigate through the use of technology in the classroom," through what she called "the digital citizenship component, religious education, student learning expectations, and the community involvement". She asserted that teachers had to create lessons and to outline their lesson plans, including standards that encompass the AUPs and digital citizenship, "including are you being SAFE (secure, accountable, friendly, and educated)."

Furthermore, believing that technology is a tool that is "logistically better" for the students, Mr. Cohn emphasized on scaffolding a framework for students on how to use technology, within defined parameters that are set by the teachers. This could be translated in Mr. Cohn's terms, into "encouraging" the students to use their devices properly, "setting up parameters," and "warning them of possible consequences if not used properly." He actually stated that "if we stay within the framework, or —you know —scaffolding, then they're in a safe space . . . they do have latitude." The classroom observations accentuated this point where Mr. Cohn was observed for multiple times, especially in grade six, enhancing (1) empathy among students by encouraging them to express and listen to different points of view, (2) respect by emphasizing good manners and listening attentively to the students' questions, (3) kindness by

encouraging kind attitudes and pointing out their positive effects, and (4) self-control by checking students' accounts on a regular basis.

Ms. Scott also touched on the subject of not scaring students too badly, but still explaining to them the effects that their words might have on someone else, if sent virtually, and how that might make the other person feel. Towards the end of the interview, she mentioned that she was frustrated, because up until that day, it was still up to the technology department to educate students on the topics of digital citizenship and responsible computing, which she didn't feel, was the responsibility of the technology department. She added that

> Teachers need to be experts on that, in order to really help students and raise awareness concerning these topics, and . . . this needs probably professional development.

Seek for balance. Most of the teachers at SMS believe that there should be a balance between using the iPads and the traditional tactile way (paper, pen) in the classroom, not only for moral reasons, but for pedagogical and human goals as well. For example, Ms. Ora has found that students need to vary the ways of learning in order to get the best of education. Mr. Cohn also confirmed that balance is necessary, first for a better differentiated learning that takes into account students with different modalities, and second, because "just being a kid" requires to "put that [technology devices] away." Mr. Cohn also added that

> Kids get tired from tech and need a break from screen. . . . They should have tactile learning as well. . . . I used the tech for their production but I also use other things as well. I think it's got to be a balance.

Ms. Jackson also preached the need to limit the screen time, because, according to her, the use of iPads has not only negatively affected the students' vision, their hearing, their motor skills, and

thus their writing, but has also impacted the children's good manners. Ms. Jackson expressed this concern through these words:

> Students need to now be taught and be reminded on how to be polite "You're not on your iPad, when someone's talking to you . . . make eye contact, be polite" and they tend to forget that. . . . I still teach them that: Manners.

As for Ms. Yang, she found that limiting the screen time is valuable, in order to keep the personal and human interaction in the students' life. She even said that she

> If they're (the students) looking down all the time, there's a lot that they're missing from their neighbors, from their teacher, from the environment . . . and I (she) just can't see myself (herself) ever relinquishing all of that to the device.

In effect, the need for limiting screen time was underlined very explicitly in TC (2015), where we read: "The faculty acknowledges digital tools will never replace discussion and developmentally appropriate activities that mix with social skills, play, and hands on learning experiences" (p. 3). It went on to confirm that "the concept of one-to-one learning still defines the relationship between a student and their peers or teacher rather than a relationship between a student and their device" (id.).

Importance of professional development for teachers. Ms. Scott was the only one to mention, quite explicitly, the indispensability of professional development for teachers, in order for them to know how to use technology and how to teach digital citizenship. In fact, she asserted that:

> Teachers need to be "expert" in that (technology). . . . Teachers need to take time to become educated themselves, so that they can kind of passed that along every day when

> they're using technology be able to remind students how to pick a good website or just interacting with somebody else online and what's appropriate what's not.

She continued by arguing that teachers should not scare students while teaching online appropriate behavior, and that the "digital citizenship is not the job of tech department but that of every teacher." Actually, it was mentioned in the WARP that the school worked with the C3 professional development team to continue professional development for teachers in the area of technology; thus, ensuring that key technology skills were not lost with the transition of devices to the classroom.

In the same context, Ms. Ora mentioned that educators should be well prepared, before showing online resources to their students: "One of the most important things is to know your resource before you show it to the students." Ms. Jackson also hinted that teachers need to be good examples (role models) in front of their students on how to use technology.

Need for parental education. In the end, it is worth mentioning Dr. Grace's and Ms. Yang's perspectives when they mentioned that, following the integration of the technology in schools, the morality had been widened by connecting the educational leaders with people's life at home. In effect, Ms. Yang said:

> Now we've had to cast a wider net, and talk about how are you engaging with other people on your phone, on your iPod, on your iPad at home. . . . And we, sort of, had to put ourselves into people's homes now, because now, we have to include digital citizenship in our teaching of morality at school. . . . To some degree we have to bring the parents in and we have to educate the parents.

She continued this idea by addressing the challenge that school leaders and teachers had to face with the parents, due to the integration of digital devices in the classroom, now that "every household has a different acceptance level of technology at their home." In effect, Ms. Yang explained this challenge with the following words:

> Having to come up with one way, one expectation, one unified way of teaching about educational technology and the responsibilities that our students have, is a struggle, because what's good for one family isn't good for another.

In order to address this challenge, Ms. Yang suggested the need to educate everyone on morality, on "what's acceptable," taking into consideration the generational gaps between the digital immigrant parents who show reluctance and reticence toward the use of digital technology on one hand, and the digital native parents who are more comfortable with digital technology.

The principal, Dr. Grace, echoed Ms. Yang's idea and confirmed that, thanks to the technology, the school has now a moral educational role with parents as well, which seemed more challenging than the one with kids. She actually stated:

> We're having just as much challenges . . . as a school, with parents posting things that are inappropriate, and causing issues for the school, even about other kids. In fact, we are finding that we have more problems with parents than kids . . . the parents, it's really strange. You think that they would have common sense but they don't. . . . I had to have to bring more parents into the principal's office, then children, and explain to them why they're have to take down their post, or hand them our handbook about Communications policy.

Summation of Research Question 1

In conclusion, it is important to note that a question was addressed to the leaders concerning their personal perception of technology as a tool, and whether they believed that an addiction to technology could be found nowadays among people. Most of them responded that they consider technology as a mere tool (Dr. Grace; Ms. Smith, Ms. Scott, Ms. Yang, Mr. Cohn, Ms. Moreno), but according to Ms. Yang, that could be very addictive for some people, especially when "people are not using it as just a tool [so] it becomes the center of their existence," or when the parents do not put enough restrictions on their children's use of devices, as Dr. Grace, Ms. Scott, Ms. Smith, and Ms. Ora pointed out. In fact, Ms. Ora criticized that final assertion by stating:

> Absolutely. There is no doubt in my mind [that there is an addiction to technology nowadays]. For example, I watch the kids and they are like "yeah I spent six hours last night playing" or "I was staying up all night and checking Instagram". And you see them sending messages to each other at two, three, four in the morning. And they can't let go of it. . . . And if you take their phone away, they're like this [lost]; they can't stand to be separated from it.

Dr. Grace continued to describe the devices as having addictive qualities, further asserting the need to set limits:

> There's been a substantial decline in morals and ethics with our students, and we attribute that directly to the new parenting style that has developed over the years. Students are much more willing to talk back to you, to ignore you when you give them an instruction,

> to be rude. . . . Yesterday, one of the teachers caught one of her kids cheating online with his iPad, thinking absolutely nothing was wrong with that.

The majority of the participants attributed this decline in ethics due to social media and everything that kids are now exposed to online, rather than to ET or the 1:1. Ms. Yang considered that students have become less respectful with adults, due, not to the effect of technology, but rather, to the lack of limits set by parents, who allow their children to use technology within their own households, which has in turn somewhat replaced the engagement of the parents with their children. She added that:

> Kids who have free access at home to technology are the ones that are coming to us that we're finding out are doing inappropriate things online; bullying, you know, the things using technology as a means of communicating inappropriately with other people . . . and then we bring technology into the classroom, those behaviors are going to continue.

In summary, the educational leaders at SMS made a clear distinction between educational technology, that is used in schools with control and restrictions, and is thus considered non-addictive, on one hand, and the use of technology at home, which lacks enough restrictions from the part of adults, on the other. In other words, for SMS' leaders, especially for Dr. Grace, Ms. Ora, Ms. Yang, and Ms. Jackson, it is the absence of control in using digital devices that led to the addiction among teenagers, and consequently, to the loss of many social values, or even the degradation of moral virtues. To delve deeper into the question about the relationship between technology and moral values, students completed a survey to share more about their use and perceptions of technology and the relationship to morality.

Technology and Student Morality

To examine the students' use of digital devices and their attitudes toward the 1:1, and to identify if there is any possible relationship between the use of digital devices and the students' moral values, data were collected from an anonymous student survey and from classroom observations. These data address the second research question:

2. How do middle school students use and perceive educational technology?
    a. Is there any connection between educational technology and students' moral virtues?

Three different themes emerged to answer the second question: (1) the students' use of technology and their attitudes towards using technology; (2) students' perceived connection between using their devices and their moral values; and (3) students' perceived connection between their attitudes toward technology and their moral values.

Students' Use of Technology

Students were asked to respond to questions on the survey to measure their comfort with and actual use of technology. In response to a question regarding the level of comfort that the students feel when using their tablet for school work, the vast majority (71.4%) of the respondents (n = 35) expressed extreme comfort, 10 (20.4%) were somewhat comfortable, and only four (8.2%) showed indifference about it. The level of comfort toward using technological devices, measured along a 5-point scale from *extremely comfortable* to *extremely uncomfortable,* had a categorical mean of 4.63 with a standard deviation of .64, suggesting the average response was near extreme comfort. In terms of their use of technology, 100% of students shared they had access to technology in their homes. Almost 77% indicated that they spent between one and six

hours on the computer per day (n = 17 for one to three hours, and n = 21 for three to six hours per day), while the remaining 23% were spending more than six hours a day (n = 6 between six and 10 hours, and n = 4 for more than 10 hours per day). The frequency of responses was illustrated in the following Table 3.

Table 3
Middle School Students' Screen Time (N=49)

Item	Number of Respondents	Percentage of Respondents
Less than 1 hour	1	2.0%
1-3 hours	17	34.7%
3-6 hours	21	42.9%
6-10 hours	6	12.2%
more than 10 hours	4	8.2%

The students were also asked about the amount of time they spend on the computer for different activities including research/classroom work, homework, group projects, social media, playing games, and others (reading, listening to music, etc.). Students were asked to indicate the percentage of time they spent on such activities out of a total of 100%. Students selected "Others" most frequently and indicated using the computer for other activities such as, reading or listening to music (M= 44.67; SD= 27.83). Playing games was the second rated amount of time spent by students on the device (M= 41.80; SD= 32.98), followed by research and classroom work with a Mean of 40.45 and a Standard Deviation of 26.49. Time spent on the computer by the students to do their homework had the lower score (M= 35.56; SD= 20.45) and the time spent on "Social media" was also lower (M= 34.40; SD= 28.41). Finally, the activity that took the least time spent on the computer by the participants was "Group projects" with a Mean of 21.72 and a Standard Deviation of 22.07. While the range of time spent on these activities could

have spanned anywhere from 0% to 100%, it is noteworthy that some of the participants indicated spending 100% of their screen time on three kinds of activities: group projects, playing games, and others like reading and listening to music.

In terms of observational data, however, I never observed students doing group projects with technology. In fact, during the period of language arts, the students spent almost 80% (50 minutes) of classroom time on their iPads and interacted very minimally with each other. The same could be said also for the period of social studies, where the students use their devices for the whole class time.

In response to the survey question asking the students to indicate the amount of time they used their devices during the different classes, using a 5-point Likert scale from Never (1) to Always (5), the students revealed that they used their devices almost all the time during the social studies period (M= 4.76; SD= .48), most of the time during the language/ arts period (M= 3.84; SD= .87), less than half the time during the math class (M= 2.61; SD= 1.10), sometimes during the science class (M= 2.16; SD= .85), and very rarely in the religion class (M= 1.65; SD= .63). These findings were actually confirmed by the interview data, as well as by the classroom observations. In fact, during the three consecutive days during which I observed the classrooms, the use of iPads by the students was limited only to seven minutes each time, during the periods of science/ math (where the students were asked to join a game through Kahoot), and to almost never, during the periods of religious class.

