International Journal of advanced humanities Research" (IJAHR)
Online ISSN: - 2812-5940
https://ijahr.journals.ekb.eg/

Effectiveness of Flipped Classroom Strategies on Learning Outcomes in Economics Threshold Concepts across Arts, Commerce, and Science Disciplines in Secondary Schools

[1] JIMOH, Saliu,[2] Mohammed, Oluwashola,[3] Lawal-Arogundade, Olayiwole,

[1] Department of Language, Arts and Social Science, Faculty of Education, Lagos State University, Nigeria
akin4jimoh@yahoo.com
[2] Department of Language, Arts and Social Science, Faculty of Education, Lagos State University, Nigeria
abidat.mohammed@lasu.edu.ng
[3] Department of Economics, Faculty of Social Science, Lagos State University, Nigeria
samad.lawal@lasu.edu.ng

Abstract

The effectiveness of flipped classroom learning on learning outcomes in economics threshold concepts across three disciplines, namely arts, commerce, and science, in secondary schools in Nigeria was explored through a quasi-experimental design using a one-group pre-test and post-test format. A total of 12 schools were sampled using systematic sampling techniques from the four zones in Lagos State Education District V, with three schools from each of the zones that make up the district. Intact classes of year two senior secondary school students were used in each sampled school. The study tested three hypotheses at 0.05 level of significance. The results indicated that there was a significant joint influence of threshold concepts and flipped classroom strategies on learning outcomes in economics among senior secondary school students ($F = 9.023$, $p < 0.05$). No difference was seen in the learning outcomes among students from arts, commerce, and science disciplines ($F = 0.66$, $p > 0.05$). Hence, the results recommended that professional development on improved flipped classroom strategies needs to be given to economics teachers, as it has a significant positive effect on the learning outcomes.

Keywords: Flipped Classroom, Threshold Concepts, Learning Outcomes, Economics, Secondary Schools

Article History
Receive Date: 2024/10/15
Accept Date: 2024/11/1
Publish Date: 2024/11/9

Volume 4 / Issue2, December, 2024
DOI: - 10.21608/IJAHR.2024.329995.1047

CITATION:
Mohammed, A., Jimoh, A., & Lawal-Arogundade, S. (2024). Effectiveness of Flipped Classroom Strategies on Learning Outcomes in Economics Threshold Concepts Across Arts, Commerce, and Science Disciplines in Secondary Schools. *International Journal of Advanced Humanities Research*, *4*(2), 72-84. doi: 10.21608/ijahr.2024.329995.1047

Introduction

The traditional method of teaching has always been a combination of lecturing in class and homework outside the classroom. In the last ten years, however, a number of pedagogical innovators have created new methods that break this mold. Among these is the flipped classroom: a methodology in which the entire structure of learning is flipped on its head (Deng, 2019). A student first acquires the flipped class on his or her own before class, usually through videos or other digital resources, then applies that learned material in class time through discussions, problem-solving, and hands-on activities with the teacher's assistance (Purba et al., 2021). In the flipped classroom model, the teacher's role changes from being a lecturer to that of a facilitator, emphasising active learning and engagement during class time. Flipped classrooms are the contemporary educational approaches that have been popular in fostering personalised and interactive learning. For example, some researchers (Nurwulandari, 2024; Mohammed 2022; Purba et al., 2021; Olaniyi 2020) suggest that flipped classrooms increase student engagement, retain more students, and enhance academic achievements, especially in those courses requiring deep conceptual understandings such as science, mathematics, and economics. Rather, students learn the material in advance of the class so that they have more time to process the complex concepts and come to class prepared to ask questions and build on ideas through collaborative learning activities. This approach according to Olaniyi (2020) is especially highly engaging for students of economics, because during the out of the classroom activities, they could ask their parents and other adults about daily economics activities that would enhance deeper understanding of the concepts being sought.

