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EDITORIAL DESK

Volume 3 of the West African Journal of Educational Administration and Planning (WAJEAP) has a total of ten articles that were the products of well researched papers presented at the international conference held in May 2024 at the Presbyterian University of East Africa in Kikuyu, Nairobi, Kenya. The conference had well over 100 participants that gathered at the ambiance of PUEA environment, which was well attended by over 25 universities across the globe including Nigeria, Serra Leone, Kenya, South Africa, Australia and University of South Alabama in United States of America. All the articles have been peer reviewed and plagiarism checks conducted on them before publication.

I, therefore, want to deeply appreciate the management team of the Presbyterian University of East Africa for making this publication a reality. All the writers and authors are congratulated for passing the stringent measures set by the guild of editors.

Congratulations to everyone, and I wish you a prosperous Christmas celebration in advance.

Prof. M. O. B. Mohammed FNAEAP,
Head, Editorial Team

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LEVERAGING THE TECHNOLOGIES IN FLIPPED CLASSROOM AS PANACEA TO OVERCOMING BARRIERS TO LEARNING ECONOMICS THRESHOLD CONCEPTS IN NIGERIA

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ABSTRACT

This study explored the effectiveness of leveraging technology in a Flipped Classroom model as a solution to overcoming barriers to learning threshold concepts in Economics in public secondary schools in Education District V of Lagos State Nigeria. Findings of this study added to the pool of prior studies by showing that there is a significant joint and relative influence of threshold concept and active learning in a flipped classroom on students' academic achievement in economics. This study was hinged on the theory of conceptual change which served as a roadmap. The study employed descriptive survey research design using questionnaire and achievement test as instruments of data collection. The population consisted all public senior secondary schools in Lagos State Education District V. 397 students and 103 teachers who offered economics were sampled through multistage sampling technique. The data gathered were analysed using frequency, percentage, mean, standard deviation and Pearson Product Moment Correlation at 0.05 level of significance. Two key findings emerged from the study: firstly, the usability of the technologies in a flipped classroom in the teaching of Economics in senior secondary schools in Lagos State Education District V is once or twice a week ($\bar{x} = 3.052$); secondly, a significant positive correlation exists between the utilisation of technology in a Flipped Classroom setting and students' academic achievement in Economics threshold concepts ($r = .380$; $P < 0.05$). In conclusion, the research underscores the potential of the Flipped Classroom model in addressing learning barriers, particularly in the context of Economics threshold concepts in Nigeria. The study recommended widespread adoption of technology-assisted pedagogy in Economics education and emphasizes the importance of teacher training to optimize the benefits of this approach.

Keywords: Technology, Flipped Classroom, Active Learning, Academic Achievement

INTRODUCTION

Given the current state of underdevelopment, unemployment, economic deterioration and consumption-based economy of Nigeria today, there is need for academic achievement of students in subjects like Economics (Gotip & Kasgak, 2006). Economics as a social science subject is concerned with the production, distribution, and consumption of goods and services. Economics studies how, business, government, and nations like Nigeria make choices about how to locate resources (Aliyu et al., 2021). As a result of its comparative value to human lives, it is expected that every student will view Economics as precise, interesting, and simple to grasp. Ironically, it appears that this is not the case since many students consider economics to be a difficult, abstract, and nearly impossible subject to excel in. This perceived difficulty may emerge from various difficult topics that are inherent in economics, some of which are threshold concepts (Edu, 2012).

Every subject including economics has threshold concepts, which are ideas or learning opportunities that might be compared to opening a doorway to mastery of the subject. These ideas bring a new viewpoint on the subject and enable the perception of things that were previously inaccessible. The fundamental conceptual change or learning that a learner must undergo in order to view the world from the perspective of a specific subject is known as a threshold concept (Nadelson et al., 2018). Several works of literature have identified several topics that are viewed as economics threshold concepts (Davies, 2011; Davies & Mangan, 2007; Olaniyi, 2020). A few of them include - opportunity cost, theory of demand and supply and price determination (Davies, 2011; Shanahan et al., 2006). Understanding these threshold concepts could play a major role in determining students' academic achievement in the subject.

It has however been observed that students' academic achievement in Economics subject in Southwest, Nigeria has not been encouraging because the available statistics from West Africa Examinations Council (WAEC) examination results from 2018 to 2022 shows low percentage performance of students in economics in Southwest, Nigeria. In economics, 75 percent of the students scored grades between F9 to D7 within the period under review (West Africa Examinations Council Reports, 2023). The reason for this poor academic achievement of students in Economics could be due to poor comprehension of threshold concepts in the subject. Could technologies such as flipped classroom for active learning be leveraged to overcome this barrier in learning economics threshold concepts?

