

Predictors of Student Success in an Online Learning Environment in the English-Speaking Caribbean: Evidence from the University of the West Indies Open Campus

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Abstract

This paper investigated success rates and possible predictors of success among students at The University of the West Indies Open Campus. Archival data were mined from admissions and academic records of students from the 2008 intake to explore retention and completion rates, and for students enrolled in two online undergraduate courses in Semester 1 of the 2012/2013 academic year. The two courses had consistently high failure rates. Descriptive statistics and binary logistic regression were used to analyse the data. The results indicate that among the 2008 cohort, the retention rate was high (>75%) and the completion rate compared favourably with other similar institutions. Significant predictors of programme completion included sex and location of the students as well as cumulative GPA at the end of the first year of study. Predictors of success for individual courses included the location of the students and engagement with course resources.

Keywords: Caribbean; online learning; predictors of online success; retention; University of the West Indies Open Campus

Introduction

For many decades, distance education has been provided and used as an alternative to face-to-face instruction, and many individuals who for whatever reasons could not access face-to-face instruction, have made use of this facility. Distance education has journeyed from paper-based programmes sent by mail through radio and television broadcasts until more recently, with the advent and rapid development of electronic technology and the Internet, to online learning. Indeed, online learning is considered by some to be the new form of distance education (Moore, Dickson-Deane & Galyen, 2011) and there is a growing demand for this mode of learning worldwide. In countries such as the USA, online learning is an option for students at even the high school level (Kennedy & Archambault, 2012; Hawkins, Graham, Sudweeks & Barbour, 2013). As with face-to-face instruction, online learning has its strong points as well as its challenges and it is advisable not to see one as better than the other, but merely as different. Online learning is defined as “a structured learning activity that utilizes technology with intranet/internet-based tools and resources as the delivery method for instruction, research, assessment, and communication” (Michigan Department of Education, n.d., p. 1) and as “learning that takes place partially or entirely over the Internet” (Means, Toyama, Murphy, Bakia & Jones, 2010, p. 9). These definitions capture the notion that online learning is done via the Internet and the Michigan Department of Education (n.d.) indicates that there are different modes of delivery that fall under this term. These include teacher-led format where the instructor sets the pace and the activities and monitors the students’ progress; the blended instruction format, a combination of traditional face-to-face and online instructional activities; teacher-facilitated formats where students take significant responsibility for their own

learning with face-to-face or online support from teachers; and self-paced formats where students navigate course material on their own with no access to teacher support. The Department of Education suggests that research has shown that students are most successful in a teacher-led environment. Indeed, a teacher-led environment may be extremely valuable for those who are venturing into online learning for the first time.

The fact is that many who encounter online learning for the first time, because of their previous learning experiences and environments, may not be prepared for virtual and asynchronous instructional activities, and consequently may hold unrealistic and inappropriate perceptions and views about this mode of teaching and learning. One of the areas that is often highlighted in relation to online learning is the apparently high levels of non-completion of programmes and failure rates for courses. Indeed, a common practice is to compare completion and failure rates for online programmes and courses with those for similar offerings in face-to-face contexts. In such cases, online learning is often portrayed in a negative light.

It should be borne in mind that there may be factors other than the delivery mode that influence the outcomes of online programmes when compared with face-to-face programmes. For example, Subotzky and Prinsloo (2011) in creating a model for predicting student success in open distance learning in South Africa, identify other factors for which student and institution must exercise joint responsibility to facilitate the students' "walk" through essential processes such as choice of programme, admissions and learning activities, that leads to success. These include what Subotzky and Prinsloo (2011) refer to as key modalities, namely psychological constructs of attribution, self-efficacy, and locus of control. Furthermore, Tinto (2002) suggests that there are five conditions that facilitate student persistence towards success: expectation, advice, support, involvement and learning, which he later reduced to four, expectation, support, assessment and feedback, and involvement (Tinto, 2011). These writers suggest that student success can be considered in terms of the harmonization of student and institutional factors. Other writers focus on student factors solely as influences of student success. One such factor is the early grade point average (GPA) earned by the students. Research (DeBerard, Spielmans & Julka, 2004; American Institutes for Research, 2013) indicates that GPA is a good indicator of successful completion of programmes. Evidence suggests that weak students have lower GPAs than more academically-able students. GPA is used in colleges and universities as an indication of quality of student. Evidence also indicates that whatever the mode (online or face-to-face), cumulative GPA is a good predictor of success, with the lower the GPA, the lower the chances of the student completing the course/programme or experiencing success; and that weak students entering a programme are more likely to have low GPAs.

In the English-speaking Caribbean region, there has been discussion about the apparently low completion rates and high instances of failure among students registered for online programmes and courses with the University of the West Indies (UWI) Open Campus, the primary regional institution that offers higher education via this mode of delivery. This discussion is not unique to this region or institution. Simpson (2012) presented a chart in which the completion (graduation) rates for a number of institutions that offered online studies were presented along with similar rates for traditional face-to-face institutions. The completion rates for the online institutions, including the United Kingdom Open University, ranged from 0.5 percent to 33.5 percent. It must however be borne in mind that different institutions may have different methods of determining these rates and it is possible that those reported may be higher or lower than the actual ones. Relating to this, Haigh (2007) asserts that online learning is not suited for all students since many of them lack the skills and ability to do so successfully. Jenkins (2011) is in agreement with this, pointing out that some students who choose this mode of delivery lack the self-discipline, academic ability and technical

competence to be successful. This mismatch between student characteristics and the demands of online learning if not addressed can lessen the chances of students experiencing success.

This study focusses on issues relating to student success in an online learning environment in the Caribbean. It considers success in terms of achievement at the individual course level, persistence and retention, and completion of programme.