In economics, there are certain concepts that are considered threshold concepts-those ideas that when learned change perspectives of students and allow them to think like economists (Davies, 2019). These concepts are usually central in the discipline and provide the platform for more advanced learning. Threshold concepts, however, have always been tricky to grasp since these always tend to be more abstract and counterintuitive, or they deal with thinking shifts. Examples of threshold concepts in economics would fall into the domain of opportunity cost, market equilibria, and elasticity (White et al., 2016; Mohammed, 2022).

The problem that arises is that these concepts may be quite complex and, thus, act as a blockade to further learning. The grasping of these concepts is supposed to be attained in an effective manner by educators. The flipped classroom-roots of pre-class preparation and in-class active learning-offer a potential solution to this challenge (Cheng et al., 2019). Introducing threshold concepts through instructional videos or readings before class allows students to become familiar with the material in a low-pressure environment. In-class activities can then be constructed to help students apply such concepts, work through misconceptions, and deepen their understanding through peer collaboration and teacher support (Mohammed, 2022). Learning outcomes represent detailed knowledge, skills, and attitudes that students should have acquired as a result of their educational experiences. For secondary education, learning outcomes reflect the benchmark standards against which progress and achievements of students are measured (Mohammed, 2024). Well-

defined learning outcomes are necessary for guiding instruction, assessing student performance, and making sure that the goals of education are realised. Typical learning outcomes for courses in economics include that students will be able to apply economic principles to the real world, analyse economic data, and critically evaluate economic policy. These clearly are outcomes that require students to develop both a theoretical and applied understanding of economics (Adio et al., 2021). Yet, these aims have often not been achieved through traditional methods of teaching that tend to be limited to lectures, and even less so when trying to teach complex threshold concepts (Olaniyi, 2020; Mohammed, 2022).
It is, thus, expected that the findings will be key pointers for any meaningful engagement in economic education within and outside Nigeria. This study provides a blueprint for other schools and educators to bring up the learning outcomes of students in economics, by demonstrating how effective the flipped classroom model is in teaching threshold concepts. Furthermore, the focus of this study is at the secondary school level – the level of most specific relevance to the policymakers and educational administrators responsible for the adequate preparation of students for higher education and subsequent entry into the workforce.

STATEMENT OF THE PROBLEM

While economics holds importance among teaching subjects, the concept of threshold has always created conditions that make it very hard for students to grasp. Many teaching approaches, like the lecture system and rote memorisation, do not equip students with conceptual skills that help them understand and apply their learning (Olaniyi, 2020). Matters are made worse by the large class sizes, limited hours available within the classroom, and diverse backgrounds present in the students' academic profiles that are streamed into arts, commerce, and science disciplines while still in secondary schools. Resource constraints, inadequate teacher training, and outdated curriculum design inhibit effective teaching. Most teachers have never received training in state-of-the-art pedagogical methods and also do not have access to technology, which severely deprives students of the necessary support required for mastering the complex nature of economic concepts. As a result, students seem to fail pessimistically and consequently develop disinterest in those subjects. For this reason, researchers observed that for an interdisciplinary subjects like economics, where integration of complex concepts is necessary, the flipped classroom model works very well to instil the desired learning outcomes (Adio et al, 2021; Ipem et al., 2021; Mohammed 2024). This is because students are involved actively, which helps them to work through some of the hard threshold concepts and do deeper learning by collaboration. This approach is effective, especially for Nigerian secondary schools where economics, is learnt by streams of students divided into arts, commerce, and science. Irrespective of such divisions, there are threshold concepts which all students have to understand, such as supply and demand, opportunity cost, and market structures. This makes teaching such threshold concepts challenging to all teachers on account of the variety of academic backgrounds and learning styles of the students (Makinde, 2020; Ipem et al., 2021). Accordingly, this paper contributes to the literature by investigating whether the flipped classroom method teaches economics threshold concepts to Nigerian

secondary school students regardless of their discipline and delivers lessons that can be used in improving learning outcomes toward success in the global economy. The following hypotheses will, therefore, be tested to ensure the aforementioned.

