

Original Research Article

**EFFECT OF EMERGING EDUCATIONAL TECHNOLOGY (EDMODO) ON SENIOR
SECONDARY SCHOOL STUDENTS' ACHIEVEMENT IN MARKETING IN UDENU
LOCAL GOVERNMENT AREA OF ENUGU STATE**

Abstract

The aim of the study was to determine the effect of emerging technology (Edmodo) on senior secondary school students' achievement in marketing in Udenu Local Government Area of Enugu State. The study was guided by three research questions and three hypotheses. The study adopted quasi-experimental research design of pretest-posttest non-equivalent control group design. The population of the study was the entire 123 (78 males and 55 females) senior secondary school II offering Marketing in the study area. The sample size was 51 students comprising 26 (15 males and 11 females) for the experimental group and 25 (12 males and 13 females) for the control group. The intact classes of the two schools were used. The instrument used for the study was Marketing Achievement Test (MAT) which contains 20 objective questions with four options A-D. The questions were adopted from West Africa Examination Council (WAEC) school candidate past questions. The instrument was validated by three experts in the field of marketing education and measurement and evaluation. The reliability of the instrument was done using Kuder-Richerson 20 (K-R 20) and the reliability value was 0.83 which shows that the instrument was reliable. Extraneous variables such as subject interaction, teacher bias and others were controlled in the study. The experiment took place for three weeks. At first pretest was conducted followed by the treatment and after the treatment a posttest in the last week of the experiment. Mean and standard deviation scores were used to analyse the research questions while Analysis of Co-Variance (ANCOVA) was used for the hypotheses. The findings of the study revealed that those students taught marketing using Edmodo achieved better than those taught using the conventional method. Teachers should use emerging educational technology (Edmodo) and stop the use of conventional method. Conclusion was drawn.

Keywords: Edmodo, Achievement, Marketing, and Gender

Introduction

Edmodo is an educational platform that has been specifically developed to enhance instructional practices and foster active student engagement within the context of online learning (Agbaegbu et al., 2021). According to Hourdequin (2014), Edmodo instructional technology is considered an academic platform that facilitates two-way interaction between teachers and learners. It is said that this platform is used by more than 81 million individuals. According to Al-Kathiri (2015), Edmodo was developed as an educational platform with the primary objective of promoting substantial significance. According to the findings of this research, the use of Edmodo, which was first introduced in 2008 by Jeff O'Hara and Nick Borg, has been extensively embraced by educators, learners, educational institutions, and parents as a means to facilitate the process of knowledge acquisition. According to Holland and Muilenburg (2011), kids in grades K-12 regard Edmodo educational technology as a distinctly educational platform, but Facebook does not possess the same feature.

The Edmodo educational technology platform enables instructors to submit various educational materials such as notes, videos, assignments, quizzes, and links on the website. These resources may be shared with students and parents who want to engage in the online classroom environment. According to Curran-Sejkora (2013), the Edmodo educational technology platform provides students with the option to collaborate in groups and engage in collaborative tasks assigned by their professors. The Edmodo educational technology facilitates a two-way exchange of information and engagement between teachers and learners, distinguishing it from other platforms like Facebook and Whatsapp. Hence, it has the potential to be efficacious in instructing social science disciplines at the senior high school level. According to Mills and Chanra (2011), there is evidence to suggest that the use of Edmodo instructional technology has

been linked to beneficial outcomes in terms of student performance and the interaction between students and instructors. Furthermore, students have the capability to engage in a multitude of virtual classroom activities that closely mirror those seen in traditional face-to-face educational settings. The inherent potentials associated with the use of Edmodo as an educational technology indicate that it is an efficacious tool, particularly when the focus is on reducing interpersonal interactions.

The Edmodo instructional technology platform enables instructors to submit various educational materials such as notes, videos, assignments, quizzes, and links on the website. These resources may be shared with students and parents who want to engage in the online classroom environment. According to Curran-Sejkora (2013), the Edmodo instructional technology platform provides students with the option to collaborate in groups and engage in collaborative tasks assigned by their professors. Edmodo educational technology facilitates a two-way exchange of information and engagement between teachers and learners, distinguishing it from other platforms like Facebook and WhatsApp. Hence, it has the potential to be efficacious in instructing social science disciplines at the senior high school level. According to Mills and Chandra (2011), there is evidence to suggest that the use of Edmodo instructional technology has been linked to beneficial outcomes in terms of student performance and the interaction between students and instructors. Furthermore, students have the capability to engage in a multitude of virtual classroom activities that closely mirror those seen in traditional face-to-face educational settings. The inherent potentials associated with the use of Edmodo as an educational technology indicate that it is an efficacious tool, particularly when the focus is on enhancing students' achievement in Marketing.

