What Really Matters? Technological Proficiency in an Online Course

Stacy Hendricks, Ed.D.
Stephen F. Austin State University
hendricksl@sfasu.edu

Scott Bailey, Ed.D
Stephen F. Austin State University
baileybryan@sfasu.edu

Abstract

As the student population becomes more diverse, university administrators are challenged with meeting those needs in a variety of settings. Specifically, most universities are offering courses through three delivery methods: face-to-face, hybrid, and online. Although all three methods have existed for quite some time, pedagogical concerns regarding online instruction continue to be at the forefront of discussions regarding effective instruction. According to Ronsisvalle and Watkins (2005), assessing the technological skills students possess is a crucial first step in online education. Therefore, this study specifically focused on the technological skills needed by students for an online course. The lack of technological skills could quickly affect the success of the student in the online learning environment. Maintaining academic integrity and high levels of student learning are of utmost importance (Armstrong, 2011); therefore, it is essential to better understand the technological skills necessary for a student to be successful in an online course.

The professor's role and technological proficiency are equally as important as that of the student. The teaching responsibility of the professor changes with online courses (Baran, Correia, & Thompson, 2011). Not only must the professor design the course, facilitate discussion, and directly instruct students (Anderson, Rourke, Garrison, & Archer, 2001), he/she must also be technologically savvy. Thus, it is also important to investigate the technological role and responsibility of the professor. The purpose of this study was to explore the necessary technological skills a student must possess in order to be successful in an online course. The intent of this study was to find possible stumbling blocks that could be averted before the student ever begins the online program.

Review of the Literature

Understandably, student learning and student success are two essential factors in any classroom. Steinman (2007) concluded that a quality education is significant regardless of the mode of delivery. Therefore, when dealing with an online classroom it is important that the technology does not hinder the learning process. When used effectively, technology can enhance the educational practices in online classrooms (Baghdadi, 2011). Thus, it is important to understand how online classes can be created to provide quality and effective learning experiences and success for all students.

Online courses have created flexibility and convenience for many students to attend universities; otherwise, those same students might not have had that opportunity (Armstrong, 2011; El Mansour & Mupinga, 2007; McBrien, Jones & Cheng, 2009; Mahoney, 2009). While enrollment continues to increase with online courses (Park & Choi, 2009; Talent-Runnels, et al. 2006), the retention rate has become a challenge (Aragon & Johnson, 2008; Park & Choi, 2009). It appears that the rate of students enrolling in courses is increasing each year; however, the attrition rate of online courses tends to be problematic for universities and community colleges. Thus, it is both important and helpful to explore why students are dropping out of online courses. According to DeTure (2004), the retention problem with online courses may be understood "by identifying student characteristics that correlate with success in distance learning courses..." (p. 22). With the poor retention rate, it is apparent that both the professor and the student must make adjustments in order for the online courses to be successful (Bennett & Green, 2001).

Professors

Regardless of the delivery mode, professors have a major impact and influence in the classroom. In an online learning environment, the mere presence of the instructor was found to positively impact the student's level of "affective learning,

cognition, and motivation" (Baker, 2010, p. 23). Unfortunately, according to Armstrong (2011) and Mahoney (2009), students tend to believe the instructor is a missing component of online courses. Furthermore, Koh, Barbour, and Hill noted the need for instructors to adapt their teaching methods for online courses (2010). Johnson and Aragon agreed, stating that innovative lessons and activities do not usually transfer from face-to-face courses to online courses (2003). Specifically, professors must be cognizant of the role they play in the course. The course should not be completely teacher directed. Instead, the students should be involved in their learning process through items such as discussion posts. Barnett-Queen, Blair, and Merrick (2005) found that online discussion posts created a student centered, critical thinking environment which was not necessarily the case in face-to-face classrooms. The student lead discussion posts provided an environment that is similar to constructivism. Barnett-Queen, Blair, and Merrick (2005) questioned the level of professor interaction with the discussion posts. Several students felt that more professor interaction was needed within the course; however, the researchers questioned whether such professor involvement would negatively affect the interactive and critical thinking environment.

It is important for professors to begin redesigning courses to promote positive professor/student relationships and engaging lessons with student support. Professors must understand the technological aspect of online courses when redesigning and teaching online courses. One faculty member asserted, "pedagogy of online learning must be part of training and the online environment" (Quality on the Line, 2000, p. 20). Not only does online teaching require additional training of the professor, it also requires additional time of the professor (Barnett-Queen, Blair, Merrick, 2005). The professor needs additional time to design the online course and populate it with content, guidelines, rubrics, assessments, and discussion posts for students. Also, once the class has begun, the professor must constantly provide feedback, engage in discussion posts, and answer questions via emails. Through the design process, the professor can minimize technological difficulties for students by organizing and structuring the class effectively from the beginning (Baker, 2010).