Hypotheses

$H_0$1 Threshold concept and flipped classroom strategies do not have any significant joint influence on learning outcomes in Economics among Senior Secondary School Students in Lagos State Education District V.

$H_0$2 Threshold concept and flipped classroom strategies do not have any significant relative influence on learning outcomes in Economics among Senior Secondary School Students in Lagos State Education District V.

$H_0$3 There is no significant difference in the learning outcomes among students in arts, commercial and science when taught the economics threshold concepts using flipped classroom strategies among Senior Secondary School Students in Lagos State Education District V.

LITERATURE REVIEW

Effectiveness of Flipped Classroom Strategies on Learning Outcomes in Economics Threshold Concepts

The following two factors explain why the flipped classroom received so much popularity and rose to prominence in some regions of the world: (1) The Flipped Classroom is ensured by cutting-edge technology, and after class, students can watch self-directed learning clips. (2) A lot of schools use videos to be watched online or offline. The Flipped Classroom has recently gained popularity in American classrooms. The Flipped Classroom in America concentrates on science disciplines including math, physics, and science and centers on elementary and high schools. The educational process encourages scholars' and teachers' acceptance of the flipped classroom. According to their approach to teaching, they enumerated the benefits and drawbacks of the flipped classroom (Deng, 2019).

Many researchers (Sisk et al., 2018; Deng, 2019; Olaniyi, 2020; Haghpour et al., 2022) have the conviction that the Flipped Classroom could have more positive benefits than the Traditional Classroom. Most of their studies showed that students absorb the training video at their own pace and would access the internet and social media to find the information they need. When students complete "homework" in class, teachers have additional opportunity to provide students feedback and gain a better understanding of their learning preferences and challenges. As a result, the time spent in the classroom can be used more effectively and creatively. It turns out that as student achievement rises, interest and involvement do as well. Additionally, viewing and learning from one another's videos helps teachers' professional development (Deng, 2019).

It is within this model – actual application and active learning – that better learning outcomes in economics threshold concepts can be potentially realised since the flipped classroom better prepares the students with more opportunities (Haghpour et al., 2022). Students in flipped classrooms are more likely to reach higher levels of understanding and retention of information, which may very well translate to improved academic performance. Also, the interactive nature of the flipped classroom makes the students more capable of taking responsibility for their

learning and enhances their critical thinking and problem-solving ability (Sisk et al., 2018). especially in economics threshold concepts (Mohammed, 2022).

The Threshold Concept offers a framework of features for highlighting relevant conceptual thinking that serves as learning gates within a subject area or field. These learning portals are regarded as a threshold that must be passed by students in order to increase their mastery of their educational experiences and to view a certain aspect of the universe in a completely fresh, transforming, and frequently unexpected way (Davies, 2019). Following such changed comprehension, further professional and in-depth learning related to the notion is made feasible, which results in an improvement in academic achievement in the subject area under consideration. In fact, without a threshold concept – which "represents a transformed way of understanding, or interpreting, or viewing anything without which the learner cannot progress" – such heights of academic achievement could not be feasible. However, students will advance to higher levels of comprehension at varying rates and through various learning strategies (Piro & Callagan, 2019). According to some notable academicians (Salwén, 2019; Timmermans & Meyer, 2019; Nicola-Richmond, 2018), the degree of exposure to threshold concepts distinguishes students who have mastered the pedagogy of a subject from those who have only a cursory understanding of it.

Economics Threshold Concepts across Disciplines

Economics is an interdisciplinary subject that cut across the arts, commerce, and science streams in schools. Students from each of these disciplines bring different dimensions and challenges to the study of different subjects (Anjum, 2018), economics inclusive. For example, students studying arts may have a problem with the quantitative areas of economics, while the students in commerce and science may have difficulties engaging the wider social and ethical implications of economic policies (Mohammed, 2024).

