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EFFECT OF THINK- PAIR -SHARE LEARNING STRATEGY WITH AUDIO VISUAL AIDS ON BASIC 8 STUDENTS PERFORMANCE IN BASIC SCIENCE IN OGOJA CROSS RIVER STATE

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Abstract
Effect of Think-Pair-Share (TPS) learning strategy with and without Audio-Visual-Aids (AVAs) on basic-8 students' performance in science in Ogoja, Cross River State was studied using quasi-experimental, pre-test post-test design. Two research questions and two hypotheses guided the study. A stratified random sample of 171 Basic-8 students in three schools were selected out of a total population of 2,558 students from 15 Basc-8 secondary schools in Ogoja was used for the study. Basic Science Performance Test (BSPT) used for data collection was validated by three experts, trial tested on 25 Basic-8 students which were not part of the main sample and test scores collected were computed by Kuder Richardson 21 which yielded the reliability coefficient of 0.72. The data collected were analysed using mean, standard Deviation to answer research question and Analysis of Covariance (ANCOVA) for test of hypotheses at 0.05 alpha level. The study revealed that there is a significant difference in the mean academic performance scores of basic-8 students in Basic Science who are taught using the TPS learning strategy, TPS learning strategy with audio-visual aids, and those taught using the lecture method F (2,167) = 10.46, p = 0000 < 0.05. The study also revealed that there is no significant difference in the mean performance score of male and female students in Basic Science when exposed to TPS learning strategy F (1,54) = 0.115; p = 0.736 < 0.05. Thus, the study recommends that Basic Science teachers use TPS learning strategy with AVAs as a medium of instruction since it improved students' academic performance Basic Science without gender disparity.

Keywords: Think-Pair-Share Learning Strategy, Audio-visual-Aids, Academic Performance, Gender and Basic Science

Introduction

Education is widely recognized as a cornerstone of national development, driving social change, economic empowerment, and technological progress. Nations that invest in quality education, particularly in science and technology, achieve faster innovation and global competitiveness. For Nigeria to meet its developmental goals, young learners must acquire strong scientific knowledge early through Basic Science education. As part of Nigeria's 9-year Basic Education Curriculum, Basic Science (formerly Integrated Science) is a compulsory subject at the Basic 7–9 levels, integrating concepts from Physics, Chemistry, Biology, and Earth Sciences to prepare students for advanced science studies (NERDC, 2022).

Basic Science is designed to build students' scientific understanding while fostering curiosity, creativity, critical thinking, and problem-solving. It serves as the foundation for future scientific pursuits, supporting innovation in medicine, engineering, technology, and agriculture (Agbidye, 2019). Scholars emphasize its role as the core of science education, providing essential concepts and methods for understanding the natural world (Ayodele, 2017). In Nigeria, it is considered vital for promoting scientific literacy, preparing students for specialized fields, and equipping them with knowledge and skills to contribute to societal and national development (Nwosu, 2018).

Despite its importance, students' poor performance in Basic Science persists across Nigeria due to factors such as inadequate instructional materials, overcrowded classrooms, unqualified teachers, poor laboratories, and low student interest (Udo & Udofia, 2020; Eriba & Samuel, 2018). The heavy reliance on traditional lecture methods, which position students as passive learners, further worsens the problem (Macaranas, 2022). Therefore, a shift toward learner-centred strategies like collaborative learning is needed to enhance performance.

Collaborative learning strategy as a pedagogical approach, involves students working together in small groups to accomplish shared academic tasks. It is grounded in the principles of social constructivism like Vygotsky's (1978) Theory of Social Development and Bandura's (1977) Social Cognitive Theory which emphasizes learning as a social process where knowledge is co-constructed through interaction and dialogue (Gillies, 2021). This approach has been shown to promote critical thinking, communication and team work skills among students, making it particularly suitable for subjects like Basic Science that requires problem solving skills and practical application (Johnson et al., 2022). The widely used techniques as stated by Ford and Panitz (2013) include Jigsaw, Buzz group, group project, Peer-teaching, role play, peer review, team-based learning, Think-Pair-Share among others. Out of the wide variety of collaborative learning strategy this study adopts the think-pair-share collaborative strategy due to its suitability to the age and learners.

