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What is the effect of grade point average (GPA) on courses taken either face-to-face or online by undergraduate working adult students?

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Abstract

The study site is a unique institution of adult students in the United States of America offering course modality choice to its students which is either face-to-face (FTF) or online. Online instruction is offered completely online using Moodle as the online learning environment. The stakeholders at the study site needed research-based findings on the effect of grade point average (GPA) on courses taken either face-to-face or online by undergraduate working adult students in order for institutional reforms to take place on course modalities. The research question that guided this study was: What is the effect of GPA on courses taken either face-to-face or online by undergraduate working adult students? The purpose of this study was to examine the effect of GPA on courses taken either face-to-face or online by undergraduate working adult students. This study was grounded in the self determination theory (SDT) with its sub-set cognitive evaluation theory (CET). A comparative design of independent groups was used in the investigation of the research question. Archived data were collected on GPA, course modality, and course modality choice. Descriptive statistics and regressions analyses were performed within course modality choice. A significant effect of student choice of learning modality in student achievement either across or within course modalities was found.

Keywords: college; GPA; final grades; business courses; online courses; face-to-face; online; undergraduate working adult students.

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The Research Problem

The study site is a unique institution of adult students in the United States of America. The educational institution is offering course modality choice to its students. Course modality is either face-to-face (FTF) or online. Online instruction is offered completely online using Moodle as the online learning environment. At the study site educational stakeholders have expanded web-based instructional offerings to undergraduate working adult students. The popularity of the online offerings has resulted in the institution offering more courses online and into considering adding complete degree programs. The institution is primarily a traditional face-to-face organization with no programs offered totally online; therefore, students must take a minimum of 55% of their selected program in the traditional course modality. The stakeholders at the study site needed research-based findings on the effect of GPA on courses taken either face-to-face or online by undergraduate working adult students in order for institutional reforms to take place on course modalities.

Nature of the Study

At the study site, the student population is diverse ethnically, economically, and socially with female students outnumbering male students by 4 to 1 ratio. The majority of the students are working adults who have families and support their children. The participants are undergraduate students at a four-year private college with an open enrollment policy and WASC accreditation. The average age of students is approximately 29 years of age. Participants were approximately 36% Hispanics, 17% African American, 35% Caucasian, and 12% Asian and Pacific Islanders. Of the participants, 55% is employed fulltime, 20% is employed part-time and 25% is unemployed. Additionally, 37% of the students have no dependents at home while 63% have one or more dependents at home. Data were gathered from a convenience sample of undergraduate working adult students who select course modality (FTF or online) and courses offered in the same academic term taught by the same educators covering the same content and utilizing the same assessments of performance.

Research Question

The research question that guided this study was: What is the effect of GPA on courses taken either face-to-face or online by undergraduate working adult students?

Significance of Study

The findings of this study have implications for researchers, practitioners, and policy makers. The findings of this study add to the current body of research available. The findings of this study can be used at the study site to create a framework to implement the institution's vision and mission by supporting students in FTF and online courses. The findings might be generalized to other similar colleges.

Purpose of Study

The purpose of this study was to examine the effect of GPA on courses taken either face-to-face or online by undergraduate working adult students. This study was conducted to address the literature gap pertinent to student choices of course modality (FTF or online) and their grade point average (GPA). The purpose of this quantitative study was to shed further light on this important topic. The findings might have benefits for policy-makers, researchers, and students at the study site. Senior administrators at the study site use the findings of this study to make institution-wide reforms. Policy makers of the participating institution will be better informed on how student choice may affect student performance.

Theoretical Framework

The self determination theory (SDT) with its sub-set cognitive evaluation theory (CET) has been primarily applied to athletics and has a consistent body of evidence supporting the proposition that self-determined activities are intrinsically motivating (Cavallo, 2003; Csikszentmihalyi, 1990; Curless, 2004; Deci & Ryan, 1985; Roberts, 1992). Motivational strength or attractiveness of asynchronous instruction was hypothesized to have a positive effect in undermining student ability to effectively judge subsequent outcomes (Weiner, 1980, 1992). For this study, the assumption was the desire for the convenience of online instruction interferes with student judgments of capacity to perform in the online instructional modality. This study empirically explored the aforementioned assumptions in relationship to student choice of course modality. This study examined choice of modality and GPA through the lens of SDT in order to add to the understanding of student performance such as course grades.

