

## **Think–Pair-Share instructional method: A pedagogical tool for enhancing students’ academic achievement in cataloguing and classification**

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### **Abstract**

The study investigated the effect of Think-Pair-Share (TPS) instructional method on students’ academic achievement in cataloguing and classification course in tertiary institutions in Anambra State with emphasis on gender. Quasi-experimental design was adopted. Out of three federal tertiary institutions in Anambra State two were selected using purposive random sampling technique. Two research questions and two null hypotheses guided the study. The instrument used for data collection was Cataloguing and Classification Achievement Test (CCAT). The results show that think-pair share instructional teaching method enhanced academic achievement of students in Cataloguing and classification course. Again, the finding revealed that gender was not significant on student overall achievement using think-pair share and lecture method. The researchers recommended that think pair share instructional method should be adopted as an effective strategy for teaching cataloguing and classification course.

**Keywords:** Cataloguing and classification, students, academic achievement, anambra state, gender, instructional method, Think-Pair-Share

### **Introduction**

The need for improvement in academic achievement of library and information science students’ teaching and learning process especially in organization of knowledge cannot be over emphasized. The need to transform the pedagogical process of teaching and learning in tertiary institution appears to be most pressing in this digital age. Cataloguing and classification is one of the pillars of library education and because cataloguing plays a pivotal role for a successful library operation, a discussion and description of cataloguing process is inevitable. It is concerned with

arranging library materials in such a way that users will locate them easily. Cataloguing and classification is simply a way of organizing library materials in such a way that the retrieval will not be difficult for library users (Adedibu,

Akinboro and Abdussalam, 2012). Cataloguing and classification course is an important course in library and information science (LIS) education. It is a course in LIS which deals with the study of how to classify, select, organize and record information. It is the bedrock upon which many library professionals acquire knowledge.

Think-Pair-Share (TPS) instructional strategy is “a learner centered technique which presents students with a task or question and gives them time to think individually, and then share their views in pairs and finally share with the larger class” (Eze and Obiekwe, 2018). TPS instructional strategy belongs to the group of instructional technique called Inquiry-Based Learning and Co-operative Learning Strategy.

Cooperative learning is an instructional technique whereby learners interact with each other while handling the task at hand and also

offer new ideas to each other which will be useful to the group and other members of the class. Cooperative learning is “the deliberate instructional use of heterogeneous small groups of students who work together to maximize each other’s learning” (Igbanugo as cited in Eze and Obiekwe, 2018). Peer tutoring, game show, role play, group discussion, computer-assisted instruction, debates are all types of cooperative learning (Eze as cited in Eze and Obiekwe, 2018).

Academic achievement in Cataloguing and classification course refers to the extent to which the students have achieved their required goals as students. Academic achievement also refers to performance outcomes in intellectual domains taught at school, college, and university (Spinath, 2012). According to Mutua as cited in Mbonu(2018), “academic achievement is the successful completion, through effort, of the acquisition of academic content and skills which is determined by the scores or grades that students get in an examination or test”. Thus Egara, Nzeadibe and Okeke (2018) reported that so many factors have been pointed at as responsible for the poor performance of students. Some of these factors include: teaching and learning methods, inadequate instructional facilities, students’ lack of interest and motivation. Mbonu (2018) attributed this level of achievement to students’ lack of understanding of the questions, poor teaching methods and strategies, and the inability of the teachers to introduce innovative teaching methods that will enhance students’ academic achievement. The term gender refers to all the characteristics of man and woman which a particular society has determined and assigned each sex(Dave-Ugwu, and Nwosu, 2018).

However, studies revealed that lecturers use mostly conventional methods to teach students. For example, Ukala (2018) opined that poor academic achievement in biology could be attributed to many factors among

which are the teachers’ use of inappropriate teaching strategies or inability to use innovative teaching strategies. Over the years, the lecture method has been disappointing and ineffective in the teaching process.

Current studies on use of these cooperative learning strategies have proved effective. One of such cooperative instructional techniques is the think-pair-share learning strategy.

### **Statement of the problem**

The problem of this study was to investigate the effects of think-pair-share on students’ academic achievement in cataloguing and classification which is one of the courses in Library and Information Science programme; yet students find it difficult to understand this essential and abstract course. The teaching of the course needs to be improved to enhance students’ academic achievement. For the teaching and learning of cataloguing and classification to be more effective, the lecturers should consider a learner-centered teaching strategy. Hence, the need to discover a teaching strategy which can have positive effects on students’ academic achievement. Thus, this study was undertaken to find out the effects of TPS on students’ academic achievement. The problem put in question form is: What are the effects of Think-Pair-Share on students’ academic achievement in cataloguing and classification?