Think-pair-share is a co-operative discussion strategy developed by Frank Lyman and his colleagues in Maryland 1981. It gets its name from the three stages of students' actions with emphasis on what students are to be doing at each of those stages. Kogan (2019) defines Think-pair-share (TPS) as a cooperative learning strategy where students first individually consider a question then discuss their ideas with a partner and finally share their thoughts with the larger group. 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 student in comprehending the reading materials. TPS is a model of cooperative learning in pairs and give students more time to think and to help each other. That is, it is systematically in five steps as modify by Kogan (2019) namely: Step 1: group student into *even* numbers of 4, 6, 8, Step2: the teacher asks questions on the concepts, Step3: students were asked to think individually on the questions, Step 4: students were asked to discuss their thoughts with a partner on the concept raised in questions and Step5 collaboratively/cooperatively students share their thoughts with a laughter group teachers towards learning the concepts.

Think-Pair-Share (TPS) with Audio-Visual Aids is an interactive instructional strategy that combines cooperative learning with multimedia resources to enhance students' engagement and understanding of concepts. In TPS, learners first think individually about a question or problem, then pair up to discuss their thoughts, and finally share their ideas with the larger group, fostering active participation and deeper learning. When integrated with audio-visual aids such as videos, animations, and interactive slides, the strategy caters to diverse learning styles and stimulates both visual and auditory senses, leading to

improved comprehension and retention (Mayer, 2021). Research shows that combining TPS with multimedia resources promotes collaborative inquiry, critical thinking, and conceptual clarity, especially in science and social studies classrooms (Amin & Malik, 2020). Thus, TPS with Audio-Visual Aids not only supports active learning but also bridges the gap between abstract concepts and real-life applications.

Audio-visual aids enhance learning by engaging multiple senses, making abstract and complex scientific concepts more accessible, enjoyable, and relatable, particularly for Basic 8 students at a transitional stage of development (Ibrahim, 2016). They capture students' attention, stimulate curiosity, and reduce the limitations of verbal instruction by humanizing and vitalizing subject matter, thereby fostering positive attitudes toward Basic Science (Anzaku, 2016). Common examples include LCD projectors, computers, televisions, and multimedia tools, which, when integrated with active learning strategies such as Think-Pair-Share (TPS), promote student participation, sustain interest, and improve academic performance.

Performance in Basic Science is the observable and measurable behaviour of students within a specify period. Abaidoo (2018) defines performance as the scores obtained in test, assignments and examination. Performance consists of individual scores at any particular time obtained from either a teacher made test or a standardized test. According to Spady (2016) performance is a statement that describe significant and essential learning that learners have achieved, and can reliably demonstrate how they can perform in Basic Science. Apart from teaching strategies, there seems to be other intervening variables such as gender.

Gender could be another factor responsible for interest and academic performance in Basic science. It ascribes roles by the society for male and female students. Gender encompasses how people identify themselves (such as male and female or boy and girl or man or woman) and how they are perceived and expected to behave within their cultural and social contexts (World Health Organization [WHO], 2023). Gender inequality in Basic science has remained a perennial problem of global scope. The difference between boys and girls in relations to academic performance have received a lot of attention. Ajayi et al. (2017) state that male students have a higher academic performance than female students, while other studies show that the reverse is the case, other found no significant difference. For instance, Ibrahim and Suleman (2022) study reveals that male students had slightly higher academic performance than female students in Basic Science when taught using think-pair-share.