This is because in a flipped classroom, students watch lectures online outside of class rather than sitting through an entire period of lesson time, and then complete activities through active learning in class. Through technologies in flipped classroom, students consolidate what they have learnt through classroom activities with the aid of peers and teachers and learn new information through brief videos, podcasts, and e-books as well as the internet outside of class (Deng, 2019; Mohammed & Pitan, 2022). During flipped classroom, the contact and substantial learning activities that take place during the face-to-face time are the most significant aspects of the classroom learning. This technology of instruction is carried out in such a way that it puts the topic under consideration to the forefront so that the economics students can actively participate in the classroom activities and shift from naïve to think like an Economist, thus students can work out the unsolved and difficult questions with classmates or teachers rather than get the basic information passively in class (Mohammed & Pitan, 2022).

Thus, augmenting traditional teaching techniques with technology while flipping the teaching schedule does not fundamentally alter learning in any way (Erbil, 2020; Milman, 2020). Economics curricula should therefore include the new technological realities of the modern age. The latest technologies in flipped classroom should therefore be employed to teach threshold concepts in the subject. Thus, incorporation of flipped classroom into Economics instructions could enhance students' academic achievement in economics (Mohammed & Pitan, 2022). This study therefore explored the effectiveness of leveraging technology in a Flipped Classroom model as a solution to overcoming barriers to learning threshold concepts in Economics in public secondary schools in Education District V of Lagos State Nigeria.

Statement of the Problem

The data received from the West African Examination Council (WAEC) on the Southwest Nigerian state-based analysis of the candidates who achieved credit passes (A1 - C6) in Economics over the period of five years from 2018 to 2022 reveals the deterioration in students' academic achievement in Economics. The WAEC Chief Examiners' report noted, among other things, that there has been a decline in students' economics achievement compared to

previous years (West Africa Examinations Council Reports, 2023). In an effort to give a remedy for this decline, teachers and lecturers are frequently subjected to series of seminars, workshops and conferences on the best teaching methods, teaching aids, and attitudes toward the subject and students. These, however, does not seem to be sufficient, since students continue to grapple with their understanding of threshold concepts in Economics. It is thus believed that incorporating technologies such as flipped classroom into the way economics is taught and learned may help in eliminating the barrier in the comprehension of threshold concepts in the subject. The thrust of this study therefore was to investigate the extent to which leveraging technology in a Flipped Classroom model aids in overcoming barriers to learning threshold concepts in Economics in public secondary schools in Education District V of Lagos State Nigeria.

Objectives of the Study

The purpose of this study was to explore the effectiveness of leveraging technology in a flipped classroom model as a solution to overcoming barriers to learning threshold concepts in Economics in public secondary schools in Education District V of Lagos State, Nigeria. Specifically, the objectives were to:

1. ascertain the usability of technology driven active learning in a flipped classroom in the teaching of Economics in senior secondary schools in Lagos State Education District V.
2. find out if there is any significant correlation between utilisation of technology in flipped classroom and students' academic achievement in Economics threshold concepts in senior secondary schools in Lagos State Education District V.

Research Question

1. What is the usability of technology driven active learning in a flipped classroom in the teaching of Economics in senior secondary schools in Lagos State Education District V?

Hypothesis

H₀₁: There is no significant correlation between utilisation of technology in flipped classroom and students' academic achievement in Economics threshold concepts in senior secondary schools in Lagos State Education District V.

LITERATURE REVIEW

Theoretical Framework

This study was hinged on the "theory of Conceptual Change".

Theory of Conceptual Change

Conceptual change refers to the process of altering or substituting one conception for another. It might be a notion, a conviction, or a mode of thought. Conceptual change learning differs from other types of learning in that it involves a change or restructure of information and beliefs. In conceptual change learning, a preexisting thought could be completely altered, swapped out, or assimilated by the new information. The adjustment creates a conceptual framework that helps explain the knowledge and solve difficulties in the future (F. Z. E. Business Bliss Consultant, 2018). The classical Conceptual Change Theory was introduced by Posner et al. (1982). It involves the teacher utilizing technologies and making students' alternative frameworks explicit prior to designing a teaching approach consisting of ideas that do not fit students' existing conceptions and thereby promoting dissatisfaction. Prior to actually creating a teaching strategy that incorporates concepts that clash with students' preconceived notions and hence foster unhappiness, the instructor must make students' alternative frameworks explicit. The anomaly is then may be explained by a new framework

based on formal scientific inquiry. Although most studies indicate that initial novel ideas are only utilised in specific contexts, the conceptual progress that students made toward comprehending and acquiring threshold concepts and principles after instruction was frequently substantially limited (Nadelson et al., 2018).