With these challenges, there is growing interest in researching alternative teaching methods that may achieve better learning outcomes in economics. Threshold concepts together with flipped classroom strategies are becoming quite promising in this regard. The flipped classroom allows students to engage with difficult concepts at their own pace, by reversing the traditional order of instruction, with added benefits of immediate teacher support during activities. This latter option allows students to be exposed continuously to threshold concepts and allows for more freedom in how they apply what is learned to more realistic situations (Makinde 2020; Ipem, 2022; Mohammed, 2022).

Theoretical Framework

The theoretical anchorage of the study will be twofold. First is the theory of Conceptual Change as a theoretical basis for threshold concepts and second is the theory of Mastery learning as a theoretical for the flipped classroom approach.

Theory of Conceptual Change by Posner, Strike, Hewson and Gertzog

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 (Nersessian 2017).

The classical Conceptual Change Theory was introduced by Posner, Strike, Hewson, and Gertzog in 1982. According to Posner et al., (1982) this theory involves the teacher 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 maybe 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 science concepts and principles after instruction was frequently substantially limited (Nadelson et al., 2018; Nersessian 2017; Meyer & Timmermans 2016). Thomas Kuhn's depiction of the scientific revolution and Piaget's idea of disequilibration and accommodation served as the foundation for the theory (Nersessian 2017; Cassidy & Ahmad, 2021).

Mastery Learning by Benjamin Bloom

Benjamin Bloom's concept of Mastery Learning serves as the study's theoretical foundation for the flipped classroom. He was a teacher in the education department at Chicago University and a well-known psychologist and educator of the modern era. The growth in American education during the 1950s and 1960s led to the creation of the Mastery Learning (Deng, 2019). According to Mastery Learning, "everyone can master what they need to know during the teaching process if the learning settings have fulfilled students' needs" (Bloom, 1986). Bloom argued that all students can learn well and most of them will have nearly equal learning abilities, learning speed, and motivation for learning if the teaching proceeds smoothly in accordance with the teaching schedule, all the problems they encountered have been offered a solution, all students have enough time, and there is a standard for mastering (Davies, 2019). Bloom developed "teaching for mastery" and later Mastery Learning Theory on the basis of his learning theory and earlier successes. According to Bloom, all pupils can master the material if given the right circumstances (Deng 2019). Carol's studying theory, which took into account five variables, is the foundation for Bloom's Mastery Learning Theory. Study time, learning persistence, teacher quality, comprehension capacity, and aptitude are the five factors. These variables interact and ultimately have an impact on the learning outcomes (Farmer, 2018).

METHODOLOGY

Research Design

This study used a quasi-experimental design with pretest and posttest non-equivalent group comprising two treatment groups (TC in FC and Lecture method) to investigate the effect of the use of flipped classroom strategies on the students' learning outcome in economics threshold concepts in Lagos State Education District V, Nigeria.

Population and Sample

The population included all economics teachers and students in the 72 senior secondary schools in education district V of Lagos State. A systematic sampling technique was used to select 12 schools (3 from each of the four local governments) and divide them into two experimental and one control groups from each local government. One intact class of SSS two students was used in each school while all economics teachers available were sampled. Students in SSS two was considered in this study because students in SSS 1 were yet to have deep knowledge of the threshold concepts, while SSS 3 students are writing WASSCE and NECO at the period of this research. Teachers and students responded to questionnaire items designed solely for them. The students took the achievement test before and after intervention to measure their economic cognition, economic intellectual skills, and attitude.

Instrumentation

The research instruments were threefold, tagged Leaning Outcomes in Economics Questionnaire (LOEQ), Test of Mastery in Economics Threshold Concepts (TMETC) and Threshold Concept and Flipped Classroom Questionnaire (TCFCQ).

