

EFFECTS OF THINK-PAIR-SHARE AND FLIPPED-CLASSROOM TEACHING STRATEGIES ON ACADEMIC PERFORMANCE AMONG JUNIOR SECONDARY SCHOOL STUDENTS IN DAURA ZONAL QUALITY ASSURANCE IN KATSINA STATE, NIGERIA

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Abstract

This study examined the effect of think-pair-share and flipped-classroom teaching strategies on students' academic performance among junior secondary schools in Daura Zonal Education Quality Assurance Katsina state, Nigeria. Four research questions and hypotheses were formulated to guide the study. The study adopted quasi-experimental design to compare groups of students before and after implementation of think-pair-share and flipped-classroom teaching strategies. The population of the study consisted of 6176 students, while the sample of the study consist of three intact classes of 45, 42, and 51 students respectively. The data collection instrument was a Social Studies Performance Test (SSPT), and the data collected were analysed using descriptive and inferential statistics. The results revealed that both think-pair share and flipped-classroom have positive effect on the academic performance of the students in junior secondary schools in Daura Zonal Education Quality Assurance Katsina state. It was also found that, think-pair-share was gender friendly, while flipped-classroom was gender biased towards male students. Based on the findings, recommendation was made for the need for relevant authorities to prioritize regular and adequate use of different methods to ensure effective academic performance of students as this will promote effective teaching and learning.

Keywords: think-pair-share, flipped-classroom, teaching strategies, academic performance

Introduction

Academic performance of students has for long generated a lot of interest among scholars, researchers, government officials, parents and students themselves. Many studies have examined the factors that influence students' performance at all levels of education with the purpose of enhancing learning at these stages. Performance of students, according to Gouch (2009) can generally be referred to as the way and manner students deal with their studies and how they cope with or accomplish different tasks given to them by their teachers. In other words, it is essentially about student's ability to study and remember facts and being able to communicate knowledge verbally or on the paper. Kobaland and Musek (2001) define performance on task with measures such as comprehension, quality and accuracy of answers of tests, quality and accuracy of problem solving, frequency and quantity of desired outcome, time or rate to solution, time on task level reasoning and critical thinking, creativity, recall and retention, and transfer of tasks.

Think-pair-share (TPS) is a collaborative learning strategy where students work together to solve a problem or answer a question about an assigned reading. This strategy requires students to think individually about a topic or answer to a question; and share ideas with classmates. Discussing with a partner maximizes participation, focuses attention and engages students in comprehending the reading material. Think-pair-share helps students to think individually about a topic or answer to a question. It teaches students to share ideas with classmates and it builds oral communication skills. It helps focus attention and engage students in comprehending the reading material. It also, gives them the opportunity to feel more comfortable sharing their thoughts. In addition to fostering social skills, this strategy also improves students' speaking and listening skills. When pairs brainstorm together, each student learns from his partner. The think-air share help students share ideas with classmates and builds oral communication skills.

McCandlish (2012) stated that Think-Pair-Share is a cooperative discussion that has three parts to the process: students think about a question or an issue, they talk with a partner about their thoughts, then some students share their discussion and thinking with the class. Ledlow (2001) states Think Pair Share is a low-risk strategy to get many students actively involved in classes of any size. The procedure is simple: after asking question, the teacher tells students to think silently about their answer. As a variation, you might have them write their individual answer.

Aditi et al.,2014 examined the learning effectiveness of Think-Pair-Share in a different course. A quasi-experimental study was performed and found that students who learned via Think-Pair Share performed significantly better on a post-test than students who learned the same concept via lecture. They also conducted a survey and focus group interviews to understand student perceptions of learning with TPS. Majority of students agreed that TPS activities helped improve their conceptual understanding. From an instructor's point of view, TPS was useful to address the challenges of a large class, such as students tuning out or getting distracted and was easy to implement even in a large class.

Bamiro and Adekunle (2015) investigated the effects of three strategies (i.e., guided discovery, think-pair-share, and lecture) on senior secondary school students' achievement in chemistry. It was found that students taught with guided discovery and think-pair-share strategies obtained significantly higher post-test mean scores than those in the lecture strategy, $F(4, 223) = 51.66, p < .05$. The use of guided discovery and think-pair-share strategies had great potential for improving achievement in chemistry and science learning generally.

