REJECT THE TECH? STUDENTS' VIEWS ON TECHNOLOGY FOR INSTRUCTION AND COLLABORATION

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Abstract

***Purpose**: The purpose of this study was to investigate students' perceptions of technology usage both inside and outside the classroom and to better understand their views on using technology for educational purposes. **Method**: Using a convenience sample, university students completed an online survey to assess their experience and perceptions of using technology. Descriptive statistics were used to report the findings. **Findings**: Most students (91%) like to use technology in some form, but many believe that technology is not always used correctly. Only 9% of students indicated that they preferred traditional methods of teaching. The overabundance of technology did not intimidate students, which may be because many of the same tools were used in different classes and students had become accustomed to them. Although students reported they often learned about the technology on their own (52%), they seemed to rely on the same "tried-and-true" tools.*

Introduction

A common scene when entering a college classroom is a room filled with students sitting and staring at their smartphones. Situations vary, but students are typically texting, playing games, or searching for information. Very little conversation or interaction occurs among them. Today's students are "tied" to their phones and become apprehensive when they do not have access to them. Demanding that the students put their phones away during class could be perceived as severe since many students believe they are able to multitask effectively, both texting and listening to the lecture simultaneously. One way to bridge this gap between educator and student is to allow students to apply technology during the lesson.

A dominant theme in discussions about making course material relevant to today's students, both secondary and postsecondary, appears to center around infusing technology into the classroom. One way to accomplish this goal is through active learning, which better engages students in the material being presented. When faculty effectively incorporate active learning into the classroom environment, the teacher shifts from the center of instruction to a role as a facilitator of knowledge (Florman, 2014). This shift moves the student from a passive learner to an active learner. However, not all students are willing to become active in the learning process because active learning demands more from students.

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Incorporating technology into the curriculum is one way to create an active learning environment. Technology supports the learning process just as any other traditional learning tool would do; however, technology should not be used without an understanding of how it enhances the learning process. The impetus behind incorporating technology is the desire to meet students where they are.

Many of today's students are from Generation Z, a cohort of children born in the late 1990s or later. These students have never known a time without smartphones and other technology available at their fingertips. As they enter the workforce, Generation Z workers will be researching on the Internet, proficiently promoting their companies through social media, and independently learning new software (Castellano, 2016). A natural assumption is that these same attributes describe today's students in the classroom. Because students commonly use mobile phones and social media in their everyday lives, technology usage comes naturally for them in both the classroom and the workplace.

Technology does not replace sound pedagogy in the classroom; rather, technology should enhance pedagogy. In fact, one accreditation principle of the Southern Association of Colleges and Schools is that technology should *enhance* student learning (Southern Association of Colleges and Schools Commission on Colleges, 2012). Educators must understand this important distinction when designing lessons. Reading (n.d.) noted that "Technology no longer has the buzz that it used to have. Several years ago if you sat a student in front of a computer you would get instant engagement. This is no longer the case" (para. 5). Instead, technology should be viewed as just one tool that educators can use.

Svinicki and McKeachie (2014) suggested a four-pronged approach for successfully integrating technology into lesson plans. This approach addresses (1) how content and technology are aligned with learning outcomes, (2) understanding the instructor's experience and proficiency in the use of technology, (3) identifying the students' experience and access to the use of technology, and (4) recognizing the functionality of the specific type of technology used. Each of these factors is important to the learning process and must be considered independently as well as collectively when designing lessons.

Another important motivation for integrating technology is to prepare students for a workforce that is technology dependent. Becoming comfortable with different technology applications will likely contribute to students' success in their careers. As an example, businesses are using online collaboration to increase worker productivity, lower turnover rates, and save money (Rojas, 2015). Thus, learning to collaborate digitally inside and outside the classroom can prepare students to collaborate in the workplace.

Purpose and Objectives

The purpose of this study was to investigate student perceptions of the use of technology both inside and outside the classroom and to better understand their

views on using technology for educational purposes. In addition, the researchers sought a deeper insight into the collaborative technology tools used at both high school and college levels and students' views of those tools. The researchers believed that students may feel overwhelmed by the abundance and variety of technology used in different classes and that they may not always view more technology as better. As such, the findings for this study will have important implications for educators at all levels.