Definition of Terms

Online course: Online course refers to a period of instruction lasting one academic period in which all course materials, student deliverables, and human interactions take place via a digital or electronic medium (e.g., web server, email, course management system, phone, or text message).

Student achievement: Student achievement refers to the final grade received by a student participant of an A, B, C, or D and given by the instructor of record for the registered course.

Traditional course: Traditional course is defined as face-to-face instruction occurring in a typical classroom, given and presided over by one instructor in the traditional lecture method and in which student deliverables may either be collected in class on scheduled class days or electronically submitted to the course website.

Assumptions, Limitations, Delimitations, and Scope

The study was restricted to the student population at a private WASC accredited institution. The study was conducted over one academic period at one educational institution. No random sampling was used. The findings of this study are limited to data access at the study site. These factors minimized the generalizability of the results obtained.

Literature Review

Current research findings additionally show that students who have more experience with online instruction do better than students who have not had such experience (Osborn, 2001; Roblyer, 1999; Wade, 1999; Weisskirch, 2006). Drop-out rates for online instruction have been reported to be between 25% and 40%, while traditional face to face on-campus courses have exhibited rates between 10% and 20%. GPA has consistently been shown to be the single best predictor of future academic success (Bell, 2006; D'Agostino & Powers, 2009; Osborn, 2001; Scott, Tolson, & Tse-Yang, 2009; Sulaiman & Mohezar, 2006).

A large body of research evidence has shown the typical online student is an employed, female adult learner who is computer literate and motivated by career advancement (Leasure, Davis, & Thievon, 2000; Muilenburg 2005). Many studies have provided demographic profiles that indicate online students are older and are more likely to have families and be employed than their traditional counterparts (Becker & Haugen, 2004; Bryant, Kahle, Schafer, & Folkers, 2005; Schell, 2001).

A review of the current literature addressing the importance of student choice in online learning adult education courses revealed that there is a paucity of research on the subject in general and no specific information relating to quantitative studies on how choice of learning modality effects student persistence, academic performance, and satisfaction (Marks, Sibley, & Arbaugh, 2005; Swan, 2001). Roblyer (1999) found that two factors were significant contributors to decisions made by students to choose either distance learning (DL) or FTF instruction and control of the learning pace for those choosing DL and Interaction (with instructor and students) for those preferring FTF. These findings are in line with the finding of (Folkers, 2005; Rentroia-Bonito, 2005; Shea, Motiwalla, & Lewis, 2001).

Students' previous experience with the online course management system has been shown to be related to student subsequent online success (Osborn, 2001). GPA has been shown to be the single best predictor of student academic success in both FTF and OL course modalities (Osborn). Osborn asserted the number of online courses previously completed by online students has reliably discriminated between students who drop and those who complete online courses. Osborn noted that students who remain in online courses have higher GPAs compared to those that drop out of these courses. Psychological predictors of student online success have had a lower degree of success reliably predicting online student success except for the moderately correlated global trait locus of control and the concept of self-efficacy (Bandura, 1977, 1997) when applied to a specific situation (Cervone, 1989; Miller, Rainer, & Corley, 2003; Wang & Newlin, 2000, 2002).

This study sought to find what role student choice regarding OL and FTF may play in student performance as measured by their final grades in FTF and online courses. Hundreds of comparison studies over the last 20 years have left no doubt that online instruction is as effective, if not more effective, than the traditional face-to-face course modality (Finlay, Desmet, & Evans, 2004; Leasure et al., 2000; Picciano, 2002; Vamosi, 2004; Vamosi, Pierce, & Slotkin, 2004). GPA has consistently been shown to be the single best predictor of future academic success (Bell, 2006; D'Agostino & Powers, 2009; Osborn, 2001; Scott et al., 2009; Sulaiman & Mohezar, 2006). Computer ownership and use have been shown to be predictors of GPA and college success since many courses assume students have a degree of technological competence (George, Dixon, Stansal, Lund-Gelb, & Tabitha Pheri, 2008; Goodfellow & Wade, 2007; Kiriakidis, 2011).