Going by the empirical evidence, Oyekan and Ayodele (2018), Abiodun et al. (2022); investigated the effect of Think-Pair-Share Strategy on the Academic Performance of Secondary School Students in Science in Lagos State, Nigeria and found that students in the experimental group who used the Think-Pair-Share strategy significantly outperformed those in the control group in their science tests. Ogunyemi and Adeyemi (2022), Alharbi (2021) investigated on the impact of interactive learning strategies, including Think-Pair-Share, on the academic achievement of Saudi students in Basic Science and findings revealed that students exposed to interactive Think-Pare-Share strategies of performed significantly better in science assessments than those in the control group. Akanmu (2019), Ibrahim et al. (2021), Nnorom and Ogbu (2017) and Johnson et al. (2022) conducted a study to examine the effects of the Think-Pair-Share (TPS) strategy on the academic performance of senior secondary school students in mathematics in Ilorin, Nigeria. Findings revealed a significant improvement in the performance of students taught mathematics using the TPS strategy compared to those who received conventional

instruction. The results also indicated no significant gender difference in performance.

The reviewed empirical studies provide valuable insights into the positive effects of the Think-Pair-Share (TPS) strategy on students' academic performance in science and mathematics; however, several critical gaps make them less directly applicable to the present study. Most of the cited studies (e.g., Oyekan & Ayodele, 2018; Akanmu, 2019; Ibrahim et al., 2021) focused on secondary or senior secondary school students, whereas the present study targets junior secondary (Basic-8) students, whose cognitive levels and learning needs differ significantly. While these studies established the effectiveness of TPS as a cooperative learning strategy, none explicitly integrated or compared the use of Audio-Visual Aids (AVAs) with TPS, leaving a gap in understanding how multimedia resources might enhance or modify the effectiveness of TPS in science learning. Third, most studies were conducted in different socio-educational contexts such as Lagos, Ilorin, and Saudi Arabia, which may not reflect the unique learning conditions, resource availability, and teacher competencies in Ogoja, Cross River State, thus limiting generalizability.

Statement of the Problem

Functional education is ideal for outstanding academic performance. However, research highlights a concern over students' poor academic performance in Basic Science due to poor teaching methods as noted by (Tofi et al., 2017; Eriba and Samuel, 2018). The Poor academic performance among Basic Education students is worrisome by education stakeholders, including parents, government, and researchers. Evidence from research (Okwara and Upu, 2017) has shown that much work has been done in the use of constructivist teaching strategies like inquiry, project, field trips among others yet this problem of poor academic performance still persist as a result of teachers' use of poor teaching methods like lecture method. Thus, observing that little has been done in the use of Think-pair-share learning strategy with audio-visual aids, especially in Ogoja educational zone. The limited empirical evidence on the effectiveness of Think-Pair-Share (TPS) with audio-visual aids on students' academic performance in Basic Science gives the focus for this study with the following objectives:

1. To find out if there is difference in mean academic performance of Basic 8 students in Basic Science taught using Think-Pair-Share strategy, Think-pair-Share strategy with audio-visual aids and those taught using teacher-centred.
2. To Compare the academic performance of male and female students in Basic Science when exposed to Think-Pair-Share learning strategy.
3. To Compare the academic performance of male and female students in Basic Science when taught using Think-Pair-Share learning strategy with audio-visual aids.

Research Questions

The following questions guided the study.

1. What is the difference in mean academic performance of Basic 8 students in Basic Science taught using Think-Pair-Share strategy, Think-pair-Share strategy with audio-visual aids and those taught using lecture method?
2. What is the difference in the mean academic performance of male and female students in Basic Science when exposed to Think-Pair-Share learning strategy?
3. What is the difference in the mean academic performance scores between male and female students taught Basic Science using Think-pair-Share learning strategy with audio-visual aids?

Hypotheses

These hypotheses were formulated and tested at 0.05 level of significance:

1. There is no significant difference in mean academic performance of Basic 8 students in Basic Science taught using Think-Pair-Share strategy, Think-pair-Share strategy with audio-visual aids and those taught using lecture method.
2. There is no significant difference between the mean academic performance of male and female students in Basic Science when exposed to Think-Pair-Share learning strategy.
3. There is no significant difference between the mean performance scores of male and female students in Basic Science who were exposed to Think-Pair-Share learning strategy with audio-visual aids.

