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Vincent Cho

*Boston College, [vincent.cho@bc.edu](mailto:vincent.cho@bc.edu)*

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## **Cover Page Footnote**

The author would like to thank the anonymous reviewers, as well as acknowledge his research assistants: Joshua Littenberg-Tobias, Kaitlyn Tuthill, and Christina Lee.

## Vision, Mission, and Technology Implementation: Going One-to-One in a Catholic School

Vincent Cho  
Boston College

*As one-to-one computing initiatives become commonplace, some Catholic school educators might find themselves wondering what, if anything, such technologies might have to do with Catholic identity. This case study drew upon survey and interview data to explore the intersection of Catholic vision and mission with the implementation of a one-to-one (BYOD) initiative. The study finds that Catholic values informed the school's support of teachers, as well as its efforts to help students navigate the personal and social issues associated with devices. In the end, teachers were positive about one-to-one. Many teachers had experimented with devices in their classrooms, and some even reported using devices for social justice purposes. In other words, the school's unique vision and mission enabled it to engage in activities that might not occur elsewhere. The implications of this study on how to conceptualize about technological change and how to lead technology initiatives are discussed.*

Keywords: one-to-one, implementation, school vision, Catholic identity, technology

Schools today have become increasingly computerized. A key example of this computerization is one-to-one initiatives, which aim to ensure that every student in every class has access to a digital device (e.g., laptop, tablet, smartphone). The promises of one-to-one initiatives may include: easier access to online resources; improvements to students' communication and collaboration skills; and increased student achievement (Bebell & O'Dwyer, 2010; Penuel, 2006; Sauers & McLeod, 2012). As one-to-one initiatives become increasingly common throughout the US and around the globe (Nagel, 2010; Richardson et al., 2013), Catholic schools face increased pressures to follow suit.

However, not all one-to-one initiatives are the same. For example, schools must make decisions about the nature of one-to-one access (Dexter, 2011; Richardson et al., 2013). What kind of device? Will students be allowed

to take devices home? Will they be bought or leased? Alternatively, some schools have begun to adopt Bring-Your-Own-Device (BYOD) approaches, which allow students and families to make personal decisions about device selection and ownership. These approaches also may result in a broader diversity of devices in any given classroom.

Complicating matters, school leaders receive little preparation for how to negotiate these or other decisions relating to technology implementation (Schrum, Galizio, & Ledesma, 2011). In general, research has rarely attended to school technology leadership (McLeod & Richardson, 2011), let alone the leadership of one-to-one initiatives. Without research about the practical and theoretical considerations incumbent to one-to-one, many school leaders are left to their own devices (pun intended). One step toward addressing this gap is to provide contextualized accounts of particular technologies and the conditions supporting their use (Hughes, Boklage, & Ok, 2016; Orlikowski & Iacono, 2001).

The present study makes headway into some of these issues by describing one Catholic school's implementation of a one-to-one (BYOD) initiative. Empirical studies about technology in Catholic schools and about BYOD programs are rare. One way to address their intersection is to explore the role, if any, of Catholic school vision and mission on program implementation. In other words, does going one-to-one happen in and of itself, or instead, might the Catholic school context influence educators' conceptualization and use of one-to-one devices? The purpose of this mixed-methods case study is to explore the intersection of Catholic school vision and mission with the implementation of a one-to-one (BYOD) initiative. It is guided by three research questions:

1. What was the school's vision and mission?
2. How did vision and mission influence one-to-one implementation?
3. What were the outcomes from the school's one-to-one implementation efforts?

### **Conceptual Framework**

The following passages present a framework for thinking about the role that Catholic school vision and mission may play in the implementation of one-to-one initiatives. First, I describe approaches to conceptualizing about the role of vision and mission in technological change. Second, I hypothesize about the potential intersection of Catholic school vision and mission with one-to-one implementation.

### **Vision, Mission, and Technological Change**

Education scholars generally acknowledge the importance of attending to what people see, think, and feel about reform during change initiatives. For example, Fullan (2007) describes the importance of nurturing beliefs about the need, nature, and moral import of reforms. This is seen as facilitating the progression from initial idea, to implementation, to institutionalization of innovations. Similarly, Hall and Hord's (2015) Concerns-Based Adoption Model (CBAM) (Hall & Hord, 2015) emphasizes the importance of addressing constituents' respective concerns in order to facilitate progress toward higher levels of activity. For example, some might be assessing their adequacy or ability to enact reform (and thus still preparing to change). Others might be making small changes and assessing their efficiency, while yet others might be ready to reflect on ways to broaden or improve the overall reform. By attending to organizational vision and mission, leaders provide initiatives with meaning and direction, thus shaping what people do, when, and how (Hallinger, 2011; Spillane & Louis, 2002; Weick, 1993). When engaged with a school's vision and mission, teachers have a better sense for which problems are worth solving and why they are worth the effort (Klar & Brewer, 2014; Lowenhaupt, 2014).