The flipped classroom design implies that the teacher provides the course content to the students through videos and other learning materials to be absorbed at their own time before they enter the classroom. The instructor may also upload these materials online to be easily accessible to the student anyway and at any time, (Bamiro. 2019). Before uploading the online materials, the instructor should ensure the following; low stake problems or discussion questions based are included in the video; define the process of analysing or solving such problem; think inclusively about the composition for small groups so that students can learn from a heterogeneous set of perspectives. This means that flipped classroom promotes democratization of learning as autonomy of students' is enhanced, where the instructor is the guide.

Action science theory provided the theoretical framework for this research study. Stringer (2007) defined action research as a systematic approach to investigation that enables students to find and solve effective solutions to problems they confront in the classroom. In this respect, Think-pair-share

method that is deemed effective in retention capability and that will lead to solving problems in their everyday lives, by giving students a task to find solution for themselves.

Action research combines theory with practice within a cycle of activity that includes problem diagnosis. As such, Flipped Classroom and Think-Pair-Share action intervention, and reflective learning are so important. Gall et al., (2007) stated action research has played a growing role in the field of education in recent years because of its promise for improving educators' practice, strengthening the connection between research and practice in order to ensure continuous improvement and quality education's in society. The key to action science theory is the implementation of an intervention and an evaluation as to whether or not the intervention improved a situation.

Statement of the Problem

Junior secondary school is considered as the final phase of basic education. It is the level where learners that are expected to master different subjects matter before proceeding to senior secondary and up to tertiary institutions of his choice. It is unfortunate to observe that a significant number of JSS II students cannot cope with the challenges of skills in social studies. Utilizing different methods of teaching by social studies teachers in junior secondary schools enhance performance and reduce massive failure.

The researcher observed that, some subjects especially core subjects, which are supposed to be interesting to the students in junior secondary schools become subject of discussions, because, the rate at which the students fail shows that effective method of learning need to be employed to and modified. Despite the efforts of Katsina State Ministry of Education there has been a noticeable decline in the performance of students in their examination.

A research on the performance of junior secondary school social studies students in Basic Education Certification Examination (BECE) from 2014 to 2016 and discovered that the students were not performing as expected. Hansel (2012) found out that the causes of massive examination failure in terminal exams included using traditional method of teaching which is out dated. Also, many schools especially the public schools have insufficient competent social studies teachers. Therefore, there is need to reinforce their effectiveness in teaching especially in the adaption of effective method of teaching. It is against this background in an attempt to answer these questions, that this study was conducted.

Objectives of the Study

The following objectives guided the study:

1. To determine the effect of think-pair-share teaching strategy on academic performance in social studies among junior secondary school students in Daura Zonal Education Quality Assurance, Katsina state.
2. To find out the effect of flipped-classroom teaching strategy on academic performance in social studies among junior secondary school students in Daura Zonal Education Quality Assurance, Katsina state.
3. To determine the difference in academic performance in social studies between male and female students who were taught using think-pair-share teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state.

4. To determine the difference in academic performance in social studies between male and female students who were taught using flipped-classroom teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state.

Research Questions

Based on the objectives of the study, the following research questions were answered:

1. What is the differences in the mean academic performance in social studies scores between those students taught using think-pair share teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state?
2. What is the differences in the mean academic performance scores in social studies between those students taught using flipped-classroom teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state?
3. What is the differences in the mean academic performance scores in social studies between male and female students taught using think-pair share teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state?
4. What is the differences in the mean academic performance scores in social studies between male and female students taught using flipped-classroom teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state?

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance;

Ho1. There is no significant difference in the mean academic performance scores in social studies between those students taught using think-pair share teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state.

Ho2. There is no significant difference in the mean academic performance scores in social studies between those students taught using flipped-classroom teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state.

Ho3. There is no significant difference in the mean academic performance scores in social studies between male and female students taught using think-pair share teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state.

Ho4. There is no significant difference in the mean academic performance scores in social studies between male and female students taught using flipped-classroom teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state.

Methodology

This study adopted quasi-experimental research design of pre-test post-test design. design to compare groups of students before and after implementation of think-pair-share and flipped-classroom teaching strategies. The population of the study consists of 6,176 Junior Secondary Two students in

all junior secondary schools in Daura Zonal Education Quality Assurance, Katsina State. Purposive sampling technique was employed to determine the sample size of the study, three intact classes of 45, 42, and 51 students respectively, that served as experimental group 1, experimental group 2 and control group for the study. Social Studies Performance Test (SSPT) was used for data collection. The reliability of the instrument obtained was 0.81 coefficient. The data was analysed using independent t-test at 0.05 level of significance.

Results

There is no significant difference in the mean academic performance scores in Social studies between those students taught using think-pair share teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state.

