The Relationship between Persistence, Academic Engagement and Academic Achievement among Postgraduate Students of OUM

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Abstract

Self-managed learning is one of the pillars of lifelong learning. Learners' stamina to sustain as self-directed learners is vital for their academic success. This paper examines the association between persistence in studies, academic engagement, and academic performance among postgraduate students in an Open and Distance Learning Institution. The logistic regression was used to model the relationship while the Receiver Operating Curve (ROC) was used to assess the sensitivity and specificity of the predictive model. In this cross-sectional research, a total of 339 students enrolled in various Master's degree programs at OUM answer a self-administered questionnaire. Academic performance was compared with students' perceived engagement in academic activities, and persistence in studies.

Among the significant predictors of academic performance are classroom behaviour and cognitive emphasis (components of engagement), and academic integration, institutional commitment, academic conscientiousness and degree commitment (components of persistence). Students with favourable ratings on their academic engagement and persistence in studies tend to do better academically. The statistical model predicting these relationships is 83.33% sensitive and 91.04% specific. This paper concludes that by using student engagement and persistence as predictors of academic achievement would enable the academic institutions to identify 'at risk' students much earlier compared to using CGPA.

Introduction

Given the emphasis placed on academic achievement of students as a criterion for successful insemination of knowledge, the way in which students acquire knowledge through the learning process has become a primary concern for all educational institutions. Several studies have highlighted the significant role that student engagement can play in learning. For example according to Newmann (1992), student engagement occurs when students psychologically engage in learning. Once engaged, they try hard to learn what the course offers and take pride not simply in earning the grades, but in understanding the material and apply it when appropriate (Newmann, 1992). Student engagement has been popularly used as an indicator of successful classroom instruction and predictor of students' academic success (Willms, 2003). Students are said to be engaged when they are involved in their work, persistent with their studies

despite challenges and obstacles, and take pride in accomplishing their work (Bomia .et.al (1997). Student engagement also refers to a "student's willingness, need, desire and compulsion to participate in, and be successful in, the learning process promoting higher level thinking for enduring understanding." Willms (2003), p.i.

Early studies of student engagement often focused on time-on-task behaviors (Fisher, et al., 1985). However, more recently, other definitions have appeared in the literature. Students' willingness to participate in routine school activities, such as attending classes, submitting required work, and following teachers' directions in class was used as the indicator of student engagement. For instance, Natriello (1984) defined student engagement as "participating in the activities offered as part of the school program" (p.14). There is also a definition that focuses on more subtle cognitive, behavioral, and affective indicators of student engagement in specific learning tasks. Skinner & Belmont (1993), for instance, define student engagement as students showing sustained behavioral involvement in learning activities accompanied by a positive emotional tone. Pintrich and & De Groot (1990), however, associated engagement levels with students' use of cognitive, meta-cognitive and self-regulatory strategies in managing their learning processes. Students' engagement is viewed as motivated behavior which can be seen from the kinds of cognitive strategies students choose to use, and by their willingness to persist with difficult tasks by regulating their own learning behavior.

Persistence on the other hand is defined as adults staying in programs for as long as they can, engaging in self-directed learning, and at their own phase complete the program overcoming various challenges they may face (Parker, A, 2003). Persistence is a continuous learning process that last until an adult student meets his or her educational goal. A key difference between adult and child learners is that adults choose to participate in their educational activities while children participate because of legal mandates and strong social and cultural forces that identify schooling as part of the child's developmental process. Adults learners make informed decision whether to participate or not in each class session and often must overcome significant barriers in order to attend classes. Thus the level of persistence in highly correlated with adult learners' academic performance (Kahn and Nauta, 2001).

Academic institutions have traditionally used academic variables such as grade point average (GPA), college admissions tests, and high school coursework (Tinto, 2006) to identify at-risk students. However, evidence from the literature indicates that non-academic factors often have greater impact on undergraduates' persistence decisions.

Research Design

This is a cross-sectional research using self administered questionnaire as the data collection instrument. The instrument measures two constructs, persistence in studies and engagement in academic activities. The dimensions for the persistence in studies and engagement in academic activities were developed based on a thorough review of the existing literature whilst the focus group interviews were used to generate the specific indicators to assess the students' perceived engagement in academic activities and their persistence in studies. The indicators were translated into a questionnaire and the data collected from the samples of postgraduate students was used to establish the psychometric properties of the instrument as well as establishing the relationship between students' engagement in academic activities and their persistence in studies.

Population and Samples

The population for this study consisted of all the postgraduate students at OUM enrolled in the Master's degree programs and were actively taking service during the September 2010 semester. This study included only students who were in the blended mode. All international students, purely online students, and students in the MIDT program were not included in this study. As this study utilized statistical inference, random sampling was used. First, the student list was obtained from the Centre for Graduate Studies. The multi-stage technique was employed to select the programmes and the classes. All students in the selected classes were taken as samples representing the population.