### **Purpose of the study**

The main purpose of this study was to investigate the effect of think-pair-share instructional strategy on students’ academic achievement in cataloguing and classification. Specifically, the study was to find out:

1. The mean academic achievement scores of student taught cataloguing and classification using Think-Pair-Share instructional strategy and those taught with lecture method.

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2. The effect of Think-Pair-Share instructional strategy on the mean academic achievement scores of male and female students.

### Research questions

The following questions are answered in the study:

1. What are the mean academic achievement scores of students taught cataloguing and classification using Think-Pair-Share instructional strategy and those taught with lecture method?
2. What are the effects of Think-Pair-Share instructional strategy on the mean academic achievement scores of male and female students?

### Hypothesis

The following two null hypothesis is tested in this study at 0.05 level of significance:

Ho1: There is no significant difference in the mean academic achievement scores of students taught cataloguing and classification using Think-Pair-Share and those taught using lecture method.

### Literature review

Think-pair-share is a method of learning whereby the students are provided with an opportunity to think about the task before them and share their thoughts with other members of their group (partners) before discussing it in the presence of the whole class. It is also a cooperative learning technique that was proposed by Lyman (1981) (Raba,2017). He further opined that it is a three step technique where students think about a given question or problem, given a limited time to think, organize their thoughts and formulate their ideas and answers to the given questions. It will be wrong to talk about TPS instructional

strategy without looking at what cooperative learning strategy is. Cooperative learning may be seen as any classroom learning situation in which students of all levels of performance work together in structural groups towards a shared or common goal. (Khalifa,2016).Cooperative learning has been proven to be effective for all levels of students because it helps to promote learning and foster respect and friendships among students from diverse backgrounds and it is also a way of providing students with a well-defined framework from which to learn from each other. With cooperative learning, (no matter the subject area) teachers can structure and plan lessons so that students can engage in a win-lose struggle to see who is best in competition; work independently on their own learning goals at their own pace and in their own space to achieve a preset criterion of excellent individualism and also work cooperatively in small groups, ensuring that all members master the assigned material (Khalifa, 2016).

In the literature, studies on the effect of think-pair-share instructional strategy on students’ achievement also abound. Eze and Obiekwe (2018) investigated think-pair-share instructional strategy as a variety tool for enhancing students’ achievement in secondary school in Chemistry. The study adopted a quasi-experimental design on non-equivalent control group. The sample consisted of 100 SS1 students and the instrument for data collection was the Particulate Nature of Matter Achievement Test which was validated by two experts in Science Education. The reliability of the instrument was determined using test-retest method and the score correlated using Pearson’s Product Moment Correlation which yielded an index of 0.93. Research questions were answered using descriptive statistics while the null hypotheses were tested at 0.05 level of significance using analysis of covariance. Findings of the study revealed that male students exposed to think-pair-share

instructional strategy achieved higher than their female counterparts. There is also a significant difference in the mean achievement scores of the experimental and control groups in favour of the experimental group.

Agbede and Ba’aba (2019), explored effect of jigsaw and think- pair- share methods on students’ performance in principles of account in colleges of education in north-east Nigeria. The study has three purpose, three research questions were raised to guide the study while three null hypotheses were formulated and tested at 0.05 level of significance. A quasi-experimental design was adopted for the study. The population of the study was 900 NCE business education students in colleges of education in north-east, who offered principles of accounts in 2015/2016 academic session. One hundred and twenty (120) students were taught in their intact classes. The instruments used to generate data for the study was Principles of Accounts Achievement Test (PAAT). Mean and standard deviations were used to answer the stated research questions. Simple regression analysis was used to test null hypotheses one and two, while t-test statistics was employed in testing null hypotheses. From the results of the study, null hypotheses three, four and five were retained while null hypothesis one, two were rejected. Based on the findings of the results, it revealed that jigsaw and Think-pair-share methods had significant effects on students’ academic performance in principles of accounts in colleges of education in North-East, Nigeria.

