

E-LEARNING AS A PREDICTOR OF ACADEMIC ACHIEVEMENT AMONG EDUCATION UNDERGRADUATE STUDENTS IN MICHAEL OKPARA UNIVERSITY OF AGRICULTURE, UMUDIKE

OBIOHA CHIDIMMA NWADIUTO, Ph.D
chidimmanobioha@gmail.com
Department of Educational Foundations
Alex Ekweme Federal University Ndufu Alike Ebonyi State

OLUBUKOLA ABOSEDE FOYEWA
foyewaolubukola8@gmail.com,
Department of Arts and Humanities Education
Alex Ekweme Federal University Ndufu Alike Ebonyi State

PAUL IKECHUKWU IFERE, Ph.D
Department of Educational Foundation,
Alex Ekweme Federal University Ndufu Alike Ebonyi State

SYLVESTER NWIGWE OGBUEGHU, Ph.D
Social Science Education Department,
University of Nigeria Nsukka.

EMEKA IFEOMA EJEH, Ph.D
ejehifeoma@gmail.com
Department of Educational Management, Faculty of Education
Alex Ekweme Federal University Ndufu Alike Ebonyi State.

Abstract

This study investigated the extent e-learning serves as predictor of academic achievement of Education undergraduate students in Michael Okpara University of Agriculture, Umudike. Two research questions and two null hypotheses guided the study. The study adopted a correlational research design. The sample for the study consisted of 678 respondents drawn through census sampling techniques from population of 678 (299 males and 379 female) in 2020/2021 2nd year College of Education undergraduate students in Michael Okpara University of Agriculture, Umudike, Abia State. Census sampling technique was used because the population was manageable. Two instruments titled: "Students' E-learning Questionnaire (SELQ) and Students' Academic Achievement in Education Psychology Test (SAAEPT)" were developed by researcher and validated by three experts in the College. The stability of the SELQ was determined using Pearson's Product Moment Correlation coefficient and reliability index of 0.67 was obtained for SELQ. The reliability of the Students' Academic Achievement in Education Psychology Test (SAAEPT) was determined using Kuder-Richardson (KR-21) formula after single administration and reliability index of 0.88 was obtained. Data generated were analyzed using Pearson's r , R^2 (coefficient of determination) to answer the research questions while linear regressions analysis was used to test the null hypotheses at 0.05 levels of significance. The study revealed the following findings: E-learning predicted 63% of the students' academic achievement in Education Psychology Courses. Therefore, E-learning significantly predicted the academic achievement of undergraduates in Educational Psychology courses in Michael Okpara University of

Agriculture, Umudike; E-learning predicted only 4.9 and 4.7 percent of the academic achievement of male and female undergraduates respectively, in Educational Psychology courses and there was no significant difference in the academic achievement of male and female undergraduates in Educational Psychology courses based on e-learning. The study concluded that students enjoy the use of e-learning in teaching, learning. It was thus recommended among others that government and parents should support e-learning process for enhance academic efficiency.

Keywords: Perception & Attitude, E-Learning, Education Undergraduate Student

Introduction

In recent years, there have been major changes in how teaching and learning is delivered. Gradually, the traditional classroom learning is giving way for online based teaching and learning (Jazeel & Saravanakumar, 2016). The increasing pervasiveness of online based teaching and learning is spearheaded by the ever increasing advancement in technology. Over the last decade, the diffusion of technology and associated web-based learning has increased the adoption of online education or what many may term as distance learning (Armstrong, 2011; Ramírez-Correa, Arenas-Gaitán, & Rondán-Cataluña, 2015). For instance, Allen and Seaman (2018) indicated that a Sloan Consortium survey of 2,500 U.S. colleges and universities revealed that, online enrollments more than doubled from about 1.6 million in 2002 to 3.9 million in 2007. It is therefore not surprising that a recent study conducted in 2018 from the same consortium showed that 6.7 million people enrolled in online based studies in the United States.

