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Online Learning: Examining the Successful Student Profile

J. Michael Blocher, Laura Sujo de Montes, Elizabeth M. Willis, and Gary Tucker
Northern Arizona University

Abstract

Can anyone learn anywhere at anytime or are there required pre-requisite skills or strategies to achieve such learning? Certainly, it seems logical to assume that access, availability of hardware, and knowledge of software are some of the items required, but are there others? Are there strategies and skills that can be taught to promote greater success? Does the successful online learner need to possess specific skills or strategies to be successful? This paper details Phase I of a longitudinal study investigating distance learning students' technical skills, cognitive/metacognitive learning strategies, motivation, and stages of concern as they enter an online Masters of Education in Educational Technology degree program. Preliminary results indicate that the program seems to attract relatively new, young in-service teachers that are confident in their technology skills that might be seen as leaders in their field. Because the degree program demands a great deal of peer collaboration within the course work, particular attention was paid to data regarding the cognitive learning strategy of peer collaboration and help seeking. Although, these students indicated that they would utilize peer collaboration as a learning strategy, they might be more apt to utilize it from a help seeking aspect. However, they also indicated that if they did seek help it would probably be from the instructor first.

Online courses and degree programs are becoming available through most of our universities. In fact, many institutions fear that they will be extinct if they do not offer Web-based distance education courses (Roblyer, 1999). Although many studies have provided evidence that distance learning is able to offer learning opportunities that are equal to traditional learning environments (Moore & Kearsley, 1996), online courses and online degree programs beg many questions of validity and value of the actual learning opportunities offered. Given that online learning can be of equal quality to those that are face-to-face, the questions become: Can anyone learn anywhere at anytime or are there required prerequisite skills or strategies needed to achieve such learning? Certainly, it seems logical to assume that access, availability of hardware, and knowledge of software are some of the items required, but are there others? Are there strategies and skills that can be taught to promote greater success? Does the successful online learner need to possess specific skills or strategies to be successful?

The purpose of this paper is to provide an overview and some preliminary results of a longitudinal study currently being conducted at a southwestern university that is examining its online Masters of Education in Educational Technology (M.Ed. in Ed.

Tech.). The focus of this research is to investigate the authenticity of the "Learning Anywhere Anytime for Anyone" philosophy that is at the foundation of many online degree programs. Specifically, this paper will provide a detailed look at the various instruments and methods used to collect data that are being used to help identify technical skills, cognitive and metacognitive strategies, motivational factors, and the stages of concern for accepting this new paradigm of learning.

Theoretical Framework

As the Internet becomes commonplace for activities such as relaxation, shopping, or education, the school without walls has emerged and is claiming its niche among the brick and mortar schools in the American educational system. The use of the Internet as a learning space has revolutionized distance education in higher education (Abrahamson, 1998) where resources found at home, museums, libraries, and universities are woven together to transform individual learners, who collaborate in distinctive new ways, into a community of learners (Spindler, 1995) joined not by geographical location but by common interests. Many have cited examples of the advantages of E-Learning (online learning) and the need for adult workforce development programs to provide the flexibility of a 24-hours-a-day, seven-days-a-week that Web-based delivery can offer (Sharp, 2001; Lozada, 2002). However, the term E-Learning suggests that this is not just an electronic correspondence learning experience, but rather a technology-mediated, interactive learning environment. For example, Moore (1989) described three types of interaction that are desirable to have in a distance learning setting to move beyond simple correspondence: (a) learner-learner, (b) learner-instructor, and (c) learner-content. The results of all of these types of interaction in an online learning environment remain the same: They provide for the sharing of ideas and concepts where learners are presented information and receive valuable feedback. The implication for educational practice is that collaboration and group interaction is actively supported to promote learning (Teles, 1993).

However, online learning also includes another type of interaction: interaction with the technology interface for course delivery (Hillman, Willis, & Gunawardena 1994). As Norman (1993) suggested, technologies are never neutral. They impede some actions and aid others. There are course management tools to provide greater technical support, reliability, and consistency for faculty in their endeavors to develop an interactive learning environment. For example WebCT and Blackboard provide many user-friendly components, such as both asynchronous and synchronous electronic messaging systems, collaborative grouping, student grading assessment tools, and file transfer.

Barriers

Interestingly, a report by the American Association of University Women (AAUW) supports the concept that online learners want more than just electronic correspondence. Indeed, the findings of their survey of over 500 men and women suggest that the majority of online learners are women over the age of 25 who are seeking the

same intellectual stimulation and challenge that traditional students seek (Kramarae, 2001).