LOEQ had two sections A and B. Section A consisted of demographics of students while section B consisted 20 positive items that was measured on four columns, ticked according to the modified Likert scale – VL - Very Low, L - Low, H – High, VH – Very High. LOEQ was subdivided into seven items on economic cognition, seven items on economic intellectual skills and six items on attitude to economics. These items were designed to gauge students' self-perceived level of economic intellectual skills, economic cognition and attitude towards economics providing valuable insights into their confidence, comprehension, and engagement with economic concepts. Items in LOEQ were adapted from Jimaa Shihab Students Rating Scale (2013). This instrument was validated by economics teachers and other experts in economics. To ascertain the degree to which the LOEQ consistently measure what it was meant to measure, the items were subjected to a Guthman Split-Half method of reliability on Statistical Package for Social Sciences version 25. The coefficient gave a value of 0.97 which suggests that the test is highly reliable.

TMETC consisted 15 multiple-choice questions attempted by students before responding to the questionnaire. This was considered necessary in order to test the mastery level of the students in the identified threshold concepts in economics and to induce positive and reliable response when they are responding to the questionnaire. The students were given 15 minutes to provide answers to the questions. The questions were set considering the identified topics which are considered threshold concepts in Economics syllabus, and examination questions obtained from some of the sampled schools. The scoring of the questions were 2 marks for the multiple-choice questions, giving a total of 30 marks. Questions in the TMETC were drawn from the topics that have been taught in their previous classes on the identified threshold concepts in Economics. TMETC was validated by economics teachers in the sampled schools.

TCFCQ was made up of two sections – A and B. Section A included purpose of research work, duration, name of school and teachers' demographics. Section B consisted of 22 positive items that was measured on four columns, ticked according to the modified Likert scale – SD – Strongly Agree, D - Disagree, A - Agree, SA – Strongly Agree, bordering on views of teachers on identified threshold concepts in economics and the usability of active learning. Items included in teachers' questionnaire were adapted from the Organisation for Economic Co-operation and Development (OECD) Teaching and Learning International Survey, (2018), some statement from the body of this research work. The coefficient of Guttman Split Half reliability of TCFCQ was 0.98, calculated using Statistical Package for Social Sciences (SPSS) version 25.

Method of Data Analysis

The gathered data from this study was analysed using descriptive and inferential statistics. The descriptive statistics of table, mean, standard deviation, and percentage were utilised to analyse the three research questions. The inferential statistics was analysed with the use of Analysis of Covariance (ANCOVA) statistics in SPSS version 25 to test the hypothesis at 0.05 level of significance. Since the groups were not randomly assigned, the covariate was the pretest scores on TMETC, which controlled for any initial difference among the groups. The data underwent the necessary parametric assumption tests to check its suitability for the statistical tool. These tests include Levene's test of homogeneity, which measured the group variance, and the Shapiro–Wilk test of normality, which assessed the data distribution.

FINDINGS AND DISCUSSION

Test of Hypothesis One

Threshold concept and flipped classroom strategies do not have any significant joint influence on learning outcomes in Economics among Senior Secondary School Students in Lagos State Education District V.

Table 1: Summary of the Model and Multiple Regression Analysis Coefficients for the Joint Influence of Threshold Concept and Flipped Classroom Strategies on Learning Outcomes in Economics among Senior Secondary School Students in Lagos State Education District V.

ANOVA						Model Summary			
Model	Sum of Squares	df	Mean Square	F	Sig.	R	R^2	Adjusted R^2	Std. Error of the Estimate
Regression	453.543	2	226.771	9.023	.001 b	.640a	.410	.364	5.013
Residual	653.423	26	25.132						
Total	1106.966	28							
a. Dependent Variable: Learning Outcomes in Economics									
b. Predictors: (Constant), TC, FC									

