
Comprehensive Assessment of Student Retention in Online Learning Environments

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Abstract

As the growth of online programs continues to rapidly accelerate, concern over the retention of the online learner is increasing. Educational administrators at institutions offering online courses, those fully online or brick and mortars, are eager to promote student achievement. Retention is critically important, not just for student success, but also for the success of these institutions of higher education. Models for understanding student persistence in the face-to-face environment are well established; however, many of the variables in these constructs are not present in the online environment or they manifest in significantly different ways. With attrition rates higher than in face-to-face programs, the development of models to explain online retention is considered imperative. This study moves in that direction by exploring the relationship between student demographics and interactions, and retention at a large online university. Analysis of data, which included an n of 20,569, provides an illustration of the importance of transfer credit and the consistency of activity in predicting continued enrollment.

Introduction

Student persistence or retention has been a documented issue in higher education in the United States since the late 1800s (Thelin, 2004). Formal research studies on the topic of retention began as early as 1926 (Braxton, 2000). Escalating in the 1970s, and persisting through the last few decades, academics such as Spady (1970), Astin (1993), Tinto (1975, 1993), Pascarella (1985), and Braxton, Hirschy, & McClendon (2004) published influential research on the topic of student retention.

It has been difficult to obtain accurate data on why students leave an institution (Barefoot, 2000). Serious issues and challenges to student success in higher education were reported in the 1980s (Chickering & Gamson, 1987). During the 1980s and 1990s over 20 national study groups determined from research the need to put students first (Schroeder, 2003). In the 1990s questions were raised about national ranking of colleges and universities and what is considered important in looking at the quality of an institution of higher education (Marklein, 2005).

A number of researchers have identified that the higher the high school grade point average (GPA) and the higher the Scholastic Aptitude Test (SAT) or American College Testing (ACT) exam scores of a college student, the stronger the chance that the student will persist in college and graduate (Astin, 1993). In fact, institutions with the most rigorous admissions selectivity have exhibited the highest persistence or retention rates (Tinto, 1993). Conversely, institutions with the lowest selectivity criteria (open enrollment) generally have the lowest retention rates, and institutions with open enrollment admissions policies are considered the least selective. In these cases, students are required to submit

proof of graduation from high school and are admitted with minimal GPA requirements and few, if any, SAT or ACT requirements.

Researchers have also identified the importance of social integration in the student retention rates of colleges (Astin, 1993; Spady, 1970; Tinto, 1975). Tinto's model of student persistence theorized that the greater the level of academic and social integration, the greater the student's chances of persisting until graduation (Tinto, 1975). Research has been published about retention rates at many types of institutions including four-year and two-year colleges, commuter colleges and universities, public universities and private universities, research universities, historically Black colleges, and tribal colleges (Tinto, 1993).

While much has been written about the retention at these common types of institutions, relatively little has been written about retention at the online institutions of higher learning that have developed since the early 1990s. For purposes of this study, the term "online" refers to accredited institutions of higher learning that utilize the Internet as the sole medium of instructional communication between professor and student with no presence of professor or student in a physical classroom at the same time. In 2008, online institutions primarily served adult learners (defined as students older than 24) with a market share approaching 40% of all adult learners in higher education and an estimated market share of traditional learners (age 18-24) of approximately 1.5% (Eduventures, 2008).

Online institutions offer access to academic programs to any student who has access to the Internet and a computer. Online institutions are also convenient in that 1) a student is not required to attend a class held at a physical location that may or may not be close by to his place of work or his home; and 2) student participation is not restricted or confined by traditional class times and days. In most cases, online institutions offer their classes asynchronously meaning that the student and the instructor are not required to be present in the classroom at the same time (Sloan Consortium, 2009). For adult students who are mobile, who are not located near a traditional college campus, or whose work and family obligations restrict the discretionary time they can devote to educational pursuits, online programs are a very attractive option.