Although this literature base highlights the general importance of vision, it does not specifically address how vision might intersect with technology implementation. At one level, vision may be conceptualized as a precondition to successful technology integration (Anderson & Dexter, 2005; Ertmer, 2005). For example, Hughes et al. (2016) describe one district's vision for one-to-one iPad use in terms of who came up with ideas and how much "buzz" or buy-in accompanied them (p. 295). This perspective leads the analyst to think of vision as if it were charge in a battery—if there is enough charge, certain levels or frequency of activity will result.

An alternative perspective treats vision not as batteries, but as lenses. Visions can differ substantially, each one shaping what users see, want, and expect from their technologies (Leonardi, 2013). For example, Cho and Wayman (2014) describe how differences in district- and role-level notions about student data set up educators' expectations about computer data systems. In turn, these expectations led educators to enact certain system features and to reject others. Further, Dexter (2011) studied the laptop programs of five schools, noting that each school had a different motivation for adopting laptops (e.g., instant computer access, equity and achievement, curriculum enhancement). In turn, each motivation was associated with a different mode of laptop distribution (e.g. laptop carts, laptops throughout certain grade

levels or classrooms only). Although such reports suggest that vision and mission may influence what becomes of technologies in practice, researchers have not thoroughly explored the range of visions and their potential impact on one-to-one initiatives.

### **Catholic School Vision and One-to-One Implementation**

If vision serves not simply as a precondition, but as an active player in technology implementation, then Catholic schools may provide a rich context for study. Catholic schools are known for their strong visions and for embodying these visions throughout school activities (e.g., pedagogy, service, school climate, personal development of students) (Convey, 2012; Cook & Simonds, 2011; Shimabukuro, 2008).

McLaughlin (1996) posits that Catholic education has three distinguishing features. First, Catholic education is grounded in a distinct and comprehensive view of the meaning of human persons and of human life. In other words, how Catholic schools engage with the world is directly connected to theological and philosophical perspectives held by the Catholic Church. Second, Catholic education aspires to holistic influence. In other words, the values and faith underpinning Catholic education also shape the ways in which students engage with classes, subject matter, and the school community. Third, Catholic education addresses the religious and moral formation of students. It does so not by force or coercion, but by respecting and nurturing each student's freedom of conscience. The goal is not to simply pass along intellectual knowledge about religious teachings, but rather to help students to actively discern and embody the values, norms, and virtues of those teachings.

Although these characteristics serve as cornerstones to the vision and mission of Catholic schools, they do not happen on their own. Catholic educators also make decisions around how to best enact these visions in the real world (Cook & Simonds, 2011; McLaughlin, 1996). For example, Scanlan (2012) describes how one Catholic school upheld its commitment to social justice by focusing on serving students with disabilities. Further, Fuller and Johnson (2014) describe how pressures around academic performance led one school to become less focused on issues of Catholic vision and mission. As yet, current scholarship has not addressed how Catholic vision and mission might inform Catholic educators' implementation of technology. Prior research has focused simply on Catholic teachers' levels of technology use (i.e. Gibbs, Dosen, & Guerrero, 2008; Windschitl & Sahl, 2002) without addressing how or if Catholic identity might have shaped the very nature of those uses.

In addressing this gap in knowledge, it is possible to hypothesize two contrasting scenarios. First, vision and mission might play little to no role in technology implementation. Echoing the account provided by Hughes et al. (2016), vision might serve as a precursor to adoption, but not as a player in shaping how people conceptualize about devices and their uses. Thus, implementation work would pertain to technical or logistical issues facing any school regardless of its vision. Alternatively, the second scenario is that the school's Catholic vision might influence how educators conceptualize about devices and their uses. Drawing upon the cornerstones set forth by McLaughlin (1996), one might expect educators to find uniquely Catholic approaches to one-to-one implementation. For example, some educators might find ways to incorporate devices into helping students learn about social justice matters or to create a more just world. Others might focus on the holistic development of students, encouraging them to act ethically when using devices, to engage in positive relationships with others when using technology, or to reflect about the implications of Catholic teachings and worldview on their device usage. Finally, the Catholic emphasis on freedom of conscience might influence how educators or students might learn to discern the best or most appropriate uses of devices.