Background

Many recent studies consider how technology affects the learning environment. Tamim, Bernard, Borokhovski, Abrami, and Schmid (2011) conducted a second-order meta-analysis to summarize the findings of other meta-analyses concerning the differing effectiveness of learning with and without technology over the last 40 years. This study revealed that "the average student in a classroom where technology is used will perform 12 percentile points higher than the average student in the traditional setting that does not use technology to enhance the learning process" (p. 17). The researchers noted that technology alone will not increase learning; but this enhanced learning will be the result of many factors including teacher effectiveness, subject matter, and reliability of the technology used. Tamim et al. (2011) believed that technology was best utilized to support learning instead of strictly delivering the content in that "computer technology supporting instruction has a slightly but significantly higher average effect size than technology applications used for direct instruction" (p. 17). The researchers were cautious in their conclusions that simply incorporating technology alone was not sufficient for learning.

Svinicki and McKeachie (2014) thought that technology can augment learning if it is clearly tied to learning goals and the individual instructor's teaching style. When used effectively, active learning occurs with the use of technology because of increased opportunities for engagement and better preparation of students with skills needed in their future careers. Additionally, Aparicio, Bacao, and Oliveira (2016) stressed that when instructors begin to focus on incorporating technology into the learning environment, they must remember that "learning is a cognitive process for achieving knowledge, and technology is an enabler of the learning process" (p. 292). Further, the many dynamics that are introduced by technology must be considered. Svinicki and McKeachie (2014) stressed that whatever instructional technology is used, it is likely to be more effective if it is "integrated into a careful planning process that takes into account the various factors involved in teaching and learning" (p. 235). Again, this process reinforces the idea that technology is not used in a vacuum but instead is used to facilitate and enhance the learning process.

Hsu's (2016) study about primary school teachers' beliefs regarding technology integration in the classroom showed a shift in teacher perspectives. Teachers with

a high self-efficacy about technology use were more likely to place a high value on the use of technology in the classroom. In addition, language arts and social studies teachers were most likely to integrate technology into the classroom. Hsu's (2016) study found barriers to technology use included students' lack of computer skills, lack of training for teachers, and lack of time for teachers to implement lessons using technology.

Davison and Lazaros (2015) studied university students' perception of using smartphones and laptops for learning. Results showed that 90% of students used laptops, 60% used smartphones, and 45% used tablets. Students indicated that they used their laptops mostly to communicate with other students and to complete assignments but preferred their smartphones for personal use. Additionally, the study revealed that students were comfortable using technology on their own accord, but this study did not review how it was used specifically in the learning process.

Gebre, Saroyan, and Bracewell (2014) examined student engagement in technology-rich classrooms in university-level classes. They found that "there is a strong relationship between students' engagement with information technology in relation to their learning and their involvement in effective educational practices including active and collaborative learning and better student-faculty interactions" (p. 93). They noted that faculty needed professional development programs to ensure effective technology use in the learning process. These programs should not be simply learning the technology but should develop instructional practices and provide increased opportunities for active engagement.

Montrieux, Vanderlinde, Schellens, and De Marez (2015) researched the use of tablets in a secondary classroom. They conducted the study in a classroom where tablets had been used for several years, so the technology was not innovative in this instance. Some teachers used tablets to enhance their traditionalist, teacher-centered instructional methods. However, the authors found that "innovative teachers use tablet devices to provide authentic learning experiences and where they can construct and share knowledge in a media-rich environment" (p. 14). They stressed the importance of professional development for teachers to incorporate technology more effectively in instruction.

Murthy, Iyer, and Warriem (2015) noted that professional development programs should stress that instructors learn new technologies from the students' view to understand how technology is perceived by students. In this case, the teacher learns the new technology first as a student. Murthy, Iyer, and Warriem (2015) stressed that "it is not sufficient for participants to listen about the strategy or see it being implemented. They need to do hands-on activities required of the strategy in 'student' role, and only then create instruction based on that strategy in a 'teacher' role" (pp. 25-26).

Davis, Fisher, and Forde (2009) reviewed specific types of technology and how they impacted learning. They assessed how technology tools such as interactive

whiteboards, computer labs, email messaging, and blogging helped students learn to write better. The authors studied students in a business communication class to see if using technology would decrease writing apprehension. They concluded that there was not a statistically significant difference in writing apprehension and actual performance between students taught in the traditional method versus students taught using specific technology tools.

Methodology

Using a convenience sample of undergraduate students at a regional university in the southern U.S., a survey was distributed to assess students' perceptions of the use of technology in the learning environment. The research was approved by the Institutional Review Board of the researchers' university. A link to the electronic survey created in Qualtrics was provided to students in three consecutive semesters. The survey was piloted in Fall 2015. After reviewing responses, the researchers added three additional questions to the survey to address how students perceived the use of technology in the classroom learning environment. The revised survey was distributed in Spring 2016 and Fall 2016 semesters.