Issues Relating to Online Learning: Exploring Existing Literature

Online tertiary education is growing exponentially and in some cases surpassing face-to-face enrolment (Hawkins *et al.*, 2013). Mon (2010) reports increases in the number of colleges and universities venturing into online education, and shows that enrolments in online education programmes in the United States increased from 1.6 million students in 1998 to over 3.9 million in 2007. The popularity of online learning is largely due to its anytime, anywhere flexibility, and though there are indications that suggest that younger students are capitalizing on this mode of study (Deka & McMurry, 2006), the general feel is that it tends to appeal to the more mature student; persons with work and family commitments whose schedules do not allow for face-to-face attendance at a brick and mortar campus (Jaggars, Edgecombe & Stacey, 2013).

As online learning becomes a more widely used means of pursuing higher education, discussions pertaining to several related issues have emerged. For example, there is concern about the perceived levels of frustration among some students and the apparently high attrition rates for online courses (Mon, 2010). These concerns raise questions about the conditions that would encourage student satisfaction and raise the rates of graduation from and the levels of retention in online programmes. Focusing on student outcomes is vitally important to providers of online learning since they can have an impact on the competitiveness and economic viability of their respective institutions (Atchley, Wingenbach & Akers, 2013). This focus should include making efforts to identify factors that may predict students' success in the online environment with a view to informing decision making as it relates to course offerings, student and faculty support services and allocation of resources (Colorado & Eberle, 2010).

One major outcome relating to online learning that is often considered is course completion rate, where online courses and programmes are compared with their equivalents in face-to-face programmes. Previous studies have reported mixed results; some in favour of the face-to-face mode (McLaren, 2004); some with no difference (Waschull, 2001; Gagne & Shepherd, 2001) and others in favour online programmes (Means *et al.*, 2010). These conflicting findings may be attributable in part to differences in contexts in which the research was carried out. Despite this however, it is generally accepted that completion rates for online students are 10 percent to 20 percent lower than they are for students in face-to-face programmes (Carr, 2000).

Linked to the completion and attrition rates is the notion of students' academic performance. As with overall outcomes, research has produced mixed findings. Some studies found significant differences in academic performance across the two modes of delivery in favour of face-to-face delivery (Faux & Black-Hughes, 2000; Paden, 2006; Jenkins, 2011), while for others the difference was in favour of online delivery (Schoenfeld-Tacher, McConnel, & Graham, 2001). There are also studies in which no significant difference is found between the academic performance of students in face-to-face settings and those in online environments (Russell, 2001). Again, the variation in results may have to do with the factors such as the nature of the course being pursued, differences in assessment and student support systems, but the notion that perhaps there are mitigating factors that predispose some students to fare better in one setting or the other should not be dismissed. Indeed, it is both these possibilities that may have led some to question the suitability of some

subject areas for online delivery (Terry, 2001; Schmieder, 2008; Shum, Land & Dick, 2010), as well as the suitability of some students to engage in online learning (Carr, 2000; Haigh, 2007).

As mentioned earlier, the notion of suitability suggests that there are certain characteristics that may predispose students to be successful as online learners. Some insights into what these characteristics might be can be obtained from related literature. For example, literature suggests that characteristics such as age (Yukselturk & Bulut, 2007; Colorado & Eberle, 2010; Xu & Jaggars, 2013;), sex (McSporran & Young, 2001; Xu & Jaggars, 2013), cumulative GPA (Colorado & Eberle, 2010; Wilson & Allen, 2011) and levels of student engagement with learning resources, peers and tutors (Swan, 2002; Deka & McMurry, 2006; Restauri, 2006; Grandzol & Grandzol, 2010; Zimmerman, 2012) are relevant factors to consider when investigating predictors of student success in online settings. Consequently, these factors were included in the current investigation as possible significant predictors of success among the students registered in online programmes with the UWI Open Campus.

Apart from overall success, this current study also investigated students' success in two courses offered online, namely *Introduction to Financial Accounting* and *Principles to Macroeconomics*. These courses were selected for investigation because, since the inception of Open Campus, the success rate of students registered for these courses has been somewhat poor. While these may not have been the only courses with low success rates, these are two courses that have been of interest to other researchers, who wanted to determine factors that contribute to student performance. Previous studies indicate that performance in courses in these two areas can be influenced by factors such as gender, age, cumulative GPA, course load, motivation, and previous encounters with courses similar to these two (Ellis, Durden & Gaynor, 1998; Al-Tamimi & Al-Shayeb, 2002; Bennett, Padgham, McCarty & Carter, 2007; Kara, Bagheri & Tolin, 2011; Durr, n.d.). These studies suggest that the listed factors are legitimate considerations for an investigation such as the current one. Consequently, factors explored as influences of Open Campus students' success in these two courses included some of these factors, along with others deemed important by the Open Campus (for example, student interaction with online resources and tutors' interaction with students). While it is recognised there may be other factors not accounted for in this investigation that may have an impact on students' successful completion of courses, the ones included here were those for which data were available.

The Context of the Research

The UWI has been in existence for over 65 years. It is a multi-site institution with traditional physical campuses that deliver face-to-face programmes in three countries of the English-speaking Caribbean: Jamaica, Trinidad and Tobago and Barbados. Prior to the establishment of its Open Campus, UWI maintained a physical presence in all of the countries of the English-speaking Caribbean in the form of Extra-Mural Departments (later named Schools of Continuing Studies) and other outreach centres. The University's commitment to serving this region was evident in its then revolutionary use of what may now be considered primitive forms of open and distance learning. In a historical synopsis, in which Simmons-McDonald (2014) chronicles the path that led to the UWI Open Campus, several of the initiatives that pre-date it were mentioned. These include the Radio Education Unit (1958) which enhanced the University's distance teaching efforts; the Challenge Examinations (1970) which allowed students to study on their own to write examinations for courses in the first year of selected programmes; and the UWI Distance Teaching Experiment/Enterprise (UWIDITE) (1983) which provided support for students in the Challenge programme. The University's keen interest in providing dual mode delivery contributed to the establishment of the UWI Distance Education Centre (UWIDEC) in the late 1990s. UWIDEC incorporated the UWIDITE,

and through the upgrading and expansion of its teleconferencing capabilities as well as its computer networks at the teleconferencing sites, facilitated improved and widened access to higher education through online programmes.