A comprehensive understanding of marketing is crucial within commerce and trade. According to Cronje, Du-Toit, Motlatla, and Marais (2007), marketing is defined as a set of managerial activities and decisions aimed at effectively addressing the challenges and opportunities presented by a constantly changing business environment. The primary goal of marketing is to develop and deliver a product or service that fulfills consumer needs while simultaneously achieving the objectives of the business and benefiting society as a whole. According to Lamb, Hair, McDaniel, Boshoff, and Terblanche (2007), the concept of marketing involves the anticipation and fulfillment of customer requirements via mutually advantageous exchange procedures while also ensuring profitability and competitive advantage through efficient management practices. According to Iwu (2015), the concept of marketing encompasses interactions, dialogues, and interventions aimed at enhancing the quality of products and services while also seeking to attain various advantages. If one can posit the veracity of this claim, it follows that marketing opportunities include not only the provider of a product or service but also the customer of such a product or service. Consequently, pupils are required to possess a comprehensive understanding of this subject matter. The aforementioned explanation elucidates that marketing entails a dynamic exchange between marketers and consumers, wherein managerial decisions are made to develop valuable products and services, subsequently offering them at accessible prices tailored to specific market segments. Iwo said that marketing is essential for management to provide equitable access to products and services, as well as the use of suitable communication channels to convey product and service messaging. The attainment of pupils in a particular topic has significant importance.

The term "achievement" is used to describe the attainment of a certain level of proficiency or competence in an academic discipline. Ezeudu, Jolaosho, Yahaya, Opara and

Babalulu (2020) asserted that achievement is when a student attain a particular standard in a course of study. According to Ugwuanyi (2014), achievement may be regarded as the cognitive attainment of a student in their academic endeavors. The definition of achievement under discussion differs from Ajua's (2006) definition, which holds that academic achievement refers to the successful academic progress a student achieves through their efforts and abilities in a particular subject domain. According to Idialu (2013), academic achievement refers to the degree to which a student, teacher, or educational institution has successfully attained educational goals. Academic achievement is defined in this study as the standard of performance that both male and female students exhibit in a variety of educational activities, such as tasks, assignments, classes, research projects, or programs in which they have the opportunity to participate.

Gender is a distinguishing characteristic used to delineate individuals as either male or female. Gender poses several challenges to students' academic achievement, mostly due to the existence of sex roles. This distinction assigns specific tasks to males and females, creating barriers that hinder academic achievement. Gender is often defined as the sociocultural construct that encompasses the social significance and interpretation of one's biological sex, specifically pertaining to the categories of being male or female (Ambe-Uva, Iwuchukwu, & Jibrin, 2008). Keightley (2011) regarded gender as a concept that pertains to the classification of individuals into male and female categories. Each gender is within the societal context. Bronfenbrenner (2005) views gender as a construct that encompasses social distinctions and the dynamics that exist between males and females. The individual in question identifies as female. The prioritization of academic achievement in Marketing applies to both male and female students. It is on this ground that the study sought to find out the effect of emerging technology (Edmodo)

on senior secondary school students` achievement in marketing in Udenu Local Government Area of Enugu State.

The main aim of the study was to determine the effect of emerging educational technology (Edmodo) on senior secondary school students` achievement in Marketing in Udenu Local Government Area of Enugu State. Specifically, the study south to:

- Find out the mean achievement scores of students taught Marketing using Edmodo and those taught with conventional method.
- Find out the mean achievement scores of male and female students taught Marketing using Edmodo.
- Determine the interaction effect of method and gender on the mean achievement scores of students in Marketing.

The study was guided by the below three research questions.

- What is the mean achievement scores of students taught Marketing using Edmodo and those taught with conventional method?
- What are the mean achievement scores of male and female students taught Marketing using Edmodo?
- What is the interaction effect of method and gender on the mean achievement scores of students in Marketing?