The number of students taking online courses is increasing at a rate approaching 20% per year, and online student growth is 10 times the rate of traditional face-to-face (FTF) enrollments (Allen & Seaman, 2007). NCES reported web-based instruction was available at 97% of the nation's public 2 year institutions and 89% of public 4 year institutions while 53% of private not for profit institutions offered online courses. Competition among post-secondary institutions

for students preferring online instruction has encouraged these institutions to increase their web-based courses in order to attract and perhaps even keep their present student enrollments.

Current literature review revealed that students learned as well in both teaching modalities (OL and FTF) (Finlay et al., 2004; Joy & Garcia, 2000; Twigg, 2005; Vamosi et al., 2004). Along with those studies, findings on dropout rates from online courses were significantly higher than from the traditional FTF learning modality (Dutton, Dutton, & Perry, 2002; Phipps, 1999). Persistence (dropouts) as defined by course completion has been acknowledged to be common problem associated with online instruction (Dutton et al.; Noble, 1998). Dropout rates for online courses have been attributed to a number of possible causes with the most common being technological competence within the specific online format (Roblyer, 1999, 2006; Wade, 1999). Problems with defining what a drop out is across institutions have confounded the conclusions reached by these investigators as well as a failure to fully investigate the populations self selecting into online or the traditional courses.

In one community college that online learners were predominantly visual learners, were women who had children at home, incomes of over \$40,000 per year and had an average age of 34 (Halsne & Gatta, 2002). The traditional college student were primarily the students about 24 years of age, kinesthetic or auditory learners, had no children and were more likely to be of Spanish/Hispanic origin than the online students. Dutton et al. (2002) found similar results as those of Halsne and Gatta. Online students were found to be older, more likely to be lifelong learners, be employed, had longer commutes to campus, were more experienced with computers, and their concerns for class conflicts with work, reducing commuting time and flexibility in studying as being more important than choice of course format. Lecture students rated contact with instructors and fellow students, motivation from class meetings, and the need to hear lectures as most important in their choice of format. The greater the perceived distance that students feel from instructors and other students the greater degree of dissatisfaction and the less likely the student will be retained (Chen, 2003; Heckert 2006).

Five constructs that affected the dropouts of adult learners engaged in online education were identified through an in-depth literature review by Jun (2005). The five constructs were background, motivation, academic integration, social integration and technological environment. Jun reported that few of the studies in his literature review provided a theoretical basis or explanatory network to explain the results.

The typical online student is an employed, female adult learner who is computer literate and motivated by career advancement (Leasure et al., 2000). Wang and Newlin (2002) have stated in their search of the predictors of student online

performance that age, gender, and technological ability are not reliable predictors of online academic success. Sulaiman and Mohezar (2006) reported undergraduate GPA was the most significant predictor of eventual graduate success in a Masters of Business Administration (MBA) program while gender, age, ethnicity, and work experience had no bearing on graduate level success.

Previous academic performance has often been used as potential predictor of future academic success and GPA continues to be the single best predictor for adults of diverse backgrounds (Cubeta, Travers, & Sheckley, 2001). Sulaiman and Mohezar (2006) reported undergraduate GPA was the most significant predictor of eventual graduate success in a Masters of Business Administration (MBA) program. D'Agostino and Powers (2009) reported in their meta-analysis of teachers that overall undergraduate college GPA was the most significant predictor of subsequent teacher performance over a number of professional credentialing and licensing examinations (Cubeta et al.).

A number of studies have mentioned previous online experience with the course management system as a significant factor in subsequent online academic success and student satisfaction (Osborn, 2001; Roblyer, 1999; Wade, 1999; Wang & Newlin, 2002). The assumptions made were that previous experience in the online environment provided students with the confidence in their personal technological and time management abilities to enable success in the online environment.

