Correlates of Academic Achievement for Master of Education Students at Open University Malaysia

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BACKGROUND

The relationship between demographic variables and academic achievement among adult distance learners has received considerable attention. Recent research in this area has largely been propelled by the need to develop a theoretical understanding of student success in adult distance education (Chen, Jang & Branch, 2010; Ng, 2009; Yen & Liu, 2009; Yukselturk & Bulut, 2007). Based on the outcomes of related empirical investigations, this study focused on three demographic variables: gender, age and home/study location, hereon referred to as *learning centre*. The study does not assume synonymy between on-site online courses and distance education.

The relationship between gender and achievement warrants investigation as a larger proportion of female than male students enrol in distance learning courses (Halsne & Gatta, 2002; Zirkle, 2003). While some researchers have demonstrated that distance education appeals disproportionately to females (Ross & Powell, 1990), others have found that learning styles often create an inequitable learning environment for males and females (Blum, 1999). Further, the learning experience in distance education often requires technical skills and confidence about learning from a distance, hence disadvantaging females by posing "higher dispositional, situational, and institutional barriers" for them (Blum, 1999:1). However, in contrast to the findings forwarded by Ross & Powell (1990) and Rovai (2001), recent investigations have found that there is no significant relationship between gender and course grades (Wojciechowski & Palmer, 2005).

The literature on age and academic success shows little consensus among researchers. Recent research indicates that the probability of student success in online distance learning courses increases with age, a factor positively correlated with students' grades (Williams, 2008). In Artino & Stephens' (2009) study it was found that younger students find more value in online learning, and proposed that for working adults, age and circumstance may play a part achievement. This is consistent with the long-held view that older adult learners are less technologically savvy than younger students, and often have greater responsibility toward work and family (Dubois, 1996). In contrast, research by Ke & Xie, (2009) and Hargis (2001) has established that age alone does not contribute to success in distance education.

An investigation that includes location is significant to this study due to variation in resources and learning support in different localities. Support structures in Open University Malaysia learning centres vary according to size of student population, perceptions of social presence, availability of qualified instructors, degree of technological advancement, administrative savvy as well as the quality of online or face-to-face interaction offered to distance learners.

The above discussion shows that while much attention has been given to the role of gender and age in academic achievement, the evidence is inconclusive. Additionally, research on location is significant to understanding the role of key factors in a distributed learning environment.

METHODOLOGY

The study employed Chi-Square statistics and odds ratios to test the association between students' academic performance and their demographic profile. Additionally a logistic regression routine was used to predict the factors contributing to students' academic performance. The predictor variables assessed for association with academic performance were gender, age and learning centre. The criterion variable was the CGPA attained for a minimum of five MEd courses (taken over a minimum of two semesters) and a maximum of eight courses (taken over a two-year period). At OUM, the cut-off point for awarding a 'pass' is a CGPA of at least 3.00. Students with an 'incomplete' or 'deferred' status were not included in the sample.

Demographic Profile of Sample

The sample for this study comprised 948 students derived from a population of 1,318 students enrolled in the Master of Education programme between the years 2005 and 2009. Of the 948 records analyzed, 652 students (68.6%) had obtained a CGPA of 3.00 and above. There were more female students (59.7%) than male students (40.3%) in the sample. In terms of age, those categorised under 36-45 years (51.6%) formed the largest group. Those aged 50 and above (6.8%) as well as those aged 30 and below (8.2%) formed the smallest groups.

There were thirteen Malaysian learning centres represented in the sample, spanning from Kedah in the north of peninsula Malaysia to Tawau and Sandakan in the far eastern part of the country. The highest percentage of students in the sample hailed from Kelantan (17.6), followed by Kuching (13.7%) and Kuala Lumpur (13.4%). The smallest groups of students were from Perak (3.8%), Negri Sembilan (3.4%) and Sandakan (3.3%). The demographic profile of the students is summarised in Table 1 below.

Table 1. Demographic Profile of Students

		n	%
Gender	male	382	40.3
	female	566	59.7
Age	26 - 30	78	8.2
	31 - 35	102	10.8
	36 - 40	240	25.3
	41 - 45	249	26.3
	46 - 50	125	13.2
	51 - 55	90	9.5
	56 and above	64	6.8
Learning Centres	Kuala Lumpur	127	13.4
	Johor	41	4.3
	Kedah	67	7.1
	Kelantan	167	17.6
	Perak	36	3.8
	Pahang	70	7.4
	Kota Kinabalu	73	7.7
	Tawau	44	4.6
	Terengganu	63	6.6
	Negeri Sembilan	32	3.4
	Sandakan	31	3.3
	Sibu	67	7.1
	Kuching	130	13.7

RESULTS

The results show that gender has a significant association with academic performance. As shown in Table 2 below, the percentage of students with a CGPA of 3.00 and above among female students was 74.7%. This is significantly higher (p = 0.0001) than the percentage of males who obtained a CGPA of 3.00 and above (59.9%). The figures for students who obtained a CGPA of less than 3.00 show a similar trend, in that a significantly lower number of females performed poorly in comparison to males.