Within the last decade, the growth of online activities has flourished in Nigeria due to the rise of infrastructural development by technological giants in the country (Edumadze, Ogoe, Essilfie, Edumadze, & Graham, 2017; Freeman, Antwi-Boampong & Agyemang, 2019). In view of this technological development, it is prudent that educational institutions and most especially institutions of higher learning take full advantage to effectively adopt online learning strategies and maximize its use efficiently. It must be noted that Nigeria is growing steadily in the areas of distance education where the use of online learning is well pronounced. In view of this many studies are fronting for the use of online learning platforms and web-based studies while others are campaigning strongly for its use across all institutions of higher learning (Freeman et al 2019).

However, much as the Nigerian educational ground appears fertile for web-based studies, there exist general poor achievement of undergraduate students in Educational Psychology courses in Michael Okpara University of Agriculture, Umudike, Abia State (Uzoka, 2018). Efforts made to improve the achievement of the students in the educational Psychology courses such as monitoring the teaching strategies used by the lecturers (Uroko, 2019) and removing the inexperienced lecturers from teaching the courses (Uzoka, 2018) did not yield satisfactory results. Lecturers, curriculum planners and evaluators are worried; especially when it is believed that if the poor achievement of undergraduate students in Educational Psychology courses continues to decline, it will affect the economic and technological development of the nation. The need to improve the students' achievement in Educational Psychology courses motivated the need to try the e-learning approach; in view of the importance of Educational Psychology in human development. The goals of Educational Psychology are among others to • Orchestrate smoothly running classrooms; • Engage in well-practised, virtually automatic routines; • Have extensive knowledge of instructional strategies; and • Make deep interpretations of events. However, researchers have found that too often both experienced and beginning teachers lack the rich and flexible understanding of subject matter that is required to teach in ways that are responsive to students' learning needs (Borko & Putnam, 2016). Indeed, it is important to recognize that not every experienced teacher is a good teacher. Some experienced teachers will say, "Forget everything you learned in school and watch what I do instead." This might or might not be a good idea for you. Many new strategies of teaching have been developed in recent years, especially from a constructivist perspective, so it is important to keep an open mind about whether an experienced teacher is giving you the best advice.

The instructional philosophy would not have students memorize information rote but would give them opportunities to meaningfully construct the knowledge and understanding themselves (Gibson & MacKay,

2017). Increasingly, the trend in educational reform is to teach from a constructivist perspective (Bransford, Brown, & Cocking, 2019). The constructivist belief is that for too long in North American education children have been required to sit still, be passive learners, and rote memorize irrelevant as well as relevant information. However, not everyone embraces the constructivist view. Some traditional educators believe that the teacher should direct and control students' learning more than the constructivist view implies. They also believe that constructivists often don't focus enough on basic academic tasks or have sufficiently high expectations for children's achievement. Some experts in educational psychology believe that you can be an effective teacher whether you follow the current trend in educational reform and teach more from a constructivist perspective or you adopt a more traditional direct-instruction approach (Gibson & MacKay, 2017). One therefore wonders the extent e-learning could serve as predictor of academic achievement of Education undergraduate students in the present study.

A factor that is suspected to predict the achievement of students Educational Psychology courses based on e-learning is gender. Gender is the culturally and socially constructed differences between males and females found in the meanings, beliefs and practices associated with femininity and masculinity (Kalat, 2015). Gender influence has been inconclusive. Some studies have argued that males and females have different approach to studies in the traditional setting and same is expected to be reflected in online based studies (KotouaIlkan&Kilic, 2015; Owusu-Mensah, Anyan, &Denkyi, 2015). Other studies have made categorical allusion that there is going to be a huge gap on how web based studies is going to affect females. However, this assertion is without any empirical support (Freeman et al 2019; Owusu-Mensah et al, 2015). The implication therefore is that to achieve a high level of effectiveness in the usage of online or web-based studies in higher institutions, the demographic differences in terms of gender should be given proper attention.