The majority of adult students selecting to pursue online education have indicated that the primary reason for selecting the online learning environment was one of convenience. The asynchronous nature provides students with the flexibility to engage with course materials when and where the students choose. Issues of transportation, child care, and uninterrupted career path were mentioned by large majorities of surveyed students enrolled in online courses (O'Lawrence, 2007; Wang & Newlin, 2002).

Current literature has focused on how course modality differs, how students differ who choose one course modality or the other, and how online students perceived problems with the course modality and student subsequent performance (Leasure et al., 2000). These scholars have generally supported the idea that students who choose online courses over traditional face-to-face courses differ across a number of factors including older in age, employment status, married, have children at home, gender, and have higher GPAs (Dutton et al., 2002; Halsne & Gatta, 2002) and have postulated higher course dropout rates due to demographic factors (e.g., family and employment) when compared to traditional students. Scholars have supported the idea that technological competence is a good predictor of performance in the online environment (Barkley, 2006; Bong, 2004; Hornik, 2007; Marsh, 1993; Pajares & Graham, 1999). The presumption being that those

who are comfortable with technology would be more likely to select distance online education as a choice.

The most consistently reported reason for choosing online instruction over the traditional face-to-face mode is one of convenience (O'Lawrence, 2007; Wang & Newlin, 2002). The researcher examined the relationship between adult student choice in online and face-to-face course modality and subsequent student performance at an accredited graduate college in western USA. Choice was examined in relation to student performance in both teaching modalities (OL and FTF).

The phenomenon of Internet education leads to *social space virtualization* through the use of communication technologies that generate paradigmatic transformations globally because the Internet is time and place independent. Through social space virtualization, online participants may create a new global learning environment and maintain online social interactions via threaded discussions. Virtualization of social space may change the behavioral habits of the online learners. Globalization of online communication creates a new feature of trans-cultural social interactions creating educational paradigms and expectations of academic behavior for collaborative creativity. The idea of online modernized interaction creates opportunities for creativity. The philosophy of collaborative creativity generates virtual social networks in forms of mass communications for educational purposes.

The social constructionism theory applies to the online learning environment as philosophical and sociological (Gergen, 2001; Liao, 2006; Cojocaru, 2008). According to Derrida (1997), social reality is the result of ongoing negotiations of interpretations among the participants. Unlike constructivism, constructionism radicalizes the social construct theory on reality. Social reality is not just a construct derived from the negotiation of interpretations, but also a multiple reality creating different constructs for the same social reality that themselves operate simultaneously.

Treatment and Control Groups

The participating institution scheduled a series of courses in the fall quarter of 2008, designed to examine student instructional modality preference (OL or FTF). The researchers were given access to these institutional archived data.

Eight courses were offered in both OL and FTF modalities. These eight courses were taught by educators assigned each to one OL and one FTF course. The educators used the same course syllabus in both courses with the same assessments, and teaching materials. The institution collected records for all students registered for the selected courses prior to the first day of class and who were reported by the instructors as attending during the first week of instruction. The

collected data from these eight courses formed the treatment group for this study. Thus, the participants who selected course modality (FTF or online) made up the treatment group.

Twenty other courses were purposely selected offered in either the OL (seven courses) or FTF (13 courses) modalities only in order to approximate the number of students enrolling in the aforementioned eight course sections. Records were collected by the institution's administration for all students registered in these 20 courses prior to the first day of class for students who attended during the first week of instruction. The data from these 20 courses formed the control group for this study. Thus, the participants who selected the remaining courses without a choice of modality made up the control group.

Data Collection and Evidence of Quality

The naturally occurring groups were made possible by an administrative decision during the fall quarter of 2008 to offer two sections of the same courses taught by the same instructors teaching one online and one FTF section of a course using the same syllabus and course materials for content and assessment. The records produced during this period served as the secondary archived data for the study.

The Director responsible for research at the study site retrieved individual student data that included each participant's GPA at the time of course registration, final grade, and course modality. The Director exported the data to a Microsoft Excel spreadsheet and provided the researchers only with students' GPA at the time of course registration, final grades, and course modality choice. No data revealed student identification information such as student numbers, names, or addresses.

Protection of Participants

The researcher obtained IRB approval from the data study administrator responsible for research. A Data Use Agreement was signed between the participating educational institution and the researcher in order to collect the archived data.