Technological needs are ever changing in education. As with any change, professors who teach online must remain updated on the technological changes related to the online platform. Thus, there will always be a need for professors to constantly gain insight through quality professional development in order to implement the most updated technology available (McBrien, Jones, & Cheng, 2009).

Universities always aim to hire the most qualified professors regardless of the delivery method. However, this objective gets a bit more difficult when hiring professors to teach online courses due to the complexity of the advanced technological skills one must possess (DiPietro, Ferdig, Black, & Preston, 2008). If universities hire qualified professors for the job as well as provide the necessary technological training, the course design process and quality of instruction are more likely to improve; thus, benefitting the students.

Students

For the most part, students perceive online courses as a positive learning environment (Thiede, 2012). Online courses provide students with scheduling flexibility and convenience that a traditional face-to-face course cannot offer (Armstrong, 2011; El Mansour & Mupinga, 2007). However, online courses come with some technological prerequisites. Thus, in addition to possessing an interest in the course content, the student is also required to possess technological skills. To be successful, the student must be technologically savvy with a computer at the minimum. Despite this prerequisite, Mahoney (2009) and Muilenburg and Berge (2005) found that most students are comfortable with online learning and have few complaints of technical issues. Conversely, El Mansour and Mupinga (2007) found technology to be a major barrier among students. Accordingly, it is important to determine what can be done to provide students with a positive, online learning experience.

When exploring what contributes to a successful online experience, Harrell (2008) noted "five broad categories that can have a positive impact on online student success: student readiness, student orientation, student support, instructor preparation and support, and course structure" (pp. 36-37). In order to provide students with support, one institution provided students with the ability to interact socially and academically with their peers. The students exchanged study materials, textbooks, job information, class chats, etc. (Quality on the Line, 2000).

Dupin-Bryant (2004) found the level of computer proficiency to be more critical than the number of years of computer experience. This study discovered that students with the appropriate technological skills and training would be more likely to complete online courses since the technology issues would not hinder the learning process. Moreover, the results indicated that technology orientation training such as web-based application training may also increase student success in the online classroom (Dupin-Bryant, 2004). Tallent-Runnels et al. (2006) agreed, stating students who have previous experience with online learning as well as proficient computer skills tend to have a more positive attitude toward the online learning experience. Furthermore, Park and Choi (2009) determined that students are less likely to drop out of online courses if the content is relevant to their needs and they are satisfied with the courses.

Pedagogically, online learning is certainly different from face-to-face learning. There is no doubt that professors and students will continue to wrestle with the technical issues of online courses. Therefore, both professors and students must approach the online courses accordingly. Professors should be aware of the various levels of technical knowledge and skills of students enrolled in online course (Bennett & Green, 2001). Students must be cognizant of the technological proficiency skills necessary to be successful in an online course. Educational institutions must determine ways to provide students and faculty with the necessary technological skills and training to be successful in the online classroom environment.

Methodology

This qualitative study was designed to explore the graduate students' perceptions regarding the necessary technological skills a student must possess in order to be successful in an online course. Specifically, this study was guided by the following: (a) What technological skills do students need to be successful in the online learning environment?; (b) What suggestions do students have that could improve their technological proficiency in order to be more successful in the online course?; and, (c) What ways do students expect the professor to assist in the technology issues?

The population of the study included graduate students, from a Southwest United States, mid-size university, concurrently enrolled in the two introductory principal preparation certification program courses *(N = 51)*. During the Spring 2013, the online survey was completed by 35 graduate students, which yielded a response rate of 69%. Of the 35 respondents, 51% *(N = 18)* were male while 49% *(N = 17)* were female. The age groups were somewhat equally split, with 40% *(N = 14)* within the 25-35 age group, 29% *(N = 10)* within the 36-45 age group, and 31% *(N = 11)* within the 46+ age group. Eighty-nine percent *(N = 31)* of the respondents have owned a computer more than eight years. Although these two courses were introductory courses for the principal preparation program, 74% *(N = 26)* of the respondents indicated that they had taken an online class before.

The authors of the study developed and designed an online survey to specifically address the research questions. After verifying the content validity with other colleagues and graduate students enrolled in a principal research course, the survey was administered electronically to students enrolled in two introductory principal preparation program courses.