Students enrolled in an online M.Ed. in Ed. Tech. program are an example of a discrete sub-group of these non-traditional online learners. Most are classroom teachers who are required to continue their professional development and go back to school either to retrain or to keep abreast with changes in education. These online learners require not only the knowledge base to integrate technology in their teaching practices, but also apprenticeship experiences that will build their skills and confidence in technology use.

Even having a faculty who design interactive, engaging online learning environments and utilize user-friendly course management tools, online learners may still face some very real barriers. Although the promise of online learning suggests that the flexibility of a 24-hours-a-day, seven-days-a-week Web-based delivery provides educational access to anyone with a computer and Internet access, not all students have the same abilities to access and engage in online learning.

Technical Skills

Although the above-mentioned Web course management tools provide a very user-friendly interface, online learners still need to feel comfortable using technology and their technical skills must be at a certain level for them to successfully engage in Web-based courses. Accessing online educational opportunities often requires specific, and sometimes, arcane technology skills. This is even more so for students enrolled in an educational technology degree program where technology concepts and skills are part of the content to be learned. Indeed, to provide support for online courses, many institutions have developed instruments that provide learners with feedback on what technical skills they may need to engage in online learning and, also, online tutorials that provide graphic instructions on some of the more difficult tasks (Miltiadou, 1999; NAU Technical Skills Survey, 2002; ASUonline, 2002; NAU EdTech Tutorials, 2002).

Self-Regulation

Although there may be online synchronous chats or online "office hours," most online learners work within an asynchronous educational setting where they must choose the time and location for their study to a much greater extent than traditional learners do. Given this premise, students' ability to self-monitor, self-regulate their learning, and garner resources and peer support to gain an understanding of these somewhat complex skills is vitally important and could be a barrier to their success. They must monitor their involvement with the learning materials and their motivation as well as be self-disciplined to be successful. The necessity for self-monitoring becomes heightened because the instructors' contributions may be far below that of their traditional classroom counterparts with only 10–15% of message volume attributed to instructor messages of online computer conferencing. Indeed, as interaction with the instructor is reduced, peer interaction becomes a greater percentage of the class interaction (Jonassen, Davidson, Collins, Campbell, & Haag, 1995). In light of this increase in peer interaction, Harasim (1996) suggested that learning environments that utilize computer-mediated communication (CMC) encourage collaboration and teamwork and require active rather

than passive participation. In turn, due to the nature of the isolated learning environment, successful self-awareness of motivation, regulation of resources, and cognitive/metacognitive strategies (Pintrich & De Groot, 1990) are vital components for online learners.

Concerns Over Adopting Innovation

Another possible barrier, for the success of the students enrolled in an online M.Ed. in Ed. Tech., is the process that students goes through as they adopt innovation, specifically the use of technology and changing students' concerns during their online degree program. Developed by Hall, George, and Rutherford (1977), the Stages of Concern about the Innovation Questionnaire is used to assess seven hypothesized stages that an individual moves through when adopting a process or product innovation, in this case, technology. The seven stages are (0) Awareness, (1) Informational, (2) Personal, (3) Management, (4) Consequence, (5) Collaboration, and (6) Refocusing. The progression from stage to stage indicates the participants' ideas that go from unrelated concerns about technology usage to a total involvement with technology and its impact on the learning process.

Methods

This ongoing longitudinal study, examines students as they progress through the online M.Ed. in Ed. Tech. over three stages. During the first and current stage, the goal is for faculty researchers to examine various essential online learner traits of students enrolled in the institution's online degree program. Pre and post self-reported instruments gather data on the learners' self-efficacy with Internet applications and computer skills, their motivation, their cognitive and metacognitive learning strategies, and their level of concern regarding the adoption of technology.

The goal for stage two is to construct a profile of those traits that seem beneficial or detrimental to online learners enrolled in the targeted degree program. Student completion and dropout rates, as well as grades, are then correlated against the pre and post data. This data is then used to build a profile of a successful online learner for this degree program, in regard to motivational factors as well as the necessary levels of technology self-efficacy, self-regulation of cognitive and metacognitive learning strategies, and movement through the stages of concern.

The goal for stage three is to provide feedback to students as they enter the degree program. This feedback will be personalized in such a way that students will be informed of their individual profile compared to the model profile. This information could be used for prescriptive advisement. For example, if an entering student reports low values of self-efficacy of specific technology skills, a specific remediation course could be recommended. If a student reports low values in their organizational or resources management strategies, suggestions and recommendations could be added as specific course advisement.

