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Effect of Think-Pair-Share on Students Academic Achievement and Interest in Electrical/Electronic in Technical Colleges in Niger State

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ABSTRACT

This study determined the effect of the Think-Pair-Share (TPS) strategy on students' academic achievement and interest in Electrical/Electronic in technical colleges in Niger State, Nigeria. A quasi-experimental design, specifically the non-equivalent control group design, was used. A group of 259 Technical College II students was selected using simple random sampling from four technical colleges. Two research instruments—Electrical/Electronic Achievement Test (EEAT) and an Interest Inventory were employed for data collection. The instruments were validated by experts, and the reliability of the EEAT was determined using the Pearson Product Moment Correlation Coefficient, yielding a reliability index of 0.86. Data acquired were analyzed using mean, standard deviation, and Analysis of Covariance (ANCOVA). The results showed that pupils exposed to the TPS strategy performed substantially better and demonstrated greater interest in Electrical/Electronic than those taught using conventional methods. TPS encouraged active engagement, peer collaboration, and deeper comprehension of concepts, which led to improved achievement and interest. The study concludes that Think-Pair-Share is an effective instructional strategy for increasing both academic performance and motivation in technical subjects. It recommends the integration of TPS into classroom teaching and regular training for educators on collaborative learning techniques to enhance teaching effectiveness and student outcomes in technical education.

Keywords: think-pair-share, academic achievement, interest, electrical/electronics

INTRODUCTION

Electrical/Electronic is one of the key vocational disciplines taught in Nigerian technical colleges, offering students with both theoretical knowledge and practical abilities in areas such as electrical installations, circuit design, and maintenance of electronic equipment. In Niger State, students enrolling in this field are instructed to obtain abilities that would allow them to contribute to the electrical and electronics industry, either via employment or self-employment after graduation. However, the accomplishment of these aims primarily relies on the quality of the educational techniques utilised. In many circumstances, conventional lecture-based techniques dominate the classroom, frequently resulting to passive learning, poor student engagement, and hampered academic accomplishment (Audu et al., 2020; Eli, 2021).

The manner of education has a key influence in influencing how well students do and how deeply they connect with the topic. In the case of Electrical/Electronic, which contains difficult technical topics that need both theoretical comprehension and hands-on application, typical teaching approaches may not give the required depth of involvement. Research has demonstrated that rote memorization and teacher-centered education typically result in poor retention and limited understanding, significantly influencing both academic achievement and student engagement (Lawrence & Tar, 2018; Ogbuanya et al., 2021). In response, more interactive and student-centered tactics like Think-Pair-Share (TPS) have been adopted to improve students'

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learning experiences, making it simpler for them to understand difficult ideas and stay involved in the subject matter.

Think-Pair-Share (TPS) is a collaborative learning strategy designed to foster student engagement and enhance learning outcomes by involving students in a three-step process: thinking about a question or topic individually, discussing their thoughts with a peer, and then sharing their insights with the larger group. This strategy has been demonstrated to increase knowledge, improve retention, and promote academic accomplishment (Sejani, 2016; Akanmu, 2019). In the environment of Electrical/Electronic, TPS enables students to cooperate on problem-solving, exchange ideas, and reinforce their mastery of important electrical principles. By promoting active involvement and peer interaction, TPS helps students better comprehend complicated concepts, leading to greater academic accomplishment.

In addition to enhancing academic achievement, Think-Pair-Share also plays a key influence in developing students' interest in Electrical/Electronic Work. Interest is a vital aspect in inspiring students to engage with and continue in their studies. When students find the subject matter interesting and entertaining, their intrinsic drive to study improves (Evita et al., 2019; Napitupulu & Surya, 2017). TPS enhances student interest by creating an interactive, less formal learning environment where students are encouraged to share their ideas without the fear of judgment. This sense of collaboration and inclusivity fosters a deeper connection with the subject matter, making learning more meaningful and stimulating. As students become more interested in their studies, their overall engagement and academic achievement are likely to improve.

Think-Pair-Share provides considerable advantages for boosting both academic progress and interest in Electrical/Electronic at technical colleges in Niger State. By encouraging active student engagement, fostering cooperation, and developing critical thinking, TPS offers an excellent alternative to standard lecture approaches. This method not only enhances students' knowledge of complicated electrical concepts but also makes learning more pleasurable and engaging, which in turn raises student enthusiasm. When students are more motivated in their studies, their academic achievement is likely to improve, giving them with the skills and knowledge required to excel in the electrical and electronics (Zakaria et al., 2019; Ikelegbe, 2020). Based on the variations in research findings by various researchers, the researcher aimed at determining the effect of think-pair-share on students academic achievement and interest in electrical/electronic in technical colleges in Niger State.