In 2007, UWI began the amalgamation of all of its outreach centres in the English-speaking Caribbean into a single institution, under a common governance structure that constituted its Open Campus (Simmons-McDonald, 2014). The online programmes offered by this institution follow a teacher-led format (Michigan Department of Education, n.d.), where all students registered for programmes and/or courses are assigned an online tutor who guides the learning activities. Along with its online facilities, the Open Campus also includes country sites (the former Schools of Continuing Studies) that contribute to the support system for students registered in its programmes. Consequently, in addition to the online resources, students registered in Open Campus online programmes and courses are assisted through asynchronous and synchronous online support. Online support is provided by online programme managers, course coordinators, learning support specialists and course tutors. Online services also include academic advising as well as access to virtual library resources. Course tutors, apart from their initial training, also receive support from the Instructional Development Coordinator as well as all the other above mentioned personnel. Face-to-face support is provided by country site personnel in areas such as registration and academic advice. At these sites, there is also access to resources such as tele- and video-conferencing facilities, computer labs and libraries. As is the case in any learning environment, students in the online programmes and courses can seek additional support outside of their organised programme if they so desire. In some cases, the Open Campus online students may even request that the country sites organise this service for them, at a fee.

It is in this context that the current study was conducted. The UWI Open Campus is a relatively new institution that brings to the people of the region a mode of learning which is evolving. This investigation should contribute to the development of the Open Campus's online programmes, providing empirical evidence to inform policies with regard to provisions for its students. It will also add to the global discussion relating to online education.

Methodology

In order to carry out this investigation, archival data were compiled and analysed. Data were mined from admissions and academic records for students who enrolled in bachelor's degree programmes in the inception year (2008) of the Open Campus. Within the university system, these are three-year programmes for students with full-time registration. Data collected included demographics such as sex, age, country of residence, year of entry, programme pursued; academic profile such as entry qualifications, cumulative GPA at the end of the first year of study, quality of degree earned for those who had already graduated (honours: first class, upper second and lower second; pass); registration status by semester (registered/not registered; number of courses taken).

Apart from student programme data, data were also compiled for two individual courses (*Introduction to Financial Accounting* and *Introduction to Macroeconomics*) used to explore factors that influence success at the course level. These two courses were selected because from the inception of the Open Campus, they recorded high failure rates. It was felt that if factors that influence the likelihood of successful completion of such courses could be identified, then the campus could seek to ensure that these conditions are in place for future students who register for these courses. For this exploration, data were compiled for students who were registered for the courses in Semester 1 of the 2012/2013 academic year. Data collected included the sex, age and location of the students; the students' interaction with the online course material, measured by the number of times the students logged into the course site; the online activities of the tutors (number

of times they viewed content, added to or updated resources on the site); the number of times the students took the course up to that point; and the students' final results for the semester (pass/fail).

The data were compiled in electronic databases using IBM SPSS Statistics version 22, Release 22.0.0. The 2008 cohort consisted of 1944 students: 1571 (81%) were female and 373 (19%) male. In relation to the two courses that were examined, the breakdown of the sample involved is shown below (table 1) by sex.

Table 1: Breakdown of the Sample Used in the Examination of Two Courses by Sex

COURSE	SEX						Total
	Unknown		Female		Male		
	No.	%	No.	%	No.	%	
ACCT1002	26	4.4%	450	75.9%	117	19.7%	593
ECON1002	22	6.0%	278	76.4%	64	17.6%	364

Valid cases from these samples were included in the investigation of predictors of success in the courses involved. In the following section, descriptions and explanations of the different analyses run and the results are presented.

Findings

The findings presented here are arranged under subheadings that reflect the issues that featured in the investigation: student success as measured by overall programme completion rate, retention rates, and predictors of successful completion of programmes. Finally findings relating to predictors of success for two selected courses investigated are presented.

Programme Completion Rates

Rate of completion for online programmes is an issue that raises much discussion. In order to investigate the Open Campus' completion rate, the data for its first cohort of students (the 2008 intake) were analysed. Records for the 2012/2013 academic year were examined to determine the status of these students at that time. As is common among open and distance education institutions (Simpson, 2012), within the Open Campus, students are allowed not only to register on a part time basis, but also to complete their programmes at a pace convenient to them. This sometimes includes taking breaks from their studies if their circumstances warrant it. The data were investigated to determine the proportion of students who completed their programme of study (graduated) within five years of starting. The results revealed that of the 1944 students who enrolled in bachelor's degree programmes in 2008, approximately one-quarter of them (475) were able to graduate by 2013. This is indeed commendable since typically, students essentially are studying on a part-time basis and register for only one to three courses per semester.