Data Sources

Several data sources are being correlated from numerous perspectives to build a profile for the successful online M.Ed. in Ed. Tech. learner. By default, this will also produce the converse, which may provide a benchmark for prescriptive advice. First, the student completes a general information form that provides demographic and contact information. This is followed by a hardware inventory to determine if access may be a factor in the success or challenges of any particular student. Next, to gauge the level of technical skill self-efficacy at the beginning of the students' admittance to the online program, the Online Technologies Self-Efficacy Survey (OTSES) (Miltiadou, 1999) is administered. The OTSES is a self-report of student beliefs of self-efficacy with specific Internet applications and basic computer skills. Then, students complete the Motivated Strategies Learning Questionnaire (MSLQ) (Pintrich, Smith, Garcia, & McKeachie, 1991). The MSLQ is a self-report of motivational factors, both cognitive and metacognitive strategies that students monitor and regulate when studying or working on course assignments. Finally, the students complete the Stages of Concern About Technology Questionnaire. The entire instrument was modified by replacing the word "technology" with the word "innovation" within the context of the teaching profession. Because it is more desirable to have students in the latest stages of concern, a successful online learner will be one who is concerned with how to modify what s/he learned in the degree program to apply it to his/her own teaching practice.

Data are collected through the administration of instruments that were modified slightly for online data collection. Students enter their data directly into a server database during the application process and at the exit point of the degree program. As mentioned before, the application process (pretest) requires students to complete the following: (a) a general information form, (b) a hardware equipment inventory, (c) the OTSES, (d) the MSLQ, and (e) the Stages of Concern (SOC). Upon completion of the program (posttest), students are required to go through an exit interview process where they complete the OTSES, MSLQ, and SOC again. With the gathering pre and post data, the researchers hope to provide an evaluative measure of the program by documenting any changes in technical self-efficacy, cognitive and metacognitive strategies, and feelings about adoptions of technology that students may report in their passage through the online program. For example, the goal of this program is to graduate students who display the optimal SOC profile (Stage 6, Refocusing) as its highest peak. The post administration of the SOC will provide important information for faculty in their program evaluation as students graduate from the M.Ed. in Ed. Tech.

Initial Findings

Although there are now over 300 students enrolled in the M.Ed. in Ed. Tech. program, only five have graduated to date. Furthermore, the complete set of online surveys to collect data for the evaluation of the M.Ed. in Ed. Tech. was not in place when the program started and has only been available for approximately one year. It is therefore important to remember that these results are preliminary findings. The findings presented in this paper correspond to what should be considered as the pretest. More detailed findings will become available within the next few years as the M.Ed. in Ed. Tech. matures.

General Information Survey

Initial findings from this study are similar to those reported by the AAUW Educational Foundation (Kramarae, 2001) and show that the number of female students (57) enrolled in the program is almost double that of the male students (32). The M.Ed. in Ed. Tech. program seems to attract relatively new, young teachers. Fifty-two students were in the 22-35 age group, and 30 of them were in the 36-50 age group. Thirty-four teachers reported that they have from one to five years of teaching experience while 21 said they have six to ten years of teaching experience. Students who come to this program are not new to technology. The majority of the students (63) have been involved with some form of technology for more than five years, and they consider themselves to be intermediate users of technology (51).

Online Technologies Self-Efficacy Survey

Data collected from the OTSES (Table 1) indicate some interesting findings. Students have reported relatively high average ratings of self-efficacy for technology skills. Indeed, students self-reported an overall average of 3.67 out of a possible 4 suggesting that they feel quite efficient in their technology skills. This confirms the general information report mentioned above, as well as the findings of the SOC, as we'll see later.

Table 1

Mean and Standard Deviation for items of the SES Survey

OTSES Scales	Mean	SD
File Management: Creating folders, organizing files etc.	3.77	.286
Word Processing: Creating, saving, opening etc.	3.62	.453
Internet Skills: Using Web Browsers etc.	3.85	.179
Internet Skills: Sending, Receiving, Managing etc.	3.89	.236
SES Total	3.67	.359
N = 59	1 = Not Confident; 4 = Very Confident	

However, a little over 10% of the students had individual total OTSES ratings that ranged between 2.7 and 3.0 (2 = "Not Very Confident"; 3 = "Somewhat Confident"), indicating they may have difficulty accessing course materials or interacting with their peers in their courses. These students may indeed benefit from advisement on specific technology skills at the beginning of their program, such as using bulletin boards or chat rooms.

