Predictors of Persistence and Success in Online Education

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Introduction

The number of students enrolled in online and distance education courses has been increasing since 2000 (Allen & Seaman, 2013). In the fall of 2015, there were 5,954,121 students enrolled in any distance education courses at degree-granting postsecondary institutions (U.S. Department of Education, 2015). This increase in virtual education had brought about pedagogical changes and adaptations that have altered the roles of the educator and learner, and had reshaped the environment in which they interact. According to the 2017 distance enrollment report by the *Digital Learning Compass* , the number of students who have enrolled in online courses had surpassed six million nationally, continuing a growth trend that has been consistent for 13 years (Allen & Seaman, 2017). Additionally, more than a quarter of higher education students (29.7 percent) in the United States have enrolled in at least one online course (Online Learning Consortium, 2017). The purpose of this study was to examine predictors of success for online learners. To this end, the researchers sought to further understand whether familiarity with and access to technology, employment status, academic readiness are predictors of grade point average and satisfactions for students enrolled in online courses.

Literature Review

Growth in online and distance education has not been even across colleges and universities. Almost half of distance education students are concentrated in just 5% of the institutions, while the top 47 institutions (1% of the total) enroll 1,385,407 of all distance learners (Allen & Seaman, 2017, p. 4). Recent reports have also shown that online enrollment has remained geographically close to main campuses: 52% of students who took at least one online course, have also enrolled in at least one course on campus (Seaman, Allen, Seaman, & Babson Survey Research Group, 2018). Furthermore, even though the concept of online and distance education may imply global, 56.1 % of those who enrolled in online courses resided in the same state as the institution of attendance (Seaman et al., 2018, p. 17).

The State of Distance and Online Education

The popularity of online and distance education programs is attributed in part to the rise of the Network Society, which was catalyzed by advancement in information technology and the subsequent increase in the use of the Internet throughout the world. According to a recent report by the World Bank, more than 3.2 billion people around the world are active users of the internet (World Bank, 2017). Online and distance education is also an attractive pathway for working adults over the age of 25, who tend to bring unique strengths and challenges to the online learning ecology (Squires, 2018, p. 127). Another element to the prevalence of online education is that it offers Institutions of higher education an efficient and logistically-reasonable alternative to "traditional" face-to-face program offerings (Allen & Seaman, 2013; Steven & Elaine, 2008).

The emergence of online and distance education has created an andragogic and cultural rift within the ecology of higher education, concerning the quality and appropriateness of online curriculum (Bousbahi &

Alrazgan, 2015). The rejection of online education as a legitimate environment for teaching and learning is due to both generational and philosophical differences (Allen & Seaman, 2013; Bousbahi & Alrazgan, 2015; Steven & Elaine, 2008). Faculty members who are accustomed to teaching in the traditional face-to-face settings are reluctant to engage in the development and implantation of new learning management systems (Bousbahi & Alrazgan, 2015). However, in a recent study, Allen and Seaman (2015) found that while the majority of faculty (78%) question the validity of online education, institutional leaders and cabinet-level members discuss and have plans for including online education in their strategic plans.

The recoiling stigma that is associated with online and distance education may also be attributed to the low course persistence, lack of student reediness for online courses, and high attrition rates as compared to traditional face-to-face modality (Hung, Chou, Chen & Own, 2010). Recent studies have shown that the dropout rates for students enrolled in online courses is 10-20% higher than those of traditional face-to-face programs (Allen & Seaman, 2013; Allen & Seaman, 2017; Hung et al., 2010; Online Learning Consortium, 2018). Another stigma that has been linked to online education is the real and perceived vulnerability of this modality to acts of plagiarism and other forms of violations to academic integrities (MacLennan, 2018; McAllister & Watkins, 2012).

However, recent studies have shown that plagiarism can be minimized by fostering self-regulated learning skills and reimagining the structures of course and program designs (McAllister & Watkins, 2012). Additionally, Tools like Safe Assign and Turnitin have shown to enhance the student's ability to write academically and at the same time honor the institutional codes of ethics. For example, Halgamuge (2017) has found that the use of Turnitin has helped students improve their written communication skills and reduce their similarity indexes between the first and subsequent drafts. In a similar study, Tolman (2017) have examined the link between online courses and academic dishonesty and showed that it is a fallacy. He argued that the nature of online courses is less conducive to academic dishonesty than those in the face-to-face environments (p. 583).

Predictors of Success in Online Education

To address the quality and attrition rates of online and distance education, researchers have examined the predictability of success by measuring factors that are related to both the student and the institution. For example, Dupin-Bryant (2004) have identified six pre-entry variables that were related to student retention in online distance education, including GPA, class rank, number of previous online courses, information literacy, knowledge of learning management systems, and digital communications (p. 202). However, among these six predictors, of course completion and non-completion, information and research literacy, as demonstrated by the student's adequate computer training, constituted the highest predictors of success and completion (p. 204). In a similar study, Horzum, Kaymak and Gungoren (2015) have examined the relationship between online learning readiness, motivation, and students' perceptions about learning. Results from this study showed online learning readiness was a predictor of academic motivation directly and of perceived learning indirectly (p. 764).