The following null hypotheses framed guided the study and were tested at 0.05 significance level.

H₀₁: There is no significant difference in the mean achievement scores of students taught Marketing using Edmodo and those taught with conventional method.

H₀₂: There is no significant difference in the mean achievement scores of male and female students taught Marketing using Edmodo.

H₀₃: There is no significant difference in the interaction effect of method and gender on the mean achievement scores of students in Marketing.

Methods

The study was a quasi-experimental research design. In particular, non-equivalent pre-test and post-test alternative treatments control the group design. Quasi-experimental design according to Ali in Jolaosho (2017) is a research design which uses non-randomized group and these options occurs when the researcher cannot randomly sample and assign the subjects. Jolaosho (2017) stated further that quasi-experimental does not use random assignment of subjects, rather intact class are usually used. The intact classes of Senior Secondary School Students II (SSII) in Udenu Local Government Area were used. The use of intact classes was to avoid the threat of selection bias among the students and to avoid re-arranging and re-grouping, which could affect the normal lesson.

The study was conducted in Udenu LGA of Enugu State. The headquarter of the LGA is in Obollo-Afor. The total area of Udenu LGA is 248km². Udenu LGA share boundary with Nsukka LGA. The population of the study was the entire 123 (78 males and 55 females) senior secondary school II offering Marketing in the study area. The sample size was 51 students comprising 26 (15 males and 11 females) for the experimental group and 25 (12 males and 13 females) for the control group. The intact classes of the two schools were used.

The instrument used in the study was the Marketing Achievement Test (MAT). The MAT was a 20-item of 4 multiple-choice objective questions which was adopted from West Africa Examination Council (WAEC) school candidate past questions. Three experts face validated the

instrument while a table of blueprint handled the content validity of the instrument. Two of the experts were from Marketing and one from Measurements and Evaluation. To ascertain the reliability level of the research instruments, a pilot study was carried out in Oji-River Local Government Area. The reason for the choice of Oji-River Local Government Area was that the schools in Udenu Local Government Area were believed to be more or less equivalent in standard to the schools in Udenu Local Government Area which is the main study area. One type of reliability testing was conducted to determine the internal consistency of the test instrument using Kuder Richardson 20 (K – R 20). The K-R 20 result gave a reliability value of 0.83 which shows that the Marketing Achievement Test (MAT) instrument was highly reliable. Pretest and posttest were used for data collection. The pretest and posttest instrument were administered to both the experimental (Edmodo) and the control (Conventional) groups. Pre-test at the initial stage was administered simultaneously to both groups. The students in the experimental group were exposed to Edmodo while those in the control group were taught in the traditional way of teaching. After three weeks posttest was now administered to both groups. Mean and standard deviation were used to analysed the three research questions while the three null hypotheses were tested using Analysis of Covariance (ANCOVA). Hence, the hypotheses that were greater than 0.05 were accepted and those hypotheses that were less than 0.05 were rejected.

Results

Research Question 1

What is the mean achievement scores of students taught Marketing using Edmodo and those taught with conventional method?

Table 1. Pre-test and Post-test Mean Scores of Edmodo and Conventional Method Groups In The Achievement Test

Group	N	Pretest		Posttest		Mean Gain
		\bar{x}	SD	\bar{x}	SD	
Experimental	26	25.00	3.41	70.85	6.17	45.80
Control	25	25.28	3.36	49.52	5.21	24.24

*N = Number of students, \bar{x} = Mean and SD = Standard Deviation

The data presented in Table 1 showed that the experimental group 1 which was taught Marketing using Edmodo had a pre-test mean achievement score of 25.00 with a standard deviation score of 3.41 and a post-test mean achievement score of 70.85 with standard deviation score of 6.17. The difference between the pre-test and post-test mean for the group taught Marketing using Edmodo was 45.80. The control group which was taught Marketing using Conventional Method (CM) had a pre-test mean score of 25.28 with a standard deviation score of 3.36 and a posttest mean achievement score of 49.52 with a standard deviation score of 5.21. The difference between (mean gain) the pretest and posttest mean for the group taught Marketing using the Conventional Method was 24.24. This result reveals that, the students in the experimental group taught using Edmodo achieved better in the achievement test than the those students in the control group taught with Conventional Method. Hence Edmodo is more effective in enhancing students' achievement in Marketing.