Method

A pre-test post-test quasi-experimental design was employed to study the effect of Think-pair-share learning strategy and audio-visual aid in Basic 8 students' interest and performance in Basic Science in Ogoja, Cross River State. The study bid to enhance students' academic performance in Basic Science. A stratified random sampling was used to select a sample of 171 Basic 8 students located in 3 intact classes in 3 schools from a population of 2,558 Basic 8 science students from 15 upper basic schools in Ogoja education zone of Cross River State. Basic Science Performance Test (BSPT) was constructed by the researcher and used for data collection. BSPT contained Section A which captured students' bio-data, while Section B consists of 32-item multiple-choice test developed by the researcher. The BSPT was validated by three experts from Science and Mathematics education. Their feedback improved the face and content of the instrument. A trial test was conducted with 25 Basic 8 students from a non-sampled school, and a reliability coefficient of 0.72 was determined by trial test and test scores were computed by K-R20. After trial test and pretest, the experimental group was taught four selected concepts from Basic Science namely: changes in matter, changes in non-living things, habitat, and the human skeletal system. This was because the concepts have relevance in students' daily life could build their foundational knowledge for further career opportunities in STEM education. These concepts were taught using Think-Pare-Share and Think-Pair-Share with Audio-Visual in the experimental group, while the control group was taught same using concepts using lecture method for six weeks before the post-test. In the process of the experimental procedure the extraneous variables such as group initial differences, interaction effects, and priming were controlled. Pre-test and post-test were administered under standard examination conditions. Mean and standard deviation were used to answer research questions, while hypotheses were tested at a 0.05 significance level using Analysis of Covariance (ANCOVA). This was because of the two independent variables (creative exploration and expository teaching) comparing group means while controlling for previous creative-minds development, data was on interval scale and the data was normally distributed (Emaikwu, 2013).

Results

Research Question One: What is the difference in the mean academic performance scores of Basic 8 Students in Basic Science who are taught using Think-pair-Share learning strategy, Think-pair-Share learning strategy with audio-visual aids and those taught using lecture method?

Table 1: Mean and Standard Deviation of Academic Performance Scores of Students taught Basic Science using Think-Pair-Share learning Strategy, Think-Pair-Share Learning Strategy with audio-visual aids and lecture method.

Method		**Pre-test**	**Post-test**	**Mean/SD Gain**
TPS Learning Strategy	Mean	11.85	19.95	8.1
	N	59	59	
	Std. Deviation	2.99	3.71	0.72
TPS + AVAs Learning Strategy	Mean	11.60	20.19	8.59
	N	57	57	
	Std. Deviation	2.48	2.94	0.46
Lecture Method	Mean	10.45	17.44	6.99
	N	55	55	
	Std. Deviation	2.37	3.38	1.01

The results in Table 1 show Mean and Standard Deviation of Academic Performance Scores of Students taught Basic Science using Think-Pair-Share learning Strategy, Think-Pair-Share Learning Strategy with audio-visual aids and lecture method. The Table shows that 59 students were taught using think-pair-share (TPS), 57 students were taught the same topics using Think-pair-share collaborative with audio-visual strategy (TPS +AVAs) while 55 students were also taught the same topics using lecture method (LM). The Table further reveals that students exposed to TPS has achieved the highest mean gain score of 8.59, followed closely by those taught with the TPS alone with 8.10. In contrast, students taught using the traditional lecture method had the lowest mean gain score of 6.99. These suggest that Think-pair-share strategies, especially when enhanced with audio-visual aids, improve students' performance in Basic Science. The lower standard deviation in the Think-pair-Share with audio-visual group of 0.46 further indicates greater consistency in student performance within this group. Therefore, it can be said that the integration of AVAs into TPS positively influences students' academic performance more than teacher-centred instruction.

Research Question Two: What is the difference in the mean academic performance of male and female students in Basic Science when exposed to Think-Pair-Share learning strategy.