Self-efficacy, which is shaped in part by the student's level of satisfaction and readiness for online learning, has also been found to be a significant predictor of program completion (Allen & Seaman, 2013; Evan & Beverly, 2011; Farid, 2014; Steven and Elaine, 2008; Hung et al., 2010; Squires, 2018). For example, Farid (2014) found that 28% of students who dropped out of online courses at a community college have cited personal reasons as the primary cause (p. 153). However, 18% of students who participated in the same study have indicated that technology and lack of institutional support services were the reasons for not completing the online courses.

When it comes to self-efficacy, motivation for learning, and self-directed learning online education is more suited for upper levels and graduate education. For example, hung et al (2010) found that junior and senior students exhibited significantly greater readiness on self-directed learning and efficacy than did freshman and sophomore students at a Taiwanese university (p. 1087). These findings are in agreement with those of Dupin-Bryant (2004) who found that prior learning experience and computer training to be significant

predictors of online completion. However, missing from the studies of Hung et al (2010) and Dupin-Bryant (2004) were the potential impacts of institutional retention strategies on student satisfaction and motivation in online courses. In a more recent study, Cochran, Campbell, Baker and Leeds, (2014) have examined the impacts of retention strategies and found that cumulative GPA and class standing were significant student characteristics related to student retention. Furthermore, there was no empirical support for student engagement as a strategy for retention in online courses (Cochran et al., 2014).

There is no doubt that online education has changed the landscape of higher education institutions in the United States and around the world (Allen & Seaman, 2017; Cochran et al., 2014; Horzum et al., 2015; Hung et al., 2010). It is also evident that growth in online enrollment is associated with high attrition rates as compared to face-to-face learning environments (Allen & Seaman, 2013; Farid, 2014). In recent studies, researchers have examined predictors of success in online courses including, self-efficacy, prior learning experience (i.e., GPA), and student familiarity with technology and research methods (Allen & Seaman, 2017; Dupin-Bryant, 2004; Horzum et al., 2015). While factors such as previous learning experience, academic rank, and self-efficacy were consistent predictors of success across several studies, other factors such as family, employment status, and academic support are equally important (Bousbahi & Alrazgan, 2015; Squires, 2018).

Methods

To answer the research question, the authors have distributed an online survey to all students enrolled in the online programs at a Midwestern university during the fall semester of 2018. The survey instrument was based on an updated version of TOOLS, which is Test of Online Learning Success (Kerr, Rynearson, & Kerr, 2006). Participants in this survey included both current and former students at the graduate and undergraduate levels who have enrolled in at least one online course between 2015 and 2018. The survey was distributed by email on via Qualtrics once approval from the office of institutional review board was granted. Of the total 4,015 possible participants who were contacted to complete the survey, 250 responses were recorded, thus providing a response rate of 6.23 %. Response data was initially analyzed using Qualtrics and SPSS to produce the findings discussed in this study.

Participants

Of the 250 responses, 73% of respondents have identified as Caucasian, 63% were female, 37% resided outside of the Midwest, and 54% were graduate students, and no freshmen or sophomore have complete the survey. The average age of respondents was between 26 and 35 years old. The average household size of the respondents was two and the largest was six. The average household income for the respondents was between $50,000 and $74,999. Finally, 40% of respondents have indicated that some of their education was paid for by their employers.

Data Sources

The researchers have gathered data using a survey questionnaire which was created and tested by the researchers in this study. This questionnaire included 88 questions concerning demographic data, study habits, and predictors of success for students enrolled in online courses. This questionnaire consists of four tiers, which included familiarity with the use of technology, school-life balance, academic readiness, and learning orientation (Kerr et al., 2006).

Data Analysis

The results of the first Model, as presented in table 1, Show that only 11 out of the 88 questions of the survey questionnaire were significant predictors of success for online students. This first model sought to identify predictors of student success based on their self-reported views on whether they felt successful in their online courses. These 11 survey questions were significant predictors of students self-reported success, $b = .382$, $t (17.737) = 5.399$, $p < .001$. These questions also explained a significant proportion of variance in the self-reported success scores, $R^2 = .472$, $F (1, 171) = 29.15$, $p < .001$. The questions cover a variety of themes, including time management (e.g., questions 5 & 10), self-efficacy (e.g., questions 1 & 11), and self-motivation (e.g., questions 2, 5, & 7).

Table 1. Variables Entered/Removed

Model

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a. Dependent Variable: The following question uses a 10-Point scale, with 1 being extremely unsuccessful, and 10 being ext

To further test the significance of these 11 questions, analysis of variance as shown in table 2 was performed. Additionally, the Model Summary represented in table 3 shows that the 11 questions accounted for 68% of predictors of success in an online learning environment. It may also indicate that when it comes to lectures and new content, they prefer the face-to-face approach to learning.