H₀₁: There is no significant difference in the mean achievement scores of students taught Marketing using Edmodo and those taught with conventional method.

Table 2: Analysis of Covariance (ANCOVA) of the Significant Difference in the Mean Achievement Scores of Students Taught Marketing using Edmodo and those Taught with Conventional Method and Creative Arts

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	5852.560 ^a	4	1463.140	44.490	.000
Intercept	3820.760	1	3820.760	113.566	.000
Pretest	55.456	1	55.456	1.648	.206
Method	5657.197	1	5657.197	168.152	.000
Gender	2.386	1	2.386	.071	.791

Method *Gender	4.394	1	4.394	.131	.719
Error	1547.597	46	33.643		
Total	193408.000	51			
Corrected Total	7400.157	50			

The result in Table 2 shows that an F-cal of 168.152 with associated probability of 0.000 were obtained with respect to the difference in the mean achievement scores of students taught Marketing using Edmodo and those taught with Conventional Method. Since the associated probability (0.000) was less than 0.05 level of significant set as the bench mark for taking decision, the null hypothesis (H_{01}) was rejected. The decision drawn was that there was a significant difference in the mean achievement scores of students taught Marketing using Edmodo and those taught with Conventional Method.

Research Question 2

What are the mean achievement scores of male and female students taught Marketing using Edmodo?

Table 3. Pre-test and Post-test Mean Achievement Scores of Male and Female Students in Marketing using Edmodo

Gender	N	Pretest		Posttest		Mean Gain
		\bar{x}	SD	\bar{x}	SD	
Male	15	24.93	3.45	70.80	5.99	45.87
Female	11	25.09	3.51	70.91	6.71	45.82

*N = Number of students, \bar{x} = Mean and SD = Standard Deviation

The result presented on Table 3 shows that the male group had a pretest mean achievement score of 25.93 with a standard deviation score of 3.45 and a posttest mean achievement score of 70.80 with a standard deviation score of 5.99. The difference between (mean gain) the pretest and posttest for male group was 45.87. The female group had a pretest mean achievement score of 25.09 with a standard deviation score of 3.51 and a posttest mean

achievement score of 70.91 with a standard deviation of 6.71. The difference between (mean gain) the pretest and posttest mean score for the female group was 45.82. For each of both male and female students, the posttest achievement mean was greater than the pretest achievement means with male group having higher mean gain. This shows that Edmodo appear to have improved the achievement score of both the male and the female students in Marketing.

Ho₂: There is no significant difference in the mean achievement scores of male and female students taught Marketing using Edmodo.

The result in Table 2 shows that an F-ratio of .071 with associated probability value of 0.791 obtained with respect to the difference in the mean achievement scores of male and female students taught Marketing using Edmodo. Since the associated probability (0.791) was greater than 0.05 set as the level of significance and criterion for taking a decision, the null hypothesis (Ho₂) was not rejected. Based on this, it was therefore concluded that there was no significance difference in the mean achievement scores of male and female students taught Marketing using Edmodo.

Research Question 3

What is the interaction effect of method and gender on the mean achievement scores of students in Marketing?

Table 4. Mean and Standard Deviation of the Interaction Effect of Method and Gender on the Mean Achievement Scores of Students taught Marketing

Variables		N	Pretest		Posttest		Mean Gain
Method	Gender		\bar{x}	SD	\bar{x}	SD	
Experimental	Male	15	24.93	3.45	70.80	5.99	45.87
	Female	11	25.09	3.51	70.91	6.71	45.82
Control	Male	12	26.50	3.53	49.67	4.33	23.17

Female	13	24.15	2.88	49.38	6.08	25.23
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*N = Number of students, \bar{x} = Mean and SD = Standard Deviation