Table 2: Mean and Standard Deviation of Performance of Male and Female Students taught Basic Science using Think-pair-Share Learning Strategy (TPS)

GenderTPS		Pre-test	Posttest	Mean Gain
Male	Mean	12.10	20.63	8.53
	N	30	30	
	Std. Deviation	2.50	3.79	1.29
Female	Mean	11.59	19.24	7.65
	N	29	29	
Mean Difference	Std. Deviation	3.50	3.54	0.04 0.88

Table 2 shows the mean and standard deviation for male and female students' performance scores in Basic Science (BS) taught using think-pair-share learning strategy. As shown in Table 2, male students had a pre-test mean score of 12.10, which increased to 20.63 after the intervention, resulting in a mean gain of 8.53. Female students had a slightly lower pre-test mean of 11.59, which increased to 19.24, with a mean gain of 7.65. The mean difference in gain scores between male and female students was 0.88, favoring male students. In terms of variability, male students had a posttest standard deviation of 3.79, while females had a slightly lower deviation of 3.54. Notably, the standard deviation of the gain score for females of 0.04 is much smaller than that of males with 1.29, suggesting more consistent improvement among female students. These results indicate that while both male and female students benefited from the Think-Pair-Share strategy, male students recorded a slightly higher average improvement in academic performance. However, the difference in mean gain is relatively small, suggesting that the strategy is effective across genders, with no substantial performance gap.

Research Question Three: What is the difference in the mean academic performance scores between male and female students taught Basic Science using Think-pair-Share learning strategy with audio-visual aids?

Table 3: Mean and Standard Deviation of Mean Performance Scores of Students taught Basic Science using Think-pair-Share Learning Strategy with Audio-Visual Aids (TPS+AVAs)

Gender TPS+AVAs		Pre-test	Posttest	Mean Gain
Male	Mean	11.45	20.31	8.86
	N	29	29	
	Std. Deviation	2.92	2.97	0.05
Female	Mean	11.75	20.07	8.32
	N	28	28	
	Std. Deviation	1.96	2.97	1.01
Mean Difference				0.54

Results in Table 3 shows the mean and standard deviation for male and female students' performance scores in Basic Science (BS) taught using think-pair-share learning strategy with audio-visual-aids. As presented in Table 3, male students had a pre-test mean score of 11.45, which increased to 20.31 after the intervention, resulting in a mean gain of 8.86. Female students had a slightly higher pre-test mean of 11.75, which increased to 20.07 at post-test, yielding a mean gain of 8.32. The mean difference in gain scores between male and female students is 0.54, which is in favour of male students. In terms of variability, both genders had the same post-test standard deviation of 2.97, indicating similar spread in final scores. However, the gain score standard deviation is lower for males which is 0.05 compared to those female students with 1.01, suggesting that male students' performance improvement was more consistent, while female students showed greater variation in their learning gains. These results indicate that while both male and female students made substantial academic gains in Basic Science through the use of TPS with AVAs, male students

slightly outperformed their female counterparts on average, and did so with greater consistency. However, the small mean difference suggests that the strategy is similarly effective across genders, with minimal disparity in academic outcomes.

Hypotheses

Hypothesis One: There is no significant difference in the mean academic performance scores of Basic 8 students in Basic Science who are taught using Think-pair-Share learning strategy, Think-pair-Share learning strategy with audio-visual aids and those taught using lecture method.

Table 4: ANCOVA of Academic Performance Scores Based on Teaching Method

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	262.627[a]	3	87.542	7.707	.000	.122
Intercept	3030.186	1	3030.186	266.769	.000	.615
Pretest	2.323	1	2.323	.205	.652	.001
Method	237.707	2	118.854	10.464	.000	.111
Error	1896.928	167	11.359			
Total	65343.000	171				
Corrected Total	2159.556	170				

a. R Squared = .122 (Adjusted R Squared = .106)

The result in Table 4 reveals that F (2,167) = 10.46; p = 0.000 < 0.05. Thus, the null hypothesis is rejected. This implies that there is a significant difference in the mean academic performance scores of Basic 8 students in Basic Science who are taught using the Think-pair-Share learning strategy, Think-pair-Share learning strategy with audio-visual aids and those taught using the lecture method. With a partial eta squared of 0.111, the teaching method explains about 11.1% of the variance in students' performance, which is a moderate effect size. A follow up pair wise comparisons test was conducted to locate where the significant difference exists in the performance scores of the three groups is indicated in Table 5.