Retention Rates

In order to address the issue of retention rates, the data for the 2008 cohort of students were again explored. Apart from the 475 students who had already graduated by 2013, the records were then examined to determine the status of the remaining 1469 who had not yet completed their programme five years after they enrolled at the Open Campus. The evidence indicated that 1065 of them were still registered for courses at the time and working steadily towards completion. This suggests that

of this cohort, 1540 students (475 graduated and 1065 working towards graduation) could be accounted for. This indicates a retention rate of 79 percent. The other 404 students (21%) could not be accounted for. The absence of these students from registration may be an indication that they are taking a break for the semester. It is also possible that they dropped out of the programme or that they simply vanished (McLaren, 2004). This categorization of students who have not completed their programmes but are not registered for courses during a particular semester was not available in the databases mined. The high retention rate observed is noteworthy however, considering the concern with low retention rates found in other studies of online learning (Carr, 2000; Mon, 2010).

In light of the suggestion that some students may not be suited for online learning (Carr, 2000; Haigh, 2007), the data were explored with a view to determining possible factors that might have some influence on the likelihood of students graduating within five years of enrolling in a bachelor's programme with the Open Campus.

Factors Influencing Programme Completion Rate

In order to identify possible factors that influence the likelihood of Open Campus students graduating from their programmes of study, a binary logistic regression procedure was run with data for students in the 2008 cohort. A model including factors believed to be influential was built. Variables included in the model are shown below (table 2).

Table 2: Regression Model for Investigating Factors that Influence Completion Rate Among UWI Open Campus Students

	Variables	Coding
Dependent Variable	Graduation status of the students by 2013	0 – Not Graduated 1 – Graduated
Predictor Variables	Sex of Student	0 – Female 1 – Male
	Qualifications	0 – CSEC (High School Certification) + Post-CSEC 1 – CSEC Only
	English Language Proficiency Test (ELPT) Required	0 – No 1 – Yes
	Remedial Math Required	0 – No 1 – Yes
	Both ELPT & Remedial Math Required	0 – No 1 – Yes
	Location*	0 – Campus Country 1 – Non-campus Country
	Age of Student on Entry (in years)	
	Student's Cumulative GPA at End of First Year of Study	

* **Campus countries** are the three countries with brick and mortar campuses: Jamaica, Trinidad & Tobago and Barbados. **Non-campus countries** are the other 14 countries in the English-speaking Caribbean that support the University, but do not have brick and mortar campuses. These countries may have satellites sites of the Open Campus.

The logistic regression was run to assess the effects of the listed predictor variables on the likelihood of students graduating in a five-year period. The full model with all the predictors was statistically significant ($\chi^2=417.185$; $df=8$; $p<0.0005$; $N=936$). This suggests that the model is able to distinguish between students who graduated after 5 years and those who did not. The model explains between 36 percent (Cox & Snell R Square) and 48 percent (Nagelkerke R Square) of the variation in the graduation results, and was able to correctly classify 78.4 percent of the cases.

Table 3: Results for the Binary Logistic Regression Investigating Factors that Influence the Likelihood of Students Completing their Programme of Study

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Sex of Student	-.490	.215	5.208	1	.022*	.613	.402	.933
Qualification	-.377	.230	2.684	1	.101	.686	.437	1.077
Location	.793	.181	19.147	1	.000#*	2.209	1.549	3.151
ELPT Required	.483	.208	5.380	1	.020*	1.621	1.078	2.438
Remedial Maths Requires	-.387	.375	1.066	1	.302	.679	.326	1.416
ELPT & Remedial Maths Required	-.316	.252	1.574	1	.210	.729	.445	1.195
Age on Entering the Programme (in years)	.025	.011	5.422	1	.020*	1.025	1.004	1.047
GPA after First Year of Study	1.134	.084	182.350	1	.000#*	3.108	2.636	3.663
Constant	-3.533	.412	73.570	1	.000#	.029		

The output for IBM SPSS v22 is given to 3 decimal places. Hence a result of .000 suggests an actual value of $<.0005$.

* Statistically significant predictor at $p<0.05$.

The results of the procedure (table 3) indicate that being male ($B=-0.490$), having only CSEC as the highest entry qualification ($B=-0.377$), and requiring remedial mathematics ($B=-0.387$) or both remedial mathematics and ELPT ($B=-0.316$) reduced the probability of the students graduating within five years of entering a programme. Furthermore, the odds ratio statistics ($Exp[B]$) indicate that among this cohort of students, the odds of graduating within five years of entering a bachelor's degree programme were higher for students from non-campus countries than for those from campus countries; for students who are required to take the ELPT than for those who are not required to take this test; for increasingly older students and for students with increasingly high cumulative GPAs at the end of the first year of studying. Significant predictors in the model include the sex and age of the student; the location of the student; whether or not the student was required to take the ELPT and the student's GPA at the end of the first year of study. It should be remembered that there are other influential factors that are not accounted for in this model. Indeed, factors such as attitude to academics, motivation to succeed, locus of control and hours spent studying that have been shown to affect academic outcomes (Subotzky & Prinsloo, 2011) are not included here. Since the data analysed were already existing, it was not possible to go back to measure these characteristics.

Factors Influencing Success in Individual Courses

In order to investigate possible factors that contribute to success for individual courses, two courses with high failure rates (*Introduction to Financial Accounting* and *Introduction to Macroeconomics*) were considered. Using data from the Semester 1 2012/2013 examination results, binary logistic regression was run to assess factors that may influence the likelihood of passing the individual courses. A number of variables, shown below in Table 4, were compiled in a model. The number of times that the students' online tutors logged onto the course site was added to the model on the assumption that, though not the best measure, on some level, this is an indication of the level of interaction between the students and the tutors. During these login periods, the tutors viewed and added/updated content.

Table 4: Regression Model for Investigating Factors that Influence the Likelihood of Students Passing Individual Courses

	Variables	Coding
Dependent Variable	Student's Performance on the Course	0 – Failed 1 – Passed
Predictor Variables	Sex of Student	0 – Female 1 – Male
	Location	0 – Campus Country 1 – Non-campus Country
	Age of Student during the 2012/2013 Academic Year (in years)	
	No. of Times Student Took the Course up to 2012/2013	
	No. of Times Student Logged onto the Course Site	
	No. of Times Tutor Logged onto the Course Site	

Below (tables 5 and 6) are the results of the regression that was run using the data for the two courses.