Additionally, web-based learning platforms come in different ways which put its effectiveness in the support of distance learning in divergent views (Maina&Nzuki, 2015). Due to technicalities in web-based studies, many people shy away from utilizing these services (Thomas, &Oladejo, 2017). Thus, when introduced in distance learning, it becomes imperative to assess how people view its effectiveness. Effectiveness in this context is how users (male and female students) benefit from the various dimensions or elements as used in online based learning. According to Gitau and Omwenga (2016), some of the elements within online based learning which breed divergent views on its support and effectiveness are computer usage, teacher support, students' interaction and collaboration, personal relevance, authentic learning, students' autonomy and equity. These elements and how they support and contribute to effectiveness in online distance learning, is argued by Gitau and Omwenga (2016) to have gender-based differences. It is therefore important to empirically investigate, the extent e-learning predicts the academic achievement of undergraduates in Educational Psychology courses in Michael Okpara University of Agriculture, Umudike, Abia State, with gender as moderator variable.

Statement of the Problem

The increasing rate of online education in Africa in general and Nigeria in particular, necessitates a vigorous study into the various dynamisms of online distance studies as far as users are concerned. Users in this context include teachers, school management or administrators and students. The most prominent stakeholders among these categories of online learning is students. Yet, the problem with our education system is that the achievement of undergraduate students in Educational Psychology courses in Michael Okpara University, Umudike has been declining continuously. Lecturers, curriculum planners and evaluators are worried; especially when it is believed that if the poor achievement of undergraduate students in Educational Psychology courses continues to decline, it will affect the economic and technological development of the nation. Yet, the extent e-learning could serve as predictor of academic achievement of Education undergraduate students in Michael Okpara University of Agriculture, Umudike has not been investigated. Therefore, the problem of this study put in a question form is: To what extent does e-learning predict the academic achievement of undergraduates in Educational Psychology courses in Michael Okpara University of Agriculture, Umudike?

Purpose of the Study

The purpose of the study was to investigate the extent e-learning predicts the academic achievement of undergraduates in Educational Psychology courses in Michael Okpara University of Agriculture, Umudike. Specifically, the study sought to:

1. find out the extent to which e-learning predicts the academic achievement of undergraduates in Educational Psychology courses in Michael Okpara University of Agriculture, Umudike.
2. determine the difference in academic achievement of male and female undergraduates in Educational Psychology courses based on e-learning.

Research Questions

The following research questions were formulated to guide the study:

1. What is the extent to which e-learning predicts the academic achievement of undergraduates in Educational Psychology courses in Michael Okpara University of Agriculture, Umudike?
2. What is the difference in academic achievement of male and female undergraduates in Educational Psychology courses based on e-learning?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance to further guide the study.

HO₁: E-learning does not significantly predict the students’ academic achievement of undergraduates in Educational Psychology courses in Michael Okpara University of Agriculture, Umudike.

HO₂: There no significant difference between’ the academic achievement of male and female undergraduates students’ in Educational Psychology courses based on e-learning.

Methodology

The study adopted a correlational research design. The sample for the study consisted of 678 respondents drawn through census sampling techniques from population of 678 (299 males and 379 female) in 2020/2021 2nd year College of Education undergraduate students in Michael Okpara University of Agriculture, Umudike, Abia State. Census sampling technique was used because the population was manageable. Two instruments titled: “Students’ E-learning Questionnaire (SELQ) and Students’ Academic Achievement in Education Psychology Test (SAAEPT)” were developed by researcher and validated by three experts in the College. The stability of the SELQ was determined using Pearson’s Product Moment Correlation coefficient and reliability index of 0.67 was obtained for SELQ. The reliability of the Students’ Academic Achievement in Education Psychology Test (SAAEPT) was determined using Kuder-Richardson (KR-21) formula after single administration and reliability index of 0.88 was obtained. Data generated were analyzed using Pearson’s r, R² (coefficient of determination) to answer the research questions while linear regressions analysis was used to test the null hypotheses at 0.05 levels of significance.

Results

Research Question 1

What is the extent to which e-learning predicts the academic achievement of undergraduates in Educational Psychology courses in Michael Okpara University of Agriculture, Umudike?

Data for answering research question are presented in Table 1.