Students' Attitudes toward Technology

Attitudes toward technology were measured by six items along a 5-point scale from strongly disagree (1) to strongly agree (5). These survey items included topics such as the belief

in better learning outcomes by using technology, the enjoyment of learning related to using the devices, the challenging aspects of using devices, the possible distraction from using technology, and the personal preference toward the use of devices. The Table 4 below provides the responses from 49 students on the survey about their attitudes toward technology.

Table 4
Students' Attitudes toward Technology (N = 49)

	M	*SD*
I believe that I can learn better when I use my iPad in the classroom.	4.20	0.84
I believe using my iPad in classroom makes my classes more fun.	4.35	0.72
I believe using my iPad in classroom makes my classes more challenging.	2.45	1.00
I believe using my iPad in classroom easily distracts me.	2.63	1.06
I believe using my iPad in classroom makes me waste time.	3.38	1.06
Composite Variable: Students' attitudes toward technology ($\alpha = 0.65$)	3.89	0.62

From the composite variable, "attitudes towards technology," the overall class average was a 3.89 (*SD* = 0.62). The majority of students scored between 3.27 and 4.51 on a 5-point scale, where 5 indicated a strong positive attitude.

Students' Morality

Morality was assessed via seven items on the survey, reflecting six moral virtues inspired by Borba's (2001) virtues of empathy, conscience, kindness, respect, and tolerance. The value of kindness was measured via two items to avoid including two ideas in one item (or a double-

barreled presentation). Figure 1 below provides students' responses to each item, measured on a 5-point scale from never (1) to always (5).

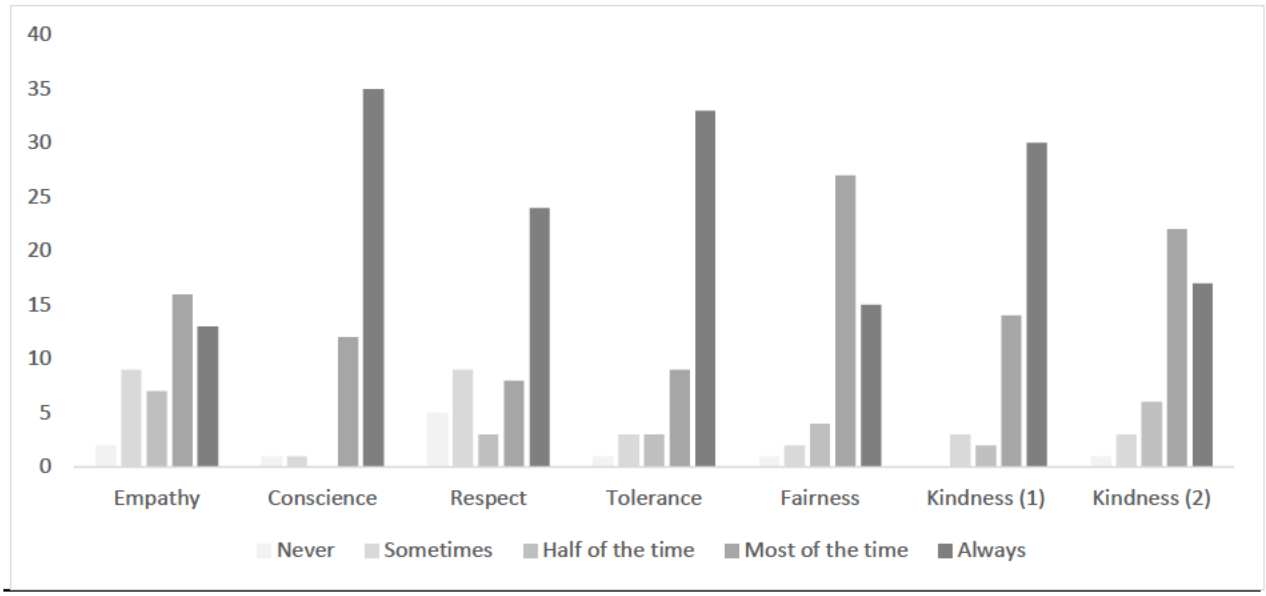


Figure 1: Students' self-reported morality

In general, the majority of the participants considered themselves as having solid moral attitudes or moral virtues. In fact, 85.7% of the participants revealed being always (30.6%) or most of the time (55.1%) fair with others by showing willingness to compromise (virtue of fairness). Furthermore, the surveyed students showed a strong moral conscience by absolutely denying having plagiarized or copied others' work without their knowledge (71.4%). They also identified themselves as always tolerant (67.3%), making friends from different backgrounds and beliefs than theirs. They were also shown as fairly robust respectively in kindness and respect (61.2 % of the participants confirmed constantly accepting that others make mistakes on one hand, and 49% of them alleged asking every time permission to look at others' screens or to use their possessions, on the other hand). It is noteworthy that the moral virtue of empathy was the

least considered among middle schoolers; only 26.5% of the participants admitted always feeling and showing their care for others. In addition, the virtue of respect had only 10.2% of the respondents who affirmed never asking permission to use or watch others' possessions while about 50% of them indicated always asking for permission before looking at others' screens.

Relationship between Morality and Technology. First of all, it is important to note that due to a moderate internal reliability ($\alpha = .65$) for the composite variable of attitudes toward technology, the correlations in this case must be interpreted with caution. Utilizing a Pearson r correlation, the data collected in this study indicated there was a statistically significant moderate correlation between students' attitudes toward technology and their moral value of kindness, measured as accepting others' mistakes ($r = .34$, $p < .05$). In this regard, the survey data suggested that the more middle school students maintain a favorable attitude towards the use of technology, the greater likelihood that they also tend to accept that others make mistakes.

Additionally, several Pearson r correlations revealed data regarding the kind of activity used during the time spent on digital devices by the middle schoolers on one hand, and their moral virtues on the other hand. Table 5 below shows the individual item correlations between the amount of time spent on devices for specific activities (measured as percentage of time) and moral virtues (measured as frequency of engaging in the behavior on a Likert sale from never to always). Six moral virtues were measured on the survey including: empathy, conscience, respect, tolerance, fairness, and kindness.

Table 5
Correlations between Screen Time Use and Moral Virtues

Moral Virtues	Classroom work	Homework	Group Projects	Social Media	Games	Others (reading, listening to music)
Empathy	-.08	.04	-.22	.01	-.43**	-.13
Conscience	-.11	-.35*	-.54**	.09	-.13	-.31*
Respect	.19	.32*	.26	-.01	-.07	.21
Tolerance	.14	.20	-.23	.05	-.34*	-.18
Fairness	.40**	.26	.22	-.21	-.24	-.01
Kindness (1)	.16	.32*	.21	.08	.05	.32*
Kindness (2)	.23	.08	-.02	-.11	-.16	-.14

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

As seen in the table above, there was a statistically moderate positive correlation between students using their electronic devices for research or class work, and their virtue of fairness ($r = .40$, $p < .01$), such that students who indicated using their digital device to do classroom work, indicated higher scores on fairness, defined as being willing to compromise so that everyone can get their fair share. With respect to using the device for homework, a moderately negative relationship appeared between students using their devices for homework and the virtue of conscience, in the sense of cheating ($r = -.35$, $p < .05$). In other words, the students who indicated higher frequency of using their devices to do their homework, indicated a higher tendency to copy others' work without their permission. However, using the device for

homework showed a statistically moderate positive relationship with the virtue of kindness (1) ($r = .32$, $p < .05$) and that of respect ($r = .32$, $p < .05$). This led us to consider that the students who indicated using their devices to do their homework more often, also indicated higher frequency of accepting others' mistakes, as well as asking permission to use others' belongings.

There was a statistically significant negative correlation between the students who use their digital devices for group projects and their level of conscience ($r = -.54$, $p < .01$). This suggested that middle schoolers who indicated higher percentages of time using their devices to do group projects, also indicated higher frequency of copying others' work without obtaining their permission.

The students who indicated spending higher amounts of time on their devices for playing games also indicated lower scores on empathy and tolerance, measured as showing less care for others and making fewer friends from different cultural and religious backgrounds, respectively. In fact, a significant moderate negative correlation could be found between frequency of time playing games and showing empathy ($r = -.43$, $p < .01$). Another moderate negative correlation also existed between frequency of time playing games on the computer and showing tolerance ($r = -.34$, $p < .05$).

Finally, in regards to the participants who indicated frequently using their screen time for activities like reading and listening to music, a moderate negative correlation was shown between that and their virtue of conscience ($r = -.31$, $p < .05$), whereas a moderate positive correlation existed between using computer devices for reading and listening to music, and kindness (1) ($r = .32$, $p < .05$). In other words, students who indicated spending more screen time on activities like reading and listening to music, indicated lower scores on the item measuring

frequency of copying others' work without permission, but higher scores on the item measuring kindness as accepting others' mistakes.

To conclude the survey data, most of the activities that middle schoolers use their devices for had positive correlations with virtues that form their moral intelligence, with the exception of the moral virtue of conscience. Conscience defined by Borba (2001) related to their aptitude of being honest and of resisting copying, cheating, or stealing.

Summation of Research Question 2

The classroom observations revealed possible connections between the use of 1:1 program and the moral virtue of self-control, which constituted the seventh virtue of the concept of moral intelligence. As to the survey, it revealed important correlations between using digital devices and the six virtues of empathy, conscience, kindness, fairness, respect, and tolerance (Borba, 2001). Together, the data resulting from the survey and from the classroom observations highlighted a new perspective on the 1:1 program, from the point of view of the students and of the researcher with regard to morality. In fact, several patterns emerged from the classroom observation data. One theme that was prevalent among the three grade levels observed was the fact that the students needed more reminders or reprimands to behave or to use the device appropriately, which connoted a weakness in the virtue of self-control according to Borba (2001). Another theme that emerged from the classroom observations, is the fact that the implementation of the 1:1 program was not unified across the grade levels but was dependent in part on the curricular material available, and on each individual teacher's preferences.

Conclusion

To sum up, the quantitative and qualitative data that were presented in Chapter 4 were gathered from several sources: interviews, document analysis, multiple observations in a classroom setting, and a survey. As was mentioned earlier, qualitative and quantitative data were combined in this study in order to generate more insight and expand understanding of the complex issues of technology and morality (Creswell, 2009). The results from the aforementioned sources were thus triangulated to provide a picture of how the 1:1 program has been implemented at SMS, how faculty and teachers are navigating it with morality, and how students are using it, with a special focus on the virtues constituting Borba's (2001) moral intelligence. After all, the sequential mixed-methods approach that yielded those data, sought to address these two research questions:

1. How has the 1:1 program been implemented in a LA Catholic middle school?
    a. How do Catholic educators (leaders and faculty) perceive its implications on the school's mission, on the teachers' teaching, and on the students' learning?
    b. How are Catholic educators integrating such an educational technology program, in order to establish a climate supportive of the moral development of adolescents?
2. How do middle school students use and perceive educational technology?
    a. Is there any connection between educational technology and students' moral virtues?

In effect, the qualitative data resulting from the interviews and the school's documents addressed mainly the first question, while the quantitative data resulting from the survey and a small amount of the qualitative data resulting from the observations, were more focused on the second question. As was intended, while the survey and the classroom observations provided information about the students' use of digital devices and their morality, the semi-structured interviews provided an insight into the perspective of the educational leaders at SMS, concerning the implementation of the 1:1, as well as its relationship with morality.

One of the overarching themes that emerged from the results was that the integration of 1:1 program in the classroom has been beneficial to both students and teachers, especially by making the teachers' job easier and faster, getting the students more engaged and accountable in school, and preparing the middle schoolers for high school and the future in general. Another emerging theme was the contribution of 1:1 program in widening the scope of the school's educational role to encompass the students' homes. Add to this, an important point that was made by the leaders was the fact that educational technology needed to be governed by rules, restrictions, and moral values, in order to avoid being addictive and disruptive to the moral growth of the students. Finally, the survey and observation data revealed that there might be a relationship between the students' use of digital devices and their moral virtues.