Introduction to Financial Accounting

The binary logistic regression was run to assess the effects of the listed predictor variables on the likelihood of students passing the course *Introduction to Financial Accounting* (ACCT1002). The full model with all the predictors was statistically significant ($\chi^2=76.80$; $df=6$; $p<0.0005$; $N=543$). This suggests that the model is able to distinguish between students who passed the course and those who did not. The model explained between 13 percent (Cox & Snell R Square) and 18 percent (Nagelkerke R Square) of the variation in the examination results, and was able to correctly classify 70 percent of the cases.

The results of the regression (table 5) indicate that being male ($B=-0.084$) and having taken the course multiple times ($B=-0.335$) reduced the probability of passing the course in Semester 1, 2012/2013. Furthermore, students in non-campus countries were more likely to pass this course than those from campus countries. Similarly, older students and those with increasingly higher numbers of times logging onto the course site were also more likely to pass. Lastly, the number of times that the tutors logged onto the course site had no effect on the outcome of the examinations for this course (pass/fail). Significant predictors in the model included the location of the student; the number of times the student took the course prior to the period of interest and the number of times the student logged onto the course site. As before, it should be remembered that there are

Table 5: Results of the Binary Logistic Regression Investigating Factors that Influence the Likelihood of Students Passing ACCT1002

Predictors	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Sex of Student	-.084	.231	.132	1	.716	.920	.585	1.445
Location	.674	.199	11.524	1	.001*	1.962	1.330	2.896
Age during 2012/2013 Academic Year	.014	.013	1.298	1	.255	1.014	.990	1.040
No. of Times Course Taken	-.335	.114	8.604	1	.003*	.715	.572	.895
No. of Times Students Logging onto Course Site	.002	.000	25.531	1	.000**	1.002	1.001	1.002
No. of Times Tutors Logging onto Course Site	.000	.000	1.346	1	.246	1.000	1.000	1.000
Constant	-.304	.478	.405	1	.524	.738		

The output for IBM SPSS v22 is given to 3 decimal places. Hence a result of .000 suggests an actual value of <.0005.

* Statistically significant predictor at $p < 0.05$.

other influential factors that are not considered in this model, since this model accounted for less than 20 percent of the variation in the examination outcomes for this course.

Introduction to Macroeconomics

The logistic regression was also run to assess the effects of the listed predictor variables on the likelihood of students passing the course *Introduction to Macroeconomics* (ECON1002). The full model with all the predictors was statistically significant ($\chi^2=131.738$; $df=6$; $p < 0.0005$; $N=339$). This suggests that the model is able to distinguish between students who passed the course and those who did not. The model explained between 32 percent (Cox & Snell R Square) and 44 percent (Nagelkerke R Square) of the variation in the examination results, and was able to correctly classify 80 percent of the cases.

The results of the regression (table 6) indicate that having taken the course multiple times ($B=-0.123$) reduced the probability of passing the course in Semester 1, 2012/2013. The results also indicated that male students and students from non-campus countries were more likely than their counterparts to pass this course. Furthermore, older students and those with increasingly higher numbers of times logging onto the course site were also more likely to pass. As with the other course, the number of times that the tutors logged onto the course site had no effect on the outcome of the examinations for this course (pass/fail). The only significant predictors in the model were location of the student (campus or non-campus country) and the number of times the student logged onto the course site.

Discussion

This study set out to investigate issues relating to online learning in the context of the UWI Open Campus, an institution created to serve the higher education needs of people in under-served

Table 6: Results of the Binary Logistic Regression Investigating Factors that Influence the Likelihood of Students Passing ECON1002

Predictors	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Sex of Student	.517	.341	2.302	1	.129	1.677	.860	3.272
Location	1.185	.305	15.122	1	.000**	3.272	1.800	5.946
Age during 2012/2013 Academic Year	.022	.019	1.421	1	.233	1.022	.986	1.061
No. of Times Course Taken	-.123	.153	.643	1	.423	.884	.655	1.194
No. of Times Students Logging onto Course Site	.006	.001	55.985	1	.000**	1.006	1.004	1.007
No. of Times Tutors Logging onto Course Site	.000	.000	.260	1	.610	1.000	1.000	1.001
Constant	-2.853	.701	16.582	1	.000**	.058		

The output for IBM SPSS v22 is given to 3 decimal places. Hence a result of .000 suggests an actual value of <.0005.

* Statistically significant predictor at $p < 0.05$.

and under-privileged groups in the English-speaking Caribbean. In light of concerns highlighted in relevant literature, archival data for students who registered for bachelor's degree programmes in the institution's first year of operation, 2008, were used to explore factors such as completion of programmes and retention rates as measures of programme success. Possible predictors of successful completion of programmes were also explored. In addition, data for students who registered in Semester 1 of the 2012/2013 academic year for two Open Campus courses with histories of high failure rates, were also used to investigate factors that can predict success at the course level.

The findings from the analysis of the data suggest that, for an institution that is relatively new, the Open Campus appears to be performing as well as, and in some areas, better than some of its longer-established counterparts globally. For example, the completion rate of 24 percent after only five years of operation from its first cohort of undergraduate students is commendable, and compares favourably with the rates for other institutions that offer online programmes, as presented by Simpson (2012). Indeed, only one of the institutions in Simpson's list had a higher completion rate. Related to completion is the retention rate of the institution. The finding of a retention rate close to 80 percent among the cohort of students is also highly commendable, when there is much concern about the high attrition rates among students in online programmes (Mon, 2010; Simpson, 2012). It should be noted that since the research relied on archival data, and no contact was made with the students who were not registered in 2013, it is possible that some of them were merely taking a break and fully intend to continue their programmes as soon as they resolve whatever prompted the need for a break. Thus, the retention rate may be higher than what is reported here.