Table 1: Correlation Matrix of E-learning and Academic Achievement of Undergraduates in Educational Psychology Courses

Source		MCS	AAISA
E-learning	Pearson correlations	1	.794

	Sig (2-tailed)		.000
	N	678	678
AAUEPT	Pearson correlations	0.794	1
	Sig (2 tailed)	.000	
	N	678	678
	R ²	.630	

SELQ = Students' E-learning Questionnaire and SAAEPT = Students' Academic Achievement in Education Psychology Test, N = Number of respondents * Correlation Significant at 0.05 level.

Data in Table 1 indicated a correlation coefficient (r) of .794 which was positive and within the coefficient limit of ± 0.61 - .80. This indicates that E-learning to a high and positive extent predicted the students' academic achievement in Education Psychology Courses in Michael Okpara University of Agriculture, Umudike. The coefficient of determination (R²) .630 indicates that 63% of the variance observed in the students' academic achievement in Education Psychology Courses was accounted for by exposure to E-learning. Therefore, E-learning predicted 63% of the students' academic achievement in Education Psychology Courses.

Hypothesis One: E-learning does not significantly predict the academic achievement of undergraduates in Educational Psychology courses in Michael Okpara University of Agriculture, Umudike.

Table 2: Simple Linear Regression Analysis of E-learning and Academic Achievement of Undergraduates in Educational Psychology Courses

Variables	Term	Sum of square	DF	Mean square	F –cal	Sig	Decision
E-learning and Academic Achievement	Regression	2187.582	1	2187.582			
	Residual	3426.261	677	5.061	432.243	.000	S
	Total	5613.843	678				

Df= degree of freedom, F = F-calculated, Correlation is significant at the 0.05 level (2-tailed)

The data in the Table 2 showed that E-learning significantly predicted academic achievement of undergraduates in Educational Psychology courses in Michael Okpara University of Agriculture, Umudike. The calculated f-value of 432.243 in respect of the relationship between E-learning and academic achievement of undergraduates in Educational Psychology courses was greater than f-critical value of 1.96 with degree of freedom of 1 and 677 at 0.05 levels of significance. Therefore, the null hypothesis of no significant relationship between E-learning and academic achievement of undergraduates in Educational Psychology courses was rejected. Consequently, E-learning significantly predicted the academic achievement of undergraduates in Educational Psychology courses in Michael Okpara University of Agriculture, Umudike.

Research Question 2

What is the difference in academic achievement of male and female undergraduates in Educational Psychology courses based on e-learning?

Table 3: Correlation Matrix of the Difference in Academic Achievement of Male and Female Undergraduates in Educational Psychology Courses Based on E-Learning

Source		Male	Female	AAISA
Male	Pearson Correlation	1		.221
	Sig. (2-tailed)			.185*
	N	678		678
	R ²	.049		
Female	Pearson Correlation		1	.217
	Sig. (2-tailed)			.184
	N	678		678
	R ²	.047		

Data in Table 3 indicated a correlation coefficient (r) of .221 which is positive and within the coefficient limit of $\pm 0.21-0.40$. This indicates that the difference in academic achievement of male undergraduates in Educational Psychology courses based on e-learning is to a low extent. The coefficient of determination (R²) .049 indicates that only 4.9 percent of the variance observed in the academic achievement of male and female undergraduates in Educational Psychology courses was accounted for by e-learning. E-learning predicted only 4.9 percent of the academic achievement of male undergraduates in Educational Psychology courses. Table 3 also indicated of .217 which is positive and within the coefficient limit of $\pm 0.21-0.40$. This indicates that the academic achievement of female undergraduates in Educational Psychology courses based on e-learning is to a low extent. The coefficient of determination (R²) .047 indicates that only 4.7 percent of the variance observed in the academic achievement of female undergraduates in Educational Psychology courses was accounted for by e-learning. E-learning predicted only 4.7 percent of the academic achievement of female undergraduates in Educational Psychology courses. Therefore, E-learning predicted only 4.9 and 4.7 percent of the academic achievement of male and female undergraduates respectively in Educational Psychology courses.

Hypothesis Two: There is no significant difference in academic achievement of male and female undergraduates in Educational Psychology courses based on e-learning.