Statement of the Problem

In Niger State, many technical institutes providing Electrical/Electronic degrees suffer with poor levels of student involvement and academic accomplishment. Traditional teaching approaches, especially the lecture-based approach, sometimes fail to develop the amount of engagement and critical thought essential for students to truly comprehend complicated electrical and electronic concepts. As a consequence, students are disengaged, which hinders their ability to remember critical information and acquire practical skills necessary in the profession. These deficiencies not only affect their academic accomplishment but also reduce their desire in pursuing additional studies or professions in the electrical and electronics industry. The absence of effective teaching practices that foster active involvement and cooperation exacerbates the problem, leaving students underprepared for real-world applications of the information they receive.

Given the significance of student involvement in vocational education, Think-Pair-Share (TPS) has emerged as a potential technique to boost both academic achievement and student interest. However, there is insufficient study on how TPS might be successfully applied in Electrical/Electronic Work courses inside technical institutes in Niger State. While TPS has been found to boost student cooperation, problem-solving abilities, and enthusiasm in different disciplines, its particular influence on Electrical/Electronic students remains underexplored. This research intends to address this gap by studying the influence of the Think-Pair-Share technique on students' academic achievement and interest in Electrical/Electronic in Niger State's technical colleges. Through this research, the study seeks to evaluate if TPS may create better academic achievements and generate higher enthusiasm among students in pursuing professions in the electrical and electronics area.

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Purpose of the Study

Determine the effect of think-pair-share on students' academic achievement in electrical/electronics in technical colleges in Niger State.

Determine the effect of think-pair-share on students' interest in electrical/electronics in technical colleges in Niger State.

Research Questions

What are the mean achievement scores of students taught electrical/electronics using think-pair-share and those taught using conventional teaching method?

What are the mean interest scores of students taught electrical/electronics using think-pair-share and those taught using conventional teaching method?

Hypotheses

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

There is no significant difference in the mean achievement scores of students taught electrical/electronics using think-pair-share and those taught using the conventional approach.

There is no significant difference in the mean interest scores of students taught electrical/electronic using think-pair-share and those taught using the conventional approach.

METHODOLOGY

The design of this study was quasi-experimental. Specifically, the non-equivalent control group design was adopted for the study. This study was conducted in Technical Colleges in Niger state, Nigeria. The population of the study was 432 TC II students from six technical colleges in Niger State. Simple random sampling was used to select four technical colleges with population of 259 students. Three experts from Department of Industrial and Technology Education, Federal University of Technology, Minna validated the instruments. The instrument was pilot tested on 40 electrical/electronic students from Government Technical College Lafiagi which is not part of the population. The reliability of the EEAT was determined using Pearson Product Moment Correlation Coefficient and was found to be .86. The pre-test was administered to the students in all the groups before the commencement of the experiment without any feedback on the test being given to the students. After scoring; Students' scores were recorded and kept aside by the researchers for use after the experiment. After teaching, the post-test were administered to all the groups. Data from the posttest were recorded separately. Data collected using the instruments were analyzed with respect to the research questions posed and the hypotheses formulated for the study. Means and Standard Deviations of achievement scores of students were used in answering the Research Questions, while the Analysis of covariance (ANCOVA) was used to test the hypotheses formulated for the study at 0.05 level of significance.

RESULTS

Research Question One

What are the mean achievement scores of students taught electrical/electronics using think-pair-share and those taught using conventional teaching method?

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Table 1: Mean Achievement and Standard Deviation Scores of Students in Think-pair-share and Control groups

		Pretest	**Posttest**
Think-pair-share	N	137	137
	Mean	10.0857	31.8095
	Std. Deviation	1.93209	6.81217
Control	N	122	122
	Mean	9.5471	18.9510
	Std. Deviation	1.89003	7.31522

Table 1 shows the pretest mean scores for both the Think-Pair-Share (10.09) and Control (9.55) groups were relatively low and similar, indicating comparable initial academic achievement. After the intervention, the Think-Pair-Share group showed a significant increase in mean score to 31.81, while the Control group's mean rose moderately to 18.95. This suggests that the Think-Pair-Share strategy had a more substantial positive effect on students' academic achievement. The standard deviation for the Think-Pair-Share group increased from 1.93 to 6.81, indicating greater variability in posttest scores. Similarly, the Control group's standard deviation increased from 1.89 to 7.32, also suggesting more spread in posttest performance. The larger gain in mean scores for the Think-Pair-Share group (21.72) compared to the Control group (9.40) reflects the strategy's effectiveness. Both groups improved, but the Think-Pair-Share group's improvement was more than double that of the Control. The result supports the effectiveness of Think-Pair-Share in enhancing students' academic achievement in Electrical/Electronic.