Table 5: Pair Wise Comparisons for Mean Academic Performance Scores of Students in Basic Science who are taught using Think-pair-Share Learning Strategy, Think-pair-Share Learning Strategy with Audio-Visual Aids and those taught using Lecture Method

(I) Strategy	(J) Strategy	Mean Difference (I-J)	Std. Error	Sig.[b]
Think-pair share strategy	Think-pair- share collaborative with audio-visual strategy	-.262	.627	1.000
	Lecture Method	2.466*	.647	.001
Think-pair- share collaborative with audio-visual strategy	Think-pair share strategy	.262	.627	1.000
	Lecture Method	2.728*	.648	.000
Lecture Method	Think-pair share strategy	-2.466*	.647	.001
	Think-pair- share collaborative with audio-visual strategy	-2.728*	.648	.000

Based on estimated marginal means *. The mean difference is significant at the .05 level.

Table 5 shows the pairwise comparisons of the mean academic performance scores of students taught Basic Science using Think-Pair-Share (TPS), Think-Pair-Share with Audio-Visual Aids (TPS+AV), and Lecture Method (LM). The

results indicate both significant and non-significant differences among the instructional strategies. The comparison between TPS and TPS+AV shows a mean difference of -0.262 with a p-value of 1.000. Since the p-value is greater than 0.05, there is no statistically significant difference in the academic performance of students taught using TPS and those taught using TPS with Audio-Visual Aids. This implies that both strategies are equally effective in improving students' performance in Basic Science.

In contrast, the comparison between TPS and Lecture Method reveals a mean difference of 2.466 with a p-value of 0.001. Since the p-value is less than 0.05, the difference is statistically significant, indicating that students taught using TPS performed significantly better than those taught using the Lecture Method. Similarly, the comparison between TPS+AV and Lecture Method shows a mean difference of 2.728 with a p-value of 0.000, which is also statistically significant. This means that students taught using TPS with Audio-Visual Aids significantly outperformed those taught using the Lecture Method.

The reverse comparisons (Lecture Method vs TPS and Lecture Method vs TPS+AV) further confirm these results, as both also show significant negative mean differences, indicating lower performance for students taught using the Lecture Method.

Hypothesis Two: There is no significant difference in the mean performance scores of male and female students in Basic Science when exposed to Think-pair-Share learning strategy.

Table 6: ANCOVA of Mean Performance Scores of Male and Female Students in Basic Science Exposed to Think-pair-Share learning Strategy

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	30.945[a]	2	15.473	1.131	.330	.039
Intercept	1267.156	1	1267.156	92.650	.000	.623
Pretest	2.375	1	2.375	.174	.678	.003
Gender	**26.954**	**1**	**26.954**	**1.971**	**.166**	**.034**
Error	765.902	56	13.677			
Total	24277.000	59				
Corrected Total	796.847	58				

a. R Squared = .039 (Adjusted R Squared = .005)

Data in Table 6 reveals that F (1,56) = 1.971; p = .166 >0.05. Thus, the null hypothesis is not rejected. This implies that there is no significant difference in the mean performance scores of male and female students in Basic Science when exposed to the Think-pair-Share learning strategy. This implies that there is no significant difference in the mean performance scores of male and female students in Basic Science when exposed to the Think-pair-Share learning strategy. The partial Eta square of 0.034 was obtained for gender, meaning that 3.4%, which is very small, of the students' performance scores can be attributed to the gender.