### Methods

This mixed-methods case study (Merriam, 2009; Yin, 2009) relied upon both interview and survey data to explore one-to-one implementation at a Catholic school. Xavier Preparatory School, a Jesuit high school in the Midwestern United States, was in the second year of its one-to-one initiative at the time of data collection. This school was selected because its formal mission statement emphasized students' academic, personal, and social development. Thus, it was expected that this unique context might shed light on the potential intersection of Catholic identity and one-to-one implementation. In what follows, I describe the procedures used for collecting and analyzing data about these issues, as well as some of the limitations of the methods employed.

### Data Collection

Data were collected in the fall of 2013. A research assistant and I conducted interviews in early November. This helped to inform the wording of the online survey, which was then administered in mid-December.

**Qualitative data collection.** Table 1 describes interview participants and their job roles. In total, 17 teachers and five administrators participated in interviews. In order to capture a range of teacher perspectives, teachers were selected at random from Xavier's various academic departments (e.g., math, English, science, technology, performing arts), then interviewed in mixed focus groups of two or three. Administrators were selected for interviews based upon their job roles (i.e. principal, assistant principal, technology director) and recommendations made by other interview participants, then interviewed individually. All interviews followed the same semi-structured protocol (Merriam, 2009; Weiss, 1994) addressing educators' attitudes about the school, its one-to-one program, and mission. Lines of inquiry included: school mission; educators' goals for students; leaders' expectations of teachers; and the effects of one-to-one on day-to-day work.

Table 1

Interviewee Roles	
Role	N
Administrator	5
Science teacher	4
English teacher	3
Math teacher	3
Social Studies teacher	3
Theology teacher	2
Technology teacher	1
Performing Arts teacher	1

**Quantitative Data Collection.** Online surveys were sent to teachers and administrators (N=73). The final response rate for all educators was 81% (N=59), which comprised of 53 teachers and six administrators. The survey measured a variety of topics relating to educators' attitudes and classroom practices involving one-to-one. Cho (2016) and Cho and Littenberg-Tobias (2016) provide additional details regarding the development and potential applications of the survey.

Attitudinal items were set on a 4-point Likert scale (1=strongly disagree; 4=strongly agree). These items were factor analyzed and resulted in three scales relevant to the present study. Table 2 reports the items used in these scales. First, the *Classroom Learning scale* consisted of four items assessing educators' attitudes toward the impact of devices on classroom learning. The

alpha reliability for this scale was 0.64. Second, the *School Vision scale* consisted of four items assessing participants' perception of vision for teaching and learning (e.g., the qualities of good teaching; academic goals for students). The alpha reliability for this scale was 0.92. Third, the *One-to-One Supports* scale comprised five items assessing educators' satisfaction with supports such as professional development and technical support. The alpha reliability for this scale was 0.83.

Classroom practices were measured according to five possible categories relating to frequency (0 = "I have never done this"; 4 = "A few times a week or more.") See Table 3 for the items relating to classroom practices. Five of these items related to the use of devices for instructional purposes (e.g., online research, viewing class notes). Four of these items related to the use of devices for social justice purposes (e.g., learning about social justice issues, developing solutions to societal problems).

Table 2

Subscale Instrument Items

Classroom Learning	School Vision	One-to-One Supports
Students develop a deeper understanding of the subject material when using a personal device	Educators in my school agree about academic goals for students	Training around integrating personal devices into courses has been high quality
Personal devices help students grasp difficult academic concepts	Educators in my school agree about the qualities of good teaching	Training around monitoring student behavior on their personal devices has been high quality
Students discover creative solutions to problems when using personal devices	Educators in my school agree about how to evaluate student learning	I am given enough technical support to incorporate students' personal devices in my teaching
Students collaborate when using personal devices	Educators in my school agree about how to respond to student learning needs	I am given enough time to plan lessons involving students' personal devices needs  Students' personal devices are dependable

Table 3

## Classroom Practices Items

Instructional	Social Justice
Conduct an activity that requires students to collaborate using their personal devices	Have students use personal devices to learn about social justice issues
Have students do online research using a personal device	Have students use personal devices to develop solutions to societal problems
Administer a test, quiz, or an assessment on personal devices	Have students use personal devices to contact people about social justice issues
Create class notes that students can view on their personal devices	Have students use personal devices to share information about social justice issues
Use students' personal devices as a way to individualize instruction.	