Bamiro (2015) investigated the effects of guided discovery and TPS strategies on secondary school student’s achievement in Chemistry in Ijebu Ode, Odogbolu Local Government Area of Ogun State. A pre-test, post-test, control group quasi-experimental design with a 3x3x2 factorial matrix was adopted for the study. Treatment was at three levels (lecture strategies, guided discovery and

TPS instructional strategy). Two hundred and forty-two SS1 students were used for the sample. Data collected were analyzed using Analysis of Covariance (ANCOVA) and Multiple Classification Analysis. Scheffe test was further used as post hoc measures. The study revealed that students taught with guided discovery and TPS obtained significantly higher post-test mean scores than those in the lecture strategy.

Raba (2017) investigated the influence of TPS instructional strategy on improving students’ oral communication skills in EFL classrooms. It was obviously noticed that think-pair-share strategy plays a positive role in improving students’ oral communicative skills, creating a cooperative learning environment and enhancing students’ motivation to learn better. Furthermore, students enrolled in the faculties of applied sciences responded better than students enrolled in the faculties of human sciences; similar responses were shown from students of higher academic level.

Yusuf, Owede and Bello (2018) investigated the effect of TPS on students’ achievement in Civic Education in Bayelsa State, Nigeria. Quasi-experimental 2x2x3 pre-test, post-test factorial design was used. The population consisted of all SSS11 students in Bayelsa State. Intact class comprised of 61 and 46 students. Purposive random sampling technique was used to select experimental and control group. Three researcher-designed instruments which included two instructional packages and one test were used to collect data for the study. Test retest was used to obtain reliability of the instrument and it was 0.83 after an interval of two weeks using Pearson’s Product Moment Correlation. Analysis of Covariance (ANCOVA) was used in testing the three hypotheses at 0.05 level of significance. The result revealed that students taught civic education using TPS (experimental group) outperformed those in the control group.

## Methods

The study adopted quasi-experimental design which is a non-equivalent control group design that use pre-existing group or intact classes. The area of the study was Anambra State of Nigeria. The population of the study comprised of all the 3<sup>rd</sup> year Library and Information Science students offering cataloguing and classification in three federal tertiary institutions in Anambra State. Out of the three federal tertiary institutions in Anambra State, two were selected through purposive random sampling technique. Eighty male and female students were selected from the institutions. Toss of coin was used to select the institution which will represent the control and the one which will represent the experimental group. The researchers constructed Cataloguing and Classification Achievement Test (CCAT) which was the instrument used for data collection. The CCAT consisted of 20 multiple choice test questions. CCAT was validated by experts in library and information science. The test blue print and the unit lesson plans were also validated by the experts in library education. The reliability of the instrument was established using test-retest method and it yielded consistency of 0.82. The experimental group was taught using TPS strategy while the control group was taught the same topic using Lecture method which is a conventional method. The CCAT was administered before the commencement of the treatment as pre-test. The actual teaching or treatment lasted for six weeks while the post-test was administered in the sixth week. The scores from the pre-test and that of post-test were recorded and used as data which represents the student academic achievement scores. The research questions were answered and analyzed using mean while the hypotheses were tested at 0.05 level of significance using Analysis of Covariance (ANCOVA).

## Results

**Research question 1:** What are the mean academic achievement scores of students taught cataloguing and classification using TPS and those taught with lecture method?

The data in Table 1 are used to answer this question.

In Table 1, it can be observed that students taught cataloguing and classification using think-pair-share had the mean of 60.94 in the post-test while those taught with Lecture Method has the mean of 44.00 with Standard Deviations of 18.02 and 10.86 respectively. The experimental group exposed to TPS instructional strategy performed better than the control group. The better performance of the experimental group showed that students taught cataloguing and classification using TPS learnt the cataloguing and classification concepts better than those taught by the lecture method.

**Research question 2:** What are the effects of TPS instructional strategy on the mean academic achievement scores of male and female students taught cataloguing and classification using TPS instructional strategy?

The data in Table 2 are used to answer this question.

Table 2 reveals that the post-test mean achievement scores of female cataloguing and classification students taught using TPS is 60.45 with standard deviation of 15.19 while the posttest mean achievement scores of the male CAT students taught using TPS had a posttest mean achievement score of 62.00 and standard deviation of 24.06. It appears that female students had slightly higher post-test

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mean achievement score when compared with their male counterpart in cataloguing and classification using TPS instructional strategy. This result shows that TPS instructional strategy is not gender biased although the scores show that the females performed slightly better than male students.

of students taught cataloguing and classification using TPS instructional strategy and those taught using lecture method.

The data in Table 3 are used to test this hypothesis.