An analysis and a discussion of the findings, their significance, along with their implications for the educational leaders, the students, and the parents, are addressed in chapter 5. Recommendations for further research in light of the findings are included in the following chapter.

CHAPTER 5

DISCUSSION

Introduction

Few modern educational initiatives have been as widespread, dramatic, and costly as the integration of computer technologies into American classrooms. Both proponents and opponents of educational technology agree that the full effects of computers in school cannot be fully realized until the technology is no longer a shared resource (Oppenheimer, 2003; Papert, 1992, 1996), such as in a 1:1 program. Generally speaking, the literature, which has examined 1:1 programs, addresses students' academic achievements and motivations, teaching and learning interactions, and bridging the digital divide. Furthermore, very few studies focus on 1:1 programs within the Catholic school context (Cho, 2017; Wyatt, 2017). To that end, the intent of this case study was to understand teaching and learning practices when students and teachers use their own technological devices, in a Catholic middle school setting. Additionally, the study examined the impact of the 1:1 program on school leaders and students, especially with regard to students' moral virtues. The two research questions guiding this study were as follows:

1. How has the 1:1 program been implemented in a LA Catholic middle school?
    a. How do Catholic educators (leaders and faculty) perceive its implications on the school's mission, on the teachers' teaching, and on the students' learning?
    b. How are Catholic educators integrating such an educational technology program, in order to establish a climate supportive of the moral development of adolescents?
2. How do middle school students use and perceive educational technology?

a. Is there any connection between educational technology and students' moral virtues?

This chapter includes, firstly, a discussion of the findings gathered from the student survey, from the classroom observations, from the school documents, and from the one-on-one interviews with the school leaders. Secondly, the significance of these findings will be discussed, the limitations of the study will be acknowledged, and its implications on the theoretical, practical, and policy levels, will be presented, before suggesting at the end, some recommendations for further research.

Study Background

In order to understand how teachers and students are integrating the 1:1 program into the curriculum, and the connection of this program with morality, this case study focused on the Junior High (or Middle School) level at SMS, located in the suburbs of LA, under the jurisdiction of the Archdiocese of Los Angeles. As the main researcher, I analyzed several school documents, then conducted one-on-one semi-structured interviews with the principal, the vice principal for IT, the technologist, and the five junior high teachers, before I carried out 18 hours of classroom observations for three consecutive days with the sixth through eighth grades. After gathering the qualitative data, I conducted a 20-minute survey with the students, after which, I transcribed the interviews, and read and reread them multiple times, in order to code the data to identify major themes. I then analyzed the survey answers, trying to find correlations between variables like the students' use of devices or their screen time, and their moral virtues. The analysis of these data led to the following findings.

Discussion of Findings

The following findings are grouped into two categories. The first category of findings answers the first research question, which aimed to explore the implementation of 1:1 at SMS, and the way the leaders were navigating it with morality. The second category of findings is angled more toward students' moral virtues and their connection to the use of digital devices.

Implementation of 1:1 Program

Motivation and academic achievement. The qualitative data collected from the interviews, the school documents, and the classroom observations, all confirmed the outcome of Suhr et al.'s (2010) and Harris, Al-Bataineh, and Al-Nataineh's (2015) studies. Suhr et al. (2010) examined the impact of 1:1 instruction on upper elementary English Language Arts test scores and found that 1:1 students academically outperformed their non-laptop counterparts. Similarly, Harris et al. (2015) examined fourth grade students from a Title 1 elementary school in Central Illinois and found that the use of devices in the classroom could constitute a catalyst to help achieve at higher levels, suggesting the positive impact 1:1 programs can have on the students' academic achievement and on their motivation. Interestingly, the current case study showed a similar finding at a Catholic middle school; the use of devices appeared to improve problem solving skills, as mentioned by the teacher of social studies and by the principal at SMS. This finding echoed Lowther et al.'s (2003) study, which examined the impact of using laptops in the fifth-, sixth-, and seventh- grade students for classroom activities, and on student use of technology and their writing and problem-solving skills, and showed significant advantages for the laptop group on five of the seven components of the problem-solving skills task. The findings of the current study extended the benefit of 1:1 program on the students' solving skills to the

eighth graders and to the Catholic school setting. However, the data from the current study did not fully corroborate with Silvernail and Gritter (2007) or with Lowther et al. (2003) who both reported that the use of 1:1 program led to improvements in writing. Rather, the language arts teacher at SMS noticed the opposite effect among her students. Overall, findings from the current study aligned with the literature by indicating that the 1:1 program improved academic motivation and problem-solving skills within the science curriculum. The current study further extended this line of inquiry by documenting these findings within the Catholic middle school setting. To contribute to the broader understanding of 1:1 programs in Catholic settings, the next finding highlights the need for a mission-driven approach.

Need for vision and collaboration. Successful implementation of a 1:1 program requires an alignment with the school's mission, a clear vision, and a positive attitude toward technology from the part of the principal and/or the decision maker. Next, successful implementation requires planning from the school leaders, as well as the involvement and collaboration from all of the stakeholders. This was actually revealed explicitly in the interviews with the principal, the vice principal for technology and the technologist, as well as with most of the teachers. They all agreed that their personal love for technology, the support of the parents, the technology plan, and the formation of the technology advisory committee (TAC), were indispensable for SMS to be able to integrate the 1:1 in classrooms. Thus, strong planning and buy-in from stakeholders was essential to the success of the program. In assessing the strategy development process done at SMS, in order to implement the 1:1 program, there is a clear alignment with Espinosa's (2010) framework of strategic planning, especially in what Espinosa (2010) described as "identifying and inviting stakeholders to participate in the process" (p.5). SMS clearly implemented this step

of Espinosa's framework by involving stakeholders, specifically including parents and teachers in the decision-making process of the 1:1 program, which ultimately contributed to its success.

In effect, SMS's mission has remained the same since the school was founded, which was, as their mission stated, to "develop and educate the whole child to be: Active in Catholic Faith, Academically Prepared, Accepting of Others, Accountable for All Actions, and Articulate Communicator" (available on the school's website). The connection of the mission of SMS and the 1:1 program coincided with one another, especially that SMS leaders perceived using laptops and tablets within the classroom as a way of bringing about pedagogical change to enhance student learning. This area was in line with the literature by Cho (2017), which suggested that "teachers saw digital devices as contributing to students' academic learning, collaboration, and problem solving" (p. 190). Taken together, successful implementation of the 1:1 program at SMS was due to strong planning around a shared mission-centered vision. Such a vision, however, needs support and resources.

Need for resources. Providing money and resources played a major role in the implementation of 1:1 program. The technology advisory committee (TAC) was named the *Technology Campaign Committee* by the principal, which was discontinued after raising the necessary amount of money during the campaign. Based on the name, it was clear that the main concern at SMS was largely oriented by the financial challenge of the program and thus toward raising money and resources in order to make it happen. As for the academic and curricular aspects of the program, they were entrusted more to the educational professionals. The capacity and the speed by which the 1:1 program at SMS was implemented, depended mainly on the affluence of the school community. In fact, Heater (2017) announced that the Los Angeles

Unified School District had to spend a total of around $1.3 billion to hand over iPads to all its students. Requiring substantial institutional investment, the 1:1 program was made possible and successful at SMS because the school was able to raise enough funds in order to build the necessary infrastructure, install charging stations in every classroom, provide the students with enough devices, and to finance the professional development for teachers. In fact, this idea is backed by Dunleavy, Dexter, and Heinecke's (2007) study, which stated that in order to successfully integrate technology in the classroom, schools needed to budget for the devices, hardware, software, and for a well-thought-out professional development for teachers. Henceforward, the wealthier the school community is, the more likely that the integration of 1:1 program will be faster. Findings suggested that the lack of a unified vision, the lack of collaboration, the lack of resources, or the lack of planning, would lead to the incapacity or to the difficult implementation of 1:1 programs in Catholic schools.

Need for regulations. The majority of the leaders interviewed during this study, acknowledged the importance of new and updated regulations after implementing the 1:1 program in the classrooms. In fact, in addition to the AUPs, which take into account web safety and digital citizenship, many leaders shared that there should be enough control and monitoring from the part of the school over the devices, and that the use of cellphones by the students during class hours should be banned. Moreover, the need for more regulations for the use of digital devices in the classroom was stressed by school personnel. For example, the principal emphasized the importance of including explicit teachings about social skills and Catholic values, and on the differentiation between learning methods (digital or not) in the curriculum. Those regulations should effectively take into account the necessity of teachers' professional

development, the needed balance between using the devices and not using them in the classroom, and several other policies, in order to counter some of the pitfalls of the digital world, which were identified in the current study, during the interviews, like *distraction, lack of personalization,* and especially the *lack of retaining information* or *memorization,* which constituted a new contribution to the literature. In fact, while Feenberg (1991), James (2014), and Uhls et al. (2014) discussed concerns related to the distracting impact of technology use, and the lack of personalized relations in the digital world, describing it as the "video deficit" (Uhls et al., 2014), I have not encountered in the research any mention of a "memory deficit" in relation to the use of digital devices.

Home and school connection. The data collected from the interviews revealed that following the integration of the technology, the educational leaders' work changed from being solely focused on the student in the classroom, to teaching them and their parents at home. In effect, this point was acknowledged by the principal who shared that she deals with the millennial parents, more than the students, in teaching them digital citizenship skills and making them feel comfortable in communicating face to face; she thus calls for parent education or "training in-person communication." The survey data signaled that the middle schoolers spent as much time, if not more, on their devices at home, than in the classroom, and what they do on their devices at home, most probably impacted their work and achievement at the school level. Actually, the participants in the survey revealed that they spend more amount of screen time on activities like playing games, going on social media, and homework—which were likely done more at home due to the school's restrictions policy—than on classwork and group projects, which were accomplished in the classroom. The negative effects of technology were eventually

considered by most of the school staff, as having originated from home and from the lack of well-informed parenting than from the use of ET in the classroom. According to the annual Brigham Young and Deseret News American Family survey, the "overuse of technology has overtaken drugs, sex, and bullying as the biggest parental worry" (Kamenetz, 2019). Actually, Sanders, Parent, Forehand, Sullivan, and Jones (2016) found, in their study, that a child's screen time was associated with maladaptive outcomes and that parenting strategies for the adolescents' screen time may be ineffective. Moreover, Langer, Crain, Senso, Levy, and Sherwood (2014) asserted that greater screen time was associated with both authoritarian and permissive parenting styles. Add to this, Fuller, Lehman, Hicks, and Novick (2017) confirmed the finding in their study that the increase in body mass index and the decrease in the quantity and quality of children's sleep was connected to them using digital devices at bedtime. On another note, as Radesky and Christakis (2016) once noted that, when it comes to children's development, parents should worry less about kids' screen time and more about their own, because as McDaniel and Radesky (2018) suggested in their study, problem behaviors in children were associated with technological interruptions in parent-child interactions or "technoference", indicating problematic use of digital technology by parents. While the current study did not examine SMS parents' attitudes toward technology, their use of technology, nor their parenting practices related to their child's technology use, the view of the school staff presented in this study, along with recent literature, suggested the need for future research to learn more about technology use at home.

Teacher's role. Findings suggested that students' screen time in the classroom depended on the teacher's tenure and self-reported technological skills. The data collected through the

student survey, corroborated the classroom observations, revealing that there was no difference in the amount of time spent by the students on screens between different grades. There was a big disparity in the students' use of devices between classes, and thus between teachers. In effect, this statement confirmed the findings of Bebell and Kay (2010) suggesting that "teachers nearly always control how and when students access and use technology during the school day" (p. 47). The impact of teachers on the classroom screen time, that is noticed in this study, corroborates with Bebell and O'Dwyer (2010) who argued that "it is evident that teachers play an essential role in the effective implementation of 1:1 initiatives and that the onus of responsibility for implementation often falls to the teacher" (p. 8).