Research Question Two

What are the mean interest scores of students taught electrical/electronics using think-pair-share and those taught using conventional teaching method?

Table 2: Mean Interest Scores and Standard Deviations of Students in the Think-pair-share and Control Groups

Group		**Pre-test**	**Post-test**
Think-pair-share	N	137	137
	Mean	1.6037	3.5840
	Std. Deviation	.11304	.10116
Control	N	122	122
	Mean	1.5414	2.9384
	Std. Deviation	.11831	.34181

Table 2 shows pre-test interest mean scores for the Think-Pair-Share (1.60) and Control (1.54) groups were close, showing similar initial levels of interest in Electrical/Electronic. After the pre-test, the Think-Pair-Share

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group's mean interest score rose significantly to 3.58, while the Control group's mean increased to 2.94. This indicates that the Think-Pair-Share strategy was more effective in boosting students' interest. The standard deviation for the Think-Pair-Share group slightly decreased from 0.11 to 0.10, suggesting consistent interest levels among students. In contrast, the Control group's standard deviation increased from 0.12 to 0.34, showing greater variation in post-intervention interest. The improvement in interest for the Think-Pair-Share group (1.98) surpassed that of the Control group (1.40). This result demonstrates that the Think-Pair-Share strategy not only increased interest but also maintained uniformity in students' responses. The findings support the effectiveness of Think-Pair-Share in significantly enhancing students' interest in Electrical/Electronic.

Hypothesis One

There is no significant difference in the mean achievement scores of students taught electrical/electronics using think-pair-share and those taught using the conventional approach.

Table 3: Analysis of Covariance of Students' Scores in the Think-pair-share and Control Groups' Achievement Test in Electrical/Electronics Due to Method

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	1802.154	2	901.077	18.013	.000
Intercept	126545.459	1	126545.459	2529.766	.000
Pretest	26.336	1	26.336	.526	.469
Group	1782.335	1	1782.335	35.631	.000
Error	10204.610	224	50.023		
Total	185167.000	227			
Corrected Total	12006.763	226			

Table 3 shows that the p value of the significance of F (35.631) on achievement is 0.000 compared to $P \leq 0.05$ alpha level already set. The null hypothesis of no significant difference in the mean achievement scores of students taught electrical/electronics using the think-pair-share and those taught using the conventional method is therefore rejected. Hence, there is a significant difference in the mean achievement scores of students taught electrical/electronics using the think-pair-share and those taught using the conventional teaching method in favour of the think-pair-share group.

Hypothesis Two

There is no significant difference in the mean interest scores of students taught electrical/electronic using think-pair-share and those taught using the conventional approach.

Table 4: Analysis of Covariance of Students' Scores in the Think-pair-share and Control Groups' Interest Inventory in Electrical/Electronics Due to Method

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	21.572	2	10.786	171.168	.000

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Intercept	11.070	1	11.070	175.664	.000
PreInterest	.010	1	.010	.154	.695
Group	19.864	1	19.864	315.229	.000
Error	12.855	224	.063		
Total	2242.302	227			
Corrected Total	34.428	226			

Table 4 shows that the p value of the significance of F (315.229) on interest is 0 .000 compared to P≤ 0.05 level of significance already set. Therefore the null hypothesis of no significant difference in interest scores between the think-pair-share and control group is rejected. Hence, there is a significant difference in the mean interest scores of students taught electrical/electronics using think-pair-share and those taught using the conventional approach in favour of the think-pair-share group.

DISCUSSION OF FINDINGS

The Finding indicated the efficiency of Think-Pair-Share in improving students' academic achievement in Electrical/Electronic. This is in accordance with the research of Kaddoura (2013) who in his study discovered that the Think-Pair-Share technique greatly enhanced nursing students' academic performance and critical thinking abilities. The research noted that TPS fosters active involvement and greater knowledge of course material. The conclusion is also aligned with the research of Udeani and Okafor (2012) who in their study discovered in their study on Nigerian science classrooms that collaborative tactics like TPS lead to increased academic achievement, particularly in practical and problem-solving topics.