Motivated Strategies Learning Questionnaire

The MSLQ has provided some interesting results in regard to the motivational scales. Overall, students averaged 6.57 (7 being highest) on Intrinsic Goal Orientation items while only a 4.14 on Extrinsic Goal Orientation items was reported. Not surprisingly, students averaged 6.84 on Task Value items (which were worded as computer tasks) and 1.98 on Task Anxiety items suggesting that they valued the tasks, but were not necessarily intimidated by them.

The most interesting finding in the MSLQ was the overall students' average of all of the peer collaboration items within the strategies section. Here students reported an average of 4.87, the lowest average of all of the cognitive or metacognitive strategies. To gain a deeper understanding of students' expectations regarding peer collaboration as they entered the program, individual items from two scales of the MSLQ where analyzed, help seeking and peer collaboration, because both could be seen as peer-peer interaction. The results in Table 2 show that students reported below the median of 4 in the 7-point Likert scale on help seeking (that they would try to work on their own, even if having trouble). However, the means for the other help seeking items are substantially higher, asking the instructor the highest at 6.2, identifying helpful students at 5.6, and actually asking for help from peers at 5.5.

When examining student means in regard to the peer collaboration items, the means for all three items where noticeably lower than the help seeking means. This would give some indication that students, even though they might seek help if needed, may be less apt to engage in peer collaboration, at least at this point in their passage through the online degree program. Because many of the courses in the M.Ed. in Ed. Tech. include a substantial amount of collaborative activities designed to enhance peer-peer interaction, it may prove interesting to analyze the results from students who complete the program for changes in the peer collaboration items on the post MSLQ.

Table 2

Mean and Standard Deviation for Specific Items of the MSLQ Survey

Items	Mean	SD
Help Seeking I ask the instructor to clarify concepts I don't understand well.	6.200	1.103
Help Seeking I try to identify students in a class whom I can ask for help if necessary.	5.613	1.610
Help Seeking When I can't understand the material in a course I ask another student in this class for help.	5.507	1.446
Peer Collaboration I try to work with other students from a class to complete the course assignments.	4.811	1.685
Peer Collaboration When studying for a course, I often try to explain the materials to an online classmate or friend.	4.707	1.944
Peer Collaboration When studying for a course, I often try to set aside time to discuss course material with a group of students from the class.	4.547	1.596
Help Seeking Even if I have trouble learning the material in a class, I try to do the work on my own without help from anyone. (*Reversed Item 7 = Not At All True of Me; 1 = Very True of Me)*	3.740	1.633
N=75 1 = Not At All True of Me; 7 = Very True of Me		

Stages of Concern

The most interesting findings came when analyzing the data from the SOC because these students, as a group, are the early adopters of this online M.Ed. in Ed. Tech. program. First, it is important to remember that these students are, for the most part, in-service teachers. This group profile displayed two high peaks: the highest on Stage 5 (Collaboration) and the second highest peak on Stage 4 (Consequence). By definition, the focus of Stage 5, Collaboration, is on coordination and cooperation with others regarding the use of the innovation, in this case technology. On the other hand, concerns on Stage 4, Consequence, focuses on the impact technology may have on their classroom students in such spheres as evaluation of student outcomes, performance and competencies, and changes needed to increase their students' outcomes. The analysis of the group profile by its first and second peaks suggests that students coming to the online program are heavily concerned about working with colleagues or others in coordinating the use of technology, a typical profile of a leader, as defined by the SOC. However, they are also concerned about the consequences of its use for their classroom.

As displayed in Figure 1, Stages 1 (Informational) and 6 (Refocusing) are almost at the same level of concern. This result may be indicative of a group of users who tend to be positive in attitudes toward technology and who have ideas about how to improve existing forms of technology use. Finally, the low Stages 0 (Awareness) and 3 (Management) suggest a profile of users who have intense involvement with technology and who have minimal to no concerns about managing its use.

