Exploring the Relationship between Military Service and Performance in Online Classes

Guy H. Downs
Eastern Michigan University
gdowns1@emich.edu

Dorothy K. McAllen
Eastern Michigan University
dmcallen@emich.edu

Abstract

Universities have witnessed the consistent growth of increased college-level distance education programs with 32 percent of all students having taken at least one online course (Allen & Seaman, 2013). Key to this continued growth, however, is understanding the factors that contribute to the greatest growth and success in these programs. Researchers have identified a growing sub-population of non-traditional students – military Veterans, where universities have specifically seen a dramatic growth in enrollment (Lighthall, 2012). This study examined the relationship between military service and academic performance in distance learning courses offered entirely online. We conducted an Ordinary Least-Squares (OLS) regression, using grade point average in online classes as the dependent variable and Veteran status as the explanatory variable, and found that Veteran status has a positive, statistically significant relationship with academic performance in the online classroom.

Introduction

In attempting to predict academic success among college-level students, identifying the factors that exert the greatest impact on a learner's success, allows those who design curriculum to better meet the needs of the students (Allen & Seaman, 2012; Dabbagh, 2007). With the dramatic increase in technology and distance learning programs, the results from this type of study also offers a unique opportunity for educational providers to identify new student populations, particularly among non-traditional learners. It is also critical for educators in online learning in higher education to explore and identify the characteristics that support student success and adjust their practices and teaching methods accordingly (Allen & Seaman, 2012; Hoskins & van Hoof, 2005; Park & Jun, 2009). To explain and compare the effectiveness of distance learning on student outcomes, many studies break online learning down to three basic factors: (a) teaching presence or interaction with the instructors, (b) social presence or interaction with peers, and (c) cognitive presence or interaction with content material (Swan, 2003). Sutton (2001) warns, however, that additional factors must also be explored and analyzed in determining the results from interactions in computer-mediated courses. Factors such as attitudes and perceptions toward distance learning, prior technical knowledge, and student demographics may also play key roles in student success.

One sub-population of students are those connected with the military, both Veterans and active service personnel. Beginning in the early 1990s, distance learning was encouraged and practiced in most military branches of service. This allowed needs-based education to reach a broader population of enlisted officers as well as integrate educational practices and curriculums between different services (Chilcoat, 1999). With the reauthorization of the Montgomery G.I. Bill, universities have seen a dramatic increase by military Veterans seeking to use their GI benefits by enrolling in college-level classes, while universities are looking for ways to accommodate these non-traditional students seeking to use their GI benefits (Moon & Schma, 2011). Studies involving military students indicate that an increasing number of those students connected with the military are now actively participating in

distance learning classes at public and private universities (Artino, 2009; Barnard & Zardeskas, 2007; Starr-Glass, 2011).

In attempting to identify success factors in online programs, several studies that focused solely on military learners and distance education concluded that institutional support and prior experience were just as important a metric as others, such as student and instructor participation levels in determining the effectiveness of distance learning (Burlage, 2002; Lewis, 2006). Artino (2009) argues that because of the military culture, training, and experiences, members of the military use self-regulated learning strategies to transform intellectual abilities into academic performance and skill. "Models of self-regulated learning describe a recursive cycle of cognitive, motivational, and behavioral activities that are central to learning and knowledge construction (Artino, 2009, p. 148). Self-regulated learning is composed of multiple processes, such as planning, monitoring, and goal setting, and ultimately lead to superior learning and performance (Zimmerman, 2008). Research also suggests that military learners possess unique characteristics that separate them from other students (Starr-Glass, 2011). Two research studies by Bachman, Sigelman, and Diamond (1987) and Starr-Glass (2011) further argue that military learners share a set of beliefs and values that set them apart from non-military learners. "In the military culture, education is a top priority from both a mission-ready and a funding perspective" (Smucny & Stover, 2013, p. 8).