With 4.6 million students enrolled in online courses in the United States alone, and a 17% growth rate in online enrollments, program growth is considered a priority at over 80% of major US institutions of higher education (Allen & Seaman, 2010). While compelling, this accelerated growth has raised significant questions concerning the quality of online instruction in terms of outcomes. One measure of outcomes is student learning and perceived efficacy. In their 2009 study, the U.S. Department of Education isolated 51 common factors across thousands of studies and concluded that, in general, online learning is more effective than face-to-face learning (U.S. Department of Education, 2009). However, despite this highly positive finding, the question of retention remains problematic for online programs, with several studies and anecdotal evidence indicating attrition rates for online courses frequently being much higher than for their campus-based counterpart (Bos & Shami, 2006; Diaz & Carnal, 2006; Rovai, 2003; Willging & Johnson, 2004). In more recent work, Patterson and McFadden (2009) found dropout rates to be six to seven times higher in online programs.

This study examined variables concerning the retention of students in a fully online undergraduate program at American Public University System. The purpose of the study was to determine which factors were most relevant in determining retention, with the intent of creating actionable policy measures.

The Study and Its Context

Setting

American Military University (AMU), the predecessor of the American Public University System (APUS), accepted its first students in 1993. Originally, the institution offered a single Masters program in Military Studies via a modified correspondence format. In January 1996, the institution offered its first bachelor's degree programs and in January 2000, offered its first associates' degree. AMU began converting its curriculum from the correspondence format to online instruction in 1998. By the end of 2000, all of the courses in all degree programs at AMU were online.

In 2002, American Military University changed its accreditation and corporate status to the American Public University System (APUS), encompassing two universities: American Military University and American Public University (APU). In late 2002, APUS applied for accreditation with the Higher Learning Commission of the North Central Association (NCA). Accreditation was granted in May 2006.

Following NCA accreditation APUS grew rapidly with a 72.1% increase in new students between 2006 and 2007. However, within this exceptional growth rate student retention was problematic. In 2007, new students dropped out at a rate of 23.8% after taking their second course at APUS. Because of the open enrollment policy, the lack of physical restrictions limiting enrollment, and an adequate supply of qualified instructors, the number of returning undergraduate students has never exceeded the number of new students in any year in contrast to the ratio of new students to returning students at a traditional institution. With total students enrolled approaching 65,000 in late 2009, the need for developing an understanding of those factors influencing retention patterns was considered imperative.

Academic Preparedness

Tinto (1993) indicates the problems of attrition in higher education are not just about the numbers of attrition suggesting that these qualitative problems are connected to learning and development. The issue of academic preparedness, or lack thereof, for students is of great interest to researchers, policy makers, and higher education administrators alike. Researchers have documented that factors affecting college readiness are found in high concentration in middle school. Math and reading proficiency at grade level are predictors in academic preparedness for college. Lack of proficiency can indicate placement into developmental courses and being categorized by the institution as high risk for attrition during the first year of college (Cabrera, Nora, Terenzini, Pascarella, & Hagedorn, 2006; Kuh, 2007).

Non-traditional Age Students

Traditional age students, 18 to 24 years of age, have historically made up a large majority of the college student population. This trend has been changing over the past two decades (Participation in Education, n.d.). The adult student is now the dominant learner in the 21st century (Williamson, 2009).

Institutions can create policies and make decisions that marginalize students or can develop practices and engage students at a level that the individual feels and believes that they matter. Part-time and adult learners may have different factors than full-time traditional age students that affect engagement and persistence in higher education. The line between the two theories of teaching, andragogy and pedagogy (Knowles, 1970), is often blurred in post-secondary institutions. Even educators with adult education backgrounds may not be fully cognizant of how best to teach and engage this student population (Galbraith, 2004; Long, 1994).

Application of pedagogical learning practices in and outside the classroom as an attempt to ensure a catch-all will not work. The adult learner has experiences and prior learning which, for them to be engaged in learning, must be brought to the instructional table. Schools must take notice and vary methods to successfully engage and educate all learners. Institutions that desire to maintain or improve their student enrollments must take notice of the patterns of non-traditional learners attending both traditional brick and mortar and online schools.