As discussed in some of the interviews, the first reported cause behind this disparity resided in the availability of the curricular textbooks in a digital format or online. This was noticed for example in the religion classes, during which 95% of students revealed never having used their iPads, or using them very few times. The religion class teacher justified this minimal technology use by sharing that it was due to the unavailability of catechetical resources in a digital format. On the opposite side of the spectrum, 98% of the students acknowledged using their devices almost always, or most of the time, during social studies classes. According to the social studies teacher, there was no available textbook for the course. Having resources available online created the situation where the 1:1 program became a necessity to teach the class. Not surprisingly, as noticed by Bebell and O'Dwyer (2010), the increased resources provided in 1:1 settings "indeed resulted in an increased frequency and variety of technology use by students and teachers" (p. 7). Furthermore, during the classroom observations, the screen time was noticed to be very short in science and math courses at SMS in comparison with the social studies and

language arts classes, which matched with the outcomes of Bebell and Kay (2010) who found, from studying a Massachusetts' 1:1 middle school pilot program, that technology was used less frequently for mathematics and science than for English language arts and social studies. Actually, the current case study showed how a similar finding is true at a Los Angeles Catholic middle school. However, it appeared that the lack of curricular resources was not the only reason behind this disparity of screen time between courses.

The data collected from the classroom observations as well as from the interviews showed a positive relationship between the teachers' attitudes toward digital technology, or their perceptions of pedagogical change based on 1:1 program, and the length of the students' use of devices in the classroom. In other words, the more positive attitudes the Catholic school teachers maintained toward 1:1 programs, the more likely they were to let students use tablets within the classroom setting. This finding extended Buabeng-Andoh and Totimeh's (2012) finding, which elaborated that the more time and experience teachers had with technology, the more positive attitude they had towards it. In addition, the finding of the current study agreed with the statement of Stansbury (2010) who concluded, after compiling four studies on 1:1 program projects in K-12 schools, that "1:1 success depends more on teachers than on the equipment itself" (n. p.). In his article, the author actually mentioned a study of 21 high-need Texas middle schools, which found that the use of laptops in the classroom and thus the successful implementation of 1:1 program depend largely, among few other factors, on the teachers' buy-in.

Furthermore, the qualitative data of the current study revealed a more significant relationship between the teachers' tenure and their self-reported technological skill level, on one hand, and between their tenure and the duration of screen time in classrooms, on the other. In

fact, the students of teachers who had been teaching for more than 20 years, having beginner/intermediate technological skills, had much less classroom screen time in comparison to the students of more recent teachers with advanced/expert skills. For example, teachers who reported being "novice" and "average" in technological skills, and had been teaching for close to 25 years, had the majority of their students signal that they used their devices much less than half of the time during class. These results were actually triangulated by the classroom observations as well by the typical research literature where, according to Jones et al. (2015), incoming teachers were thought of as more accepting of novel instructional technologies. This finding was further backed by Karaca, Can, and Yildirim's (2013) research as they suggested that "teachers [were] likely to develop positive attitudes about technology integration when they [had] sufficient knowledge about its use" (p. 361) and that improving teachers' beliefs regarding the benefits of laptop integration "might be helpful to improve teachers' technology utilization" (p. 362). This idea would also suggest that tenured teachers with poor skill levels in technology perceive practical value in 1:1 computing, but that their level of comfort using devices in the classroom shapes the duration of their use of this academic programming.

Savvy school leaders. Another finding of this study was the fact that most of the leaders who considered themselves experts, or who leaned towards expertise in technology, considered educational technology as a morally neutral tool, which facilitated the job of the teacher and of the student. They were more enthusiastic talking about the advantages of the 1:1 program, despite their acknowledgement of its pitfalls. For example, the social studies teacher, a self-reported expert in technology, made sure to mention that the integration of the 1:1 program in SMS was "enjoyable" to the teacher and exciting to the students. Other teachers also expressed

how much they and their students love and desire technology. During the interviews, a pragmatic approach to education, based on practical considerations, was revealed by these teachers. They actually emphasized the speed and the easiness of the teaching and learning processes, which were made possible thanks to the implementation of the 1:1 program in the classroom. The social studies teacher was so deliberate in this path when he underlined more than once, that the educational technology constitutes a "tool that should be used to get things done," and which has helped the students to be more productive. In fact, this idea is backed up by the findings of Purcell, Heaps, Buchanan, and Friedrich (2013) who asserted that integrating technological tools in schools has a major impact on the efficiency of the teachers and students. The same idea was echoed through the statements of Kumar Snehansu (2013) who confirmed that technology increased productivity for students as well as for teachers, by reducing wasted time, energy, and money. He actually based his declarations on a survey, supposedly published in 2004, where he asserted that school leaders see technology as a way to improve productivity and efficiency.

The social studies teacher also mentioned that "kids are making creative ways now (thanks to technology) to go off task . . . and isn't that called learning as well?" Said differently, successful learning was assessed, at least for this teacher, by productiveness and creativity, more than moral and ethical values. On the other hand, the disadvantages which were underlined by those teachers and leaders, focused more on the technical challenges and the need for or the lack of resources.

Skeptical school leaders. Findings also indicated skepticism among the non-technologically savvy leaders. The data from the study's interviews revealed that the leaders who self-reported as below the average in technological skills, expressed more words describing the

disadvantages of ET than its advantages. They were more likely to emphasize their concern towards the ubiquitous and addictive aspects of technology. Two teachers represented this attitude the most when they shared that technology had become the center of the students' existence and had contributed to their complacence. Intrinsically related to the previous finding, this result also revealed a connection between the leaders' attitude towards technology and their level of expertise in using the technological devices. In other words, teachers' attitudes toward technology fluctuated based on their self-reported technological skill level, where beginner/intermediate teachers had less favorable attitudes when compared to advanced/expert skills. Yet, although teachers' attitudes differed based on technological skill, there was not a strong indication that the skill level played a role in a teacher's perception of the effects of technology. In fact, this suggested that either the teachers with different skill levels in technology expressed different level of comfort using devices, and, accordingly, showed reluctance or enthusiasm toward using technology in the classroom; or that the teachers who already possessed a skeptical approach about the effects of technology, were not willing to learn or to improve their skills in technology, and vice versa.

In conclusion, to implement a 1:1 program in a Catholic middle school, findings indicate that an involvement of all stakeholders around a unique mission and vision is recommended, along with an awareness of the widening of the school's mission to englobe the parents and students at home. Material resources, strategic planning, new regulations, and an updated curriculum adapted to the digital education, are also required for the success of the program. In spite that the integration of 1:1 program seemed to increase the students' motivation and academic achievement, the way of its implementation still depended largely on the availability of

curricular resources, on the teacher's tenure and self-reported technological skills, and on the personal attitudes and preferences of the teachers who could be divided into two main groups: the enthusiastic pragmatic one and the skeptic one.

While these major findings highlighted the implementation of the 1:1 program in a Catholic middle school, the second research question, focused more on the relationship between the students' use of technology their attitudes towards it, and their moral virtues. These findings will be presented according to the different moral virtues which form Borba's (2001) concept of moral intelligence.

Technology and Moral Virtues

Empathy. Empathy was measured as the capacity to feel for others and to show it expressively so they know the subject's care for them. The survey data indicated only a moderate negative correlation between empathy of students and playing games on the devices, such that those reporting more empathy also reported spending less time playing games. There are many sources in the literature (Alloway, Runac, Quershi, & Kemp, 2014; Konrath, O'Brien, & Hising, 2010; Misra, Cheng, Genevie, & Yuan, 2014; Uhls et al., 2014), that pointed out a possible loss of empathy due to the introduction of virtual communication and thus the decrease in face-to-face interaction with the use of technology in general. However, against Muriel and Crawford (2018), who argued that video games could be mediation devices which foster empathy among players, the current study saw a moderately negative correlation between empathy and one type of technology use—playing games. In fact, Graham (2012) asserted that playing video games has driven people to become less compassionate, and even described them as "sophisticated adult versions of spoiled little kids" (p. 17). Manney (2008) indicated that most video games are not

creating empathy, due to shallowness of roleplaying and; thus, the absence of a "deep psychological involvement in characterization" (p. 6) in those games. He even added that "violent video games can even be considered 'anti-empathy' technology" (p.6).

One limitation of the current study was that the type of game being played by students was not measured; as such, there was no way of knowing if violent video games were related to lower reports of empathy, or just video games in general. Certainly, there are many educational video games available to students as well, limiting the ability to draw a clear conclusion. In fact, the same finding could be interpreted in a different way; teenagers who were already low in empathy tended to spend more time playing games. After all, as mentioned by Manney (2008, 2015), the heart of creating empathy is storytelling and communication. Consequently, it is not clear whether spending time on video games negatively affects empathy or whether people who express a lack in putting themselves in other's shoes tend to play video games more.

Tolerance. The virtue of tolerance was measured on the survey as the ability to make friends from different backgrounds and beliefs. This item did not correlate with any type of screen time use but had a moderately negative correlation with playing games. The qualitative data did not yield any results concerning this specific virtue. As with the virtue of empathy, this finding suggested either that video games might be hindering the teenager's openness to diversity in friendship or that the teens who are intolerant of others prefer playing video games, perhaps as a way to avoid meeting or confronting others from different backgrounds. In fact, Graffam (2012) debated that the increasing number of people playing video games means that video games have an undeniable effect on culture. According to Calleja (2010), this effect was frequently associated with *escapism,* to a degree that is possible to proclaim that "digital games

are considered the epitome of contemporary escapism" (p. 336). On a different note, Tsukayam (2017) discussed in her article in the Washington Post, how video games are not diverse enough. The aforementioned escapism, along with the lack of diversity, could be in some way connected to the negative correlation found in the current study between digital playing and the virtue of tolerance.

Conscience. The virtue of conscience was measured by the example of copying others' work without telling anyone, or what is known as plagiarism, and could be included under the notion of cheating in Borba's (2001) terminology. This item showed a significant negative correlation with using digital devices especially for homework, for group projects, and for other activities like reading and listening to music. Interestingly, there was no mention about plagiarism being an issue in the interviews with the teachers at SMS. Still, plagiarism might be expected, since a recent survey conducted by *the Pew Research Center's Internet and American Life Project* (Purcell et al., 2013), as well as other research (Baruchson-Arbib, & Yaari, 2004; Jacobs, 1993; Parker, Lenhart, & Moore, 2011; Sharma, 2018), have demonstrated an expansion of plagiarism due to the use of technology and the growth of the Internet. Yet, the correlation between plagiarism and using the devices for activities like reading and listening to music provided interesting and new insights to the literature. In fact, the current finding suggested that Catholic middle school students who report using their devices often for homework, group work, or listening to music, also report more instances of plagiarism.

It is important to notice there was no correlation between the use of devices for social media and plagiarism. The absence of a negative relationship between these items is incongruous with Sharma's (2018) assertion that "social media has quickly become a breeding ground for

plagiarism that's nearly impossible to control" (n.p.). In addition, the lack of significant relationship between plagiarism and the use of technology for class work, revealed in this study, may have been due to the presence of the teachers' control and monitoring in the classroom. Bailey (2013) expresses best the connection between technology and plagiarism through these words:

> When it comes to plagiarism, technology has been a double-edged sword. On one hand it has made plagiarism itself much easier, streamlining the process of finding content to plagiarize and bringing the duplicated material into a new work. On the other, it's made plagiarism much easier to detect and prevent, creating tools to both catch mistakes and stop those who are acting in bad faith. (Bailey, 2013, n.p.)

Respect. There was a moderate positive correlation between the use of technology for homework and asking permission to look at others' screens or to use their possessions, which relates to the virtue of respect according to Borba (2001). This finding implies that students who use their devices more to do their homework are respectful of others' possessions and information. Given the recent attention on self-discipline in Catholic schools, in the sense of having respect for self and for others, found in the literature (Ferrisi, 2018; Gottfried & Kirksey, 2018), this finding was also uplifting knowing that these Catholic middle school students working on homework with their devices reported being respectful and asking for permission to use others' information.