**Hypothesis 1:** There is no significant difference in the mean achievement scores

**Table 1: Mean difference and standard deviation of the pre-test and post-test scores of students taught cataloguing and classification using Think-Pair-Share instructional strategy and those taught with lecture method (n = 62)**

S/n	Method	n	Pretest		Post test		Mean Difference
			$\bar{X}$	SD	$\bar{X}$	SD	
1.	Think-pair share	32	35.00	17.60	60.94	18.02	25.94
2.	Lecture	30	24.67	12.45	44.00	10.86	19.33

**Table 2: Mean difference and standard deviation of pre-test and post-test scores of male and female students taught cataloguing and classification using TPS instructional strategy (n = 32)**

S/n	Method	Gender	N	Pretest		Post test		Mean Difference
				$\bar{X}$	SD	$\bar{X}$	SD	
1	TPS	Female	22	36.82	16.80	60.45	15.19	23.63
		Male	10	31.00	19.55	62.00	24.06	31.00

**Table 3**  
**Analysis of Covariance (ANCOVA) for testing significant difference in the post-test mean achievement scores of students taught cataloguing and classification using Think-Pair Share instructional strategy and those taught with lecture method.**

Source	SS	Df	Mean Square	F	P Value	Decision
Corrected Model	11206.377	2	5603.189	49.140	0.000	
Intercept	12756.929	1	12756.929	111.878	0.000	
Pretest	6764.381	1	6764.381	59.323	0.000	
GROUP	1325.385	1	1325.385	11.624	0.001*	S
Error	6727.494	59	114.025			
Total	190400.000	62				
Corrected Total	17933.871	61				

\*S = Significant at 0.05 level of significance

The result in Table 3 shows that the probability of obtaining the F-value (11.624) is 0.001, which is less than 0.05 alpha levels and thus the null hypothesis was rejected. This implies a significant difference in the

mean achievement scores of students taught the concept cataloguing and classification using think-pair-share instructional strategy and those taught using lecture method. The

null hypothesis was rejected at .05 alpha levels.

### **Discussion**

The findings of this study as shown in table 1 indicated that the students in the experimental group performed better than the students in the control group. The mean achievement scores of students in the experimental group were significantly higher than the achievement scores of the control group both in the pre-test and post-test. This also agrees with Eze and Obiekwe (2018), that there is significant difference in the mean achievement scores of students in the experimental group exposed to TPS instructional strategy and those in the control group taught with lecture method. The difference was in favor of experimental group. This also tallied with the findings of Khalifa (2016) that there was statistically significant difference between the mean scores attained by the experimental group and those by the control group in the post writing achievement test in favor of the experimental group. Gender had no significant effect on students taught cataloguing and classification using TPS strategy. This, therefore, implies that the instructional method used as the treatment improved the achievement of students in cataloguing and classification. This finding, however, is at variance with the findings of Eze and Obiekwe (2018) who found out that male students performed better than female students using TPS instructional method.

The result in table 3 showed that there is significant difference between the students taught using TPS instructional strategy and those taught using Lecture method. The present study was consistent with an earlier finding by Bamiro (2015) that students exposed to guided discovery and think-pair-share strategies obtained significantly higher post-test mean

scores than those exposed to lecture method.

It is clear that the findings of this study revealed that there was no statistically significant difference in the mean academic achievement scores of male and female students taught using TPS instructional strategy. This could be because TPS instructional strategy is gender friendly. The finding agrees with the report of Okeke (2014) who found out that there is no significant difference in the performance of male and female students in science subjects.

### **Conclusion**

TPS instructional method significantly improved students’ achievement in cataloguing and classification. Students in experimental group taught using TPS perform better than the students taught using Lecture method. The study revealed that there is no significant difference in the achievement of male and female students in cataloguing and classification course.

In view of the findings of this study, the following recommendations are made:

1. The researchers recommended the use of think-pair-share instructional strategy by lecturers in teaching cataloguing and classification because of its effect on the students’ academic achievement.
2. Professional organizations like the Cataloguing and Classification Association of Nigeria (CCAN) should organize seminars, conferences, and workshops to train Cataloguing and Classification lecturers on the importance of using think-pair-share instructional strategy in learning and teaching.
3. The students in the department should be exposed to series of training for them to acquire skills in

the use of this cooperative strategy called think-pair-share instructional strategy for improvement of academic achievement.

4. The tertiary institution curriculum should include Think-pair-share instructional method as a method of teaching from primary to tertiary level for the enhancement and improvement of students’ academic achievement.
5. Students of library and information science should be properly guided to use think-pair-share instructional method to enhance the acquisition of library and information science skills.

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