Military Students

Online education is sought after by those soldiers, sailors, and airmen employed in active military duty. Student are attracted to such institutions and programs as they may continue their studies toward a degree of their choice while based or deployed in any time zone around the globe. Additionally appealing is that two programs sponsored by the US Government allow for military members to help with tuition and expenses (United States Department of Veteran Affairs, 2009). Literature on retention efforts for military students, let along research on any aspect of student soldiers in higher education, is essentially nonexistent. This study hopes to help fill the vast chasm in the body of literature on this student population particularly as connected to online learning.

Minority Students and Students of Gender

Minority students still lag in academic achievement behind White students in the United States. The sluggish rate of increase for minority male students attending college has dramatically changed the makeup of the traditional college classroom. Thirty-seven percent of Hispanic women ages 18 to 24 years old attend college compared to their male counterparts at 31%. African American women of the same age group participate at a rate of 42% contrasted with 37% of African American males (“Minority College Enrollment”, 2003). Additionally, in each ethnic group attending higher education, apart from Asian Americans, the gender of the majority are female students (“American Council on Education”, 2004). Over one-fourth of all African-American students accounted for “the largest percentage of students with no degree but who were still enrolled after five years...as well as those without a degree and no longer enrolled (30 percent)” (ACE Releases”, 2005, para. 18).

Engagement, a factor in retention, and persistence are cited in the literature as two key factors linked to the academic success of all ethnic groups (Kuh, 1995; Tinto, 1993). Both African American and Hispanic students have lower levels of participation rates in higher education than White students. The potential for attrition increases in Hispanic and African American minority groups at Predominately White Institutions. Less attrition at Historically Black Colleges and Universities is attributed to efforts designed to engage students early and often (Nelson Laird, Bridges, Holmes, Morelon, & Williams, 2004). Disappointingly, literature on Hispanic student success at predominantly Hispanic serving institutions is incomplete.

Purpose of the Study

Attrition of students, especially in the first year of college, continues to rise. Institutional matriculation numbers at face-to-face institutions provide evidence that students are no longer graduating in the traditional four-year period but are on a much longer path to obtaining a degree. Educational leaders and policy makers alike fear higher rates of attrition and challenges due to the current deep economic recession may negatively determine the fate for many students in higher education (Jaschik, 2010).

Currently, public institutions educate approximately 80% of all students enrolled in higher education (National Center for Education Statistics, 2008). However, the current economic crisis has had a severe impact on state budgets, and many states have found it necessary to make significant reductions in public funding of higher education. The net effects do not bode well for the ability of these traditional institutions of higher education to effectively deal with the challenges associated with educating additional students through traditional means.

Against this rather grim backdrop is the rising tide of online educational institutions that conduct their instruction through classroom interaction enabled by the Internet. The costs associated with the technological backbone needed to support electronic classroom capability continue to decline annually. Physically, the instructors and the students are not required to be in the same city, state, or country, thus minimizing costs related to construction and maintenance of physical facilities that normally would be required in order to provide programs, classes, and services for additional students.

It is imperative that a model of prediction concerning student retention in online learning is found to assist institutions across the higher education community in preventing attrition and advancing student persistence, therefore setting the path for matriculation. For the purposes of this study the researchers examine the demographic characteristics of students to discern what type of student enrolls at an online institution. Additionally, and of great magnitude, the researchers investigate the factors that influence student retention in online courses.

Research Questions

This study used descriptive statistics and multiple regressions to analyze the relationship between demographic and academic performance data and student retention at APUS, to answer the following research questions:

RQ1: What type of student enrolls at an online institution?

RQ2: What factors influence online student retention?