Kindness. In this study, the virtue of kindness was measured as accepting others' mistakes and was related positively to the use of technology, among middle schoolers. In other words, students who reported using technology more frequently also indicated being more

accepting of others' mistakes. This relationship between the use of technology and students' kindness was never mentioned in the interviews, despite the indication that many teachers touched on the fact that they had students who are very kind. This finding, however, could be aligned with the recent literature about technology and compassion. Peter Economy (2018), asserted in his article, "The Leadership Guy", that even though technology may have been accused of hardening kindness' building, it "may now be the solution we have been needing all along, hiding in plain sight" (n.p.).

Fairness. The quantitative data revealed a positive correlation between the students' virtue of fairness and the use of their devices to do classroom work. Fairness was measured as being able to compromise. Students who reported higher scores for fairness, also scored using technology in the classroom more. While not measured on the survey, this finding was due to the presence of a monitoring authority in the classroom who might be setting rules, which rewarded fairness among students. During the classroom observations, a big proportion of the reminders that were given by the teachers were related in some way to respecting others and taking turns contributing to the class work.

Self-control. Although the quantitative data did not measure the virtue of self-control, which constitutes the seventh virtue of Borba's (2001) concept of MI, the qualitative data from the interviews, as well as from the observations, showed a negative relationship between the students' use of devices and their capacity to ignore digital distractions (or exercise self-control). In fact, the distractive characteristic of technology was addressed by most of the teachers and leaders at SMS, signaling the use of constant reminders during class to stay on topic and setting clear policies and rules in order to help students build self-control. Nonetheless, the need for

reminders could be explained by the lack of concentration and contemplation that resulted from the use of digital technology (Carr, 2011). On the other hand, this may point to a lowered capacity to retain information, which Taylor (2012) asserted was due to children being more inclined to engage in critical thinking than in remembering things now due to technology.

A quick analysis of the aforementioned findings reveals an interesting indication that calls for more reflection. In the current study, the moral virtues of empathy, conscience, and self-control presented a significant negative correlation with the use of digital devices. According to Borba's (2001) framework, those three virtues formed the "cornerstones of moral intelligence" (loc. 1027), or what Borba called "the moral core"; the foundation, which was crucial to developing children's MI, because "it [gave] kids the power to counter outside and inside vices so that they do what's right" (loc. 330). In other words, according to the findings, the moral core of the teenagers was negatively correlated with their use of technology, while the other virtues that were cornerstones to the relationships with others, were mostly positively connected to the use of technology.

To sum up the findings' section, the qualitative interview data often corroborated the quantitative findings, but a few aspects were not discussed in the interviews with the leaders. Specifically, school leaders did not discuss, for example, the issues of plagiarism and intolerance, or even the virtues of respect and fairness, nor the relationship between the students' moral virtues and the different types of their digital activities. This suggested that there was probably, in the teachers' and educational leaders' beliefs, an apparent disconnect between the use of digital devices by the students, and the growth of their moral virtues. Furthermore, the teachers seemed to be differently positioned, on the spectrum of attitudes towards the use of

digital devices. After all, if Taylor (2012) rightly stated that "the effects of technology on children are complicated, with both benefits and costs" and this depended on "what specific technology is used and how and what frequency it is used" (n.p.), then there was bound to be differences of opinion when implementing an educational technology program. This study added depth to this complexity suggesting that the moral effects of technology depend not only on the frequency by which people spend time on the devices, but also on how, or more specifically, on the activity for which the digital device is used. This last point was actually mentioned by a recent study conducted by Domoff, Harrison, Gearhardt, Gentile, Lumeng, and Miller (2019), where the authors suggested that the way children used the devices, not the amount of time they spend on them, predicted best the emotional or social problems connected with screen addiction.

Limitations and Delimitations

The majority of the limitations to this study were typical to any case study research. Typical to any case study, the greatest limitation of this research was the relatively small sample size limiting the findings' generalizability. In fact, the idiosyncratic and small sample as well as the predominantly non-numerical data made it difficult to generalize outside the scope of this study. This study examined the case of one Catholic school site at the middle school level. Considering that moral intelligence/development is tied mainly between early childhood and late teenage years (Rest & Narvàez, 1994; Supavai, 2014; Vozzola, 2014), the study did not include any responses from other age groups. Henceforth, the age range of the students participating in this study made it difficult to generalize the findings to other ages, like elementary or high school or even college students. Still, not every student from all three middle school grades responded to the survey. From grades six and seven, only eight students had parental consent and completed

the survey; the majority of the sample respondents were in the eighth grade. Thus, the sample of students who completed the survey reflected more the eighth graders than the larger middle school student population.

This case study also focused on an affluent Catholic middle school. The easiness and speed of raising money and providing the resources necessary for implementing the 1:1 program at SMS were mainly connected to the geographic and socioeconomic status of the school community. This could be difficult to duplicate in a low-income school community.

Another limitation of this study was also related to the case study research design and can be summarized as the subjectivity or the bias of the researcher. This limitation could lead readers to easily find reasons to resist or dismiss the findings, especially if those findings are unpopular (Hodkinson & Hodkinson, 2001). In order to counter this limitation, I strived to be as rigorous and transparent as possible in all the judgements I made.

As with all interview and survey data, an inherent limitation was the reliance on self-reported data from teachers in the interviews and students on the survey. There was a possibility that even though the data were anonymous, the students may have felt a need to answer in such a way that their responses were not necessarily truthful but rather indicative of what they felt was morally acceptable or socially desirable (Lavrakas, 2008). Similarly, teachers and leaders may have felt the pressure to respond in ways that showcased their program and school in the best light.

Another limitation was present in the survey, or an instrumentation threat, which referred to the fact that the questions measuring the moral virtues of the students were created by myself as a researcher inspired by Borba's (2001) book. Using a newly crafted measurement instrument

could be considered a limitation to the study, especially in a field where many scales and inventories exist. Moreover, the way by which the moral virtues of the students were measured was limited; each virtue had only one corresponding item (except for the virtue of kindness), and the virtue of self-control was not measured. This fact might hinder the reliability and validity of the survey in measuring the students' moral intelligence and thus all survey findings should be interpreted with caution.

Finally, steps were taken to ensure the validity and trustworthiness of the data, which included following the interview protocol for data collection. First, the interviews were conducted by me as a doctoral student, who had completed the federal ethical course on conducting Human Subject Research. Second, in designing the interviews as well as the observations, and then in conducting the data analysis, I collaborated and subjected my findings to others for feedback to honor the concept of peer debrief as described by Creswell and Miller (2000), which usually helps increase the validity of the study. Third, the interview protocols included setting up an interview at a time convenient to the interviewer and interviewee. The interviews were recorded and corrected by most of the interviewees to ensure accurate transcription and then coded to ensure objective analysis. The analytical claims made represented the view of the leaders and teachers interviewed. Additionally, for the observations, I tried to minimize the "Hawthorne effect" (Cook, 1962), by sitting in an unobtrusive place in the classroom, without any interaction with the classroom environment or students.

Implications

Despite the limitations, theoretical implications emerged from this mixed methods research study. Specifically, this study has theoretical implications for the intersection of Catholic social teaching, critical technology, and morality.

There has been slight disagreement among Catholic moral theologians as to the fact of perceiving technology as neutral (Catholic official teaching) or not (Caccamo, 2015; Hochschild, 2015; Pope Francis, 2015). This study made a contribution to the field of Catholic social teaching through what I call a *Critical Catholic Moral Theory of Technology*, which sought to go beyond the traditional instrumentalist Catholic view of technology by imbedding the perspective of the critical theory of technology into the Catholic moral teaching. In fact, this study validated the fact that there was some connection between the use of digital technology and the moral virtues of the young students. This led the researcher to assert that adopting a critical perspective of technology might be profitable in the long run for the Catholic Church's role of teaching and helping the faithful practice the moral virtues. In addition, this study provided a starting point for the discussion about whether technology is merely a tool or if in fact it leads people to adopt pragmatic views, as it was noticed in this study, through the interviews with the teachers, for whom the main advantages of using technology go around productivity and speed, and especially through the interview with the social studies teacher, for whom going off task without being noticed could be considered as a sign of intelligence.

A further contribution to the field of education was the identification of the need for 1:1 Catholic schools to incorporate a critical moral perspective of technology use into their curriculum as well as into their teacher preparation programs, as an important element in creating

successful leadership. A critical moral perspective of technology would encourage teachers to consider the integration of 1:1 more than an add-on to their traditional teaching, but a holistic system which could help them develop in their students, on one hand, an in-depth understanding of their world—or what is known as conscientization (Freire, 1998)—and on the other hand, a moral virtuous character, leading to human liberation and human integrity, which both constitute important tenets of social justice. Such an approach would also avoid pragmatic ideologies among the teachers, which are not advisable according to Catholic teaching. It may be that such an approach would consequently affect student learning in a more positive and holistic way. This study revealed that all the Catholic leaders at SMS share the Catholic belief that technology was just a mere tool, which can be used for bad or good by the person. By and large, their practice, their personal views, as well as their way of dealing with the challenges related to the use of digital devices, reflected nonetheless a critical perspective of technology use, which was built upon caution and fear from a solid use of 1:1 in the classroom. This cautious attitude was actually anchored in the unwavering belief of the importance of real-life interactions and of the manual activities.

The study further contributed to the field of ET by identifying what correlations existed between the moral virtues of the students in the middle school and their digital activities. By identifying those correlations and the concerns of the teachers, and then making recommendations, this research contributed to the knowledge base in the fields of ET and morality, in the sense of shedding light on which specific activities teachers have to take into consideration when students are on their digital devices, in order to bring forth the moral growth of the students.

Recommendations

Several recommendations are elaborated for educational leaders and students, when considering issues related to 1:1 or any advanced technology programs within a Catholic middle school context. The following recommendations flow from the findings, are grounded in literature, and can be situated within the local context of each Catholic school. These recommendations extend beyond the implementation of the 1:1 program and elucidate how educational leaders can answer the moral mission of the Catholic school and enhance the moral growth of the student while implementing digital technology in the classroom. They include specific actions that can be initiated by educational leaders at the school level.

1. **Provide school-wide professional development for teachers:** The findings indicated the need for more homogeneity among teachers when it comes to the implementation of 1:1 program in their individual classrooms. In fact, the current divergence among teachers in using the digital devices made it very difficult to measure any impact on student learning or on student moral growth resulting from the 1:1 program. Discrepancies in the 1:1 program, which currently exist between teachers, might bring forth a divergence of attitudes among students, which could be expressed in the form of lack of discipline or attitudes of disrespect, which makes the job of the teacher less effective and even more challenging. Professional development can assist teachers in adopting standardized policies for implementing the 1:1 program, including the time that should be allocated to the use of devices in each class. The need for more curricular resources in all the fields, especially in science and Catholic religion, is also important to attain this uniformity in teaching.

2. **Provide individualized professional development for teachers:** The findings showed the necessity of bridging the technology gap that exists between the students and their teachers, especially those from older generations. Professional development should go beyond the technicality of using the devices to embrace the philosophy of the 1:1 and make sure that all the teachers adopt a unified perspective of technology use in the classroom. A need for individualized and differentiated professional development for teachers, according to the individual needs of each, is recommended.
3. **Create curriculum informed by Catholic social teaching:** Values and beliefs are foundational for student growth. They give meaning to their learning and especially their digital activities. Therefore, the use of digital devices must be predicated on a clear Catholic social teaching value laden curriculum that will help students to learn the espoused Catholic values and beliefs about the digital world and enable them to possess a strong sense of self-control and conscience to engage in digital activities. Educators in Catholic schools should frame their use of devices by including specific Catholic social teaching principles, which would guide students to learn, reflect, and relate their own experiences with those principles. An example of this recommendation is to create educational exercises that use digital devices to prevent plagiarism or promote the virtue of forgiveness.
4. **Create curriculum and train teachers in a critical perspective of technology:** Educational leaders are to consider a critical perspective of technology use that takes into consideration any possible impact of technology on the child's growth. In fact, when the use of technology is embraced by the school as morally impactful, and

added to the school's curriculum in that context, schools ought to take moral responsibility for contributing to the moral growth or to the decline of the students, when asking them to perform specific activities on their devices.