The online survey consisted of 14 questions. The first four questions were basic questions designed to gather basic demographic data such as gender, age group, the length of time owning a computer, and whether an online class had been taken prior to the survey. The fifth question asked the respondents to rate their ability level on certain technological skills on a likert scale from one to five, with one being no experience and five being superior. Six questions were open-ended and designed to glean information from the graduate student pertaining to the technological knowledge and proficiency needed for online courses. One question asked the respondents which technological device was used to access online course content. The remaining two questions asked students if they were aware the university provided technical assistance for the online format while the other question asked the students if they were aware the university provided technical assistance for the computer hardware/software. After the survey was completed, the authors identified themes and disaggregated responses using the data collection tool from the online survey program.

Findings

This study sought to identify the graduate students' perceptions of the necessary technological skills a student must possess in order to be successful in an online course. Through this exploratory process, all graduate students concurrently enrolled in the two introductory principal preparation program courses *(N = 51)* were surveyed. With a response rate of 69%, 35 students answered 14 questions which consisted of four demographic type questions with the remaining 10 questions related to technological proficiency.

Graduate students were asked to rate their ability level in several areas of technology that are traditionally used in an online course. The percentage ratings are summarized in Table 1.

Table 1: Student Perception of Technological Ability Level by Percentage

	Ability Level				
Technology	1	2	3	4	5
Email*	0	3	0	20	77
Presentation software (i.e. powerpoint, prezi)*	0	3	18	50	29

Search engines	0	3	9	31	57
Word processors	0	6	6	37	51
Spreadsheets	6	6	26	34	28
Online discussion groups*	0	0	18	44	38
Frustration level when dealing with technical problems*	6	18	29	29	18
Communication in online courses*	0	3	26	44	27
Maneuvering through the online course	3	0	14	46	37
Online chat with professor*	9	3	21	35	32
Audio production	3	20	26	34	17
Video production	6	21	20	32	21

*Not all respondents answered

Overall, the graduate students perceive themselves as being average to above average in most of the technology areas listed. Respondents overwhelmingly believe they are superior in email. This is no surprise since many jobs require email. Eighty-eight percent of the respondents feel they are above average or superior with search engines and word processors. It is interesting to note that every respondent has had experience with online discussion groups and believe they are average or above average with online discussions. The lowest three ability areas of technology were: (a) frustration level when dealing with technical problems, (b) audio production, and (c) video production. Twenty-four percent of the students either have little or no experience of frustration when dealing with technical problems. Twenty-three percent of respondents have little to no audio production experience which is similar to the 27% of respondents lacking in video production. Of the respondents, 97 percent selected average or above in maneuvering through an online course as well as communicating in online classes. Another varied response was online chatting with the professor. Although it isn't a large discrepancy, it is also worth noting that this is the lowest rated ability percentage with no experience. This could possibly be due to the professor not requiring the student to chat.

In an open-ended question, students were asked to list the technological skills a student must possess in order to be successful in an online course. Twenty-one students believe that you need basic computer skills before enrolling in an online course. Some of those students mentioned specific information such as adding attachments, scanning documents, sending emails, powerpoint, and word processing. Other students believe the technology level needs to be higher stating that you must have knowledge in discussion posts, video and audio production, online chats, and podcasting. Moreover, several students noted that you must understand and be familiar with the program software of the course (e.g., Blackboard, D2L, etc.). While the students explained the necessary skills needed for the online course, one stated "the course was very user friendly. I was anxious at first, but all of the assignments were clearly explained, and I was able to complete them! Yeah!"

Students were then asked for suggestions that could improve their technological proficiency in order to be more successful in the online environment. Twelve students did not have any suggestions. Five students commented on their technology equipment. The students felt that they did not have updated computers or equipment necessary to complete the assignments. One participant commented "Get a newer computer with more updated software!! My laptop is 5 years old and needs additional hardware components." Approximately six students requested technology tutorials. For instance, one student recommended a central website for training on various software and web applications used in the online courses. "I think some type of central website for training on the various software and Web 2.0 application that are being used is [in] the online class would be helpful." Lastly, a couple of students believe that you should just jump in and do it, that "practice makes perfect." Another student stated "Just do it and the more you participate, the better you will become."

When designing courses, it is beneficial for professors to know what hurdles students encounter. Hence, before the next course, the professor can possibly address those issues and eliminate any future problems to ensure effective learning. Therefore, the students were asked what stumbling blocks could have been averted before the class ever started. Approximately a third of the students did not acknowledge any stumbling blocks. But, several students discussed

personal computer issues. For example, one student mentioned needing a better computer while another student was learning on a tablet. Also, students were using several different computers which seemed to cause a problem due to the specifications and capabilities being different on the two computers.