**Data Analysis**

Interview and survey data were used together to provide a descriptive account of the school's mission and one-to-one implementation.

Qualitative analyses followed the constant comparative method (Corbin & Strauss, 2007). The principal investigator and a research assistant worked together in developing and applying codes, which is one way to strengthen the sensitivity of analyses and to minimize researcher biases (Erlandson, Harris, Skipper, & Allen, 1993; Hill, Thompson, & Williams, 1997). Portions of transcripts were read independently, and the team conferred continually. Code definitions and their application stabilized after nine transcripts were coded. Several codes emerged from this process that helped to inform the present study. These related to: the mission and culture of Xavier; the implementation of one-to-one; attitudes about one-to-one; fostering students' personal growth and uses of technology; and classroom uses for digital devices.

Quantitative analyses were conducted using descriptive statistics. Attitudinal scales were intended to provide a sense for how the school as a whole felt about issues relating to the one-to-one initiative. Thus, mean responses and standard deviations for the school as a whole ( $N = 59$ ) are reported for each scale. Classroom practice measures were intended to describe the frequency of specific instructional activities. Accordingly, the frequencies reported for these activities represent teachers only ( $n = 53$ ). These frequencies

describe prevalence of practices in terms of teachers' having tried an activity, as well as whether certain practices were conducted regularly (weekly or more).

### Limitations

This case study relied upon interview and survey data. Because these data were self-reported, they may be subject to biases relating to memory and attribution. Observations of 15 classrooms and two Personal Responsibility Periods (PRPs) were conducted as part of the overall research project, but they did not target vision and mission and were not included for formal data analysis. Even so, these observations did contribute to my analytical sensitivity to the context and technology uses at Xavier. Accordingly, findings from this study can be interpreted as offering one snapshot into dynamics that may arise in schools. Additional studies and focused observational data would strengthen the analytical generalizability of this study (Yin, 2009).

### Findings

The findings below are organized according to the research questions guiding this study. The first section describes the vision and mission of Xavier. The second section describes the school's implementation processes. The third section describes the outcomes of these efforts.

#### The Vision and Mission of Xavier

Mission is not simply about the presence of mission statements, but rather about a sense of shared meaning and purpose. Research Question 1 asked about the school's sense of vision and mission. Overall, there was consensus among Xavier educators about the nature and importance of the school's Catholic, Jesuit identity. The school's mean response on the *School Vision* scale was 3.02 (SD = 0.67), signifying that people felt they were on the same page with their colleagues regarding matters of teaching and learning.

Interview data illuminated this sentiment. Although some educators recalled a time when the school had a weak sense of Catholic mission and identity, they also noted that this had much improved in recent times. According to one administrator, a shared sense of vision appeared when educators began to reflect together about the academic, social, and spiritual qualities they wanted to see among students. "Are we using these terms in our classes? Are we using these terms as part of curriculum? Are we shouting these terms from the rooftops?"

These conversations led to subsequent changes in professional development, teacher induction, and how Xavier promoted itself within the community. Speaking about the school at present, educators felt that students were steeped in Catholic values throughout their academic and non-academic programming. For example, one math teacher lauded the school's holistic development of students: "That's one of the great things about Xavier. We educate the whole person, spiritually and academically." Similarly, a theology teacher described how Catholic teachings and values permeated students' classes and experiences. "It becomes organic to everything that we do." Adding to this, other educators described the importance of student retreats, activities, and interpersonal interactions with teachers in transmitting the school's mission.

In practice, this mission was bolstered on two levels. First, educators maintained a comprehensive view of human persons and human life. This view was grounded in a strong belief that every student was endowed with unique gifts and skills. In the words of one science teacher, "The nurturing of student gifts is an act of worship to God." As an administrator stated, "Ultimately, if we help students discover their own talents and develop them as fully as possible... help them get ready for life... I think we've done a really good job." Second, they saw freedom of conscience as important to helping students to discover their unique natures. They believed that students were best served when provided with opportunities to make decisions for themselves and to learn from any potential mistakes. For example, two teachers described Xavier as a "safe place to struggle." Similarly, a math teacher explained this value in terms of perseverance, "There is a safety net here... where you can experience some rough road, some failure and success. So that when you remove that safety net, you know what to do."