The survey was administered in classes that were taught as traditional face-to-face classes as well as in fully online classes. A total of 279 students completed the survey during the two semesters. Because the survey was distributed in a variety of classes, results came from a diverse mix of students at different levels in their undergraduate careers. All participants agreed that their anonymous responses could be included in the study, and there was no penalty for not participating. Tabulated survey results and descriptive statistics appear in the following section.

Findings

The following findings are based on final survey administrations in Spring and Fall 2016 semesters (n = 279). To understand the demographics of the students who completed the survey, students were asked to indicate their age. Of those who participated, 272 respondents self-reported their age category. A majority of the respondents (207) reported being 18-22 years old (76.10%). However, there was diversity in age with 35 participants indicating they were 23-26 years old (12.9%), 6 were 27-30 years old (2.2%), and 24 were 31 and over (8.8%). These responses indicated that the students could be considered "traditional" college-aged and the questions about technology experience in secondary education would be relevant.

Students were asked specifically to indicate whether they liked for instructors to use technology in their coursework. Almost half (133 students, 47.7%) reported liking it when technology was used both inside and outside of class. However, 96 students (34.4%) liked using technology only during class, while only 25 students (9.0%) liked using technology only outside of class. Another 25 students (9.0%) reported not liking the use of technology, indicating that they preferred to learn course material through traditional methods.

Participants were also asked if utilizing technology tools to collaborate in the classroom provided more engagement, and 198 students (71%) stated yes while only seven students (2.5%) responded negatively. However, 74 students (26.5%) said it depended on the tool used for collaboration.

Because online collaboration is likely to be an important skill needed in the workplace, students were asked if they understood the importance of this for future career success. Many students (194, 69.5%) agreed that online collaboration is an important skill. Only 20 students (7.2%) indicated it was not important, and 10 students (3.6%) were not sure. Since the effectiveness of online collaboration can vary, students were asked to indicate if they believed this importance depended on the tool used; 55 (19.7%) responded that it did.

Because a person's experience with collaboration can affect perceptions of its effectiveness, students were asked to report on their personal and professional experience of using these types of technology tools. The majority (183 students, 65.6%) had used technology to collaborate both personally and professionally. Of the remaining participants, 60 students (21.5%) had used technology to collaborate only personally online, 26 students (9.3%) had used such tools only for professional collaboration, and only 10 (3.6%) had not collaborated via technology tools at all.

The researchers inquired about students' experiences with collaborating through technology at various education levels. Participants were asked to choose all responses that applied. As a result, responses do not total 100%. The vast majority (243, 87.1%) of participants were required to collaborate using technology in college. Additionally, 157 students (56.3%) had experience collaborating at the high school level, while only 48 (17.2%) had collaboration experience in middle school. Collaboration at the elementary level was reported by only 14 students (5%), and 12 students (4.3%) reported no technological collaboration at all in school.

It was important to understand where students learned how to use online collaboration tools. Again, students were allowed to make multiple choices resulting in responses exceeding 100%. Of those surveyed, 222 students (79.6%) reported learning about technology collaboration tools through their teachers' use of the technology in the classroom. Further, 196 students (70.3%) indicated that they learned about the tools from friends or acquaintances. Less popular options included 145 students (52%) who reported discovering these tools on their own, and 89 students (31.9%) learned about the tools on their job.

Students were asked to identify different collaborative tools used at different levels in their education. Table 1 compares the use of nine different technological platforms and their reported use at both the high school and college levels.

Table 1
Collaborative Tools Used in Education

Tool	Secondary		Postsecondary	
	n	%	n	%
Wikispaces	9	3.2%	13	4.7%
Todaysmeet	2	0.7%	1	0.4%
Email	220	78.9%	253	90.7%
Google Docs	116	41.6%	190	68.1%
Google Slides	56	20.1%	82	29.4%
Voxer	6	2.2%	7	2.5%
GroupMe	58	20.8%	189	67.7%
Google Classroom	27	9.7%	28	10.0%
Text Messaging	207	74.2%	235	84.2%

In college classes, email (90.7%), text messaging (84.2%), GoogleDocs (68.1%), and GroupMe (67.7%) were the most widely used collaborative tools. In high school, email (78.9%) and text messaging (74.2%) were used most commonly.

Participants answered an open-ended question related to a technology tool they would like to use in their classes. This required students to consider tools to collaborate with classmates, submit assignments to the instructor, and create assignments. The most popular responses were Google Docs, email, GroupMe, the university's learning management system, Kahoot! quizzes (online interactive quizzes), PowerPoint slides, Skype, and online discussion boards.