5. **Balance screen time and personal interactions in the classroom:** The different data from this study highlighted the importance of providing a balance in the classroom between the use of digital devices and the real interpersonal interactions between the students and the teacher, and among the students themselves. This balance should be expressed explicitly in the curricular policies of the school.
6. **Add policies related to self-control (i.e., thinking before answering, behaving appropriately) into the AUPs:** According to this study, the only virtue that was negatively connected to the use of devices inside the context of the classroom or the school was the virtue of self-control. This implied the need for educational leaders to create policies that address the virtue of self-control in a more explicit way and focus on its growth among middle schoolers. One way to emphasize self-control is to consider policies about blurting out answers, or about the need for reminders of appropriate behaviors, for instance, and incorporate those into the schools' AUPs.

Future Research

The findings in this study highlighted the need for further research in several areas. Firstly, given this study addressed only one Catholic middle school, a similar study comparing different schools which offer 1:1 program, on one hand, and comparing 1:1 schools with schools which have not implemented 1:1, on the other, would be beneficial. A comparison of the results of the implementation of 1:1 program and its relationship with the educational dynamic in the

classroom as well as with the moral growth of teenagers, would be necessary to gauge effectiveness.

More research is also needed to reliably measure moral virtues composing the concept of moral intelligence, according to Borba (2001). A validated and reliable measure of moral virtues, which includes questions for the virtue of self-control and three or four questions for each virtue, would assist future studies.

Finally, there is an obvious need in the literature to consider educational technology as more than a value-neutral pedagogical tool and hence to broaden the perspective while studying its impact on students' development. Therefore, from an ethical point of view, widening the ethical perspective of technology use from an individualistic "ethic of use" based on local actions and reactions, to a global, systemic "ethic of virtuosity," based on universal aspects of human character, seems crucial at this point.

Despite the need in the literature to conduct quantitative studies concerning the effects of educational technology programs on academic achievement and moral development of students, I would recommend future studies include both qualitative and quantitative means of gathering information. Mixed method studies provide a more in-depth understanding of the implementation of 1:1 programs and its connection to the moral development of the students.

Conclusion

This case study aimed to discover how the 1:1 program was being implemented in the SMS Catholic middle school, and how the leaders at SMS perceived its effectiveness, its points of strength, and its points of weakness. The study further strived to unveil the way the school leaders were navigating the moral aspect of this implementation in the classroom, before trying

to find any significant connection between students' digital activities and their perceptions of their moral virtues.

After much research and data analysis, findings showed that there were many advantages, as well as disadvantages for both students and the teachers. There was also a triangulation between qualitative and quantitative data, which showed that the students' moral virtues were connected in various, and even sometimes contradicting ways to the use of technology. The study showed both a positive correlation at certain places and a negative one in others, according to the type of activities performed by the students. An interesting outcome of this research was that the moral virtue of conscience was mainly affected negatively, after the implementation of the 1:1 program, while kindness was positively affected. Surprisingly, social media had no connection between the use of technology and the students' moral intelligence virtues. As a result of this study, which has taken into account the mission of the Catholic school and the role of the teachers, many recommendations were offered, in addition to theoretical implications. The theoretical implications suggested the critical perspective of technology for Catholic social teaching, as well as the critical perspective of technology for Catholic schools, and moral virtues. As for the recommendations for practice, there is a need for more homogeneity in 1:1 use among teachers and for individualized professional development for teachers. Finally, concerning the curricular implications, there was a clear need for balance between screen time and personal interactions, and to embrace a critical perspective of 1:1 use, including emphasizing the virtue of self-control and limiting recreational screen time activities in order to encourage classwork.

That being said, this research can be used by many, including: (1) by administrators in Catholic schools to develop their teacher formation and professional development for

implementing 1:1 programs at their schools, as it infers a necessity for teachers to feel confident and be adequately prepared to engage in lessons involving 1:1 program; and (2) by teachers to help them discern the most suitable screen time and the best digital activities for their students while implementing the 1:1 program in their classroom.

This research also showed many aspects for educational leaders to further analyze, according to a social justice perspective, the relationship between 1:1 programs and student morality. In effect, while the current literature on 1:1 programs tended to be focused, primarily, on its academic effects without paying attention to its impact on other traits essential for human integrity, this case study succeeded by striving to study the moral growth of the student, thereby honoring the Freirean principle of humanization, which calls for a holistic approach to educating the entire human being. In fact, most of the literature on 1:1 programs connoted the impact of the dominant culture in education, where the only measure of success is based on quantified GPA scores, and where meritocracy was worshipped. However, by focusing on the impact of 1:1 on students' morality, this case study took into account a holistic and progressive approach of students' success that liberated them from merely being a "user" or even an object of cognitive skills.

Finally, it is noteworthy to mention that this study offered a new critical moral perspective that was absent in the minds of the leaders but which could be profitable for a better implementation of a 1:1 program and a better navigation of its impact on students' moral growth—thus, opening a breach in the literature for future research concerning the impact of the use of technology on the moral growth of students, and presenting a new theoretical framework to be taken into consideration for future research. In effect, as mentioned earlier in this study,

there was an obvious need in the Catholic literature to consider educational technology as more than a value-neutral pedagogical tool and to broaden the perspective while studying its impact on students' development. I would like to share here Mark Graham's conviction that "technology ought to become a subject of considerable interest in Catholic circles" (2012, p. 21), especially in the field of Catholic education. Inasmuch as the Catholic "ethic of use" is still limited as to analyze morally the diverse and manifold dimensions of contemporary technology, a serious study and a more accurate matrix of moral analysis needs to be done in Catholic schools as to how to implement technology in pedagogy, in a responsible, accountable, and ethical way, without altering or defying God's grace when He created us in His own image (Genesis 1:27). Therefore, from a critical point of view, when we broaden the ethical perspective of technology use, from an individualistic "ethic of use" to an "ethic of virtuosity," we ensure a better humanization of people, based on social and moral justices, as well as on Catholic theology. After all, the main goal of Catholic schooling—and I repeat—shall not be merely to educate the students to acquire learning skills. Nor is it to prepare them for college and the business world. Rather, the purpose of Catholic schooling ought to help students acquire the necessary "virtues" for a healthy Catholic life and hence answer God's call for them to be "instruments for special purposes, made holy, useful to the Master and prepared to do any good work" (2 Timothy 2:21). Amen.

APPENDIX A

Interview Protocol

Introduction/Demographic Questions:

Thank you for participating in this study. To start the interview, I'd like to ask you some background questions:

1. Can you please tell me a little about yourself? How long have you worked here? What grade do you teach? etc.
2. Have you taught at other schools before this? If so, describe.
3. How do you describe yourself from a technological standpoint? Novice? Expert?

Interview Questions

Now I'd like to ask you questions about your perceptions of educational technology, such as 1:1 at your school. Also, I'm interested in learning about your views of technology and morality.

1. Pros/Cons of Educational Technology
    a. According to your experience…What are the main advantages presented by educational technology?
        i. For the teacher
        ii. For the student
    b. What are the main difficulties you are encountering as a teacher in educational technology (1:1) classroom?
        i. From an academic standpoint
        ii. From a moral (disciplinary) standpoint
2. Educational Technology and Teaching Style
    a. How does your teaching style differ now from your teaching before you had the educational technology (i.e., 1:1 laptops) in your classroom??
        i. From an academic standpoint
        ii. From a moral (disciplinary) standpoint
3. Educational Technology and Student Learning
    a. How do you consider student learning with educational technology (1:1) has been different/ similar from how students used to learn before the educational technology (1:1)?
    b. How do you consider student behavior with educational technology has been different/ similar from how students used to *behave* before the 1:1?
4. Educational Technology and Morality
    a. To what extent do you consider education should play a role in the moral growth of the student?
    b. What implications on the development of moral or ethical character of the student do you think educators need to consider when they implement technology in their classrooms?
    c. Is there anything else you'd like to share?

APPENDIX B

Student Survey

Educational Technology refers to the integration of technology by schools, where each enrolled student and each teacher is provided with their own electronic device (laptop or tablet) in order to access the Internet, digital course materials and digital textbooks. You may have heard of this called one-to-one computing (1:1).

You will be asked a few questions about your attitudes towards the technology program at your school and your attitudes and behaviors from a moral standpoint.

This is a completely anonymous and confidential survey.

The following questions ask about your background.

1. What is your gender identity?

   - o Male
   - o Female
   - o Decline to State

2. How old are you?

   _____ years

3. What grade are you currently in?
   __6th __ 7th __8th

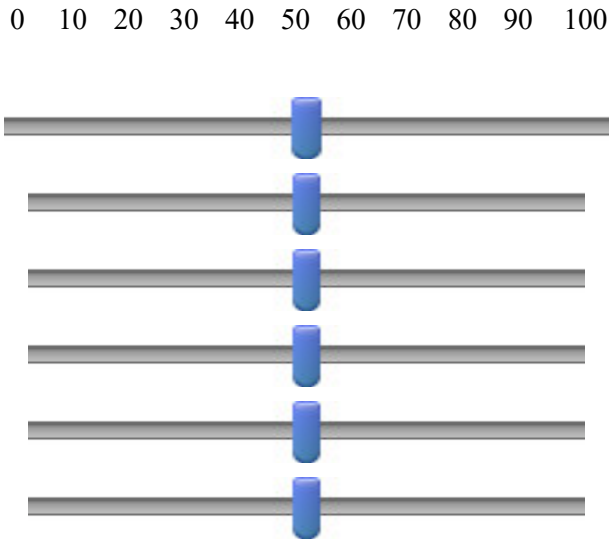
4. How many years have you been in school with a technology or 1:1 program?
   _____ years

5. How comfortable do you feel using computer/tablet for school work?
   - o Extremely comfortable
   - o Somewhat comfortable
   - o Neither comfortable nor uncomfortable
   - o Somewhat uncomfortable
   - o Extremely uncomfortable

6. Do you have access to a computer at home other than your school device?
   - o Yes
   - o No

7. What is your average use of computer/tablet per day?
   - o more than 10 hours
   - o 6-10 hours
   - o 3-6 hours
   - o 1-3 hours
   - o less than an hour

8. What percentage of your time on the computer you spend on the following items?



	Never	Sometimes	About half the time	Most of Time	Always
Art	○	○	○	○	○
Language Arts	○	○	○	○	○

Math	○	○	○	○	○
Science	○	○	○	○	○
Social Studies	○	○	○	○	○
Religion/ Org. Skills	○	○	○	○	○

9. How often do you use a computer/ tablet in your classes?

10. For each of the following statements, select one choice that corresponds to your level of agreement/disagreement.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I believe that I can learn better when I use my iPad in the classroom.	○	○	○	○	○
I believe using my iPad in classroom makes my classes more fun.	○	○	○	○	○
I believe using my iPad in classroom makes my classes more challenging.	○	○	○	○	○
I believe using my iPad in classroom easily distracts me.	○	○	○	○	○
I believe using my iPad in classroom makes me waste time.	○	○	○	○	○
I prefer to use my book/notebook instead of my iPad for my school work.	○	○	○	○	○

11. For each of the following statements, select one choice that corresponds to how often it occurs with you.

	Never	Sometimes	About half the time	Most of the time	Always
I feel for others and show it so they know I care about them.	○	○	○	○	○
I copy others' work when I need to, without telling anyone.	○	○	○	○	○
My parents/teachers tell me to stop or to behave appropriately.	○	○	○	○	○
I ask for permission when I need to look at others' screen or to use their possessions.	○	○	○	○	○
I accept that other people do mistakes and I am able to forgive them and forget.	○	○	○	○	○
I make friends with people from different backgrounds or beliefs.	○	○	○	○	○
I am willing to compromise so everyone can get their fair share.	○	○	○	○	○

APPENDIX C

Experimental Subjects Bill of Rights

Pursuant to California Health and Safety Code §24172, I understand that I have the following rights as a participant in a research study:

1. I will be informed of the nature and purpose of the experiment.

2. I will be given an explanation of the procedures to be followed in the medical experiment, and any drug or device to be utilized.