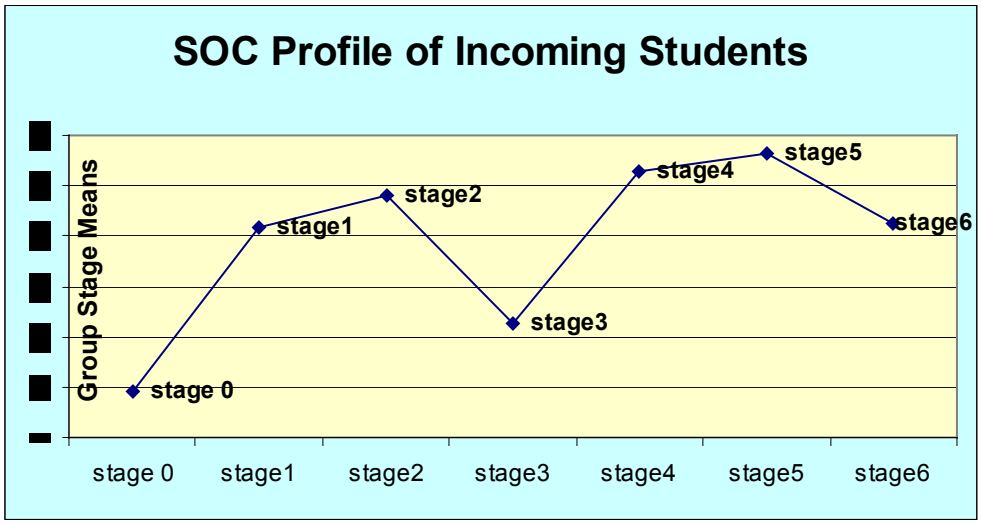

Figure 1. **Stages of Concern group profile**

Discussion

The goal of the first and current stage of this longitudinal study, as mentioned above and which is the focus of this paper, is to examine various essential online learner traits of students enrolled in the M.Ed. in Ed. Tech. Although incomplete data is available at this point, preliminary findings may suggest that the population which this program attracts may explain this profile.

The results on all of the instruments indicated that this program attracts mostly students who are somewhat technology savvy. This program is relatively new, therefore the clientele may be "innovators and early adopters," as defined by Moore (Daniel, 1996). Students who have enrolled in the online program come with honed technology skills and consider themselves intermediate users of technology having been involved with it for quite some time. Only 10% may need some kind of remediation courses. One may speculate that once a person feels comfortable with technology, then s/he can take the risk of enrolling in an online degree, and enroll in a M.Ed. in Ed. Tech. degree. This is suggested by the data from the SOC, which demonstrate a concern for using technology to collaborate with others to increase student learning. As pointed out before, this type of profile is typical of leaders.

In terms of the cognitive strategies of help seeking and peer collaboration that students bring to this program, there are two interesting issues worth discussing. First, the highest mean, of those analyzed, suggested that the students would seek help from the instructor when they needed it, with a lower reported mean for help seeking from peers.

This result may reflect the many years of teacher-centered education that enrollees in this program have experienced both as students and as teachers, where the correct thing to do was to ask the teacher, who was considered the holder of knowledge.

The second issue is the seemingly contrasting results from the SOC and the MSLQ. While Stage 5 (Collaboration) in the SOC was the highest peak in these online learners' profile, they reported lower means for the peer collaboration items in the MSLQ. Several things may account for these results. One initial thought is that there is a difference between the nature of the questions asked in regard to collaboration within the SOC and the MSLQ. Most of the Stage 5 items in the SOC ask for the respondent's views on the use of technology to help other faculty in working relationships. For example, respondent are asked to rate the statement "I would like to develop working relationships with both our teachers and outside teachers using technology." The MSLQ items, on the other hand, ask questions about working with peers in learning environments, for example, "I try to work with other students from a class to complete the course assignments." Perhaps years of teacher-centeredness have marked these learners with the idea of "loneliness is better than being in a group." On the other hand, perhaps these early adopters had expectations of this online program that, because they were working alone at their computers, they would not be working with peers. Regardless, given that the M.Ed. in Ed. Tech. program promotes group work throughout all the courses, it will be interesting to see the posttest results and look for any changes that may happen on the students' perceptions of peer collaboration and help seeking.

The second stage of this longitudinal study is to provide informed advice for students enrolled in the M.Ed. in Ed. Tech. Collecting data and developing a profile for the optimal online learner can provide students with guidelines as to their particular areas of strength and/or weakness. Certainly all learners have unique experiences and occurrences during their engagement of a degree program, but providing them with some prescriptive advice may make their efforts easier and enhance the chances of their success. For example, over time cognitive and metacognitive strategies may emerge when correlated with indicators of success, such as grades, and graduation rates. Students entering the program could be provided tutorials on how to schedule their day, manage their time and location of study, or even help them understand their motivation regarding specific tasks. In addition to providing information that may be helpful to students, these researchers view this study as a way to keep a finger on the pulse of their degree program in regard to current technologies and the online learning interface to help inform program and course decisions.

Finally, the faculty researchers believe it is vital to remember that this is not a static learning environment nor will a perfect profile emerge. Rather, this study will provide a current glimpse of an evolving innovative learning environment. However, developing a profile of online learner success in this particular study may indeed support the students of this online degree program. Furthermore, this study may serve other institutions' online program efforts as a model to begin self-assessment for their online courses and degree programs.

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