Conceptual Model

The conceptual model for this study depicts the relationship between the independent variable (usability of technology for active learning in flipped classroom) and the dependent variable (academic achievement).

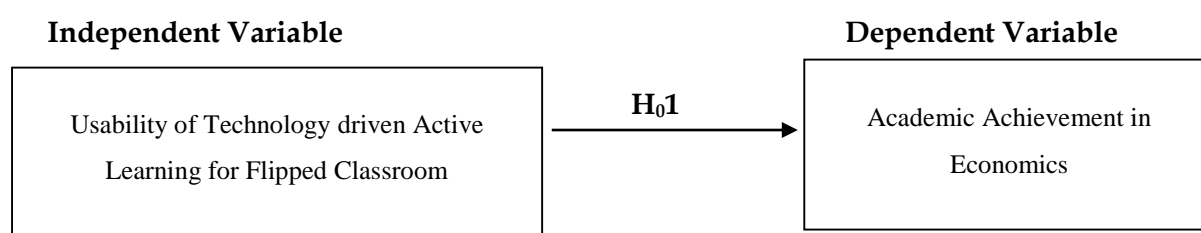


Figure 2.1: Conceptual Model (Source: Researcher, 2024)

METHODOLOGY

This research employed the descriptive survey research design. The target population comprised all sixty nine (69) public senior secondary schools, one hundred and thirty nine (139) economics teachers and fifty seven thousand, one hundred and thirty six (57,136) economics students in Lagos State Education District V. Three hundred and ninety seven (397) students and one hundred and three (103) teachers who offered economics were sampled through multi-stage sampling technique. A researcher-constructed questionnaire titled: "Usability of Technology-driven Active Learning in Flipped Classroom Questionnaire (UTALFCQ)" and an achievement test titled: "Students' Achievement Test (SAT)" were used to collect data. The instruments were validated using content and construct validity and subjected to Cronbach's alpha for estimation of its internal consistency (stability). Values of .693 and .533 were obtained UALTFQC and SAT respectively. These values meant that the instruments were stable (that is, reliable). The instruments were made into several copies and administered to the sample number of economics teachers (103) and students (397) in in Lagos State Education District V. Demographic variables of the respondents were analysed using frequency and percentage. Research question was answered using frequency, percentage, mean, standard deviation while inferential statistics such as Pearson product moment correlation was used to analyse the hypothesis at 0.05 level of significance.

FINDINGS

Demographic Data Analysis

Table 4.1: Demographic Data of Economics Teachers (n = 88)

Demographic Variable		Frequency (n)	Percentage (%)
Gender	Male	49	55.7
	Female	39	44.3
Age Group (Years)	26-34	16	18.2
	35-44	30	34.1
	44-50	27	30.7
	Over 50	15	17.0
Professional Qualification	Diploma	2	2.3
	B.Ed/B.A/B.Sc	47	53.4
	M.Ed/M.Sc	38	43.2
	PhD	1	1.1
Position held in the school	Senior Teacher	13	14.8
	Games Master	4	4.5
	H.O.D	6	6.8
	Form Teacher	18	20.5
	Subject Teacher	42	47.7
	Year Tutor	5	5.7

Source: Field-work, 2022

Table 4.1 showed that 55.7% of the economics teachers are males, while 44.3% are females. Most teachers, (34.1%) were within 35-44 years of age. Majority (53.4%) had B.Ed/B.A/B.Sc as their professional qualification and most (47.7%) were subject teachers.

Table 4.2: Demographic Data of Economics Students (n = 375)

Demographic Variable		Frequency (n)	Percentage (%)
Gender	Male	174	46.4
	Female	201	53.6
Age Group (Years)	11-15	105	28.0
	16-20	264	70.4
	Over 20	6	1.6
Occupation of Parents	Teacher	51	13.6
	Banker	50	13.3
	Engineer	75	20.0
	Trader	171	45.6
	Transporter	28	7.5
Department	Science	98	26.1
	Art	76	20.3
	Commercial	201	53.6

Source: Field-work, 2022

Table 4.2 showed that 46.4% of the students are males, while 53.6% are females. Majority, (70.4%) were within 16-20 years of age while the parents of majority of the students (45.6%) are traders by occupation. Most of the students (53.6%) are in commercial department.