Method

Participants

The data for the study consisted of all students' demographic data collected through the students' applications, enrollment data (courses, degree programs), and academic achievement data (grades). The data were extracted from the institution's data warehouse and aggregated in an Excel spreadsheet where the data in individual fields such as age, military rank, military branch of service, academic credits transferred, GPA, degree program, etc., were evaluated as predictor variables in a regression analysis. Given the large number of degree programs offered at APUS (76) and the number of students enrolled as of December 31, 2009 (63,800), the retention of undergraduate students was analyzed in order to minimize the differences in background characteristics between undergraduate and graduate students. Given that the progression toward graduation takes years and not months, data was extracted for all degree-seeking (control variable) undergraduate students who completed at least one course (control variable) at the American Public University System in 2007. Data included enrollment and academic achievement data through December 31, 2009 with a total *n* of 20,569.

Procedure

The predictor variables were all of the various student background data downloaded from the APUS data warehouse. Specifically, the data were evaluated to determine if variables would be entered into the regression equation as either interval data or dummy categorical variables. The predictor variables included: Degree Program, Program Level (Associates' or Bachelor's degree), Cumulative GPA, Number of Registrations Taken in 2007, Gender, Race/Ethnicity, Cohort Age (age upon program entry), Military / Civilian Classification, Grade Received in Last Course, New Student/ Returning Student Status, and Number of Transfer Credits Received.

Degree Program, Program Level, Gender, Ethnicity, Military / Civilian Classification, and New / Returning Status were readily identified as categorical variables and entered into an Excel spreadsheet as such. The possible values for these variables did not imply a given order, but rather indicated nominal (categorical) values. To utilize these categorical variables as predictors in the regression model, "dummy variables" were created with a new variable for each possible level of the categorical variable. As an example, for predictor variable Race/Ethnicity an individual dummy variable was created for each ethnic classification (e.g. White, Black-non Hispanic, Hispanic, etc.) representing a students' classification recorded in a binary manner.

Grade in Last Course was recorded as a letter value with either a plus or minus modifier. Though the classification followed a clear, linear pattern, a precise numerical value was not present. As such, the variable was considered categorical in nature and entered as a dummy variable.

Number of Registrations for the Year 2007 clearly met the criteria for interval data. In addition, the range was small for this variable, lending statistical adequacy to all values. Based on these factors, Number of Registrations for the Year 2007 was entered as interval data.

Though extracted as interval data from the data warehouse, determining the best method for entering Cohort Age, GPA, and Number of Transfer Credits was problematic. With respect to Cohort Age, it was decided to group the data in age bands that matched the age bands organized by Department of Education statisticians in the IPEDS surveys after visual inspection of a histogram of the data.

GPA also was considered problematic since the number of possible classifications was extensive creating a situation in which any GPA that was underrepresented would lack statistical power. In addition, descriptive statistics revealed that a clustering effect was taking place at certain levels, specifically, 0.00, 3.0 and 4.0. Visual inspection of a histogram confirmed the clustering effect as well. Based on these factors and consultation with statisticians who work in the social sciences, it was determined that the best strategy would be to use quarter point interval dummy variable classifications for GPA.

Finally, a review of descriptive statistics and the histogram for Number of Transfer Credits revealed a clustering effect around certain thresholds (specifically multiples of 3 credit hours). One threshold, no transfer credit hours received, was the largest single value in the data set. Based on this evidence, it was determined that the best strategy would be to establish 15 credit hour interval dummy variable classifications for Number of Transfer Credits received with 0 Transfer Credit Hours received as a separate band. The 15 credit hour bands were selected as 15 credit hours represent the completion of the equivalent of a full-time semester.

The total number of predictor variables, including continuous variables and dummy variable categories was 116. The n for the study was 20,569. These data sets were regressed on the criterion variable, using suggestions from Cohen, Cohen, West, and Aiken (2002).

The criterion variable was Enrollment Status, which was treated as a dichotomous variable. If a student was enrolled or had graduated at the end of 2009, a “0” was entered for Enrollment Status and a “1” was entered if the student was disenrolled.

Data from the Excel spreadsheet were entered using the Statistical Package for the Social Sciences (SPSS) software, Version 17, and the predictor variables were regressed on the criterion variable. The Forward Entry method was used to provide a more accurate picture of the overall variance accounted for by significant predictor variables through breaking out cumulative variance as each is added in terms of importance.