Source: Fieldwork 2024

Table 1 showed the regression analysis conducted on the influence of threshold concepts and flipped classrooms strategies on learning outcomes in economics among senior secondary school students in Lagos State Education District V reveals significant findings. The ANOVA summary indicates that the model is statistically

significant, with an F value of 9.023 and a significance level of 0.001 ($p < 0.05$). This suggests that the combined effect of threshold concepts and flipped classroom strategies significantly influences learning outcomes in Economics. The model summary further supports this conclusion, with an R^2 value of 0.410, indicating that approximately 41% of the variance in learning outcomes in economics can be explained by the predictors. The adjusted R^2 value of 0.364, which accounts for the number of predictors, provides a more accurate measure of the model's goodness of fit. The standard error of estimate is 5.013, reflecting the average distance that the observed values fall from the regression line. Given the significance level is less than 0.05, the null hypothesis, which posits no significant joint influence of threshold concepts and flipped classrooms strategies on learning outcomes in economics, is rejected. This result aligns with the conclusion drawn from the study by Olaniyi (2020), that active learning in flipped classroom approach have positive impact of students learning outcomes to cross the threshold to mastery of complex concepts.

Test of Hypothesis Two

Threshold concept and flipped classroom strategies do not have any significant relative influence on learning outcomes in Economics among Senior Secondary School Students in Lagos State Education District V.

Table 2: Multiple Regression Analysis Coefficients for the Relative Influence of Threshold Concept and Flipped Classroom Strategies on Learning Outcomes in Economics among Senior Secondary School Students in Lagos State Education District V.

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	50.090	8.862		5.652	.000
FC	.655	.155	.642	4.230	.000
TC	-.196	.216	-.138	-.906	.373

Source: Field work 2024

The results of the multiple regression analysis highlight the relative influence of both threshold concepts and flipped classroom strategies on the learning outcomes in economics of Senior Secondary School students in Lagos State Education District V. The flipped classroom approach showed a strong and statistically significant impact on students' learning outcome. Specifically, the unstandardised coefficient (β_1 = 0.655) indicates that for every unit increase in the implementation of the flipped classroom strategy, students' learning outcome in Economics improves by an average of 0.655 units. The standardised beta coefficient (β_2 = 0.642) reflects the considerable influence of the flipped classroom method relative to other factors, while the t-value (4.230) and the corresponding p-value (0.000) confirm the significance of this effect at the 0.05 level. These results demonstrate that the active learning approach fostered through the flipped classroom strategy significantly enhances learning outcomes in Economics. In contrast, the results for threshold concepts suggest a different outcome. The unstandardised coefficient (β_1 = -0.196) points to a minor negative association between mastery of threshold concepts and academic achievement in Economics. However, this relationship is not statistically

significant, as reflected by the beta coefficient (β_2 = -0.138), the t-value (-0.906), and the p-value (0.373). These findings indicate that, in this context, mastery of key threshold concepts such as opportunity cost, demand and supply, and price determination does not play a significant role in predicting students' learning outcomes in Economics. The results therefore reveals that while both strategies are important components of effective teaching, the flipped classroom approach stands out as the more impactful method for improving academic achievement in Economics. These findings are in line with previous studies, such as Makinde's (2020) research, which underscored the positive effect of flipped classrooms on students' performance in Mathematics, and Ipem et al. (2021), who found a predictive effect of flipped teaching methods on student outcomes in Social Studies. This study adds to the growing body of evidence that flipped classrooms can have a transformative effect on learning outcomes across various subjects and educational contexts.

Test of hypothesis three

There is no significant difference in the learning outcomes among students in arts, commercial and science when taught the economics threshold concepts using flipped classroom strategies among Senior Secondary School Students in Lagos State Education District V.