Answer to Research Question

Research Question One: What is the usability of technology-driven active learning in a flipped classroom in the teaching of Economics in senior secondary schools in Lagos State Education District V?

Table 4.3: Usability of Technology-driven Active Learning in Flipped Classroom in the Teaching of Economics (n = 88)

S/N	Items (How often do you ask the students to in order to develop their comprehension skills or strategies in Economics?)	Every day or Almost Everyday	Once or Twice a Week	Once or Twice a Month	Never or Almost Never	Mean (x)	S.D	Remark
1	watch recorded videos of topics in Economics at home	19 (21.6%)	47 (53.4%)	16 (18.2%)	6 (6.8%)	2.898	0.68	Good
2	explain or support their understanding of what they have learned individually or in a peer group work	27 (30.7%)	53 (60.2%)	5 (5.7%)	3 (3.4%)	3.182	.77	Good
3	compare what they have learned in the classroom with experiences they have had	35 (30.8%)	38 (43.2%)	15 (17.0%)	-	3.227	.79	Good
4	talk to guest lecturers such as prominent Economist bank manager, business tycoon and top government officials	25 (28.4%)	33 (37.5%)	24 (27.3%)	6 (6.8%)	2.875	.67	Good
5	make generalisations and draw inferences based on what they have learned	25 (28.4%)	51 (58.0%)	12 (13.6%)	-	3.148	.76	Good
6	Make use of 3D illustrations in form of graph and charts.	21 (23.9%)	41 (46.6%)	25 (28.4%)	1 (1.1%)	2.932	.69	Good
7	obtain feedback in form of quiz, individual exercises, and projects	28 (31.8%)	44 (50.0%)	13 (14.8%)	3 (3.4%)	3.102	.76	Good
Criterion Mean = 2.500; Weighted Mean = 3.052; S.D = 0.73; Overall Decision = Good								

Source: Field-work, 2022

KEY: S.D = Standard Deviation

*****Threshold:** mean value of 0.000-1.499 = Never or Almost Never (very bad); 1.500-2.499 = Once or Twice a Month (bad); 2.500-3.499 = Once or Twice a Week (good); 3.500 to 4.000 = Every day or Almost Every day (very good)

Table 4.3 showed the usability of technology for active learning in flipped classroom technology in the teaching of Economics in senior secondary schools in Lagos State Education District V. The rating scale of never or almost never to everyday or almost everyday was used with the criterion mean set at 2.500. Seven positive items were used to measure the usability of the active learnings in flipped classroom in the teaching of Economics in senior secondary schools. All the items were remarked “good” as their means are within 2.500-3.499. This result implied that the teacher made use of technology driven active learning such as video clips and 3D illustrations, in a flipped classroom was performed once or twice a week which was good. Table 4.3 generally showed that the usability of technology driven active learnings in flipped classroom technology in the teaching of Economics in senior secondary schools in Lagos State Education District V is once or twice a week which is good (Weighted Mean = 3.052; S.D = .73).

Test of Hypothesis

H₀: There is no significant correlation between utilisation of technology in flipped classroom and students' academic achievement in Economics threshold concepts in senior secondary schools in Lagos State Education District V.

Table 4.4: Pearson Product Moment Correlation Showing the Significant Relationship between Utilisation of Technology in Flipped Classroom and Students' Academic Achievement in Economics

		Students' Academic Achievement in Economics	in Utilisation of Technology in Flipped Classroom
Utilisation of Technology in Flipped Classroom	Pearson Correlation	.380*	1
	Sig. (2-tailed)	.000	
	N	375	375
Students' Academic Achievement in Economics	Pearson Correlation	1	.380*
	Sig. (2-tailed)		.000
	N	375	375

*Pearson Product Moment Correlation (r) value is significant at the $P < 0.05$ level (2-tailed).

Source: Field-work, 2022

The data in table 4.4 revealed a statistically significant correlation between utilisation of technology in flipped classroom and students' academic achievement in Economics in Lagos State Education District V ($r = .380$; $P < 0.05$). This is an indication that utilisation of technology in flipped classroom has a significant relationship with the students' academic achievement in Economics in senior secondary schools in Lagos State Education District V.