To test this hypothesis, Independent Samples t-test statistic was used. The data was analysed using SPSS v.25.0, and the result was presented in Table 4.2:

Table 1 Differences in the Mean Academic Performance Scores between those students taught using think-pair share teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state

Variable	Groups	Mean	Std. Dev.	Df	t	P
Pre-Test	Experimental Think-Pair Share	7.51	4.62	94	0.402	.689
	Control Group	7.20	2.97			
Post-Test	Experimental Think-Pair Share	16.62	4.22	94	8.569	.000
	Control Group	11.41	0.96			

From the Table 1. the difference in the pre-test mean academic performance scores between those students taught using think-pair share teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state was $t = 0.402$, $df = 94$, $P = .689$. This has shown that both experimental and control groups are comparable, and any difference in the academic performance after the treatment may be attributed to the differences in the treatment.

Similarly, the difference in the post-test mean academic performance scores between those students taught using think-pair share teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state was $t = 0.569$, $df = 94$, $P = .000$. Now since the p-value (.000) was less than the alpha value (.05), the null hypothesis is hereby rejected and the alternate hypothesis was adopted. So, the researcher concluded that there was a significant difference in the mean academic performance scores between those students taught using think-pair share teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state, in favour of those in experimental group who were taught using think-pair share teaching strategy.

Ho1. There is no significant difference in the mean academic performance scores between those students taught using flipped-classroom teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state.

To test this hypothesis, Independent Samples t-test statistic was used. The data was analysed using SPSS v.25.0, and the result was presented in Table 2:

Table 2 Differences in the Mean Academic Performance Scores between those students taught using flipped-classroom teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state

Variable	Groups	N	Mean	Std. Dev.	Df	t	P
Pre-Test	Experimental	42	6.52	3.95	91	- 0.935	.352
	Flipped-Classroom						
	Control Group	51	7.20	2.97			
Post-Test	Experimental	42	17.83	4.18	91	10.649	.000
	Flipped-Classroom						
	Control Group	51	11.41	0.96			

From the Table 2. above, the difference in the pre-test mean academic performance scores between those students taught using flipped-classroom teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state was $t = - 0.935$, $df = 91$, $P = .352$. This has shown that both experimental and control groups are comparable, and any difference in the academic performance after the treatment may be attributed to the differences in the treatment.

Similarly, the difference in the post-test mean academic performance scores between those students taught using flipped-classroom teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state was $t = 10.649$, $df = 91$, $P = .000$. Now since the p-value (.000) was less than the alpha value (.05), the null hypothesis is hereby rejected and the alternate hypothesis was adopted. So, the researcher concluded that there was a significant difference in the mean academic performance scores between those students taught using flipped-classroom teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state, in favour of those in experimental group who were taught using flipped-classroom teaching strategy.

Ho2. There is no significant difference in the mean academic performance scores between male and female students taught using think-pair share teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state.

To test this hypothesis, Independent Samples t-test statistic was used. The data was analysed using SPSS v.25.0, and the result was presented in Table 3:

Table 3: Differences in the Mean Academic Performance Scores between male and female students taught using think-pair share teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state

From the Table 3., the difference in the post-test mean academic performance scores between male

Variable	Groups	Mean	Std. Dev.	Df	T	P
Think-Pair Share	Male Group	17.48	4.09	43	1.457	.129
	Female Group	15.55	4.24			

and female students taught using think-pair share teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state was $t = 1.457$, $df = 43$, $P = .129$. Now since the p-value (.129) was greater than the alpha value (.05), the null hypothesis is hereby retained. So, the researcher concluded that there was no significant difference in the mean academic performance scores between male and female students taught using think-pair share teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state.

Ho3. There is no significant difference in the mean academic performance scores between male and female students taught using think-pair share teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state.

To test this hypothesis, Independent Samples t-test statistic was used. The data was analysed using SPSS v.25.0, and the result was presented in Table 4.5:

Table 4. Differences in the Mean Academic Performance Scores between male and female students taught using flipped-classroom teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state

Variable	Groups	N	Mean	Std. Dev.	Df	T	P
Flipped-Classroom	Male Group	23	20.39	2.87	40	5.893	.000
	Female Group	19	14.74	3.35			

From the Table 4, the difference in the post-test mean academic performance scores between male and female students taught using flipped-classroom teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state was $t = 5.893$, $df = 40$, $P = .000$. Now since the p-value (.000) was less than the alpha value (.05), the null hypothesis is hereby rejected and the alternate hypothesis is adopted. So, the researcher concluded that there was a significant difference in the mean academic performance scores between male and female students taught using flipped-classroom teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state, in favour of male students in the group who were taught using flipped-classroom teaching strategy.