Instrumentation and Data Collection

The procedure used to develop the instrument followed the guide suggested by De Vellis, R.F (2003). The instrument development process consists of: defining the construct, identifying the domain, generating items, collecting preliminary data (piloting), purifying the instrument, collecting fresh data, further purifying the instrument, and evaluating the reliability, validity and dimensionality of the instrument.

Based on literature and focus group interviews, students' engagement in academic activities was defined as a three factor construct comprising of *classroom behaviour*, *cognitive emphasis*, and *academic contribution*. While students' persistence in studies was defined as a five factor construct comprising of *Academic Integration*, *Service Satisfaction*, *Degree Commitment*, *Academic Conscientiousness*, and *Institutional Commitment*.

Two focus group interviews involving Masters' students of OUM were carried out to gauge their perception on *Engagement in Academic Activities* and *Persistence in Studies*. The results of the focus group interviews were later transformed into a questionnaire that was used to gauge students' perception on *Engagement in Academic Activities* and *Persistence in Studies*. A total number of 102 students responded in the first wave of data collection. The exploratory factor analysis and reliability analysis using Cronbach's Alpha were carried out and the instrument was improved.

The subsequent data collection involves a sample of 339 postgraduate students of OUM mostly master's students from the faculty of business and faculty of education. The data from the second wave was subjected to confirmatory factor analysis to establish the psychometric properties of the instrument and other inferential analyses to test the relationship between students' persistence in studies and their engagement in academic activities.

Findings

First, students' engagement according to the three dimensions (classroom behaviour, cognitive emphasis, and academic contribution) was compared with their academic achievement which is classified based on the CGPA (less than 3.00, and 3.00 and above). The mean scores and standard deviations were reported to describe the level of engagement in terms of classroom behaviour, cognitive emphasis, and academic contribution as well as the overall student engagement, whilst the Mann Whitney test was used to examine significant differences between the students with CGPA less than 3.00 and those with CGPA 3.00 and above The non-parametric test was preferred since the two groups had unequal sample sizes. The results show that students with CGPA 3.00 and above gave significantly higher ratings on the cognitive and academic dimensions of engagement. However for the engagement construct as a whole there was no

significant difference between these two groups (CGPA less than 3.00 and 3.00 and above). Table 1 summarizes the results.

Table 1: Comparing Student Engagement with regards to academic achievement

Variable and Construct	CGPA	N	Mean	Std. Deviation	p-value
Classroom Behavior	Less than 3.00	56	2.86	0.46	0.490
	3.00 and above	271	2.83	0.57	
Cognitive Emphasis	Less than 3.00	56	2.92	0.50	0.011
	3.00 and above	271	3.12	0.60	
Academic Contribution	Less than 3.00	56	3.05	0.57	0.010
	3.00 and above	271	3.28	0.58	
Student Engagement	Less than 3.00	56	2.94	0.43	0.061
	3.00 and above	273	3.08	0.46	

The p-values were computed using the Mann-Whitney U statistics.

Similar analysis comparing students' persistence according to the five dimensions (Academic Integration, Institutional Commitment, Service Satisfaction, Academic Conscientiousness, and Degree Commitment) with their academic achievement was carried out. The mean scores and standard deviations are reported to describe the level of persistence in terms of Academic Integration, Institutional Commitment, Service Satisfaction, Academic Conscientiousness, and Degree Commitment as well as the overall persistence whilst the Mann Whitney test was used, to look for significant differences between the students with CGPA less than 3.00 and those with CGPA 3.00 and above. The results show that students with CGPA 3.00 and above gave significantly higher ratings on the Service Satisfaction, Academic Conscientiousness, and Degree Commitment dimension of persistence. However for the persistence construct as a whole there is no significant difference between these two groups (CGPA less than 3.00 and 3.00 and above). Table 2 summarizes the results.

Table 2: Comparing Student Persistence with regards to academic achievement

Variable and Construct	CGPA	N	Mean	Std. Deviation	p-value
Academic Integration	Less than 3.00	56	3.91	0.61	0.124
	3.00 and above	273	4.06	0.44	
Institutional Commitment	Less than 3.00	56	3.81	0.73	0.673
	3.00 and above	271	3.84	0.60	
Service satisfaction	Less than 3.00	56	4.09	0.83	0.005
	3.00 and above	273	4.43	0.59	
Academic Conscientiousness	Less than 3.00	56	4.11	0.71	0.022
	3.00 and above	273	4.34	0.57	
Degree Commitment	Less than 3.00	56	3.84	0.61	0.011
	3.00 and above	273	4.09	0.61	
Persistence	Less than 3.00	56	3.95	0.63	0.069
	3.00 and above	273	4.15	0.41	

The p-values were computed using the Mann-Whitney U statistics.