As for the age category, a significantly higher percentage of students (p = 0.003) from all the age groups obtained a CGPA of 3.00 and above. Students from the age group 31-35 faired most favourably with 80.4% of them having a CGPA of 3.00 and above (Table 2).

For the third factor, all learning centres registered a higher percentage of students (p = 0.002) obtaining a CGPA of 3.00 and above than those who obtained a CGPA less than 3.00 (Table 2). The two learning centres recording the highest proportion of students with a CGPA of 3.00 and above are Tawau (86.4%) and Johor (85.4%). The lowest proportion of students with a CGPA of 3.00 and above is in Kota Kinabalu (50.7%) and Sibu (53.7%).

Table 2. Association between academic performance and demographic factors

		CGPA Category		
		Less than 3.00 n=296(31.2%)	3.00 and above n=652 (68.8%)	
Gender	Male	153 (40.1%)	229 (59.9%)	
	Female	143 (25.3%)	523 (74.7%)	χ^2 = 23.22 (p = 0.000)
Age Category	26 - 30	17 (21.8%)	61 (78.2%)	
	31 - 35	20 (19.6%)	82 (80.4%)	
	36 - 40	85 (35.4%)	155 (64.6%)	
	41 - 45	91 (36.5%)	158 (63.5%)	
	46 - 50	45 (36.0%)	80 (64.0%)	χ^2 = 16.69 (p = 0.003)
	51 - 55	24 (26.7%)	66 (73.3%)	
	56 and above	14 (21.9%)	50 (78.1%)	
Learning Centres	Johor	6 (14.6%)	35 (85.4%)	
	Negeri Sembilan	9 (28.1%)	23 (71.9%)	
	Sandakan	8 (25.8%)	23 (74.2%)	
	Sibu	31 (46.3%)	36 (53.7%)	
	Kuching	36 (27.7%)	94 (73.3%)	
	Kedah	18 (26.9%)	49 (73.1%)	
	Kuala Lumpur	29 (22.8%)	98 (77.2%)	χ^2 = 31.35 (p = 0.002)
	Perak	11 (30.6%)	25 (69.4%)	
	Pahang	29 (41.4%)	41 (58.6%)	
	Kota Kinabalu	36 (49.3%)	37 (50.7%)	
	Kelantan	60 (35.9%)	107 (64.1%)	
	Tawau	6 (13.6%)	38 (86.4%)	
	Terengganu	17 (27.0%)	46 (73.0%)	

To fulfil the second objective, this paper modelled the relationship between the factors to predict academic performance. The multiple logistic regression was used for this purpose. In this 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 demographic factors that have significant association with CGPA. 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, in comparison to female students, male students have a lower probability of getting a CGPA of 3.00 and above. The odds ratio for male students getting a CGPA of 3.00 and above is 0.465 (95% CI 0.147-0.783). In other words the probability of male students getting a CGPA of 3.00 and above is about 0.465 times compared to female students.

Though there is evidence that the academic performance of students from different age categories displays significant variation in terms of percentage of students with a CGPA of 3.00 and above, it was found that age does not contribute significantly to academic performance. Students from the age category 31-35 have a (slightly) higher probability of getting a CGPA of 3.00 and above compared with

those from the age group 26-30 years, for which the odds ratio is 1.106. Nevertheless, this difference is not statistically significant. The odds ratio for students in the age group 36 – 40 getting a CGPA of 3.00 and above is 0.658 (95% CI 0.260-1.953). In other words the probability of students aged between 36-40 getting a CGPA of 3.00 and above is about 0.658 times compared to the reference group (i.e. students in age group 26-30). A similar pattern also emerged for students from age groups 41-45, 46-50, 51-55, and 56 and above. The odds ratios for these groups are 0.575 (CI = 0.259-0.890), 0.604 (CI = 0.110-1.097), 0.825 (CI = 0.077-1.574), and 1.044 (CI = 0.242-1.846), respectively. These results are presented in Table 3.