Defining student retention in online programs is a complicated and difficult task. The U.S. Department of Education (DOE) defines student success as the students who graduate from a four-year program in six years (“Center for the Study”, 2009). The assumption for that definition is based upon fulltime student enrollment at primarily residential colleges. Many students enrolled in fully online degree programs are working adults (Eduventures, 2008). At APUS, the percentage of students who are enrolled part-time based on the Department of Education definition is 98 percent. Adult students seek online programs because their full-time employment makes it difficult to enroll in a residential or commuter program at an institution that requires attendance in a physical classroom at a particular time during specific days of the week. While some online learners are first time students at the American Public University System (26 out of 45,000 as filed with IPEDS in Fall, 2008), the majority have earned academic credits at other institutions or have received American Council on Education (ACE) recommended credits for employer training (primarily military training that has been evaluated by ACE). Given the part-time nature of its students, APUS allows students to take up to 10 years to earn their baccalaureate degrees. Sometimes students will request a leave of absence from their degree program due to difficulties at work (e.g., military deployments). Given that information, the following definition of student retention as proposed by Pascarella and Terenzini (2005, p. 374) was used for this study:

Retention is “the progressive reenrollment in college, whether continuous from one term to the next or temporarily interrupted and then resumed.”

This definition fits an online university that accepts adult students who are predominantly part-time learners and who, from time-to-time, may need to postpone or interrupt their studies. As long as a given individual is continuously enrolled or returns to his/her studies within a reasonable period of time, that individual should be considered a returning student.

Results and Discussion

Forward method linear regression resulted in 45 of the predictor variables being significant and accounting for a combined 32.8% of variance. However, five of the predictors accounted for a combined 28.2% of variance, with none of the remaining predictors accounting for more than .06% of variance. Thus, even though the remaining predictors were significant, the extremely low amount of variance accounted for should not be considered relevant in terms of predictive modeling. The following table illustrates the contribution of the first five predictors.

Table 1

Forward Regression Model for 2007 Data Set

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.398a	0.158	0.158	0.433	0.158	3867.774	1	20567	0
2	.451b	0.203	0.203	0.421	0.045	1155.298	1	20566	0
3	.491c	0.241	0.241	0.411	0.038	1019.476	1	20565	0
4	.518d	0.268	0.268	0.403	0.027	769.582	1	20564	0
5	.531e	0.282	0.282	0.399	0.014	406.948	1	20563	0
a. Predictors: (Constant), No Transfer Credits b. Predictors: (Constant), No Transfer Credits, YearProgramRegs c. Predictors: (Constant), No Transfer Credits, YearProgramRegs, F d. Predictors: (Constant), No Transfer Credits, YearProgramRegs, F, W e. Predictors: (Constant), No Transfer Credits, YearProgramRegs, F, W, 4									

No Transfer Credit received by the student was the predictor variable with the most predictive significance. The adjusted r-square value for this variable was .158 meaning that this variable accounts for 15.8% of the variance that a student will disenroll. On a standalone basis, this variable accounts for 48% of the aggregate variance explanation of all 45 predictor variables and for 56% of the aggregate variance explanation of the five most significant variables.

Historically, 87% of APUS undergraduates applied to transfer credit from either another college or university, American Council on Education (ACE) evaluated workforce training classes, or some other form of prior learning. More than 82% of the 2007 undergraduate student body received transferred academic credit hours. Of the 3,555 students from the data set who received 0 transfer credit hours, 35 (1%) graduated, 876 (25%) remain active and 2,644 (74%) were disenrolled. The 2,644 disenrolled students represent almost 40% of the total disenrolled students from the 2007 dataset. With the APUS population of part-time students, finding a strong correlation of disenrollment to “no transfer credit awarded” should not be unexpected.

Another explanation for the significance of no transfer credits leading to student disenrollment is the part-time status of the majority of APUS students. With students averaging 3.58 courses completed per year in 2007, a bachelor’s degree-seeking student taking the average number of courses would not complete a degree within the 10 year period allowed. Increasing the number of courses taken per year would be a logical solution but may not be a practical solution given the demands placed on working adults, particularly those with families.