Summary of Findings

Based on the results presented so far, the following are the major findings of the study:

1. That there was a significant difference in the mean academic performance scores between those students taught using think-pair share teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state, in favour of those in experimental group who were taught using think-pair share teaching strategy ($t = 0.569$, $df = 94$, $P = .000$).
2. That there was a significant difference in the mean academic performance scores between those students taught using flipped-classroom teaching strategy and those taught using conventional method among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state, in favour of those in experimental group who were taught using think-pair share teaching strategy ($t = 10.649$, $df = 91$, $P = .000$).
3. That there was no significant difference in the mean academic performance scores between male and female students taught using think-pair share teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state ($t = 1.457$, $df = 43$, $P = .129$).
4. That there was a significant difference in the mean academic performance scores between male and female students taught using flipped-classroom teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state, in favour of male students in the group who were taught using flipped-classroom teaching strategy ($t = 5.893$, $df = 40$, $P = .000$).

Discussion of Findings

From the first and second findings, it is clear that there was a significant difference in the mean academic performance scores between those students taught using both think-pair share and flipped-classroom teaching strategies on one hand, and those taught using conventional method on the other hand, among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state, in favour of those in the two experimental groups. This simply means that both think-pair share and flipped-classroom teaching strategies have positive effects on the academic performance of junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state.

As stated by Amna (2019), think-pair-share activity has a positive effect on student performance and retention ability by giving them the opportunity to feel more comfortable and share their thoughts. In addition to fostering social skills, this strategy also improves students' speaking and listening skills. When pairs brainstorm together, each student learns from their partner.

Also, using think-pair-share, teaching strategy, students were given the opportunity to independently try the problem given by the teacher, and discuss their solution with their partners. Thus, students can better understand the materials, and when they face similar problems, they can be able to solve them (Lathifah, 2016).

The potential of learners can emerge when they interact with peers using flipped-classroom, and in this way there is gain of knowledge from others (Vygotsky, 2018). When learners interact with their peers, learning is mediated and students complete tasks they would not on their own but in flipped-classroom. In this way, a complex and dynamic relationship between learning and development can be determined by Zone of Proximal Development (ZPD), which refers to the area between a learned level of independent performance and of assisted performance (O'Donnell, 2019).

The central importance of flipped classroom in promoting learning is that teachers talk with learners and learners talk amongst themselves in paired or group activities. This is seen as dialogic teaching which is collective, supportive and reciprocal, through the sharing of ideas and alternative viewpoints; and cumulative (Hodgkinson, 2018).

From the third findings, it was clear that there was no significant difference in the mean academic performance scores between male and female students taught using think-pair share teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state. Hence, think-pair share teaching strategy is gender friendly. Finally, from the last finding, it was clear that there was a significant difference in the mean academic performance scores between male and female students taught using flipped-classroom teaching strategy among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state. The difference was found in favour of male students in the group who were taught using flipped-classroom teaching strategy. This simply means that flipped-classroom teaching strategy is gender bias in favour of male students.

In line with these two finding, Orgon (2020) maintained that although few others have found small differences, with boys slightly better at mathematics and girls slightly better at reading and literature, but other studies have found the differences not only were small, but have been getting smaller in recent years compared to earlier studies. Also, Umbach and Wawrzynski, (2015), discovered that boys learn the same rate as girls, and brain scans tell part of the story. They further stressed that, more areas of girls' brains, including the cerebral cortex (responsible for memory, attention, thought, and language) are dedicated to verbal functions.

Conclusion

In the light of foregoing, it is concluded that both think-pair share and flipped-classroom have positive effect on the academic performance in Social Studies of the students in junior secondary schools in Daura Zonal Education Quality Assurance Katsina state. It was also concluded that, think-pair-share was gender friendly, while flipped-classroom was gender biased towards male students.

Recommendations

On the basis of the study outcome, the following recommendations are put forth:

1. There is need for relevant authorities to prioritize regular and adequate use of different methods to ensure effective academic performance of students as this will promote effective teaching and learning.
2. Social studies teachers should make good effort in incorporating the students on the practice of different methods to develop themselves and there by promoting effective learning in secondary schools.
3. There is need for training and retraining of both teachers on the utilization of facilities used in both think pair share and flipped-classroom teaching strategies such as audio-visual, projector and video clips etc. to ensure their effective usage.
4. That there is need to maintained use of flipped-classroom teaching strategy in teaching male and female students among junior secondary schools in Daura Zonal Education Quality Assurance, Katsina state.

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