Apart from assessing the association between the predictor variables (student engagement and persistence) and academic performance, this paper also modelled the relationship between these factors to predict academic performance. The multiple logistic regression was used for this purpose. In this logistic regression model the dependent variable was defined as the CGPA of students (either less than 3.00 or 3.00 and above), while the independent variables were those dimensions of engagement and persistence. A step wise regression model was built using the backward LR technique where the independent variables were included in hierarchical fashion and the likelihood ratio test was used to test the differences between the initial model and the various nested models which are subsets of the first model. Each regression coefficient indicates the effect of the variable on CGPA after controlling for the other variables listed.

The results (Table 3) show that the factors that significantly contribute to students' attainment of CGPA of 3.00 and above are Classroom Behaviour, Cognitive Emphasis, Academic Integration, Institutional Commitment, Academic Conscientiousness, and Degree Commitment. The first two factors belong to the engagement construct whilst the later four are the dimensions of persistence in studies.

Table 3 : Logistic Regression model prediction academic performance

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	**Classroom Behavior**	**0.784**	**0.348**	**5.075**	**1**	**0.010**	**2.190**
	Cognitive Emphasis	**0.693**	**0.355**	**3.811**	**1**	**0.041**	**2.000**
	Academic Contribution	0.409	0.352	1.350	1	0.246	1.505
	Academic Integration	**1.324**	**0.54**	**6.012**	**1**	**0.008**	**3.758**
	Institutional Commitment	**1.122**	**0.461**	**5.924**	**1**	**0.015**	**3.071**
	Service satisfaction	0.353	0.323	1.194	1	0.144	1.423
	Academic Conscientiousness	**0.648**	**0.326**	**3.951**	**1**	**0.032**	**1.912**
	Degree Commitment	**0.734**	**0.368**	**3.978**	**1**	**0.046**	**2.083**
	Constant	-20.78	6.673	18.601	1	0	

a. Variable(s) entered on step 1: Behavior, Cognitive, Academic, Academic Integration, Institutional Commitment, Service Satisfaction, Academic Conscientiousness, Degree Commitment.

The logistic regression model is a predictive model. As such, the sensitivity and the specificity of the model are important indicators to reflect the goodness of the model. Taking all the components of engagement and persistence into account, the sensitivity of the model is 83.33% while the specificity is 91.04%. In other words this logistic regression model can predict the occurrence of a CGPA of 3.00 and above with an accuracy of 83.33%. Whilst, the ability of the model to predict students getting a CGPA less than 3.00 is 91.04 % when using the engagement and persistence as predictor variables. The Cox & Snell R-Square is 0.181 while the Nagelkerke R-Square is 0.234. Both values show that the three predictor variables account for about 20 percent of variation in the CGPA of students. Based on the analysis of the Logistic Regression model, the predictive equations explaining the relationship between CGPA and the predictive variables is as follows:

CGPA = f(Classroom Behaviour, Cognitive Emphasis, Academic Integration, Institutional Commitment, Academic Conscientiousness, Degree Commitment)

CGPA 3.00 and above = -20.78 + 0.78 (Classroom Behaviour) + 0.693(Cognitive Emphasis) + 1.324 (Academic Integration) + 1.122 (Institutional Commitment) + 0.648 (Academic Conscientiousness) + 0.734 (Degree Commitment)

DISCUSSION

The results show that students' assessment on how well the course emphasises mental activities (measured as cognitive emphasis) as well as students' assessment on the contribution of the course to their academic progression (measured as academic contribution) had significant association with academic performance. This is corroborated by studies that found that students with greater level of engagement in academic activities tended to be more successful in their courses (Laird, Chen & Kuh, 2008). This is attributed in part to effective educational practices such as active and collaborative learning and student-faculty interaction (Kuh et.al, 2005; Pascarella and Terenzini, 2005).

Whilst for the second construct (students' persistence in studies), the results of this study show that the positive views of instruction, instructors, and students' own intellectual growth as well as their awareness of relationship between academic and career (measured as Academic Integration), level of confidence in and satisfaction with the choice of institution (measured as Institutional Commitment), timely performance of academic responsibilities (measured as Academic Conscientiousness) and the personal importance and values that students and their supportive network place on degree completion and sense of certainty in degree attainment (measured as Ddegree Commitment) have significant contribution to academic performance. This finding is consistent with that of recent research indicating that students' academic preparation, psychosocial, socio-demographic, situational, and institutional factors contribute positively to their degree outcome (Porchea et al 2010).

Finally it can be concluded that using student engagement and persistence, a process measure, as predictors of academic achievement would enable the academic institutions to identify 'at risk' students much earlier compared to using CGPA, which is a product measure. Student engagement and persistence

should ideally be used in conjunction with CGPA to identify 'at risk' students. This would enable academic institutions to formulate more effective intervention strategies to reduce attrition rate.

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