Total Number of Registrations/courses taken in 2007 ranked second in terms of its significance in explaining the variance of disenrollment with an adjusted r-square value of .045. The standardized coefficient beta was -.179. The negative coefficient means that the more courses taken in 2007, the less likely the student would be to disenroll. In reviewing the Total Number of Registrations taken in 2007 data, it can be noted that total courses taken was significantly different for the disenrolled students than for the rest of the population. Overall, students took an average of 3.6 classes in 2007 with a median of 3. The subset of currently active students has a similar profile to the overall numbers with a mean of 3.4 and a median of 3. Many of these active students were new students in 2007 and may not have enrolled until the second half of the year, thereby lowering their potential courses taken in that year. The subset of graduated students has a higher average of 6.1 and a median of 6, which is logical given the part time enrollment status of the majority of APUS students and the negative correlation coefficient. However, disenrolled students have a mean of 2.5 and a median of 2 for classes taken in 2007. An analysis of the total lifetime courses taken shows a mean of 4.4 for disenrolled students with a median of 3. That implies that the majority of the students who disenrolled, did so shortly after 2007 since APUS automatically disenrolls students who have been inactive for 12 successive months.

More evidence indicating the importance of this variable lies with the mean of 12.5 total course

registrations taken by the students who are active as of December 31, 2009. With 12.5 courses completed through December 31, 2009 and an average of 41 transfer credit hours received, the enrollment pace of these students exceeds the average of four courses per year needed to earn a bachelor's degree in seven years (allowing for the 41 credit hours transferred). Regardless of how the average transfer credits were earned (previous college courses, prior learning experience, or ACE-evaluated training), the evidence indicates that the journey toward a bachelor's degree is much longer for these students than for traditional students. A sustained increase in the total number of courses taken in a year shortens the time to degree completion. For example, if the pool of active students averaged six courses per year, the time to completion for a student with a mean of 41 transfer credit hours would be four and a half years versus seven years when the student takes an average of four courses per year.

The source of payment for students may also limit how many courses per year that they take. The Department of Defense Tuition Assistance Program provides reimbursement for up to six courses per year not to exceed \$250 per credit hour and \$4,500 in the aggregate. Many civilian employers have policies that cap the amount of the tuition reimbursed as well. Part-time students with limited disposable income to pay tuition and other college expenses may match the number of courses that they take per year with their company's tuition reimbursement limits.

The predictor variable with the third largest adjusted r-square value represented students whose last grade received was an F. The adjusted r-square value was .038. The standardized coefficient beta was .239. Of the 3,400 undergraduate students with a last grade of F (as of December 31, 2009), approximately 63% were disenrolled and the remainder were active. While APUS has an academic policy allowing students to retake any course in which an F is earned, the military's tuition assistance plan requires the student to reimburse the military for the course in which the F is earned. The military's tuition assistance program also will not allow an active duty service member to receive tuition assistance payments for additional college courses until the "F" grade is resolved, meaning that the Department of Defense must be repaid for the tuition that they paid to the institution before they will approve additional college courses. The military's tuition assistance plan also requires that the student have a minimum of a 2.0 grade point average after the completion of 15 semester hours reimbursed by the plan. If a student receives an "F", then the other four courses must average a 2.5 GPA in order for the 2.0 GPA requirement to be met. It is fairly common for civilian corporate tuition reimbursement programs to have minimum GPA requirements as well as minimum grade requirements for reimbursement for individual courses. In the 2007 student data set, 17.7% of all civilians received an F as a last course grade versus 16.3% of all military students.

Given the smaller number of courses taken in 2007 and the limited number of lifetime courses taken by the disenrolled group of students, it is clear that many of these students did not enroll for another course after receiving a grade of F. Last Grade of F is the largest count of a single grade for Disenrolled Students with 31.4% of the subset receiving that grade versus 12.3% of the active students who have received an F as their last. When the disenrolled population was segregated between military and civilian students, the civilian students had a slightly higher percentage of F's as a last grade (36.5%) versus the military students (30.6%). A possible explanation for this variance is the pre-enrollment counseling availability to the service member through the Educational Service Officer (ESO) assigned to the military base. ESO's approve all tuition assistance payments and may be able to advise students of the rigor required at the colleges that they are planning to attend.