This high retention rate may for the most part, be attributed to a feature that is very prominent in the Open Campus's operation. The fact is that all students are assigned to online tutors for each course that they take. This teacher-led model has been cited as being most successful in encouraging students to persist to complete their studies (Michigan Department of Education, n.d.).

Also, as mentioned earlier, both students and tutors have the support of a team that includes experts with technical and pedagogical knowledge. This is especially important to the students, many of whom when they start are still working to develop competence with the technology. Apart from the online support, students have access to the country sites where they can also receive assistance. At these sites, they have access to library and computer lab facilities, as well as audio-/video-conferencing facilities, which provide them with direct contact with their tutors if the need arises. These are all services that are in place to help the students to persist and work towards their academic goals. The UWI Open Campus takes into consideration the fact that its students are primarily from under-served and sometimes under-privileged populations, many of whom have little access to the university's brick and mortar campuses and often, inadequate or no access to technological facilities (such as computer and Internet connectivity) at home. Consequently, the institution put measures in place to ensure that these students have access to the facilities that they need to encourage success.

The Open Campus also recognises that large proportions of its intake have been out of the classroom for quite a while and are not only returning to further their education, but also doing so in an unfamiliar online learning environment. Thus, the online programmes follow a structure of support that increases the chances of success. Online support teams provide assistance not only with academic pursuits, but in some cases with any personal challenges that may interfere with student progress. This is indeed in harmony with observations that student success in distance programmes (including those of an online nature) can be greatly enhanced if the institution provides academic, social and personal support for the students (Tinto, 2002; Subotzky & Prinsloo, 2011). Despite the fact that attrition appears to be relatively low then, it seems necessary that the Open Campus should have in place mechanisms for investigating reasons for students discontinuing their programmes, whether temporarily or permanently, and provide academic advice that can help them to make decisions about their pursuit of higher education.

Noteworthy among the findings is that students from non-campus countries, the 14 English-speaking countries that support the UWI but that do not have brick and mortar campuses, were significantly more likely to pass the courses explored and to complete their programmes of study expeditiously. This finding is not surprising in the context of the English-speaking Caribbean. The non-campus countries are primarily the under-served communities which the Open Campus was set up to facilitate (Simmons-McDonald, 2014). People in these countries often are restricted (usually by financial constraints) in their abilities to go abroad to pursue higher education. It is possible that once they gain the opportunity and make the decision to invest in education at this level, they work hard to complete their studies as quickly as possible. With access to the physical campuses at home (hence no great expense of living in a foreign country), individuals in campus countries tend to choose this brick and mortar option, and the students who may opt for the Open Campus may be the ones who find it challenging to obtain a place in the physical campuses, often because of their weak academic profiles.

In addition, male students were found to be significantly less likely to complete their programmes of study expeditiously. This is a cause for concern because the number of males across the region applying to pursue undergraduate studies is already quite low in comparison to females. Also worth attention is the indication that, as suggested by Colorado and Eberle (2010) and Wilson and Allen (2011), cumulative GPA at the end of the first year of study is a significant influence on likelihood of expeditious completion of studies. This awareness can help the Open Campus to put mechanisms in place to make an early identification of academically weak or struggling students who are at risk of not completing their degrees so that interventions can be made. This would require the establishing of clear guidelines for identifying and assisting these students, along with the vigilance of caring professionals within the campus.

Vigilance involves identifying factors that can influence student success and put measures in place to promote those that have positive effects and minimise the impact of those with negative effects. This can be accomplished by paying attention to achievement at the level of individual courses. Though this study looked at only two courses, the findings relating to factors that can influence success (passing the course) can provide some insights on this issue. For example, for both of the courses explored, the location of the student was a significant predictor of success (in favour of those from non-campus countries) as was the number of times the student logged onto the course site. If logging onto the course site can be taken as a sign of engagement, then this significant finding is indeed insightful and in harmony with literature (Swan, 2002; Deka & McMurry, 2006; Restauri, 2006; Grandzol & Grandzol, 2010; Zimmerman, 2012) that indicates its importance as a predictor of student success in online settings. Of note also is the finding which indicates that the number of times students repeat some courses can significantly lower their chances of success in subsequent attempts. This awareness should prompt the UWI Open Campus to strengthen the support systems that are in place to assist failing and struggling students. As mentioned above, vigilance can contribute to the early interventions to support such students, but in cases where they experience failure, appropriate help should be available to minimise the chances of further occurrence.

A point of particular interest is the lack of significant contribution of the engagement of the course tutors, as measured by the number of times each tutor logged onto the course site. This suggests that it did not matter how many times the tutors entered the course site to interact with the students. However, research (e.g. Swan, 2002) suggests interaction with course instructors is a significant predictor of student success. Indications are therefore that more in-depth investigation of this issue may be required in the UWI Open Campus context. It is possible that the approach used to measure tutor interaction for this study was not adequate and that a more reliable means should be applied in subsequent studies. The current finding may also be an indication that the UWI Open Campus needs to pay more attention to the professional development of its tutors to ensure that the quality of their online engagement contributes significantly to the success of the students. The nature of this development can certainly be the subject of further research to ensure that best practices in online learning become an integral part of the operations of this institution. Indeed, overall there is scope for further research in online learning in this context since there may be other factors not accounted for here that may significantly influence the provision of online learning in the English-speaking Caribbean, and elsewhere.