3. I will be given a description of any attendant discomforts and risks to be reasonably expected from the study.

4. I will be given an explanation of any benefits to be expected from the study, if applicable.

5. I will be given a disclosure of any appropriate alternative procedures, drugs or devices that might be advantageous and their relative risks and benefits.

6. I will be informed of the avenues of medical treatment, if any, available after the study is completed if complications should arise.

7. I will be given an opportunity to ask any questions concerning the study or the procedures involved.

8. I will be instructed that consent to participate in the research study may be withdrawn at any time and that I may discontinue participation in the study without prejudice to me.

9. I will be given a copy of the signed and dated written consent form.

10. I will be given the opportunity to decide to consent or not to consent to the study without the intervention of any element of force, fraud, deceit, duress, coercion, or undue influence on my decision.

APPENDIX D

Classroom Observation Form

Date of Observation _____

Content/Course Observed _____

Grade Level _____ Time Obs._____

A. Learning Environment

_____ Student work displayed
_____ Relevant subject content displayed
_____ Technology (list what equipment is available):
_____
_____ Organization

Physical Setting:

Description (if necessary):

- Student seating arrangement:

- Teacher desk placement:

Are Lesson Objectives clearly stated? Yes No
List/describe the Objective(s):

_____
_____

Time not devoted to teaching and nature of non-academic or procedural activity (e.g., management, announcements, discipline); description of non-instructional event

C. Student Actions
What are students doing? (Check as many as apply.)

_____ Receiving information
_____ Applying Skills
_____ Practicing New Skills
_____ Continuation of Previous Assignment
_____ Viewing Video
_____ Presenting Information
_____ Taking test or quiz
_____ Using Resources Other Than Book
_____ Using Technology:
(specify_____)
_____ Using Internet:
(specify_____)
_____ Other
_____

Collaborative Activities…
_____ in formal groups
____ in informal groups
_____ in pairs
_____ review
_____ discussion
_____ lab

D. Student Behaviors:

- Most students are
  - off task ---------- on task
- students interact with each other around
  - non-academic or procedural issues ---------- content issues
- students are
  - hesitant to enter----------participate actively and enthusiastically in the discussion/activity

How do the students react to the teacher?

_____
_____
_____

Describe the student interactions with each other.

_____
_____

As you observe, what behaviors does the student demonstrate from a moral standpoint?

Behavior observed	**Moral**	**Amoral**
Empathy	*# of times observed*	*# of times observed*
Showing concern about the wellbeing of others		
Actively caring about others		
Expressing easily own feeling(s) to others		
Conscience		
Acting in conformity with directions		
Admitting one's own mistakes (feeling shame and not putting blame on others)		
Standing up for values		
Telling the truth / being honest		
Tempted to cheat when left alone for a short time		
Self-Control		
Displaying signs of physical or psychological aggression		
Interrupting or blurting out answers or questions		
In need for reminders or repMs. Morenonds to behave appropriately		
Tempted to open off task webpages when left alone for a short time		
Respect		
Showing courtesy and respect for others verbally or in behavior		
Showing respect of other's privacy (i.e. looking on others' screens/ searching on the net without permission)		
Showing care of own and others' possessions/ digital device(s)		
Kindness		
Ability to let go of others' mistakes		
Enjoy serving others and making them happy		
Showing caring attitude		
Tolerance		
Displaying tolerance toward others' ideas		
Showing respect to the teacher		

Refraining from making comments or jokes that put others down		
Fairness		
Searching for a fair procedure that considers everyone's interests		
Searching to gain access to a resource by egoistic behavior		
Sharing with others without enticement		
- Other		

E. Teacher Actions:

Introduction to Lesson:

_____ provides introduction/motivation/"invitation";
_____ explains activity,
_____ explains how to use ET materials and how it relates to netiquette;
_____ explains how to assess students' use of time / tech/ interaction

Interaction: **How is the teacher interacting with the students?**

_____ individually
_____ groups
_____ leading discussion
_____ whole class
_____ answering questions
_____ moving/monitoring
_____ demonstrating
_____ lecturing
_____ no interaction

How does he/she move around the space?
_____
_____
_____
_____
_____

How does he/she handle resources/materials?
_____
_____
_____
_____
_____

F.* Teacher Attitude*:

What kinds of feelings/behaviors are expressed by the teacher?

_____ humor	_____ frustration	_____ overwhelmed
_____ sadness	_____ compassion	_____ nonchalance
_____ cool/non-inviting	_____ content	_____ calmness

Comments:

What behaviors does the teacher demonstrate concerning students' use of tech from a moral standpoint?

Behavior observed	Number of times observed
Empathy	
Fostering emotional vocabulary	
Enhancing sensitivity to feelings	
Providing opportunities for students to express and to listen to different points of view	
Conscience	
Creating a context for moral growth (sharing own moral beliefs, developing a mutually respectful relationship…)	
Explaining teaching behaviors	
Teaching virtues related to digital world (honesty, respect of copyrighted materials, originality and creativity…)	
Offering opportunities for students to practice virtues	

Using moral discipline by pointing out right from wrong	
Self-Control	
Nurturing a culture of self-control in the classroom	
Encouraging the student to be his/her own motivator (praising specific actions)	
Teaching students to control their urges and think before typing (answering a question)	
Checking students accounts and web search history	
Respect	
Nurturing respect and love among students	
Listen attentively to students' questions / requests	
Enhance respect for authority and squelching rudeness	
Emphasizing good manners and courtesy	
Kindness	
Modeling and teaching the meaning of kindness	
Establishing a clear policy for unkindness	
Encouraging kind behaviors or attitudes and pointing out their positive effects	
Tolerance	
Refusing to allow posting discriminatory comments	
Encouraging involvement with a range of diversity	
Appreciating diversity and never tolerating prejudices or stereotypical messages	
Fairness	
Comparing students work on devices	
Using labels on technology use	
Praising a student savvy in technology in contrast to another	
- Other	

APPENDIX E

Electronic Usage Policies

Electronic Devices at SMS

Students are strongly discouraged from bringing cell phones, apple watches, iPods, tablets, e-readers, or other electronic devices to school. Parents are asked NOT to call their children's cell phones at school. (The school office is open from 7:45 am to 4:30 pm.) If a students brings a cell phone or electronic devices to school every classroom will have a phone pouch in the closet so all students can turn in their phones and have them protected and locked in the closet for the day. The teacher will unlock the closet in the morning and afternoon so students can turn in and collect their phones. Phones will not be allowed on any student at any point while they are entrusted to the SMS faculty. This includes school days, car lines, after school care, field trips, sporting events etc. If they need to have a phone it should be off, in a backpack, and out of sight at all times. If they need to make a phone call they may use the office or after school care phone. If a child is using or has a phone/electronic device on them the following consequences will be enforced:

1st time—The phone/electronic device will be taken for the day. The child will read through and sign the guidelines for electronic use form and receive a Blue Slip Discipline Warning.
2nd time—The phone/electronic device will be taken away and a detention will be issued.
3rd time—The phone/electronic device will be taken away and student will no longer be allowed to have a phone/electronic device with them on campus at any time for the rest of the school year.

Depending on the circumstances, the student may immediately be denied the right to bring the device to school. Repeat or serious violations of the policy will result in disciplinary measures appropriate to the circumstances, including expulsion if warranted.
The school is NOT responsible for lost, misplaced, stolen broken portable communications devices or for any unauthorized use of such devices. The school will NOT pay to replace devices that are lost, misplaced or stolen after they are confiscated and will NOT pay for any communications charges.

Guidelines for Use of Electronic Communication Systems & Devices at SMS

Effective performance of computer and telecommunications networks, whether local or global, relies upon end users adhering to established standards of proper conduct. In general, this requires efficient, ethical and legal utilization of network resources. Use of all school technology items and systems must be consistent with the educational objectives and mission of SMS.
Each student and parent or guardian shall sign the Acceptance of Handbook/ Parent/Student Policies Agreement Form before gaining access to SMS network system. Any student who fails to comply with the terms or this policy or the regulations developed by SMS may lose system privileges. Students may also be subject to disciplinary measures including appropriate legal action for violation of this policy or implementing regulations.
All parents are required to read the SMS Electronic Use Policies and explain these policies to their children.

Digital Citizenship at SMS

SMS students are expected to exhibit appropriate behavior with the use of computer based electronic technology. Students must abide by the same values, principles, rules, and guidelines set forth by the school, teachers, and administration when using such technologies.
Examples of various forms of misuse and abuse of computer based electronic technologies include but are not limited to: using Web sites, social media, on-line chat, instant messaging, and text messaging to intimidate, bully, threaten, harass, or gossip about others, plagiarizing information using the Internet, using cellular phones and text messaging during class time, posting or appearing in inappropriate material on video or social networking sites, falsely impersonating a digital identity, and portraying behaviors contrary to the Catholic values and beliefs of SMSand the Archdiocese Guidelines for Use of Electronic Systems and Devices agreement policy. Any such misuse or abuse of computer based electronic technologies is at the discretion of SMS and is subject to disciplinary action.
39.4 Agreement to Follow the Rules for Access to SMSNetwork
Access to the SMSnetwork computer, technology devices and Internet is a privilege that is subject to following these rules:
1. **Technology Privacy**: The computer and other technology devices are tools for schoolwork. Each student has his/her account and/or logins on the network and is assigned storage areas. These accounts and folders are only for my assigned usage. I will not trespass within other students' accounts or folders. I understand that the instructor may view my digital schoolwork and school communications at any time.

2. **Online Privacy**: To protect my identity, personal information such as my last name, address, telephone number, school name, cell phone number, screen name, and password is never to be given out.
3. **Legal Issues**: I am aware that vandalism of equipment will not be tolerated. I will not install or download anything found on the Internet, including software, MP3 files, pictures, etc. without direct permission from the instructor. I also understand that installation of certain files can damage the computer and may be considered vandalism.
4. **Copyright and Plagiarism**: I will cite all my resources with proper research format for all text and other research items used including pictures, MP3 files, videos, etc. I will respect copyright laws.
5. **Inappropriate Materials or Language**: The use of profanity, offensive, or sexually explicit material and/or language shall not be used to communicate online. I understand that I shall not view, send, or access materials that do not comply with the School's standards. This includes, but is not limited to materials I wouldn't show to my parents, teacher, or law enforcement. If suggestive, harassing, demeaning or belligerent communication is encountered, I will bring it to the instructor's attention immediately. I will never respond to such messages.
6. **Safety Issues**: I will not use the computers or any other technology device to participate in cyber bullying. If I come across any communications that are inappropriate, I will notify my instructor immediately. If I become aware of any student participating in cyber bullying I will notify my instructor and/or administrator. If I come across anything (picture, ad, website, etc.) on the Internet that is inappropriate then I will let the instructor know so corrective action can be taken.
7. **Social Media and Other Technologies**: I understand SMS does not support or approve of the use of social media under the age-required limits set by the social media terms of service. Facebook and other social media sites are not a school function. As the priMs. Yang educators of their children, it is the parents' responsibility to monitor social media and its correct use. Social media should be aligned with and reflect Catholic values in content created and posted by the individual user..
Should an issue regarding posts, comments, or other social media interactions be brought to the school's attention, the school may exercise its right to administer disciplinary action for those involved.
8. **Limitation of Liability**
SMS makes no warranties of any kind, whether express or implied, for the service provided.SMS will not be responsible for any damages suffered while on the network and the Internet. These damages may include loss of data resulting from delays, non-deliveries, or service interruptions caused by negligence, errors or omissions. SMS specifically dennies any responsibility for the accuracy or quality of information obtained through the Internet services. Further,SMS is not

responsible for any unauthorized charge or fee resulting from use of the school's technology system.

Mobile Device Acceptable Use Agreement

SMS is committed to preparing our students to be 21st Century Learners. As part of our curricular program and goals, we are pleased to implement mobile carts equipped with Apple iPads for our student use. Technological resources are provided to support the educational experience and mission of the school. To ensure that all students have the opportunity to use the equipment, SMShas developed the following Acceptable Use Agreement, designed to protect school equipment.