The researcher collected archived data that contained neither the names nor any other information to identify individual participants. Data were specific to the research question. Thus, data for individual students were not collected. Based upon the fact that the data were archived, professional relationships did not affect the data collection process.

Only the researchers have access to the archived data. The collected data were placed in a secure location in one of the researchers' home office whose personal computer is secured by a password, with only the researcher having access to the password.

Research Design

A comparative design of independent groups was used in the investigation of the research question. Descriptive statistics and regressions analyses were performed within course modality choice. Where assumptions of linearity were found to be significantly deviated from linearity through a means test, a subsequent regression was run.

Data Analysis

The research question that guided this study consisted of one dependent variable, which represented the final grades of the students. For the purpose of this study, the final grades of the participants were these letter grades: A, B, C, or D. The data type of the dependent variable was ordinal. Each letter grade was coded by assigning numerical values such as letter grade A or A- was given a value of 8, letter grade B+ or B or B- was given a value of 7, and so forth).

The first independent variable was the GPA average of the students. For the purpose of this study, the GPA coded numeric values and ranges were used. The data type of the independent variable GPA was a continuous variable and re-coded as an interval categorical variable prior to the analysis in order to maintain parsimony with the categorical nature of the independent variables. The independent variable GPA was assigned these numbers for analysis: 0 for the range 1.26 to 1.50; 1 for the range 1.56 to 1.75; 2 for the range 1.76 to 2.00; 3 for the range 2.01 to 2.25; 4 for the range 2.26 to 2.50; 5 for the range 2.51-2.75; 6 for the range 2.76 to 3.00; 7 for the range 3.01 to 3.25; 8 for the range 3.26 to 3.50; 9 for the range 3.51 to 3.75; and 10 for the range 3.76 to 4.00.

The second independent variable was course modality choice, which represented either a face-to-face or online course. This independent variable, course modality choice, represented students' choice of course modality. This variable was assigned these numbers for analysis: 1 for student choice of modality or 2 for student no choice of course modality.

Findings

The frequencies of the GPA ranges are presented in *Table 1*. The frequencies of the course modality and course modality choice are presented in *Table 2*. Students with choice of course modality were 21.7% while students with no choice of modality were 78.3%.

For the dependent variable final grades of the participants letter grades were assigned such as A or B or C or D. The frequencies of the final grades and course modality choice are presented in *Table 3*. For final letter grade A, 31.7% had no modality choice while 9.4% had modality choice. For final letter grade B, 25.1% had no modality choice while 7.1% had modality choice. For final letter grade C, 15.7% had no modality choice while 4.0% had modality choice. For final letter grade D, 5.7% had no modality choice while 1.1% had modality choice.

Table 1. Frequencies of GPA Ranges

GPA Range	Frequency
1.25-1.49	4
1.50-1.75	3
1.76-2.00	3
2.01-2.25	13
2.26-2.50	31
2.51-2.75	38
2.76-3.00	65
3.01-3.25	67
3.26-3.50	61
3.51-3.75	34
3.76-4.00	31

Table 2. Frequencies of Course Modality and Course Modality Choice

Course Modality	Frequency
FTF	188
OL	162
student choice of modality	76
no choice of modality	274

Table 3. Frequencies of Final Grades and Course Modality Choice

Letter Grade	No Modality Choice	Modality Choice
A	111	33
B	88	25
C	55	14
D	20	4

The correlation between students' GPA and students' final grades was Spearman Rho = .351**, which is a significant correlation at $\alpha < .01$ (Table 4). This correlation was significant and positive indicating that student GPA was positively correlated with students' final grades.

Table 4. Spearman Rho for GPA and Final Grades

Final Grade
.351**

PS: * Correlation significant $< .05$, ** Correlation significant $< .01$

Using the Multinomial Logistic Regression for final grades across course modalities was a reliable (Table 5) ($Chi\text{-square} = 892.095$, $df = 876$, $p = .345$) and significant model emerged with a ($Chi\text{-square} = 93.947$, $df = 36$, $p < .000$). The model accounted for between 23.5% and 25.7% of the variance for the dependent variable final grades across both FTF and online course modalities. The Cox and Snell value was .235. The Nagelkerke value was .257. The B coefficients are shown in (Table 6). For the variables GPA and course modality, only GPA was found to be significant with $B = -.642$ and $p = .000$.