Table 4: Linear Regression Analysis of Difference in Academic Achievement of Male and Female Undergraduates in Educational Psychology Courses Based on E-Learning

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	1.113	2	0.557	0.585	.183 ^a
Residual	643.832	676	.952		
Total	644.945	678			

Df= degree of freedom, F = F-calculated, Correlation is significant at the 0.05 level (2-tailed)

The data in the Table 4 showed that there was no significant difference in academic achievement of male and female undergraduates in Educational Psychology courses based on e-learning. The calculated f-value of 0.585 in respect of the difference in the academic achievement of male and female undergraduates in Educational Psychology courses based on e-learning is less than f-critical value of 1.96 with degree of freedom of 2 and 676 at 0.05 level of significance. Therefore, the null hypothesis of no significant difference in academic achievement of male and female undergraduates in Educational Psychology courses based on e-learning was retained. Consequently, there was no significant difference in the academic achievement of male and female undergraduates in Educational Psychology courses based on e-learning.

Major Findings of the Study

1. E-learning predicted 63% of the students' academic achievement in Education Psychology Courses. Therefore, E-learning significantly predicted the academic achievement of undergraduates in Educational Psychology courses in Michael Okpara University of Agriculture, Umudike.
2. E-learning predicted only 4.9 and 4.7 percent of the academic achievement of male and female undergraduates respectively, in Educational Psychology courses and there was no significant difference in the academic achievement of male and female undergraduates in Educational Psychology courses based on e-learning.

Discussion of Findings

The finding of the study indicates that E-learning predicted 63% of the undergraduate students' academic achievement in Education Psychology Courses. Therefore, E-learning significantly predicted the academic achievement of undergraduates in Educational Psychology courses in Michael Okpara University of Agriculture, Umudike. This means that there is a significant relationship among e-learning in areas of teacher support, student interaction and collaboration and student's autonomy and undergraduate students' academic achievement in Education Psychology Courses. The finding of the study is in agreement with the online based teaching as against traditional classroom learning by (Jazeel & Saravanakumar, 2016). It stated that increasing pervasiveness of online based teaching and learning is spearheaded by the ever increasing advancement in technology.

The study further indicated that E-learning predicted only 4.9 and 4.7 percent of the academic achievement of male and female undergraduates respectively, in Educational Psychology courses and there was no significant difference in the academic achievement of male and female undergraduates in Educational Psychology courses based on e-learning. The finding of the study is in disagreement with the findings of Kotoua Ilkan and Kilic (2015); Owusu-Mensah, Anyan, and Denkyi (2015) who argued that males and females have different approaches to studies in the traditional setting and same is expected to be reflected in online based studies. Hence, information technology were not necessary factors to motivate students irrespective of gender in online studies. The no significant difference in the academic achievement of male and female undergraduates in Educational Psychology courses based on e-learning in Michael Okpara University of Agriculture, Umudike could be as a result of the active involvement of both male and female undergraduate students without gender discrimination.

Conclusion

From the findings of the study and the discussion that followed, the following conclusions could be made it could be concluded that E-learning predicted the students' academic achievement in Education Psychology Courses without significant gender differences in Michael Okpara University of Agriculture, Umudike.

Educational Implications of the findings

The fact that E-learning predicted the students' academic achievement in Education Psychology Courses without significant gender differences suggests that teachers would achieve better results if trained on how to teach using computer-mediated communication learning strategy. Experience has shown that teachers during their preparatory stage are not exposed to the skills required in using computer-mediated communication learning (CMCL) strategy and how to plan CMCL strategy intervention.

Recommendations

Based on the findings of the study and their educational implications, the following recommendations were made:

1. As the results of the study indicated that E-learning predicted the students' academic achievement in Education Psychology Courses without significant gender differences, teacher preparation institutions should incorporate computer-mediated communication learning strategy in the relevant curriculum units and expose both the pre-service and in-service teachers to this strategy learning.

2. It is however instructive that computer-mediated communication learning packaged instruction be disseminated. However, the e-learning must take cognizance of learners' development, interest, attitude, cognitive ability and the planning of instruction has to reinforce and motivate learning independent of the teacher.