These beliefs were institutionalized via the school's *Personal Responsibility Periods* (PRPs). PRPs provided students with at least 40 minutes of unstructured time per day, such that students might learn to make responsible decisions about their time and conduct. In practice, some students might work on projects, others might meet with teachers or clubs, while others might also lounge with friends. Educators were unanimous that PRPs prepared students for higher education and for life. For example, one social studies teacher stated, "If you do that for four years, you really do learn the mindset of, 'I have 40 minutes. What can I accomplish?'" Mistakes in learning to use PRPs appropriately were considered part of the learning process. As one administrator explained:

If you fail the quiz, next time you won't [misuse PRP]. I hate to call it supportive failure, but we talk about how a freshman uses a PRP versus how a senior uses a PRP... Right now, seniors are so busy writing college applications, that their PRPs are gold to them.

### **Xavier's one-to-one Implementation Processes**

Research Question 2 asked about the influences of vision and mission on one-to-one implementation. Although some of Xavier's implementation work seemed technical or logistical in nature, some of it also seemed to be influenced by the school's Catholic vision and mission. Below, I first describe this work as it related to teachers. Second, I describe this work as it related to students.

**Supporting and encouraging teachers.** Xavier leaders were devoted to supporting teachers in adopting the school's one-to-one program. Overall, teachers agreed that they had been well-supported. The mean response for teachers on the *One-to-One Supports Scale* was 2.94 (SD = 0.62), signifying general satisfaction about training, time, and technical support. Interviews shed light on how some of the supports were logistical in nature and how some were shaped by the school's vision and mission.

**Technical support.** One logistical issue involved technical support. Teachers lauded how the information services department members were "magical," "incredible, and "angels." Technical support work went beyond simply providing troubleshooting. Rather, staff met with teachers to provide advice about how to integrate technology into instruction, sometimes working directly with students in classrooms. For example, one science teacher recounted how technical problems led staff to provide a valuable, on-the-spot lesson about differences among spreadsheet platforms. Similarly, an English teacher recalled, "[Support staff] came down within 45 seconds, just like that. My lesson plan wasn't scrapped. Everything proceeded as planned. If I had had to suddenly shift gears, I would have been very reluctant to do something like that again."

**Incremental change.** Another logistical issue involved the change process. Xavier's shift to BYOD was incremental, taking place over a span of several years. In fact, leaders recounted that the school had been using computer labs and rolling laptop carts at least eight years before implementing BYOD. One school leader described the importance of slowly shifting teacher comfort levels with technology. "By the time we went to the one-to-one program,

we were less than two students per computer, because we had so many mobile lab carts...You can't just do it in a year." As teachers began to integrate technology into instruction, they soon found that there still were not enough computers to go around. As another administrator explained, "[Teachers] were telling us that we had to get more, because the carts were checked out. The kids did not have access. We had a community that recognized a need to move forward." Also at this moment in time, the advent of the iPad and one-to-one initiatives raised conversations about Xavier's potential next steps.

In order to inform their work, leaders conducted a needs assessment of teacher and student technology preferences. Describing this process, one math teacher reported, "They did a very good thing with us...Most everyone felt involved with the decision." However, results from the assessment were inconclusive. Some wanted processing power, some wanted portability, and others simply wanted whatever they were already familiar with. In terms of logistics, these results pointed toward the benefits of a decentralized model, such as BYOD. Additionally, BYOD had the added bonus of saving the school money. One administrator reported being able to invest significantly in financial assistance to students needing help purchasing devices. Seeing this as a social justice matter, the administrator explained, "Those mobile carts are \$25,000 by the time you buy the cart and all thirty machines in it. I can put \$25,000 in a lot of kids' hands much more productively."

***An open invitation around one-to-one.*** In terms of Catholic vision and mission, Xavier leaders felt that relationships with teachers and freedom of conscience were important to implementation. Specifically, leaders were careful to promote trust and good will. As one leader asserted, it was important to "start with relationships first." He explained, "Our educational technology program works because we are in a relationship with teachers." In addition, teachers faced few directives regarding device use. Although there had been a mandatory, paid summer training, teachers were simply encouraged to "start thinking" about technology integration. Indeed, leaders and teachers agreed that the only real requirement was not to ban devices outright. As one leader stated, "We just ask them to be open to it and to engage with it. We have not been a lot more specific than that. We have had a few [instances of]... Please don't tell them that my classroom is a technology-free zone." Echoing this, another leader reported that although teachers were discouraged from banning technology, "we are absolutely going to back you up" if devices aren't right for the instructional goals at hand. Leaders were unanimous about the importance of teachers discerning the best or most appropriate uses of devices.