Conclusion

As mentioned earlier, there is some suggestion that not all students are suited to online learning (Carr, 2000; Haigh, 2007, Simpson, 2012). But whether suited or not, this may be the only option for some in under-served and under-privileged communities. The fact is that there are many in the English-speaking Caribbean for whom travelling to one of the countries with traditional brick and mortar campuses of the UWI or to any other institution of higher education is not feasible. What is needed is a means of identifying those students who may be most vulnerable in the online learning setting and providing early, intensive and continuous interventions (Seidman, 2012; Simpson, 2012), whether it be in the form of academic advice, access programmes or greater access to face-to-face support.

While the current study provides some insights into the issues of programme completion and retention among the UWI Open Campus students, it also raises questions about others. For example, since it relied solely on archival data, it was not possible to explore the contribution

of factors such as student motivation, academic self-efficacy, self-esteem and academic locus of control, highlighted as possible influential factors in other studies. The implication here is that there is a need for follow up research to be conducted among existing and/or incoming cohorts of students where data relating to such characteristics can be collected and included in the analyses.

The fact is that students who typically pursue studies online are those for whom there are factors that inhibit their enrolment in face-to-face institutions: personal and professional commitments, entry requirements, and financial constraints. Consequently, institutions that offer online programmes will always have to go the extra mile to ensure that these students have every opportunity to be successful. This calls for going beyond technology and technological infrastructure; it calls for a human touch. As Simpson (2012) observed in the final words of his book, the key to success in online learning may not lie with the technology that students need to have access, but in the people within the institution who care that the students succeed as best they can. As a relatively new institution, the UWI Open Campus appears to be heading on the right path. Investigations such as the one reported here go a long way to provide the evidence needed to make informed decisions designed to encourage student success, thus discharging its responsibility to provide access to higher education for under-served and under-privileged communities in the English-speaking Caribbean and beyond.

References

- Al-Tamimi, H. A. & Al-Shayeb, A. R. (2002). Factors affecting student performance in the introductory finance course. *Journal of Economic and Administrative Sciences*, 18(2). Retrieved from http://jeas.cbe.uaeu.ac.ae/jeas2002_dec/re1.pdf.
- American Institutes for Research (2013). *Predictors of postsecondary success*. Washington: AIR. Retrieved from http://www.ccrscenter.org/sites/default/files/CCRS%20Center_Predictors%20of%20Postsecondary%20Success_final_0.pdf
- Atchley, W., Wingenbach, G. & Akers, C. (2013). Comparison of course completion and student performance through online and traditional courses. *The international Review of Research in Open and Distance Learning*, 14(4), 104–116. Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/1461>
- Bennett, D. S., Padgham, G. L., McCarty, C. S. & Carter, M. S. (2007). Teaching principles of economics: Internet vs. traditional classroom instruction. *Journal of Economics and Economic Education Research*, 8(1), 21–31.
- Carr, S. (2000, February 11). As Distance Education Comes of Age, the Challenge Is Keeping the Students. *Chronicle of Higher Education*, 46(23), A39–A41.
- Colorado, J. T. & Eberle, J. (2010). Student demographics and success in online learning environments. *Emporia State Research Studies*, 46(1), 4–10. Retrieved from <http://academic.emporia.edu/esrs/vol46/colorado.pdf>
- DeBerard, M., Spielmans, G. I. & Julka, D. C. (2004). Predictors of academic achievement and retention among college freshmen: a longitudinal study. *College Student Journal*, 38(1), 66–80.
- Deka, S. & McMurry, P. (2006). Student success in face-to-face and distance teleclass environments: A matter of contact? *The International Review of Research in Open and Distance Learning*, 7(1). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/251>
- Durr, C. J. (n.d.). *Factors affecting student performance in principles of macroeconomics courses*. Retrieved from <http://org.elon.edu/ipe/durr.pdf>.
- Ellis, L. V., Durden, G. C. & Gaynor, P. E. (1998). Evidence on factors that influence the probability of a good performance in the principles of economics course. *Business Quest* (4 November). Retrieved from <http://www.westga.edu/~bquest/1998/perform.html>