While professors cannot address personal computer issues, they can be cognizant of previous problems and possibly raise awareness of the issues and provide solutions for future classes. It was evident that there are some organizational issues that need to be addressed in online classes. For example, one student did not have the proper username and password while another student did not even realize what online software program was used much less where to find it. While this is very bothersome on several levels, it is fortunate that there were only two students encountering problems related to the online course software. As stated by Baker (2010), course organization and structure are essential to creating a smooth semester for both the student and the professor. Several participants commented that technology was not necessarily an issue; however, conflicting assignments, lack of communication, and unclear expectations were a few stumbling blocks that were identified by the respondents.

The survey requested the respondents to reflect on the semester and determine how their technological proficiency improved. Only four participants suggested that their proficiency level did not increase. Many respondents mentioned being able to produce a video as well as submit an audio assignment. Ten participants claimed that their technological proficiency increased; however, they did not specify in what area. A few participants implied their technological knowledge increased in areas such as powerpoint, audio production, video production, making and uploading video to You Tube, and chatting with others. One participant summed it up by stating, "Who says you can't teach an old dog new tricks?"

The last two questions pertained to the graduate students' perceptions regarding professors and technology. The first question asked what role or responsibility the professor has on a student's technological proficiency in an online class. Six participants perceive the role or responsibility of the professor regarding a student's technological proficiency to be nonexistent. In fact, one student claimed, "While I'm sure technology can be frustrating, if you enroll in an online class, you need to know how to operate and figure out what the professor is wanting." Five participants perceive the professor as somewhat similar to a counselor. He should be available to listen and understand a student's problem and answer questions when appropriate. Moreover, participants believe the professor is responsible for the organization and structure of the course. For example, the professor is responsible for effective communication, specific guidelines and instructions, notification of assignments, course content, and technological assistance or direction. This expectation adds additional responsibilities to the professor's role as instructor of record.

The next question asked the participants to discuss their expectations of the professor in regards to assistance in technological issues. Eight participants do not have any technological expectations of professors regarding assistance. One student mentioned "tech support should handle tech issues [because] the professors are busy enough. Instead, participants believe the professor should be available to answer questions, provide frequent and timely feedback, and provide guidance when needed." A few respondents believe that the professors should challenge their computer skills within assignments as well as provide "how to" videos. Additionally, several participants believe professors should also be able to troubleshoot potential issues and possibly bridge the gap between the technical support services and students.

Conclusion

While this study is limited by convenience sampling, the findings are applicable to the online learning environment throughout the United States. The findings from this exploratory study offer universities insight on the technological proficiency of students entering online programs. Also, the findings provide professors with the students' perceptions of their role regarding technology issues in online courses.

This information allows the university to be proactive in addressing technology concerns before students enter an online program. For example, universities may assess the technological needs of students enrolling in online courses and provide students with a tutorial video. Also, while the participants of this study perceived their technological proficiency to be above average to superior, they still had specific requests concerning technology issues. These requests were valid and simple to address. For example, the university technology support center could provide videos on how to use certain technology. A professor can offer multiple ways to access course information as well as provide technological troubleshooting guidance. Additionally, the online professor will gain knowledge on how to assist the variety of technological proficiency levels in his/her online course. While redesigning the course, the professor can make the necessary adaptations to avert any foreseen problems.

As noted earlier, the graduate participants perceived themselves as technologically savvy. Therefore, most of the answers were limited regarding technological issues and suggestions. However, while the open-ended answers were certainly related to technology and technological proficiency, there appeared to be an underlying theme that was never

overtly mentioned. Over and over, participants mentioned needing professors to guide or direct them, be available via email or phone, be understanding, be patient, and be supportive. With characteristics such as these, there is no doubt that a strong relationship could be built. Does it take time? Yes, but doesn't everything worth doing take time? If professors took time to build individual relationships with online students, the majority of the deficiencies identified in the survey may possibly be eliminated. Then, professors could truly focus on course content and student mastery of that content.

In order to provide academic integrity and high levels of student learning (Armstrong, 2011), professors should first understand the needs of the students. One way to determine how best to meet the needs of the students, is to ask them. Therefore, this study explored graduate students' perceptions regarding technology in online courses. With the information gleaned from this study, professors and students can be proactive in ensuring technological proficiency when participating in online courses.

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