References

- *Allen, R. & Seaman, P. (2018). Students' perception of parent-child relationship and academic achievement. *Journal of Educational Psychology* 81(3), 333-340.
- *Armstrong, D. A. (2011). Students' perceptions of web based learning and instructional tools: A qualitative study of undergraduate students' use of online tools. *Turkish Online Journal of Educational Technology*, 10(3), 222-226. Retrieved from <http://www.tojet.net/articles/v10i3/10325.pdf>.
- Boateng, R., Mbrokoh, A. S., Boateng, L., Senyo, P. K., & Ansong, E. (2016). Determinants of e-learning adoption among students of developing countries. *The International Journal of Information and Learning Technology*, 33(4), 248-262.
- *Borko, L & Putnam, T. (2016). Difference between experienced and beginning teachers in understanding of subject matters. *Journal of Educational Psychology* 79(2), 111-232.
- * Bransford, P., Brown, Y. & Cocking, T. (2019). Trend in educational reform from a constructivist perspective. *International Journal of Business and Social Science*, 10(2), 223-234
- *Edumadze, J. K., Ogoe, J. I., Essilfie, G., Edumadze, G. E., & Graham, R. E. (2017). E-learning at the University of Cape Coast, Ghana-are our Distance Education Students Technologically Ready? *The Online Journal of Distance Education and e-Learning*, 5(1), 47-55.
- *Freeman, E., Antwi-Boampong, A., & Agyemang, O. B. K. (2019, November). Students' Learning Experience Within a Blended Learning Environment in a Higher Education Institution in Nigeria. In ECEL 2019 18th European Conference on e-Learning Academic Conferences and publishing limited.
- *Gibson, P. & MacKay, W. (2017). Instructional philosophy and students' academic achievement. *Procedia-Social and Behavioral Sciences*, 21(2), 1106-1113.
- *Gitau, M., & Omwenga, E. I. (2016). Application of the UTAUT Model to Understand Factors Influencing the use of Web 2.0 Tools in e-learning in Kenyan Public Universities. *Journal of Emerging Trends in Computing and Information Sciences*, 7(4).
- *Jazeel, A. M., & Saravanakumar, A. R. (2016). Perception of Sri Lankan Teachers Towards Web Based Instruction in Learning Teaching Process at School Level. *Science*, 162(105.56), 7-58.
- *Kalat, R. (2015). Influence of gender on academic achievement. *Journal of Education and Practice*, 6(14), 86-95.
- *Kotoua, S., Ilkan, M., & Kilic, H. (2015). The growing of online education in Sub Saharan Africa: Case study Nigeria. *Procedia-Social and Behavioral Sciences*, 19(1), 2406-2411.
- *Maina, M. K., & Nzuki, D. M. (2015). Adoption determinants of e-learning management system in institutions of higher learning in Kenya: A Case of selected universities in Nairobi Metropolitan. *International Journal of Business and Social Science*, 6(2), 213-224
- *Owusu-Mensah, F., Anyan, J. A., & Denkyi, C. (2015). Staff Development Practices of Open and Distance Learning Institutions in Nigeria: The Case of the Distance Education Programme of University of Education, Winneba, Ghana. *Journal of Education and Practice*, 6(14), 79-86.
- *Ramírez-Correa, P. E., Arenas-Gaitán, J., & Rondán Cataluña, F. J. (2015). Gender and acceptance of elearning: a multi-group analysis based on a structural equation model among college students in Chile and Spain. *PloS one*, 10(10), e0140460.

- *Thomas, O. A., &Oladejo, M. A. (2017). Teacher-Trainees' Perceptions of ICT (Information Communication Technology) Integration in Nigerian Teacher Education Programme. *Educare, 10(1)*.
- *Uroko, J.E. 2019). Strategies for improving the achievement of the students in the educational Psychology courses. *International Journal of Information and Learning Technology, 43(2)*, 118-129.
- *Uzoka, R.N. (2018). *Educational psychology*. Owerri: Hysab Prints and Publishers.