Table 3: One Way ANOVA Analysis of the Difference in the Learning Outcomes Among Students in Arts, Commercial and Science When Taught the Economics Threshold Concepts Using Flipped Classroom Strategies among Senior Secondary School Students in Lagos State Education District V.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	60.296	2	30.148	.656	.519
Within Groups	36284.036	789	45.987		
Total	36344.332	791			

Source: Field work 2024

Table 3 presented the statistical test to determine if there is a significant difference in learning outcomes across students in the Arts, Commercial, and Science streams in Senior Secondary School when economics threshold concepts are taught using the flipped classroom strategies. The F-value is 0.66 while the corresponding p-value is 0.52 (F= 0.66; p > 0.05). Given that the p-value is greater than the significance level of 0.05, this imply that there is not enough evidence in the data to reject the null hypothesis of no significant difference in learning outcomes in economics threshold concepts for students in the Arts, Commercial, and Science streams taught using the flipped classroom strategies. This result suggests that any observed differences in the respective outcomes are more likely due to chance than the effect of the teaching method across the streams. Thus, this study hypothesises that the learning of economics threshold concepts by students of streams Arts, Commercial, and Science is identical in a flipped classroom model. This result is slightly different from that of Anjum (2018) who found differentials in learning outcomes of students in the streams of science, art, and commercial when taught using computer assisted instructions. Anjum (2018) found that overall performance of computer aided

learning has impact on the improvement of sciences students' performance more than commerce students and arts college students.

CONCLUSION AND RECOMMENDATIONS

This study explored effectiveness of flipped classroom strategies on learning outcomes in economics threshold concepts across arts, commerce, and science disciplines in secondary schools in Lagos State Education District V. The results showed that the flipped classroom significantly enhances learning outcomes in economics threshold concept because it promotes active participation, critical thinking, and cooperation. This pedagogy showed that students of all streams, whether arts, commerce, or science, did much better in understanding complex ideas of supply and demand, opportunity cost, and market structures.

The threshold concept was essential, yet on the whole, flipped classroom approach alone had more powerful and positive influence on student achievement than traditional methods of teaching. This infers that digital pre-class preparation and interactive in-class learning reinforce the student's transferring of theoretical knowledge into practice. Moreover, there has been no significant difference of art, commercial and science streams in terms of their learning outcome on the basis of this model, which signifies its effectiveness on a number of diversified learners.

The foregoing generally indicates that flipped classroom strategies hold immense promise for economics threshold concepts and can thus be applied across the arts, commerce, and science streams in secondary schools in Nigeria. Consequently, these suggestions were made to further advance the efficiency and effectiveness of this model: In-service training for teachers is to be made available in order to fully equip them on how best to put into practice the flipped classroom models; Schools are to be sufficiently provided with digital tools and resources that would help facilitate pre-class learning activities; The current economics curriculum has to be reviewed to ensure an appropriate integration of active and critical thinking during the implementation of the flipped classroom model; It is recommended that the flipped classroom model be implemented uniformly across disciplines in order to maintain consistency in learning outcomes in economics threshold concepts; and Continuous evaluation and feedback mechanisms are encouraged to monitor the effectiveness of flipped classrooms strategies on student performance and make necessary adjustments.