Bates (2012) study on special populations identified members of the military and Veterans as an ideal population for online learning opportunities because of their highly mobile and asynchronous military experience. This study focused on whether there was a statistically significant difference in student outcomes between military and non-military learners in online classes. That research will help educators better understand and predict success as well as adjust curriculums to better serve all student populations.

Methodology

The population used for this study was selected from undergraduate students of a large, public, Midwestern university. We included all students in this study who satisfied the following three criteria.

- They had to have taken at least one fully online course (hybrids were excluded) in the 2012-13 academic year.
- They had to have declared a major in either Industrial Distribution (ID) or Technology Management (TM) within the academic unit ofinterest.
- They had to achieve a final grade of at least a D- in each of the online courses in which they were enrolled.

The sample population selected for this study was limited to students in the College of Technology who were enrolled in the ID and TM programs because these are the only two programs within the school in which every core course is offered exclusively online. By limiting our sample population to these students we were assured that every student whose records were included in this study was at least moderately receptive to the idea of online learning (i.e., we de-selected those in the population sample, those who felt hostile to online learning, but who might find themselves 'forced' to take an online class to fulfill a graduation requirement). As for the minimum grade requirement, a review of student attendance and participation amongst those students who failed an online course revealed that we could attribute most, if not all, of these failing grades to a lack of persistence. In short, these students did not fail because their work was substandard, they failed because they ceased participation in the course. Since this study was not designed to measure persistence in online courses, but rather the extent to which students who had made a commitment to persisting were able to excel in an online environment, we chose to exorcise the records of those students who had failed a course from our study. This process yielded a population sample of 147 students.

Once we had determined which students would be included in this study, we took their final grades from each online course they had completed, translated that final grade into the corresponding numerical value (e.g., 4.0 for an 'A', 3.7 for an 'A-), and then calculated the grade point average for the students online courses. This was done in order to ensure that no student was overrepresented in the study. Since

some students may have taken only one online course, while others may have taken four or more, using the average grade point instead of the grade point for each online course ensured that each student's academic performance would be equally weighted.

Descriptive Statistics and Data Analysis

First, we looked at the descriptive statistics for those observational units in our study. All student data was retrieved from the University's Information Management Office, with a summary found in Tables 1-3 as follows:

Faculty and the Technological Integration in the Teaching and Learning Process

Table 1			
Age			
DeN	Valid	146	
	Missing	1	
Mean		34.95	
Minimum		19	
Maximum		61	

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.0	119	81.0	81.0	81.0
	2.0	28	19.0	19.0	100.0
	Total	147	100.0	100.0	

Table 3					
Veteran Status					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.0	130	88.4	88.4	88.4
	2.0	17	11.6	11.6	100.0
	Total	147	100.0	100.0	

As reported, the mean age of a student in this study is approximately 35 years. This study is also heavily skewed towards male students (a full 81% of the students who met the inclusion criteria were male). Lastly, the study included seventeen students who identified themselves as being Veterans on their admission application.

Next, we conducted a comparison of means test to see if there was any statistically significant difference in the mean age of Veteran and non-Veteran students (Table 4), as well as a crosstab analysis to determine if the relationship between gender and Veteran status is significant at the 95% level (Table 5).

Table 4	
Group Statistics	

Veteran Status	N	Mean	SD	St. Error Mean	T-Test for = Means T	Sig. (2 tailed)
1	130	34.6	10.14	.892	-1.159	.248
2	17	37.65	10.69	2.592		

Table 5
Gender/ Veteran Status Cross Tabulation

Count		VETERAN_IND		Total
		1.0	2.0	
GENDER	1.0	102	17	119
	2.0	28	0	28
Total		130	17	147

	Value	df	Asymp. Sig (2 sided)
Pearson Chi-Square	4.523	1	.033

The results of this analysis indicate that there is no statistically significant relationship between age and Veteran status. There is, however, evidence of a statistically significant relationship between gender and Veteran status.

Lastly, we conducted an OLS regression to determine if there is a relationship between grade point average and Veteran status. The mean grade point average for online courses taken in the 2012-13 academic year was used as the dependent variable; Veteran status is the independent variable, and gender is included as a control.