Please read the following and indicate with your signature below both your student's and your intent to comply with the rules and procedures:

1. Each iPad is numbered; students will be assigned specific equipment and may only use the equipment which is assigned to them

As soon as students are instructed to get an iPad from the cart, they are to inspect the iPad for any obvious damage.

3. If a student discovered damage, he/she is to report it immediately to the teacher before instruction begins.

4. If a student fails to report the damage before instruction begins, that student will be held responsible for any damages beyond normal wear and tear, so it is essential to report damage immediately. Failure to notice damage will not exempt a student from responsibility.

5. Students are not to misuse SMS equipment including:

• Knowingly running or installing a program intended to damage an iPad.
• Attempting to gain access to portions of the iPad restricted to that student.
• Attempting to change any part of the software or operating system.
• Using the computer in violation of school policies.
• Downloading any material deemed inappropriate onto any iPad.
• Loading (by any means) any material deemed inappropriate onto any iPad.
• Deliberately wasting iPad resources for activities not related to the learning activity.
• Accessing the iPad during class at times not authorized by the class teacher.
• Knowingly destroying other work on the network by gaining unauthorized access.

Google Suite for Education at SMS

Google Suite for Education is a free web based suite of programs provided by Google for schools to use. Google Suite includes such programs as Google Classroom Google Drive, Google

Calendar, Gmail and Google Sites. Google Suite can be accessed from anywhere you have an Internet connection (school, home, smart phone, etc.) This reduces and replaces the need for flash drives and/or external data drives. Furthermore, since Google Suite is all online, it is the same everywhere you use it. There is no issue with having one version of a program at home and a different version at school. Staff and students at SMSwill have access to Google Suite through a secure account managed by SMS.
Access to Google Suite allows your child to:
• Create a wide variety of products (documents, presentations, videos, etc.) to demonstrate their thinking and learning.
• Easily share documents and files with teachers and other students so he/she can turn in assignments electronically, receive timely feedback and support, and collaborate on projects with classmates.

Google Classroom: Google classroom is a classroom content management system designed to digitize the workflow process of student assignments. Teachers can assign papers quizzes or any other assignment to students and collect the assignments in a digital format. Google Classroom also allows teachers to grade and return work in graded form to classroom students.

Acceptable Use and Responsibility Policy for Electronic Communications [“Archdiocesan AUP”]
All information used in the course of activities for or on behalf of the Roman Catholic Archdiocese of Los Angeles ("Archdiocese") or an archdiocesan school, parish, the seminary, a cemetery, or other archdiocesan department or operating unit (“Location”) is an asset of the Archdiocese and/or the Location, as appropriate. Electronic information and communications require particular safeguards and impose unique responsibilities on all users. The Archdiocese maintains a system of information security to protect our proprietary data. Integral parts of this system are the policies, standards and procedures designed for users. All users must adhere to these policies, standards and procedures for the complete system to remain viable.
These policies, standards and procedures apply to all users of technology, whether adult, child or youth, whether they are paid or volunteer staff, clergy or members of religious orders, in the Archdiocese or in any Location.
These policies, standards and procedures include, but are not limited to, maintaining data confidentiality, maintaining the confidentiality of data security controls and passwords, and immediately reporting any suspected or actual security violations. The Archdiocese prohibits the use or alteration of archdiocesan data and/or information technology without proper authorization. All users have an obligation to protect the confidentiality and nondisclosure of proprietary, confidential and privileged data, as well as personally identifiable information.

Definitions

Electronic communications systems include, but are not limited to, electronic mail, telecommunications systems including telephone, voice mail, and video, facsimile transmissions, stand-alone or networked computers, intranets, the Internet and any other communications systems that may be created in the future.

Electronic communications devices include, but are not limited to, regular and mobile telephones (cell phones, smart phones, walkie-talkies), facsimile machines, computers, laptops, electronic notebooks, audio and video equipment, flash drives, memory sticks, iPods®, media players, Blackberries®, and other wireless equipment that may be created in the future.

Electronic communications materials include, but are not limited to, DVDs, CDs, laser discs, audio and video-tape, audio and visual recordings, films, microfiche, audio and visual broadcasts, computer operating systems, software programs, electronically stored data and text files, computer applications, emails, text messages, instant messages, and all other downloaded, uploaded, retrieved, opened, saved, forwarded or otherwise accessed or stored content.

Electronic Communication Systems, Devices, and Materials and Users Covered

a. All electronic communications systems, devices and materials in the schools, parishes, the seminary, cemeteries, archdiocesan departments or offices, or other archdiocesan operating units (the "Premises").
b. All electronic communications devices and materials taken from the Premises for use at home or on the road.
c. All personal devices and materials brought from home and used on the Premises during regular business hours.
d. All personal devices and materials, regardless of where they are situated, that are used in such a manner that the Archdiocese and/or the Location may be implicated in their use
e. All users of electronic communications systems, devices and materials, including, but not limited to, volunteers, clergy and religious, students, employees, staff or contractors associated with the Archdiocese and/or the Location.

Ownership and Control of Communications

All systems, devices and materials located on archdiocesan premises, and all work performed on them, are property of Location and/or the Archdiocese. These systems, devices and materials are to be used pMs. Morenorily to conduct official Location and/or Archdiocese business, not personal business.

With permission from the person in charge of the parish (i.e., pastor, priest administrator or parish life director), principal or other person in charge of the Location, individuals may use systems, devices and materials, including access to the Internet, for personal business and web exploration outside regular business hours or during breaks. All users are expected to conform to appropriate content management and web surfing guidelines, whether during or outside regular business hours.

The Archdiocese and the Locations, as applicable, reserve the right to monitor, access, retrieve, read and disclose all content created, sent, received, or stored on Archdiocese and/or Location systems, devices and materials (including connections made and sites visited) to law enforcement officials or others, without prior notice.

Guidelines for E-mail Correspondence and Other Electronic Communications

a. All users of Archdiocese and Location communications systems and devices should use care in creating email, text, video, still images, instant or voice mail messages or in any postings on any social networking site. Even when a message has been deleted, it may still exist on a backup system, be restored, downloaded, recorded, printed out, or may have been forwarded to someone else without its creator's knowledge. The contents of email and text messages are the same as other written documentation and cannot be considered private or confidential.

b. Email and other electronic communications are not necessarily secure.

c. As with paper records, proper care should be taken in creating and retaining electronic records for future use, reference and disclosure, as applicable.

d. Postings to "All Employees," "All Parents," "All Seminarians," "All Parishioners" and the like on intranets or the Internet must be approved by the person in charge of the parish (pastor, priest administrator or parish life director), principal or other person in charge of the Location before they are sent out.

e. Use of personal electronic communications devices and materials during regular business hours should be kept to a minimum and limited mainly to emergencies.

f. Archdiocese and Location systems, devices and materials are not private and security cannot be guaranteed. Passwords and user IDs are intended to enhance system security; not to provide users with personal privacy. User account passwords for systems not controlled by a centralized user directory or authentication system must be on record with the person in charge of the parish (pastor, priest administrator or parish life director) principal or other person in charge of the Location.

g. User IDs and passwords should not be disclosed to unauthorized parties or shared with other employees, students or volunteers. User accounts are intended to be used only by the assigned party.

h. All information systems that create, store, transmit or otherwise publish data or information must have authentication and authorization systems in place to prevent unauthorized use, access,

and modification of data and applications. Systems that transmit or publish approved information that is intended for the general public may allow unauthenticated (anonymous) access as long as such systems do not allow unauthorized posting and modification of the published information.
i. Any device accessed or used by minors on the Premises must include updated and functioning filters to preclude access to prohibited content. All obscene materials, sexually explicit materials including pornography, and materials that are otherwise harmful to minors or in violation of this electronic communications policy are prohibited and must be blocked. Before allowing minors to access the Internet, a responsible adult must ensure that appropriate content filters are "ON" and functioning.
j. Content filters for minors may NOT be disabled or turned "OFF" without obtaining prior permission from the archdiocesan Applied Technology Department or the person with equivalent authority at the location.
k. All files downloaded from the Internet, all data received from outside sources, and all content downloaded from portable memory devices must be scanned with updated or current virus detection software. Immediately report any viruses, tampering or other system breaches to the person in charge of the location.
l. Critical information should be copied onto backup storage periodically. Backed up information should be stored in a safe place and be available for recovery in case of a loss of the original information. Depending on the complexity of a Location's information systems, a detailed disaster recovery plan may need to be developed.
m. Computer networks must be protected from unauthorized use. Both local physical access and remote access must be controlled.
n. Information systems hardware should be secured against unauthorized physical access.

Prohibited Practices
Users of Archdiocese and Location electronic communication systems, devices or materials and users of personal devices and materials on the Premises under circumstances when the Archdiocese and/or the Location may become implicated in the use may not:
a. Violate any federal, state or local laws or regulations.
b. Violate any rules of conduct, codes of ethics, safe environment or any educational policies, including but not limited to those that apply to communications or the use of information.
c. Post or cause to be distributed any personally identifying information about the user or others without permission or review by a responsible adult person, unless required by the user's job duties or assigned responsibilities. Personal identifying information includes, but is not limited to, names or screen names; telephone numbers; work, home or school addresses; email addresses and web addresses (URLs) of social networking sites or blogs.

d. Post or distribute any communications, video, music or pictures which a reasonable person, according to the teachings of the Roman Catholic Church, would consider to be defamatory, offensive, harassing, disruptive, derogatory or bullying. This includes, but is not limited to, sexual comments or images, racial or ethnic slurs, or other comments or images that would offend someone on the basis of race, creed, gender, national origin, sexual orientation, age, political beliefs, mental or physical disability, or veteran status.
e. Engage in improper fraternizing or socializing between adults and minors.
f. Engage in pirating or unauthorized copying, acquisition or distribution of copyrighted materials, music, video or film; arrange for the purchase or sale of any drugs, alcohol, or regulated substances and goods; or participate in internet gambling.
g. Post or send chain letters or engage in "spamming" (sending annoying, unnecessary or unsolicited commercial messages).
h. Record any telephone, video, or other conversation or communication without the express permission of the other participants to the conversation or communication, except where allowed by law.
i. Use electronic communications devices for designing, developing, distributing or storing any works of programming or software unless required by the duties of the job or assignment.
j. Upload, download, view or otherwise receive or transmit copyrighted, trademarked, patented, indecent or pornographic material, trade secrets, or other confidential, private, or proprietary information or other materials to which the user does not have access rights. Regarding copyrighted materials, certain exceptions are given for educational and liturgical purposes. See Archdiocese of Los Angeles Copyright and Video Screening Policy.
k. Damage, alter, disrupt, or gain unauthorized access to computers or other systems; e.g. use others' passwords, trespass on others' folders, work or files or alter or forward email messages in a manner that misrepresents the original message or a message chain.
l. Give unauthorized persons access to Archdiocese or Location systems, provide access to confidential information, or otherwise jeopardize the security of the electronic communications systems (e.g. by unauthorized use or disclosure of passwords).
m. Transmit confidential, proprietary, or sensitive information unless the transmission falls within the scope of the user's job duties or assignment by a responsible adult.
n. Introduce or install any unauthorized software, virus, malware, tracking devices or recording devices onto any system.
o. Bypass (via proxy servers or other means), defeat or otherwise render inoperative any network security systems, firewalls or content filters.
p. Allow any minor to access the Internet on Archdiocese or Location communications devices before a responsible adult has checked to insure that active filtering of prohibited materials is enabled.

q. Use electronic communications devices or systems to transmit any radio frequency signal that is not permitted and/or licensed by the Federal Communication Commission ("FCC") or that would violate FCC rules or policies.
r. Access or manipulate services, networks or hardware without express authority.

Consequences of Violations of Electronic Communications Policy
Violations of this policy, including breaches of confidentiality or security, may result in suspension of electronic communication privileges, confiscation of any electronic communication device or materials, and disciplinary action up to and including termination of employment, removal from parish or school activities, expulsion from school, canonical review, referral to law enforcement and other appropriate disciplinary action.

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