The data indicated the usefulness of Think-Pair-Share in considerably improving students' interest in Electrical/Electronic.

The outcomes of this research indicated the usefulness of the Think-Pair-Share (TPS) technique in dramatically improving students' interest in Electrical/Electronic. This conclusion corresponds with earlier studies demonstrating that TPS increases active involvement, which in turn enhances learners' interest. For example, Usman and Adewumi (2017) discovered that TPS greatly boosted students' interest in Physics by fostering peer interaction and deeper cognitive participation. Similarly, Ezenwosu and Nworgu (2013) showed that biology students exposed to TPS displayed a greater degree of interest and passion compared to those taught using standard techniques.

CONCLUSION

Based on the findings of this research, it is determined that the Think-Pair-Share technique is extremely beneficial in boosting students' academic progress and interest in Electrical/Electronic. Students exposed to the technique performed much better and showed higher excitement for learning compared to those taught using standard methods. The interactive aspect of the technique fostered active engagement and greater comprehension of the subject matter. It also enhanced peer cooperation and introspective thinking, which led to greater motivation and engagement. These data imply that Think-Pair-Share is a feasible pedagogical technique for increasing learning outcomes in technical education. Teachers of Electrical/Electronic are consequently advised to utilise the method to improve both intellectual and emotive benefits among students.

RECOMMENDATIONS

Based on the findings, the study recommends that:

Educators should integrate the Think-Pair-Share strategy into their teaching to enhance students' academic achievement and interest in Electrical/Electronic.

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Ongoing professional development should be provided to teachers on effectively using collaborative learning strategies like Think-Pair-Share to boost student achievement and interest.

REFERENCES

1. Akanmu, A. (2019). The impact of collaborative learning strategies on students' academic achievement in vocational education. Educational Research Journal, 12(4), 223-235.
2. Audu, T., Olaniyan, D., & Ojo, A. (2020). Technical education in Nigeria: A pathway for sustainable development. Journal of Technical Education and Training, 22(1), 45-60.
3. Eli, D. (2021). Innovative teaching techniques in Nigerian technical colleges: A focus on the effectiveness of cooperative learning. International Journal of Educational Research, 14(2), 77-92.
4. Evita, R., Hayati, P., & Suhendra, I. (2019). The effectiveness of the Think-Pair-Share strategy in enhancing students' problem-solving skills and interest. Journal of Education and Learning, 15(3), 179-188.
5. Ezenwosu, S. U., & Nworgu, L. N. (2013). Effect of Think-Pair-Share collaborative learning strategy on students' achievement and interest in biology. *Journal of Education and Practice*, *4*(12), 96–103.
6. Ikelegbe, O. (2020). Integrating problem-based learning in vocational training: Enhancing student outcomes in technical colleges. Journal of Educational Development, 18(2), 121-134.
7. Kaddoura, M. A. (2013). Think Pair Share: A teaching learning strategy to enhance students' critical thinking. Educational Research Quarterly, 36(4), 3–24.
8. Lawrence, B., & Tar, D. (2018). Effectiveness of traditional versus modern teaching methods in Nigerian technical education. Journal of Vocational Education, 11(1), 98-110.
9. Napitupulu, H., & Surya, M. (2017). Increasing student engagement and interest through collaborative learning models. International Journal of Instruction, 10(1), 23-34.
10. Ogbuanya, T., Okoye, C., & Umeh, J. (2021). Interest as a predictor of academic achievement in vocational education: A case study in technical colleges in Nigeria. Journal of Vocational Education and Training, 19(1), 42-56.
11. Sejani, R. (2016). Think-Pair-Share: A strategy for promoting collaborative learning and problem-solving skills in vocational education. Journal of Educational Research, 25(3), 204-215.
12. Udeani, U., & Okafor, P. N. (2012). The effect of Think-Pair-Share strategy on students' achievement in senior secondary school chemistry. African Journal of Science, Technology and Mathematics Education, 2(1), 45–53.
13. Usman, I. A., & Adewumi, M. G. (2017). Effect of Think-Pair-Share strategy on senior school students' interest and achievement in physics in Ilorin, Nigeria. *Journal of Education and Practice, 8*(11), 124–130.
14. Zakaria, F., Rahman, R., & Samsudin, A. (2019). Exploring the effects of Think-Pair-Share on students' interest and academic achievement in technical subjects. International Journal of Instruction, 22(2), 150-165.