The result presented in Table 4 shows the interaction between method and gender on the mean achievement scores of students taught Marketing. Result shows that the male group had a pretest mean of 24.93 with a standard deviation of 3.45 and a posttest mean of 70.80 with a standard deviation of 5.99. The difference between (mean gain) the pretest and posttest for male group was 45.87. The female group had a pretest mean of 25.09 with a standard deviation of 3.51 and a posttest mean of 70.91 with a standard deviation of 6.71. The difference between (mean gain) the pretest and posttest mean for the female group was 45.82. For each of the two groups, the posttest achievement mean were greater than the pretest achievement means with the male group having higher mean gain. This is indicative that Edmodo appears to have improved the achievement score of both male and female students. Result in Table 4 also shows that the male group taught with conventional method had a pretest mean of 26.50 with a standard deviation of 3.53 and a posttest mean of 49.67 with a standard deviation of 4.33. The difference between the pretest and posttest mean for the male group was 23.17. The female group had a pretest mean score of 24.15 with a standard deviation score of 2.88 and a posttest mean of 49.38 with a standard deviation of 6.08. The difference between the pretest and the posttest mean for the female group was 25.23. For each of the two groups, the posttest mean score were greater than the pretest means scores. The female group in the conventional method group gained more scores than their male counterpart; this means there was an interaction between method and gender on students' achievement in Marketing.

H₀₃: There is no significant difference in the interaction effect of method and gender on the mean achievement scores of students in Marketing.

The result in Table 2 shows that an F-ratio of .131 with associated probability value of .719 was obtained with respect to the interaction effect of method and gender on students' achievement scores in Marketing. Since the associated probability (0.719) was greater than 0.05 level of significance set as the criterion for taking a decision, the null hypothesis (H_{03}) was accepted. Thus, the conclusion drawn was that there is no significant interaction effect of method and gender on the mean achievement scores of students in Marketing.

Discussion of Findings

As shown in Table 1, there is a difference between the mean achievement scores of the two groups of students taught marketing (experimental/edmodo and control/conventional methods). The analysis revealed that students taught using Edmodo educational technology performed significantly better in the Marketing Achievement Test than their counterparts who were taught with conventional methods. The results in Table 2 further confirmed this finding by indicating a statistically significant effect of Edmodo educational technology on students' achievement in marketing. The F-cal of 168.152 with the probability value of 0.000, which was significant at the 0.05 level of confidence, testifies to the result. This finding is in agreement with the result of an earlier study carried out by Qaddumi (2021), who found a significant difference in students' language skills acquisition and retention in favor of the experimental group (Edmodo). Also in agreement with this study was the finding of Charoenwet and Christensen (2016), whose findings revealed that learning activities provided on the LMS (Edmodo) significantly improved the self-regulated learning behaviors and learning performance of students, with a positive perception towards the online learning environment. Also, in agreement with the finding of this study was Al-Rabaani and Al-Wahaibi (2019) who found out that using Edmodo in teaching economic geography significantly improves students' achievement

compared to using traditional methods. This result could be attributed to the great improvement in the classroom environment made by Edmodo, whereby it becomes very positive and attractive for students.

Result of data analysis on table 3 has shown that female students taught Marketing performed slightly better than their male counterpart taught the same Marketing using Edmodo educational technology. The results show no further significant in the mean achievement scores of male and female students taught Marketing using Edmodo educational technology. The result of this study was in line with the findings of Attah and Shotayo (2016) who found no significant difference in the mean achievement scores of male and female students in Physics when taught using Edmodo.

Result of data analysis on table 2 and 4 has shown that there was no interaction effect in the meaning achievement scores of students in Marketing. The finding of this study was in agreement with the findings of Attah and Shotayo (2016) whose finding showed that there are no significant two-way interaction effects of gender and computer self-efficacy on achievement in physics ($F(1, 206) = 0.11, p > 0.05; \eta^2 = 0.00$). The findings of this study was also in line with the finding of Jolaosho, Dajan, and Ezeudu (2020) who find out no significant interaction effect in the achievement of students in Economics.

Conclusion

The study concluded that Edmodo is effective in enhancing students' achievement in Marketing and does not discriminate base on gender. With Edmodo both male and female students of Marketing can improve in their learning. The attractive nature of Edmodo could be one of the reasons why both male and female students achievement brilliantly in Marketing when use in teaching the subject.

Recommendations

The following recommendations were made in line with findings of the study.

1. Teachers should be encouraged in using Edmodo in the classroom
2. Government should provide all the necessary facilities that will aid the use of Edmodo in the school.
3. Both the male and female students of Marketing should be encouraged in participating in Edmodo classroom and stop thinking that educational technology is meant for one particular gender.

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