Last Grade Received of W is the fourth predictor variable in terms of the adjusted r-square ranking with a value of .027. The standardized coefficient beta is .167. A grade of W is similar to an F in terms of a student's GPA as no academic credit is awarded for a W. Similar to a grade of F, the military tuition assistance plan will not reimburse a student for additional classes taken until the W grade is resolved. A W grade does not carry a grade point value and thus does not affect a student's overall GPA.

A grade of W has a different financial impact on the student, regardless of the student's tuition payment source. Generally, regulators and accrediting bodies require that colleges and universities publish a refund schedule for students who withdraw from class(es). At APUS, the first week of every semester is a "free" drop/add week, similar to many other universities. After that first week has been completed, students who choose to withdraw from a class are charged a prorated portion of tuition up until the mid-

point of the semester after which no tuition refund is provided.

More than half (56.6%) of the W's awarded to the 2007 student data set were awarded to students whose current academic status is disenrolled. Last grade of W represents 14.7% of the disenrolled population. As previously noted with the Last Grade of F, the disenrolled civilian student population has a higher percentage of W's (20.8%) versus the military student population (13.8%). When combined with Last Grade of F, the two grades account for 46.1% of all disenrolled students and 57.3% of civilian disenrolled students versus 44.4% of military disenrolled students.

The fifth predictor variable in terms of ranking is GPA 4.0. The adjusted r-square value is .014. The standardized coefficient beta is .121. The mean GPA for all 2007 students was 3.00 with a median GPA of 3.34. The mean GPA for active students was 3.17 and for graduates, the mean was 3.54. For disenrolled students, the mean GPA was 2.47, with a median GPA of 2.85. In this instance, 13.2% of disenrolled students had a GPA of 0.00 and 9.8% of disenrolled students had a GPA of 4.00.

A review of exit interview summaries of students who disenrolled from 2007 provides a reason why GPA of 4.0 would provide a positive correlation coefficient and an adjusted r-square value of .014. The top two explanations given by students who disenrolled were that they did not have the time to complete the program and/or that the program was too difficult. Another of the top five explanations that disenrolling students expressed for leaving was that they perceived the curriculum to be too easy. While this summary was from internal surveys that were not designed for research, it is an indication why this variable might surface as significant. Another explanation could be that the high achieving students decided to transfer to a more recognized or traditional college program after earning good grades at APUS. At the same time, the adjusted r-square of .014 is approximately half of the fourth predictor variable (Last Grade of W) in terms of the explanation of variance indicated by the adjusted r-square value. As previously indicated, almost half of the disenrolled population had either an F or W as their last grade and both of those grades explained more of the variance for disenrollment.

Conclusion

Analysis of data from APUS demonstrates two trends in retention in online programs that merit further research. First, the high amount of variance accounted for by the presence of transfer credit, and the tendency of a significant number of students to disenroll after two courses, indicates that initial attempts at college enrollment online may be more exploratory than in the traditional university. Given the anytime, anywhere nature of online learning this finding is not surprising; however, it should give pause to institutional administrators, educational leaders, and national bodies such as the U. S. Department of Education's Institute of Education Sciences and their Integrated Postsecondary Education Data System (IPEDS). Specifically, it is illustrative of a casual on-demand approach to learning in which individuals may tentatively explore their options and, if they believe they have the means to complete a degree, move between a number of institutions before completing a degree. Swirling, a term coined to define students taking classes or attending two or more institutions before graduating from college, appears to be a trend. A national survey indicated 45% of seniors at brick and mortar colleges attended multiple institutions for classes (Marklein, 2005). As such, the nature of retention should be redefined to examine both non-exploratory students and those who migrate through a series of institutions to earn a degree.