Table 5. Model-Fitting: Final Grades for FTF and Online Course Modalities

	B	Sig	Exp(B)
Pearson			
GPA	-.642	.000	.526

Table 6. B Coefficients for GPA and FTF and Online Modalities

	B	Sig	Exp(B)
Pearson			
GPA	-.642	.000	.526

In order to further examine the possible effect of student choice of modality, the researchers continued to investigate within course modality, first for the FTF group and subsequently the OL group. The results of those analyses follow. No outliers in the data set were found at 2.00 standard deviations or more. The GPA frequencies for the FTF modality are presented in Table 7.

Table 7. Frequencies of GPA Ranges and FTF Course Modality

Range	Frequency
1.25-1.49	4
1.50-1.75	2
1.76-2.00	2
2.01-2.25	6
2.26-2.50	16
2.51-2.75	24
2.76-3.00	32
3.01-3.25	38
3.26-3.50	36
3.51-3.75	14
3.76-4.00	14

For the dependent variable final grades of the students these values were assigned: 8 for letter grade A, 7 for letter grade B, 6 for letter grade C, or 5 for letter grade D. The frequencies are presented in Table 8. For final letter grade A, 34.0% of the participants had no modality choice while 5.3% of the participants had modality choice. For final letter grade B, 29.8% of the participants had no modality choice while 5.1% of the participants had modality choice. For final letter grade C, 17.0% of the participants had no modality choice while 2.7% of the participants had modality choice. For final letter grade D, 5.3% of the participants had no modality choice while 0.6% of the participants had modality choice. The frequencies of the final grades for the FTF course modality are presented in Table 8.

Table 8. Frequencies of Final Grades and FTF Course Modality

Letter Grade	No Modality Choice	Modality Choice
A	64	10
B	56	10
C	32	17
D	10	1

The correlation between students' GPA and students' final grades was Spearman $Rho = .309^{**}$, which is a significant correlation at $\alpha < .01$ (Table 9). This correlation was significant and positive indicating that student GPA was positively correlated with students' final grades.

Table 9. Spearman Rho for GPA, Final Grades, and FTF Modality

Students' GPA	Final Grade
	.309**

PS: * Correlation significant $< .05$, ** Correlation significant $< .01$

A Multinomial Logistic Regression was run for the variables GPA and FTF course modality. Students' GPA was found to be significant with $B = -.573$ and $p = .001$. A Multinomial Logistic Regression was run and a significant model emerged, which accounted for between 26.0% (Cox and Snell = .260) and 28.5% (Nagelkerke = .285) of the variance. Thus, this analysis indicated that GPA was predictor in the overall model (Table 10).

Table 10. Final Grade - FTF Modality: Model-Fitting and Goodness-of-Fit

Model-Fitting - Goodness-of-Fit	B	Sig	Exp(B)
GPA	-.573	.001	.564

No outliers were found or removed from the data set. Analysis indicated that no independent variables were found to have significant nonlinearity. For the dependent variable final grades, a normal distribution was formed across all course modalities and within individual modalities. Analysis indicated that there were no issues.

For the dependent variable final grades of the participants, these values were assigned: letter grades A, B, C, and D. The frequencies of final grades and online course modality choice are presented in Table 11. For final letter grade A, 28.6% had no modality choice, while 14.2% had modality choice. For final letter grade B, 19.6% had no modality choice, while 9.3% had modality choice. For final letter grade C, 14.2% had no modality choice, while 5.7% had modality choice. For final letter grade D, 6.3% had no modality choice, while 2.1% had modality choice.

Table 11. Frequencies of Final Grades A, B, C, and D for OL course modalities

Letter Grade	No Modality Choice	Modality Choice
A	47	23
B	32	15
C	23	9
D	10	3

The correlation between students' GPA and final grades in the online course modality was Spearman Rho = .394**, which is a significant correlation at $\alpha < .00$ (Table 12). This correlation was significant and positive indicating that students' GPA was positively correlated with participants' final grades.