Table 3: Results of Multiple Logistic Regression Analysis

Reference Group	Parameters	B	S.E.	Wald	df	Sig.	Exp(B)
	Gender						
Female	Male	-0.767	0.162	22.4161	1	0.00	0.465
Kuala Lumpur	Learning Centre				12	0.00	
	Johor	0.168	0.113	2.2104	1	0.826	1.183
	Kedah	-0.113	0.128	0.7794	1	0.152	0.893
	Kelantan	-0.516	0.148	12.1556	1	0.739	0.597
	Perak	-0.413	0.266	2.4107	1	0.120	0.662
	Pahang	-0.916	0.219	17.4945	1	0.013	0.400
	Kota Kinabalu	-1.135	0.326	12.1215	1	0.011	0.321
	Tawau	0.719	0.321	5.0170	1	0.000	2.052
	Terengganu	-0.354	0.293	1.4597	1	0.083	0.702
	Negeri Sembilan	-0.051	0.157	0.1055	1	0.673	0.950
	Sandakan	-0.171	0.159	1.1566	1	0.555	0.843
	Sibu	-1.263	0.141	80.2359	1	0.003	0.283
	Kuching	-0.116	0.111	1.0921	1	0.613	0.890
26 - 30	Age Category				6	0.006	1.000
	31 - 35	0.101	0.432	0.0547	1	0.787	1.106
	36 - 40	-0.418	0.224	3.4822	1	0.324	0.658
	41 - 45	-0.554	0.161	11.8404	1	0.125	0.575
	46 - 50	-0.505	0.252	4.0159	1	0.152	0.604
	51 - 55	-0.192	0.382	0.2526	1	0.304	0.825
	56 and above	0.043	0.409	0.0111	1	0.916	1.044
	Constant	1.69	0.401	17.7617	1	0	5.419

a. Variable(s) entered on step 1: gender, age category, learning centre

It was also found that students from Sibu, Pahang and Kota Kinabalu have a significantly lower probability of getting a CGPA of 3.00 and above compared with those from Kuala Lumpur. The odds ratios for getting a CGPA of 3.00 and above for students from these locations are 0.283 (95% CI =0.006-0.559), 0.400 (95% CI = -0.029-0.829) and 0.321 (95% CI = -0.318-0.960), respectively. However, students from the Tawau have a higher probability of obtaining a CGPA of 3.00 and above, where the odds ratio is 2.052 (CI = 1.423-2.682). The results of the final model are presented in Table 3.

Taking all the three demographic factors (gender, age, and learning centres) into account, the sensitivity of the model is 94.8% while the specificity is 21.6%. In other words, this logistic regression model can predict the occurrence of a CGPA of 3.00 and above with 94.8% accuracy but the ability of the model to predict non-occurrence is only 21.6%. However, the ability of the model to predict students getting a CGPA less than 3.00 is only 46.7% when using gender, age, and learning centres as predictor variables. The values in the classification table for the model (Table 4) show that the three predictor variables account for about 11-12% of variation in the CGPA of students (Cox & Snell R-Square: 0.115; Nagelkerke R-Square 0.121).

Table 4. Classification Table[*]

		Predicted		
		CGPA		
Observed		less than 3.00	3.00 and above	Percentage Correct
Step 1 CGPA less than 3.00		64	232	21.6
3.00 and above		34	618	94.8
Overall Percentage				71.9

*Cut value: .500

DISCUSSION

The results show that gender has a significant association with academic performance. This is corroborated by studies that found that female students to be more successful in courses that involve online interaction (Ross & Powell, 1990), attributed in part to communication patterns and a strong sense of online community (Rovai, 2001). However, Blum's (1999) finding that distance education involves "female-friendly" pedagogy, that is, pedagogy characterised by sharing and interactive methodology, with a great deal of potential for collaboration, warrants further investigation.

For the second factor, age, the results of this study show that age does not significantly contribute to academic performance. This finding is consistent with that of recent research indicating that regardless of age, students invest similar amounts of effort and experience similar levels of satisfaction (Ke & Xie, 2009). Nevertheless, though age is not necessarily a predictor for success in online distance learning (Hargis, 2001), the results of this study show that students aged 46 and above may require more instructional support for success in the programme.

Results for the third factor show that with the exception of one centre (Tawau) a learning centre located in a large urban metropolis may contribute positively to achievement. A possible explanation for this is that there is greater academic awareness in urban localities, as defined by the presence of several institutions of higher learning, and hence more qualified instructors, as well as better connectivity for online

interaction. In comparison, a distance learning centre with inadequate infrastructure or poor instructional support may be a factor contributing to poor achievement.

Finally it was found that the three predictor variables account for 11-12% of variation in achievement, implying that demographic factors are somewhat significant to achievement. However, further research on other critical factors is necessary to get a comprehensive understanding of influences to learning. These factors would include autonomous learning skills, work experience, preferred form of interaction and reasons for enrolment. The study also implies that a comprehensive strategy should be implemented to address the needs of male students as well as students in locations that record low levels of achievement. Such a strategy, together with early identification and academic counselling, would provide for a more rewarding distance learning experience in a distributed learning environment.

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