**Supporting student's personal and social decision making.** Xavier's vision and mission was especially evident in educators' perspectives on supporting students in using devices. They saw technology as intertwined with students' personal and social development. With this in mind, educators helped students navigate such issues by fostering digital citizenship and by turning toward the school's vision and mission.

**Fostering digital citizenship.** Xavier educators felt that it was important for students to engage in positive relationships and respect for others and themselves when using devices. For example, some expressed concerns about cyberbullying and students' distribution of inappropriate content online. Others expressed concerns about students' preservation of their reputations online. As a social studies teacher stated, "They post things and don't think about the ramifications... They think this is fun for the moment, but everything is traceable."

Accordingly, educators described the importance of modeling and speaking to students about appropriate technology use. For example, Xavier had a mandatory freshman year course on digital citizenship. Course topics included appropriate technology use as well as others (e.g., organizing notes digitally, the perils of texting while driving). As one technology teacher explained, this course addressed the broader, ethical dimensions of technology use. "What we can try to do is make them good digital citizens, to give them the moral compass to hopefully make their own good decisions." Beyond this course, content area teachers also described helping students navigate such issues. As one math teacher stated, "I was pretty intent this school year on attacking the digital citizenship issue upfront... The capabilities of the software are developing faster than the students are emotionally capable of handling."

**Leveraging Xavier's vision and mission.** Xavier educators also used the school's vision and mission to frame other dimensions of student technology use. For example, it might be recalled Personal Responsibility Periods were intended to help students mature in their uses of time. In the context of one-to-one, the lingo of PRPs also framed students' technology use. Emphasizing freedom of conscience, educators reported that students needed "trust," "freedom," and "autonomy" in order to learn for themselves how to make good decisions involving technology. As one administrator stated, BYOD policies "naturally evolved" from PRPs. "We apply the same general [PRP] approach to the realm of technology. Giving them some personal choices, we can be resources for them, in dialogue with them, and have a relationship with them."

Further, Xavier educators felt that Catholic values could also speak to the broader implications of technology in students' lives. For example, one leader described employing "*cura personalis*" when students have behaved poorly online. "I want them to understand the rights and wrongs and how it hurts people." Similarly, another administrator spoke about the importance of treating students as "individual souls," recalling that students are not simply technology users, but also human beings. "When we lose that relationship piece, we suck the humanity out of everything." Yet another leader described telling students to be present to the moment, "Focus on creation in front of you. Not just creation on the screen." Reflecting about role of Catholic values in the school's BYOD initiative, a theology teacher stated, "Any other school that tried to do [one-to-one] would have to tie it into that part of their [Catholic] identity. This is the expectation of our students at this school, this is why, and this will be our expectations with the use of technology."

### **Implementation Outcomes**

The preceding passages described Xavier's implementation processes, but what were the results of these efforts? Research Question 3 related to outcomes at Xavier. After one year of implementation, teachers were positive about the BYOD initiative and many had begun experimenting with integrating devices into their classrooms. In line with the school's vision and mission, some had even experimented with leveraging devices toward social justice goals.

**Positive attitudes about BYOD.** In general, educators at Xavier believed that the BYOD initiative benefited students academically. The mean response on the *Classroom Learning* scale was 2.99 (SD = .44), signifying that teachers saw digital devices as contributing to students' academic learning, collaboration, and problem solving. Echoing this, interview participants spoke of BYOD in positive terms. As one English teacher stated, "I'm probably one of the weakest when it comes or technology, but...It's only been a blessing." Others cautioned that although they were positive about BYOD, they were against using "technology for technology's sake" and allowing technology to be the "end all, be all." Rather, such teachers emphasized the importance of prioritizing good teaching, then aligning technology toward classroom goals.