Hypothesis Three: There is no significant difference between the mean performance scores of male and female students in Basic Science who were exposed to the Think-pair-Share learning strategy with audio-visual aids.

Table 7: ANCOVA of Mean Performance Scores of Students taught Basic Science using Think-pair-Share Learning Strategy with Audio-visual Aids.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	4.084[a]	2	2.042	.229	.796	.008
Intercept	884.821	1	884.821	99.378	.000	.648
Pretest	3.271	1	3.271	.367	.547	.007
Gender	1.022	1	1.022	.115	.736	.002
Error	480.793	54	8.904			
Total	23727.000	57				
Corrected Total	484.877	56				

a. R Squared = .008 (Adjusted R Squared = -.028)

Data in Table 7 reveals that F (1,54) = 0.115; p = 0.736 < 0.05. Thus, the null hypothesis is not rejected. This implies that there is no significant difference in the mean performance scores of male and female students in Basic Science when exposed to the Think-pair-Share learning strategy with audio-visual aids. The partial Eta square of 0.002 was obtained for gender, means that 2%, which is very small, of the students' performance scores can be attributed to the gender.

Discussion

The study revealed that Basic 8 students taught Basic Science using the Think-Pair-Share (TPS) strategy and TPS combined with Audio-Visual Aids (TPS+AVAs) significantly outperformed those taught with the traditional lecture method, with the TPS+AV group achieving the highest mean scores. This indicates that integrating audio-visual resources enhances the effectiveness of TPS by promoting multimodal learning and improving conceptual clarity. These findings align with earlier studies by Oyekan and Ayodele (2018), Akanmu (2019), and Abiodun et al. (2022), who reported higher academic performance among students taught with TPS compared to conventional methods, and with Ogunyemi and Adeyemi (2022) as well as Ibrahim, Usman, and Lawal (2021), who found that audio-visual aids significantly boost learning outcomes in science subjects. The superior performance of the experimental groups is attributed to the active learning fostered by TPS through independent thinking, peer discussion, and idea sharing. It also enhanced engagement, attention, and visualization of abstract concepts facilitated by audio-visual tools, all of which supported deeper understanding and better academic performance.

The result of the study also found that there was no significant difference in the mean performance scores of male and female students in Basic Science when exposed to the Think-pair-Share learning strategy. This was because both males and females were engaged in groups where Basic Science ideas were shared and contents shared were fully internalised for a better academic performance. This study is similar to Akanmu (2019), Ibrahim et al. (2021), Nnorom and Ogbu (2017) and Johnson et al. (2022) whose findings indicated no significant gender difference in performance when taught various subjects using Think-Pair-Share (TPS).

The findings on the effect of the Think-Pair-Share (TPS) with AVAs learning strategy on the mean interest rating of male and female students in Basic Science revealed no significant difference between the two groups. This indicates that the TPS strategy promotes gender equity, as both male and female students had higher interest when taught using this strategy. This result aligns with the study by Nnorom and Ogbu (2017), who observed that TPS significantly improved engagement and understanding among both genders, particularly enhancing female

students' verbal contributions. Similarly, Raba (2017) noted that TPS fosters an inclusive classroom environment where all students, regardless of gender, are given equal opportunity to participate and express ideas, thereby increasing their interest in the subject.

Conclusion and Recommendations

Based on the findings, it was concluded that: The academic performance of students was enhanced without gender disparity when taught Basic Science using think-pair-share and think-pare-share with audio-visuals. Based on the findings, the following were recommended:

1. Basic Science curriculum developers should emphasize on the use of TPS strategy by the curriculum implementers (teachers), because this method has enhanced students' performance in Basic Science
2. The school proprietors in conjunction with the principles should assist Basic Science teachers morally and financially in order to enable them use TPS strategy as medium of instruction in their teaching
3. It is observed that the academic performance of male and female students improved after the treatment. Therefore, teachers' emphasis should shift from teacher-centred approach to student-centred approach such as the use of think-pair-share.

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