References

- Adio, Y. O., Oluwatosin, W. L., & Olatunde, F. A. (2021). Assessment of the Implementation of Economics Curriculum and Students' Learning Achievement in Public High Schools in Osun State, Nigeria. *KIU Journal of Social Sciences*, *7*(1), 239 – 251.
- Anjum, A. (2018). Impact of Computer Aided Learning to Increase the Performance of the Students in Selected Arts, Science and Commerce Colleges. *International Journal of Management Studies,* 5 (2), 10 – 15.
- Cassidy, R., & Ahmad, A. (2021). Evidence for conceptual change in approaches to teaching. *Teaching in higher education*, *26*(5), 742-758.
- Cheng, L., Ritzhaupt, A. D., & Antonenko, P. (2019). Effects of the flipped classroom instructional strategy on students' learning outcomes: A meta-analysis. *Educational Technology Research and Development*, *67*, 793-824.
- Davies P. (2019). The Construction of Frameworks in Learners' Thinking: Conceptual Change and Threshold Concepts in Economics, *International Review of Economics Education,* 30(2), 100-135.
- Deng F. (2019), Literature Review of the Flipped Classroom, *Theory Practices in Language Studies,* 9(10), 1350–1356.
- Farmer R. (2018). The What, The How and The Why of the Flipped Classroom. *Innovative Practice in Higher Education,* 3(2), 14-31
- Haghpour B., Sahabeh E., & Halvari H. (2022). Opportunity Cost in Consumer Behaviour: Definitions, Operationalizations, and Ambiguities. *International Journal of Consumer Studies*, 46(5), 1942-1959.
- Ipem, J. N., Onyemanche, E. G., & Onwudiwe, R. I. (2021). Effect of Flipped Classroom on Secondary School Students Academic Achievement in Social Studies in Imo State. *Journal of the Nigerian Council of Educational Psychologists*, 14(1).
- Makinde, S. O. (2020). Impact of flipped classroom on mathematics learning outcome of senior secondary school students in Lagos, Nigeria. *African Journal of Teacher Education*, *9*(2), 23-42.
- Meyer, J. H., & Timmermans, J. A. (2016). Integrated threshold concept knowledge. In *Threshold concepts in practice* (pp. 25-38). Brill.
- Mohammed A. O. (2022). Influence of Threshold Concept and Flipped Classroom on Senior Secondary School Students' Academic Achievement in Economics in Lagos State, Nigeria. *Journal of Capital Development in Behavioural Sciences.* 10 (2), 183 – 200.
- Mohammed A. O. (2024). Level of Participation and Students' Achievement of Credit Passes in Economics in WASSCE Over Five-Year Period (2018-2022) in Nigeria. *Journal of Economics and Environmental Education (JEEE)* 8(1) 42-55.

- Nadelson, L. S., Heddy, B. C., Jones, S., Taasoobshirazi, G., & Johnson, M. (2018). Conceptual change in science teaching and learning: Introducing the dynamic model of conceptual change. *International Journal of Educational Psychology*, *7*(2), 151-195.
- Nersessian, N. J. (2017). Conceptual change. *A companion to cognitive science*, 157-166.
- Nicola-Richmond K., Pépin G., Larkin H., & Taylor C. (2018). Threshold Concepts in Higher Education: A Synthesis of the Literature Relating to Measurement of Threshold Crossing. *Higher Education Research & Development,* 37(1), 101-114.
- Nurwulandari, N. (2024). The Implementation of Flipped Classroom Model with Self-regulated Learning (SRL) on Learning Results for Studying Physics Material. *Tarbiyah: Jurnal Ilmiah Kependidikan*, 13(1), 105-114.
- Piro J. S., & O'Callaghan C. (2019). Journeying Towards the Profession: Exploring Liminal Learning within Mixed Reality Simulations. Action in Teacher Education, 41(1), 79-95.
- Posner G. J., Strike K. A., Hewson P. W., & Gertzog W. A. (1982), "Toward a Theory of Conceptual Change," *Science Education*, 66(2), 211–227.
- Purba, S. E. E., Kristiani, K., Sangka, K. B., & Hussain, O. K. (2021). The flipped classroom: an overview of its impact on economics learning. *International Journal of Pedagogy and Teacher Education*, 5(1), 26-34.
- Salwén H. (2019). Threshold Concepts: Obstacles or Scientific Dead Ends? *Teaching in Higher Education* 26(1), 36-49.
- Sisk V. F., Burgoyne A. P., Sun J., Butler J. L., & Macnamara B. N. (2018). To What Extent and Under Which Circumstances are Growth Mind-Sets Important to Academic Achievement? Two Meta-Analyses. Psychological science, 29(4), 549-571.
- Timmermans J. A. & Meyer J. H. F. (2019). A Framework for Working with University Teachers to Create and Embed 'Integrated Threshold Concept Knowledge' (ITCK) in their Practice, *International Journal of Academic Development*, 24(4), 101-114.
- White, B. A., Olsen, T., & Schumann, D. (2016). A threshold concept framework for use across disciplines. In *Threshold concepts in practice* (pp. 53-63). Brill.