Table 6
Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.592	.359		7.215	.000
	GENDER	-.012	.179	-.005	-.066	.947
	VETERAN_IND	.592	.220	.222	2.690	.008

The above results in Table 6 clearly suggest that there is a statistically significant relationship between Veteran status and academic performance in online classes. This finding would appear to be consistent with the results from a comparison of means test, which found that Veteran students' mean GPA in the courses of interest was 3.765, while the mean GPA for non-Veteran students was 3.17.

Table 7
Group Statistics

Veteran Status	N	Mean	SD	T-Test for = means Std. Error Mean	T	Sig. (2 tailed)
1	130	3.17	.8801	.0772	-2.753	.000
2	17	3.765	.3353	.0813		

Limitations

This study's sample population is limited to students who majored in one of two programs within the University's College of Technology. As such, it's unclear whether these findings would apply to students in other academic concentrations. Also, we should emphasize that this study only applies to academic performance, and not persistence, as other studies have found that there is no statistically significant difference in the persistence rates between Veteran and non-Veteran students (McAllen, Downs and Ascani, 2013).

Discussion

This study specifically focused on comparing student outcomes between Veteran and non-Veteran students in online programs. The results indicated a statistically significant difference exists between the two groups, with a 3.765 mean GPA for the Veteran students and a 3.17 mean GPA for the non-Veteran students. However, we must emphasize that additional research is warranted to explore not only what factors may explain this difference, but how these factors influence student performance in specific university environments. Boston, Ice, and Burgess (2012) conducted a longitudinal study for student retention in online programs and found that with the many variances possible in this type of learning environment, it is important that institutions of higher education study these various factors specific to their own institutional characteristics. In other words, the factors that affect performance in one setting may not always explain the variances in performance within another setting, owing to the unique ways in which explanatory factors may interact with one another.

That having been said, it does seem reasonable to posit that Veteran students may share some traits which are conducive towards excelling in online learning environments. Moon and Schma (2011) suggested that a strong presence of an Office of Veteran Affairs at a university was instrumental in the retention and success of both active military and Veteran students. However, other researchers indicated that the military training, culture, and experience contributed to the success of their education (Bates, 2012; Chilcoat, 1999; Smucny & Stover, 2013). Chilcoat (1999) found that prior military experience supported education and maintained traditional qualities of excellence that helped them "…be capable of creating ideas and initiating actions that enable them to generate their own futures" (p. 60). Bates (2012) agreed with Chilcoat and suggested that "These [military] individuals live highly mobile, asynchronous lives…" which is compatible with an online educational environment (para. 17). Smucny and Stover (2013) believed that the success of military and Veteran students in higher education came from their military background and training: "Military personnel must do what is asked of them and do it well… military students are respectful, follow instructions, and observe deadlines" (2013, p. 8). To the extent that a particular educational setting rewards students with these attributes, then, we might indeed expect to see Veteran students outperforming their non-Veteran counterparts in the online classroom.

Conclusion

This study represents an exploration of the relationship between military service and academic performance in distance learning courses offered entirely online. The OLS regression model suggests that there is a statistically significant relationship between students with military service (3.765 GPA) and those without military service (3.17 GPA) and their academic performance in an online program. Although it seems possible that this result is driven by some other variable (for which military service, in this case, is serving as a proxy), we have controlled for age and gender, so it's not entirely clear what that variable may be. Thus, we cautiously submit that the relationship seen here between military service and academic performance is not merely correlative. While other studies suggest possible explanations for this relationship, the findings from this study must also be interpreted with caution due to limitations involving the specific academic concentrations studied and the focus on academic performance rather than other variables such as persistence, attitudes, or motivation.

Understanding applicable factors, such as those identified in this study that contribute to success, is key to continued growth and relevance of existing and future programs in higher education. Additional research is recommended that will focus on the effect that military service has on academic performance in other disciplines, and whether that effect is as pronounced as it appears to be in the technology-related disciplines that were investigated in this study.