Second, as evidenced by the variance accounted for by annual enrollments, activity should be considered a primary catalyst for degree completion. Considerable research is needed in this area to determine what actions catalyze activity. While it is likely that some proactive engagement measures by institutions may be responsible, it is also likely that there is a social aspect to learning that should be considered as well. Specifically, the impact of the establishment and perpetuation of social presence needs to be given considerable weight in future studies. This includes inquiry into formal models such as the Community of Inquiry (CoI) Framework and analysis of relational data that can be extrapolated from student involvement in institution-centric social networking media (Garrison, Anderson, & Archer, 2000; Swan & Shih, 2005).

Limitations and Directions for Future Research

As with all research conducted at a single institution, the results may not be generalizable to other institutions. As such, this study should be duplicated to assess potential differences between various student populations. This is especially true given the high percentage of military students in the overall population. In addition, similar analyses of student populations at the graduate level should be undertaken as well.

Despite an abundance of literature demonstrating clear correlations between ethnicity and gender with persistence in the face-to-face setting, no such relationship was found in this study. As with the overall study, this finding needs to be the subject of research at other institutions with online programs. If this finding is generalizable, the significance for equity in higher education cannot be stated strongly enough with this finding related to retention in online courses.

While compelling, it should be noted that this study only addresses student demographics and class descriptors. Factors related to student interaction within the learning environment and throughout university services should be addressed in future work. Given the prevalence of the Community of Inquiry Framework Survey in the online learning literature (Swan & Ice, 2010), it is suggested that responses from the 34 items in CoI instrument be incorporated into the variables examined in retention analysis. Along these lines, the potential also exists for concurrently examining potential relationships between CoI indicators, demographic / class descriptors and retention patterns; relationships for which techniques, such as CHAID and cluster analysis, would be well suited. In addition to these recommendations, and due to the nature of the quality of the baseline data, there is great encouragement for a follow up study to be performed.

Implications for Practice

The Obama administration has stated that America needs to increase its percentage of college graduates in order to increase its global competitiveness. Available studies confirm that many factors are accountable for some of the decline in percentage of college graduates such as increasing numbers of adult students, increasing percentages of minority students, decreasing levels of access and affordability, etc. Online programs offer convenience, access, and the potential for increased affordability. How institutions work with students may determine student outcomes (Braxton, 2000). Interaction with faculty, administrative personnel and offices, and other students may also factor into engagement levels. Those levels of engagement are important in face-to-face environments but may be more important in online environments.

At American Public University System effective practices for online teaching and learning, as well as best practices for student-faculty interaction, are implemented. The New Faculty Training Course for all new instructors provides the theoretical background on student engagement, learning, and retention as well as a deeper understanding of the online learner. Within the course, content is delivered, modeled, and discussed within the group on the effective practices that can be directly applied in the design, development, and delivery of the course that increase student learning and persistence.

Another effective retention practice centers on community and connection in the classroom. Both full and part-time faculty are recommended to have a minimum of two interactions per week directly between the instructor and each student. Faculty often exceed the recommendation and this, in turn, positively impacts student satisfaction and perceived learning as evident in End of Course Survey results.

Additional to efforts with and by faculty, staff are also very involved in working with students to increase persistence and, eventually, matriculation. APUS counselors contact new students through-out their first three undergraduate courses. This high touch approach compliments student-faculty interaction and enhances the high tech nature of the online environment.

Further discussion and analysis on the issue of student retention can assist in providing more opportunities for learner success as well as increase prospects for collaboration within and throughout an institution. Chickering and Gamson (1987) declared students and faculty both are part of the solution to improving undergraduate education. Institutions develop and implement policies and practices that influence student achievement and ultimately affect retention and matriculation. Given the importance of transfer credits received and the number of courses taken in the first year to the retention of the student at

APUS, coaching and placement of students in interactive cohorts may prove to be a successful technique for enhancing student retention. Educational leaders and policy makers must take notice of similar factors that affect the success of the online learner especially as growth in this population continues at an exponential rate.

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