In table 4.4, the $r_{\text{calculated}} = 0.380$.

Degree of freedom (Df) = $n - 2$ (i.e. $375 - 2 = 373$), because one df goes for X and one df goes for Y variable.

Checking the correlation coefficient table, $r_{\text{tabulated}}$ or $r_{\text{critical}} = r_{0.05(2), 373} = 0.105$.

Decision: Since the p-value (0.000) of the Pearson Product Moment Correlation is less than 0.05 (level of significance value) or since the $r_{\text{calculated}}$ value of 0.380 is greater than the $r_{\text{tabulated}}$ or r_{critical} value of 0.105, the null hypothesis (H_0) is therefore rejected. This implied that the null hypothesis that states that "there is no significant correlation between utilisation of technology in flipped classroom and students' academic achievement in Economics threshold concepts in senior secondary schools in Lagos State Education District V" is therefore rejected.

DISCUSSION

This study was carried out to explore the effectiveness of leveraging technology in a Flipped Classroom model as a solution to overcoming barriers to learning threshold concepts in Economics in public secondary schools in Education District V of Lagos State Nigeria. This section presented this discussion of the results relating it with prior studies. The demographic data of Economics teachers showed that 55.7% of the teachers are males, while 44.3% are females. Most teachers, (34.1%) were within 35-44 years of age. Majority (53.4%) had B.Ed/B.A/B.Sc as their professional qualification and most (47.7%) of them were subject teachers. This result partially agreed with the works of Salahudeen et al. (2018) and Waheed

et al. (2021) which revealed more male Economics and Agricultural science teachers who had Bachelor's degree as their professional qualification, were subject teachers in their mid-age within 40-50 years of age.

The demographic data of senior secondary school students offering Economics showed that that 46.4% of the students are males, while 53.6% are females. Majority, (70.4%) were within 16-20 years of age while the parents of majority of the students (45.6%) are traders by occupation. Most of the students (53.6%) are in commercial department. This result partially agrees with the research works of Badejo and Bola (2021) and David et al. (2018) which established that most adolescent students in Lagos state senior secondary schools were females within the 14-20 years of age and in commercial department. Majority of their parents were into businesses such as trade.

Research question revealed that the usability of technology-driven active learnings such as video clips and 3D illustrations, in flipped classroom technology in the teaching of Economics in senior secondary schools in Lagos State Education District V is carried out once or twice a week which is good ($\bar{x}= 3.052$). This result partially agreed with the work on "Effect of Flipped Classroom Instructions on Secondary School Students' Critical Thinking and Achievement in Matrices and Determinants" which reported that teachers' sometimes use active learning instructions in a flipped classroom for the teaching of Mathematics in the secondary schools (Aneshie-Otakpa & Andor, 2021). The results could be similar because teachers in major parts of Nigeria are now being encouraged to regularly adopt active learning such as video clips and 3D illustrations, in a flipped classroom for mathematical subjects such as Mathematics, Economics, Physics and Chemistry as they can help to stimulate the students' thinking abilities.

Hypothesis revealed a statistically significant correlation between utilisation of technology in flipped classroom and students' academic achievement in Economics in Lagos State Education District V ($r = .380$; $P<0.05$). This result was quite similar to the research work on "Impact of Flipped Classroom on Mathematics Learning Outcome of Senior Secondary School Students in Lagos, Nigeria" which noted that active learning in a flipped classroom and mastery of difficult topics or concepts in Mathematics significantly influence mathematics learning outcome and their achievement in the subject in Lagos state (Makinde, 2020). Another study also showed significant effect of flipped teaching and learning method involving threshold concepts on students' academic achievement in social studies in Imo State, Nigeria (Ipem et al., 2021).

CONCLUSION AND RECOMMENDATIONS

In conclusion, this research underscores the potential of technology driven active learning such as video clips and 3D illustrations, in flipped classroom model in addressing learning barriers, particularly in the context of Economics threshold concepts in Nigeria. It was recommended therefore that;

1. Schools should integrate technology-enhanced active learning in a flipped classroom approach for teaching Economics. This method should be incorporated regularly to aid students in grasping threshold concepts more effectively; and
2. Economics teacher should be made to undergo training regularly and periodically to optimise the benefits of the technology-driven pedagogy for economics instruction.

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