Students shared specific situations when technology enhanced the learning experience due to the instructor using technology well. Many students commented that PowerPoint slides helped to organize and remember the material, Kahoot! quizzes helped with reviews, and supplemental materials posted online helped with learning. One student shared an example from class.

> What makes technology useful during learning is the ability it brings to look at something multiple ways. For example, in statistics class the program used was Hawks Learning. This program breaks down each problem step by step. It provides an explanation with each step and has an option for 'hint' where it directs the student to the next step but does not completely solve the problem.

Another open-ended question asked students to explain what made technology useful for learning. One student commented:

> What makes technology useful is being able to focus on a couple of things at a time. In one large lecture class, PowerPoints were hard to see during the lecture. Bringing a laptop to class enabled access to PowerPoints while taking notes by hand, which permitted more focus on the lecture.

Conclusions and Recommendations

The students who participated in this study represented what instructors are likely to find in typical college classes since the respondents were diverse in their ages and at different stages in their college experiences. The collective responses likely predict what technology students are accustomed to using and their levels of comfort with technology in the classroom. Most respondents (91%) liked to use technology in some form, but many did not think that technology is always used correctly. Technology can be distracting to the learning environment if not used well, which reinforces the point found in the literature that professional development programs should help instructors with effectively incorporating technology in their classes (Gebre, Saroyan, & Bracewell, 2014; Hsu, 2016; Montrieux, Vanderlinde, Schellens, & De Marez, 2015).

As expected, many students are experienced with collaborative technology (both professionally and personally) and understand its importance in their future careers. However, students appear to use more asynchronous modes for online collaboration (email, text messaging) rather than learning about new technology that could be more interactive, such as GroupMe or Google Classroom.

The open-ended questions were designed to elicit more personalized responses about students' perceptions of technology in education. A few comments involved understanding the value of using technology to make learning more active and engaging, but the majority of comments focused on a few tools that were widely used (PowerPoint, interactive quizzes, and the university's learning management system) but not considered innovative. Although students reported they often learned about the technology on their own (52%), they seemed to continue to rely on the same tools. Apparently students and instructors become comfortable with tools that are proven to work and are easy to use, and they continue to use them. Although not necessarily negative, this tends to show that people are creatures of habit and are less likely to try new, unproven techniques.

The researchers assumed that sometimes students felt overwhelmed with the use of technology, but this assumption did not prove true. Very few students (9%) indicated that they preferred traditional methods of teaching. The overabundance of technology did not appear to intimidate students, which might be attributable to the same tools being used in many different classes; and students had become accustomed to these tools.

Conclusions and recommendations based on the data collected and analyzed thus far include:

- While a minority, some students reported preferring that technology not be used in class. Instead, they prefer traditional methods of instruction and class involvement. Therefore, educators should be mindful of such students' preferences and not assume that more technology is always better.

- Another key finding relates to differing student responses to the technology in question. Not all technology tools are created equal in the eyes of students, which instructors should be cognizant of as well.
- Responses to an open-ended question related to a technology tool participants would like to use in class was noteworthy since common tools were mentioned repeatedly. Interestingly, tools embedded within the university's learning management system were mentioned frequently (i.e., email and discussion boards, as well as the LMS as a whole). This finding was telling because it indicated that not all departments or instructors use the technological resources that are readily available.

Implications for Teaching

Teachers should be trained to use technology before trying it in the classroom, and this training must encourage teachers to use technology from the students' perspective. Teachers should also be comfortable with the programs and understand when the tool is helpful and when it could be distracting. As indicated by student comments, the newest technologies do not always have to be used. However, the overuse of a tool may cause boredom.

The findings of this study have practical implications for educators since the data can be relevant to instructional design decisions. By investigating students' views of technology used inside and outside the classroom for educational and collaborative purposes, instructors and administrators can better understand how students perceive technology and how it should be used to enhance the learning experience. In turn, this information can be used to provide guidance for critical pedagogical decisions at both the secondary and postsecondary levels.

Educators' focus on skills other than technological should be viewed with concern. According to Castellano (2016), many members of Generation Z have, "poor communication skills, lack of accountability, and less-than-stellar organizational skills, productivity, follow-through, and timeliness" (p. 18). Based on this information, adding more technology will not necessarily help students improve these attributes. Ensuring opportunities for students to express themselves in traditional, face-to-face interactions will help overcome some of these skill deficiencies.

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