- Faux, T. L. & Black-Hughes, C. (2000). A comparison of using the Internet versus lectures to teach social work history. *Research on Social Work*, 10(4), 454–466.
- Gagne, M. & Shepherd, M. (2001, April 1). A comparison between a distance and a traditional graduate accounting class. *T.H.E. Journal*. Retrieved from <http://thejournal.com/Articles/2001/04/01/A-Comparison-Between-a-Distance-and-a-Traditional-Graduate-Accounting-Class.aspx>
- Grandzol, C. J. & Grandzol, J. R. (2010). Interaction in online courses: More is NOT always better. *Online Journal of Distance Learning Administration*, 13(2), 1–18. Retrieved from http://www.westga.edu/~distance/ojdl/summer132/Grandzol_Grandzol132.html
- Haigh, M. (2007). Divided by a common degree program? Profiling online and face-to-face information science students. *Education for Information*, 25(2), 93–110.
- Hawkins, A., Graham, C. R., Sudweeks, R. R. & Barbour, M. K. (2013). Academic performance, course completion rates and student perception of the quality and frequency of interaction in a virtual high school. *Distance Education*, 34(1), 64–83. <http://dx.doi.org/10.1080/01587919.2013.770430>
- Jaggars, S. S., Edgecombe, N. & Stacey, G. W. (2013). What we know about online course outcomes. *Community College Research Center, Teachers College, Columbia University, April 2013*, 1–8.
- Jenkins, R. (2011, May 22). Why are so many students still failing online? *The Chronicle of Higher Education*. Retrieved from <http://chronicle.com/article/Why-Are-So-Many-Students-Still/127584/>
- Kennedy, K. & Archambault, L. (2012). Offering preservice teachers field experiences in K-12 online learning: A national survey of teacher education programs. *Journal of Teacher Education*, 63(3), 185–200. <http://dx.doi.org/10.1177/0022487111433651>
- McLaren, C. H. (2004). A comparison of student persistence and performance in online and classroom business statistics experiences. *Decision Sciences Journal of Innovative Education*, 2(1), 1–10.
- McSparran, M. & Young, S. (2001). Does gender matter in online learning? *Research in Learning Technology*, 9(2), 3–15.
- Means, B., Toyama, Y., Murphy, R., Bakia, M. & Jones, K. (2010). *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online-learning studies*. Washington, DC: U.S. Department of Education. Retrieved from <https://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf>
- Michigan Department of Education (n.d.). *Michigan merit curriculum guidelines: Online experience*. Lansing, MI: Author.
- Mon, L. (2010, December 15). A virtual graduation ceremony for online distance students. *EDUCAUSE Review Online*. Retrieved from <http://www.educause.edu/ero/article/virtual-graduation-ceremony-online-distance-students>
- Moore, J. L., Dickson-Deane, C. & Galyen, K. (2011). e-Learning, online learning, and distance learning environments: Are they the same? *Internet and Higher Education*, 14, 129–135. <http://dx.doi.org/10.1016/j.iheduc.2010.10.001>
- Kara, O., Bagheri, F. & Tolin, T. (2011). Factors affecting students' grades in principles of economics. *American Journal of Business Education*, 2(7), 25–34.
- Paden, R. R. (2006). *A Comparison of Student Achievement and Retention in an Introductory Math Course Delivered in Online, Face-to-face, and Blended Modalities*. *Dissertation Abstracts International*, 67(10). (UMI No. 3237076). ProQuest.
- Restauri, S. L. (2006). *Faculty-student interaction components in online education: What are the effects on student satisfaction and academic outcomes?* (Doctoral thesis, Capella University). Retrieved from <http://professoryates.com/seu/Podcasts/Dissertation%20Research/SteveArticles11.12.10B/Restauri-StudentTeacherInteractionDissertation06.pdf>

- Russell, T. L. (2001). *The no significant difference phenomenon: A comparative research annotated bibliography on technology for distance education*. Raleigh, NC: IDECC.
- Schmieder, E. J. (2008). You can't teach that online: A proposal for consistency. *International Journal of Instructional Technology and Distance Learning*, 5(9). Retrieved from http://www.itdl.org/Journal/Sep_08/index.htm
- Schoenfeld-Tacher, R., McConnell, S. & Graham, M. (2001). Do no harm—A comparison of the effects of on-line vs. traditional delivery media on a science course. *Journal of Science Education and Technology*, 10(3), 257–265. <http://dx.doi.org/10.1023/A:1016690600795>
- Seidman, A. (2012). Taking action: A retention formula and model for student success. In A. Seidman (ed.), *College student retention: A formula for student success*, 2nd ed. (pp. 267–284). Rowman & Littlefield Publishers: Lanham, MD.
- Shum, S. S., Land, L. & Dick, G. (2010). Online lecturing: suitable for all courses? *Proceedings of the Southern Association for Information Systems Conference, Atlanta, GA, USA March 26th–27th, 2010*. Retrieved from <http://sais.aisnet.org/2010/2010-SAIS%20Proceedings/Shum-Land-and-Dick.pdf>
- Simmons-McDonald, H. (2014, March 15). *A framework for open and distance learning at the University of the West Indies*. An unpublished concept paper written for the Executive Management Committee of the University of the West Indies.
- Simpson, O. (2012). *Supporting students for success in online and distance education*, 3rd ed. New York, NY: Routledge.
- Subotzky, G. & Prinsloo, P. (2011). Turning the tide: A socio-critical model and framework for improving student success in open distance learning at the University of South Africa. *Distance Education*, 32(2), 177–193. <http://dx.doi.org/10.1080/01587919.2011.584846>
- Swan, K. (2002). Building learning communities in online courses: The importance of interaction. *Education, Communication & Information*, 2(1), 23–49.
- Terry, N. (2001). Assessing enrollment and attrition rates for the online MBA. *T.H.E. Journal*, 28(7), 64–68.
- Tinto, V. (2002). *Enhancing student persistence: Connecting the dots*. Retrieved September 16, 2014, from <https://traditions.ou.edu/content/dam/HousingFood/Documents/PDF%20-%20Research/Connencting%20the%20Dots%20-%20Tinto.pdf>
- Tinto, V. (2011). *Taking student success seriously in the college classroom*. Retrieved Sep 16, 2014, from <http://californiacommunitycolleges.cccco.edu>
- Waschull, S. B. (2001). The online delivery of psychology courses: Attrition, performance, and evaluation. *Teaching of Psychology*, 28(2), 143–147.
- Wilson, D. & Allen, D. (2011). Success rates of online versus traditional college students. *Research in Higher Education Journal*, 14, 1–8. Retrieved from <http://www.aabri.com/manuscripts/11761.pdf>
- Xu, D. & Jaggars, S. S. (2013). The impact of online learning on students' course outcomes: Evidence from a large community and technical college system. *Economics of Education Review*, 37, 46–57.
- Yukselturk, E. & Bulut, S. (2007). Predictors for student success in an online course. *Educational Technology & Society*, 10(2), 71–83.
- Zimmerman, T. K. (2012). Exploring learner to content interaction as a success factor in online courses. *The International Review of research in Open and Distance Learning*, 13(4), 152–165. Retrieved from <http://www.irrod.org/index.php/irrod/article/view/1302>

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