References

Allen, I. E., & Seaman, J. (2013). "Changing course: Ten years of tracking online education in the United States," The Sloan Consortium. Retrieved from http://www.onlinelearningsurvey.com/reports/changingcourse.pdf

Allen, I. E., & Seaman, J. (2012). "Going the distance: Online education in the United States, 2011," The Sloan Consortium. Retrieved from http://sloanconsortium.org/publications/survey/going_distance_2011

Artino, A. R. (2009). "Think, feel, act: motivational and emotional influences on military students' online academic success," Journal of Computing in Higher Education, vol. 21, 146-166.

Bachman, J., Sigelman, L., & Diamond, G. (1987). "Self-selection, socialization, and distinctive military values: Attitudes of high school seniors," Armed Forces & Society 2(13): 169-187.

Barnard, D., & Zardeskas, E. (2007). "Voluntary education of enlisted service members: An analysis of program effects on retention and other outcome measures," in Naval Postgraduate School Thesis, unpublished.

Bates, R. (2012, Summer). Distance Learning for Special Populations. Online Journal of Distance Learning Administration [OJDLA], 15(2). Retrieved from http://www.westga.edu/~distance/ojdla/summer152/bates152.html

Boston, W., Ice, P., & Burgess, M. (2012, Summer). Assessing Student Retention in Online Learning Environments: A Longitudinal Study. Online Journal of distance Learning Administration [OJDLA], 15(2). Retrieved from http://www.westga.edu/~distance/ojdla/summer152/boston_ice_burgess152.html

Burlage, J. (2002, February). Navy putting its money where its education is. Navy Times, 51(2), 13-17.

Chilcoat, R. (1999). "The revolution in military education," National Defense University, Washington DC, Institute for National Strategic Studies.

Dabbagh, N. (2007). "The online learner: Characteristics and pedagogical implications," Contemporary Issues in Technology and Teacher Education, 7(3), 217-226.

Hoskins, S., & van Hoof, J. (2005). "Motivation and ability: Which students use online learning and what influence does it have on their achievement?" British Journal of Educational Technology, vol. 36(1), 177-192.

Lewis, N. (2006). Military student participation in distance learning, [PhD dissertation], ProQuest, UMI Dissertations #3234950. Johnson & Wales University, Providence, RI.

Lighthall, A. (2012, Fall). Ten things you should know about today's student Veteran. National Education Association [Thought and Action], 28, 82-90. Retrieved from ERIC ISSN-0748-8475

McAllen, D. K., Downs, G., & Ascani, H. (2013). The relationship between prior military education and academic performance in an online technology management undergraduate program. *Technology Management in the IT-Driven Services (PICMET),* 2013 Conference proceedings, San Jose, CA: 2013, pp. 2498-2501.

Moon, T. L., & Schma, G. A. (2011, March 22). A Proactive Approach to Serving Military and Veteran Students. New Directions for Higher Education, 2011(153). Retrieved from Wiley Online Library, doi/10.1002/h3.426.

Park, J., & Hee Jun, C. (2009). "Factors influencing adult learners' decision to drop out or persist in online learning," Journal of Educational Technology & Society, vol. 12(4), 207-217.

Smucny, D., & Stover, M. (2013, March/April). Enhancing Teaching and Learning for Active-Duty Military Students. ASA Footnotes: American Sociological Association, 41(3).

Starr-Glass, D. (2011). "Military learners: Experience in the design and management of online learning environments," MERLOT Journal of Online Learning and Teaching, 7(1), 147-158, 2011.

Sutton, L. (2001). The principle of vicarious interaction in computer-mediated communications. *International Journal of Educational Telecommunications, 8*(3), 223-242.

Swan, K. (2003). Learning effectiveness: What the research tells us. In J. Bourne & J. C. Moore (Eds) Elements of Quality Online Education, Practice and Direction. Needham, MA: Sloan Center for Online Education, 13-45..

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: historical background, methodological developments, and future prospects. American Educational Research Journal, 45, 166-183.