Table 2. ANOVA

Model

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a. Dependent Variable: The following question uses a 10-Point scale, with 1 being extremely unsuccessful, and 10 being ext
b. Predictors: (Constant), I am comfortable with posting in discussion boards.
c. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me.
d. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need
e. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need f
f. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need f
g. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need
h. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need
i. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need f
j. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need f
k. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need
l. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need f

Table 3. Model Summary

Model
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a. Predictors: (Constant), I am comfortable with posting in discussion boards.
b. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me.
c. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need f
d. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need
e. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need f
f. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need f
g. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need
h. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need
i. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need f
j. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need f
k. Predictors: (Constant), I am comfortable with posting in discussion boards., Self-motivation comes easily to me., I need
l. Dependent Variable: The following question uses a 10-Point scale, with 1 being extremely unsuccessful, and 10 being extr

The second model focused on the dependent variable of self-reported grade point average (GPA) of students. Of the questions asked in the survey the second model showed eight variables that were statistically significant predictors of student GPA, $b = -.397$, $t(110.066) = -5.767$, $p < .001$. These eight survey questions explain a significant portion of the variance for students' self-reported grade point averages, $R^2 = .359$, $F(1, 178) = 33.261$, $p < .001$. As shown in table 4, some of the questions that were identified as self-predictors of GPA

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scores were tied to prior learning experiences (e.g., questions 1, 2, & 8). Other questions were related to the students' personal circumstances such as family and time managements (e.g., questions 4, 5, 6, & 8).

Question three, which is about the need for face-to-face interaction when new material is being taught appeared as a significant predictor of both self-reported GPA and success in online courses. The presence of question 3 as a self-reported predictor of success in online courses and also as a predictor of GPA may indicate the importance of interactive structures within the online learning management system. These findings echo those of recent studies on predictors of student success in online education and the how the absence of coaching and support lead to high dropout rates (Allen & Seaman, 2013; Allen & Seaman, 2017; Hung et al., 2010; Online Learning Consortium, 2018). One notable difference between the two models is that in the first model, the 11 question accounted for 68% of the predictability of self-reported success in online courses. For the second the eight questions accounted for 59.9% of the predictability of self-reported GPA scores.

Table 4. Variables Entered/Removed

Model	Variables Entered
1	In the past, I have struggled t
2	In the past, I have not turned
3	I need face-to-face interaction
4	I have to ask for extensions or
5	I work at least 40 hours per w
6	My family supports my acade:
7	It is likely I will get good grad
8	At times, reading can be diffic
a. Dependent Variable: Approximately, what was your GPA (grade point average)? - GPA	a. Dependent Variable: Appro

Table 5. ANOVA

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a. Dependent Variable: Approximately, what was your GPA (grade point average)? - GPA
b. Predictors: (Constant), In the past, I have struggled to complete my coursework.
c. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign
d. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign
e. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign
f. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign
g. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign
h. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign
i. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign

Table 6. Model Summary
Model
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a. Predictors: (Constant), In the past, I have struggled to complete my coursework.
b. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign
c. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign
d. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign
e. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign
f. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign
g. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign
h. Predictors: (Constant), In the past, I have struggled to complete my coursework., In the past, I have not turned in assign
i. Dependent Variable: Approximately, what was your GPA (grade point average)? - GPA

Limitations

There were a few limitations in this study. The survey was distributed to current and former online students from the past three years. During this timeframe, there could have been improvements to the learning management system, which may have impacted the learning experiences of current students as compared to those who enrolled in prior years. Additionally, training and coaching provided for faculty who teach online courses may have been different from one discipline to another, which in turn may have influenced the nature of the experiences and responses given by participants. Furthermore, those who took online courses two or three years ago may not have an accurate recollection of the challenges and learning experiences that they have had in online classrooms. Another limitation in this study was the length of the survey instrument. As the intention was to gather as much information as feasible about the learning experiences of online students, the response rates went down as questions progressed. The survey may have also been distributed to students who were on-campus students, but have occasionally enrolled in online courses, so their experiences may not be reflective of those who enroll primarily in online courses. Finally, the survey was administrated at a private non-profit university, so results may be different at a public or for-profit institution.

Future Recommendations

If further research is conducted, it is recommended that the total number of online classes taken by the student is recorded, as well as the terms when these classes were taken. This information can provide

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further insight into responses, as an individual who has taken multiple online courses compared to one may answer the questions differently. Additionally, identifying the term during which the class was taken would also provide further insight to the responses, as individuals taking online summer courses may respond differently than those taking online courses during the fall or spring semesters, as the terms are shorter in the summer.

Future studies may be conducted using the questions revealed in the two models of this study, which would reduce the number of questions from 88 to 19. Doing so, may eliminate some of the survey fatigue that was noted in this study. From a methodological approach, it is recommended that future studies separate undergraduate from graduate participants. Doing so, may reveal useful information about online learning experience based on this academic status. Finally, given that question three was a significant predictor of self-reported success and GPA, it is recommended that future studies focus on further investigating the presence of live interactions in online courses.

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