Table 12. Spearman Rho: GPA and Final Grades in Online Course Modality

Students' Grade	
GPA	.394**

PS: * Correlation significant $<.05$, ** Correlation significant $<.01$

Using the hierarchal method, a significant model emerged for the final grades and online course modality. The model indicated $F = 16.803$, $p < 0.000$ (Table 13) with an adjusted R square = .164, which accounted for 16.4% of the variability.

Table 13. Linear Regression: Final Grades and Online Course Modality

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.715	2	13.357	16.803	.000 ^a
	Residual	126.396	159	.795		
	Total	153.111	161			

a. Predictors: (Constant), OL COURSES, GPA-cat
 b. Dependent Variable: FG

Interpretation of the Findings

The researchers recognize the importance of the predictive ability of GPA in regards to subsequent performance and persistence as well as established relationships between previous student experiences within the course management system for online courses. Using regression analysis, a significant effect of student choice of learning modality in student achievement either across or within course modalities was found. This finding is in line with published findings that GPA was the single best predictor of subsequent student performance. The Multinomial Logistic Regression produced a reliable ($Chi-square=892.095$, $p=.345$) and significant model ($Chi-square=93.947$, $p < .000$). The Likelihood Ratio Test indicated that GPA ($Chi-Square=43.142$, $p < .000$) was the only significant predictor in the overall model and all other variables can be removed. GPA was the predictor of academic performance (Sulaiman & Mohezar, 2006; D’Agostino & Powers, 2009; Cubeta et al., 2001). GPA was also found to be the single best predictor of student achievement within both the FTF and OL modalities. This finding is consistent with the literature (Cano, 2005; Cubeta et al.; Sulaiman & Mohezar, 2006; D’Agostino & Powers, 2009).

The requirements for success in the online learning environment might be better met by students who have previously shown an ability to succeed in academic settings in either FTF or online course modality. While the online courses appear to be the most popular format when given a choice over the traditional FTF modality, the research site should not reduce the number of FTF courses in the hope of increasing the efficiency of the educational process as the FTF modality continues to attract a large portion of the institution’s student population and the inability to choose the FTF modality may adversely affect student course completions. Administrators and faculty members should not be concerned that the popularity of online courses will lead to increased student

course drops. Perhaps convenience or social interactions are perceived as more important than student achievement as previously noted in the literature (O'Lawrence, 2007; Wang & Newlin, 2002). Students may be electing online courses to have convenience or FTF courses for social interaction. Students who may initially be registered for the FTF course without being aware that an OL section was being offered with the same instructor and may have subsequently dropped the FTF section and enrolled in the OL section. Additionally, the institution should examine the records of the data period in order to determine if some student drops were due to students becoming aware of the modality choices available to them after they enrolled.

Practical Applications of the Findings

The practical application of the finding is essential. Some of these recommendations may apply to college administrators and professors who should establish a vision for online learning courses. The findings of this study may help stakeholders at the study site to prepare students, teachers, administrators, and policy-makers to institute effective offering of online learning programs. The findings might introduce a framework for professional development for professors of online courses. Local institutes of higher education and community members might benefit from having an awareness of the findings of this study.

Recommendations for Further Study

Scholars may wish to replicate this study and use a sample from a private college with a larger student population. Scholars may replicate this study and utilize qualitative research methods to answer similar research questions.

Summary

Some educational institutions in the United States of America offer course modality choice to its students which is either FTF or online. Online instruction is offered completely online using different online learning environments. The stakeholders at the study site needed research-based findings on the effect of GPA on courses taken either FTF or online by undergraduate working adult students. A comparative design of independent groups was used together with archived data collected on GPA, course modality, and course modality choice. A significant effect of student choice of course modality in student achievement either across or within course modalities was found. The findings of this study have made positive

contributions to the field of research. The special requirements for success in the OL environment might be better met by students who have previously shown an ability to succeed in academic settings of either course modality. Previous experience in the online environment provided students with the confidence in their personal technological and time management abilities to enable success in the online environment.

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