In addition, teachers reported positive attitudes about leaders' approach to implementation. They enjoyed the freedom they had been given in making decisions about how and when to use devices. As one science teacher stated, "I feel that I have been given complete freedom to make [BYOD] decisions

for myself...No one has asked me how much, when, or why.” Echoing this, an English teacher reported, “We are trusted to make decisions on our own. These programs are not forced down our throats...[Here,] we don’t tell you what to do. We just help you do what you want to with your technology.”

**Classroom uses for digital devices.** As shown in Table 4, teachers experimented with a variety of uses for digital devices. Although some of these uses were routine for some teachers, no one practice pervaded all classrooms. For example, 83% of teachers (n = 44) had tried creating digital class notes for students, with 53% (n = 28) doing so almost weekly or more. In interviews, teachers described creating Powerpoints or videos that could be projected in classrooms or distributed online. Similarly, 91% of teachers (n = 48) had students do online research using devices, with 40% (n = 21) doing so almost weekly or more. In interviews, teachers reported asking students to access the Internet (e.g., DNA data via the National Center for Biotechnology Information; historical materials via the Library of Congress). Some also reported impromptu web searches relating to students’ questions or interests.

Further, 72% of teachers (n = 38) reported conducting activities requiring students to collaborate using devices, with 32% (n = 17) doing so almost weekly or more. The depth of interaction among students, however, varied. For example, some interview participants reported asking students to write peer responses to each other’s work or to co-author written materials, such as via Google Docs. Other participants described the role of cloud storage (e.g., Dropbox, Evernote) in helping students to organize notes, images, and other materials for projects. Altogether, these collaborations seemed to use devices to support traditional classroom practices, rather than to innovate new ones.

Finally, it is worth noting that some teachers were beginning to incorporate devices into addressing social justice issues (see Table 5). Although these practices were not ubiquitous, they help to highlight the potential for school vision and mission to influence technology use. Specifically, 51% of teachers (n = 27) reported having had students use devices to learn about social justice. Some teachers also reported having had students use devices to develop solutions to societal problems (47%; n = 25), share information about social justice issues (45%; n = 24), or contact others about social justice issues (30%, n = 16). In interviews, some participants mentioned using devices for social justice purposes, but such comments were infrequent. Three teachers reported having students use devices to watch videos or gather information about particular topics (e.g., slavery, access to healthcare, social justice leaders). One reported that some students used devices to design websites for non-profit organizations.

Table 4

## Frequency of Uses of Digital Devices for Instruction

	Never		Less than once a month		Once or twice a month		Almost weekly		A few or more times a week	
	%	n	%	n	%	n	%	n	%	n
	Conduct an activity that requires students to collaborate	28	15	21	11	19	10	19	10	13
Have students do online research	9	5	13	7	38	20	23	12	17	9
Administer a test, quiz, or an assessment	57	30	23	12	9	5	9	5	2	1
Create class notes that students can view	17	9	15	8	15	8	13	7	40	21
Use devices as a way to individualize instruction.	28	15	21	11	23	12	13	7	15	8

Table 4

## Frequency of Uses of Digital Devices for Social Justice

	Never		Less than once a month		Once or twice a month		Almost weekly		A few or more times a week	
	%	n	%	n	%	n	%	n	%	n
	Use devices to learn about social justice issues	49	26	17	9	26	14	8	4	–
Use devices to develop solutions to societal problems	53	28	21	11	17	9	9	5	–	–
Use devices to contact people about social justice issues	70	37	19	10	8	4	2	1	2	1
Use devices to share information about social justice issues	55	29	23	12	13	7	9	5	–	–

### Discussion

Findings from this study provide a window into one Catholic school's implementation of a one-to-one (BYOD) computing initiative. This school's vision and mission influenced its approaches to supporting teachers and students in entering the digital age. It did so in ways that were aligned to McLaughlin's (1996) characterization of Catholic identity. Teachers and students were given freedom to decide for themselves how best to use devices. Efforts were especially devoted to helping students navigate personal and social issues of the digital age. This included reflection around how to behave ethically when using devices, how to develop positive relationships, and other connections to Catholic teachings or worldview. What's more, some teachers had begun exploring how devices might be used to help students learn about and to address matters of social justice. When considering that these results were found after a single year of implementation, one might expect additional progress at Xavier in the future.

Altogether, this study makes theoretical and practical contributions to current knowledge. This study makes theoretical contributions by refining current thinking about the role of technology in educational change. For example, high hopes are often placed on the potential of new technologies to revolutionize schooling (Hughes et al., 2016; Ito et al., 2013; Shuler, 2009). However, leaders are often surprised when acquiring new technologies has little effect on educational practices or outcomes (Brooks, 2011; Cho & Wayman, 2015). In other words, popular notions about computerization are often technologically deterministic, presuming that technologies will have preordained uses or outcomes (Markus & Robey, 1998; Orlikowski & Barley, 2001). These notions hinge on the question of whether technology is the source or driver of educational change.

An alternative perspective would assert that technologies are socially constructed and dependent on the worldview of users (Cho & Snodgrass Rangel, 2016; Cho & Wayman, 2014; Leonardi, 2013). This perspective puts people at the center of educational change. Values and beliefs shape not just if people do something, but how they do it. McLaughlin (1996) argues that Catholic values and teachings enable Catholic schools to envision and pursue aims that public schools (because of their unique visions and values) cannot. The present study advances these arguments. Whereas prior research found that vision influenced how devices were allocated (Dexter, 2011), the present study highlights how vision may also influence how devices are used. Xavier's one-

to-one implementation was grounded in uniquely Catholic values associated with the meaning of human persons, the holistic development of students, and freedom of conscience. Teachers were leading students to engage with devices not simply as instructional tools, but as artifacts with repercussions on students' enactment of Catholic teachings.

Thus, the present study highlights the need to research particular value systems and their potential influences on technology use. For example, Xavier educators were beginning to use devices for social justice purposes. Are such uses distinct to Catholic education, or might the values of public schools also arrive at similar activities? Further, to what extent do the particular devices or approach to one-to-one influence the role of Catholic vision and mission? Xavier's decision to adopt a BYOD approach was logistically motivated, but had implications for the school's enactment of vision and mission. Additional studies of other contexts and one-to-one models would shed light on the conditions around how vision, mission, and technology implementation might intersect.

Further, this study makes contributions to practice by demonstrating one way for a school to handle more than just the technical and logistical side to implementing one-to-one computing. Digital devices would seem to be everywhere in students' academic, social, and personal lives—sometimes with unintended or negative consequences (Kuznekoff & Titsworth, 2013; Turkle, 2011; Uhls et al., 2014). The present study serves as one example for how a school might support the holistic development of students in the digital age. In particular, Xavier educators did not seem to subscribe to the popular notion that young people are “digital natives,” knowing at birth how to make wise decisions involving technology. Rather, they thought carefully about their school's vision and mission, taking steps to adapt it to the challenges of the time.

Other practitioners might learn from the Xavier faculty by similarly evaluating their school's sense of mission. Helpful guiding questions might include: What academic, social, and spiritual qualities do we wish to see among students? How are these qualities represented in our academic and non-academic practices? In what ways do technologies support or hinder our efforts toward these aims? How do we ensure that educators and students are prepared to enact our vision in the digital age? By engaging in dialogue around such matters, schools may find it possible to promote technology use that is both purposeful and innovative.

### Conclusion

As technologies continue to advance and to become more commonplace in education, it is likely that many Catholic schools will also feel pressured to adopt one-to-one or other large-scale technology initiatives. The present study provides a snapshot of one school, recounting how this school had positive attitudes about its one-to-one (BYOD) initiative and began using devices for both instructional and social justice purposes. Because this is a snapshot, this study does not track changes in attitude or uses over time. Longitudinal and comparative research could address this limitation. Such research could aim to determine what outcomes other schools might reasonably expect when going one-to-one, as well as the mechanisms for getting there.

As an example for what is possible, the present study suggests that one-to-one initiatives may require significant planning and forethought. Although this groundwork might include professional development, technical support, and promoting positive attitudes among teachers (Penuel, 2006; Wayman, Jimerson, & Cho, 2012), the present study highlights the importance of clarity around how to sustaining the school's sense of vision and mission when it comes to devices. For example, Cho (2016) describes how Xavier educators reflected about student's spiritual and holistic development when engaging in classroom management around digital distraction. Sustaining this sense of vision and mission requires continual effort. As Fuller and Johnson (2014) point out, competing pressures and demands can lead Catholic schools to lose track of their vision and mission. Thus, the success of technology efforts might rest not only on the presence of shared vision at the time of adoption, but also on how that vision is cultivated over time.

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*Vincent Cho is an assistant professor at Boston College. His research focuses on issues of school leadership in the digital age. Please direct correspondence to [vincent.cho@bc.edu](mailto:vincent.cho@bc.edu).*