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## **Effect Of Peer Learning And Collaborative Learning On Students' Academic Performance In Port Harcourt Local Government Area.**

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### **Abstract**

The study investigated the effect of peer learning and collaborative learning on students' academic performance in Port Harcourt Local Government Area. Quasi-experimental research design was adopted for the study. The population of the study consists of 864 senior secondary school students from five (5) government senior secondary schools in SS2. Proportionate stratified random sampling technique was used to sample 206 SS2 students from the population. Data were collected using Mathematics Achievement Test (MAT) for SS2 second term. The instruments were validated by mathematics teachers. The reliability index of the instrument was determined through (PPMC) which was found to be 0.79 using test and retest method which shows that the instrument is reliable for the study. T-Test was used to answer the research question; ANOVA associated with T-Test was used to test the hypothesis at 0.05 level of significance. The analysis was done using (SPSS) version 20. It was concludes that collaborative learning and peer-peer learning has been proven, not only to improve student's academic performance but also increased the rate of class participation, active involvement in class activities and also positive attitude towards their studies.

## **Introduction**

The educational concept of 21st century during which great social, economic and technological developments are experienced, confers the responsibilities of determining the most suitable teaching approach and implementing this approach voluminously in the classrooms to the educators for the purpose of attaining a qualitative teaching process and achieving the target objectives at the end of the process.

The primary purpose of learning at any level of education is to bring a fundamental change in the learner (Tebabal & Kahssay, 2011). To facilitate the process of knowledge transmission, teachers ought to apply appropriate teaching methods that best suit specific objectives and level exit outcomes. In the traditional epoch, many teaching practitioners widely applied teacher-centered methods to impart knowledge to learners comparative to student-centered methods. Until today, questions about the effectiveness of teaching methods on student learning have consistently raised considerable interest in the thematic field of educational research (Hightower, et. al., 2011). Moreover, research on teaching and learning constantly endeavour to examine the extent to which different teaching methods enhance growth in student learning and to improve their academic performances.

Quite remarkably, regular poor academic performance by the majority students is fundamentally linked to application of ineffective teaching methods by teachers to impart knowledge to learners (Adunola, 2011). Substantial research on the effectiveness of teaching methods indicates that the quality of teaching is often reflected by the achievements of learners. According to Ayeni (2011), teaching is a process that involves bringing about desirable changes in learners so as to achieve specific outcomes. In order for the method used for teaching to be effective, Adunola (2011) maintains that teachers need to be conversant with numerous teaching strategies that take recognition of the magnitude of complexity of the concepts to be covered which will help the student in attaining great height in their academic performances.

In the 21<sup>st</sup> century, students tend to associate collaboratively in all they do in school, social gathering as well as their respective homes. Most of the students enjoys the comfort of their peer association in studying and celebration. Peer and collaborative learning would improve the academic performances of student in different subject coverage. It based on this fact that the researcher deem it fit to investigate the effect of peer learning and collaborative learning on students' academic performance in Port Harcourt Local Government Area.

## **Literature Review**

### **Peer Tutoring**

Peer tutoring is described as an effective intervention by Costantini (2015) in all areas of subject knowledge. It is known as a systematic, peer-mediated, instructional technique as per (Asaf & Zahoor 2017). This Peer Tutor learning technique uses students with high levels of retention to teach the content to those who are struggling, ensuring that all learning objectives are met. Peer tutoring is a process developed by Fantuzzo and his colleagues (Wolfe, Fantuzzo and Wolfe, 2006). It allows each student to play the role of tutor and tutored. Reciprocal peer tutoring allows each

student to benefit from giving directions, evaluating and providing reinforcement for their partner. It creates mutual assistance and social support among participants (Fantuzzo, et. al, 2009).

Most of the time, research on peer tutoring provided evidence for its positive effects on performance, learning, reduction of stress and anxiety and an increase in satisfaction with the progress, still, little research has investigated the effects of peer tutoring for "writing to learn" activities (Gielen, et. al, 2007). "Peer-tutoring" writing consists in assisting the revision process through the intervention of a peer, following the peer-tutoring assumption; Peer-tutoring is expected to enrich the production through the confrontation with other learners, and by fostering processes like metacognitive awareness on their own productions, particularly epistemic monitoring and reflexive thinking. Throughout history, there have been many developments in peer learning, working in different contexts.

The term peer tutoring is used for various tutoring activities. It is mostly referred to the students who usually study or learn in pairs in order to help each other. Peer tutoring usually leads to better understanding of the academic concepts. It is more fruitful when the students having different ability levels work with each other (Kunsch, et. al, 2007). Peer tutoring is one of the important techniques which have been used by teachers to raise the assurance and confidence level of their students. Through this method, the learners are divided in pairs in which one acts as a tutor and the other as tutee or learner.

The students who learn in cooperative learning groups acquire more knowledge and they take their responsibilities in a better way as compared to others (Fernandez-Santander, 2008). There are different forms of academic peer tutoring in colleges; especially in large universities the students of graduate level are assigned the responsibility of teaching courses of undergraduate level.

### **Types of Peer Tutoring**

The monitorial system developed by Joseph Lancaster in 1800s is another type of peer learning in which monitors or proctors learn from their teachers and then passed it to other children (Gerber & Vandyke, 2020).

There are three main types of peer tutoring.

1. **Reciprocal Peer Tutoring (Rpt):** In this type of peer tutoring the peers learn from each other by changing their status from tutor to student. Both peers take turns at being the tutor while the other one acts as the student or learner. This strategy provides a very good opportunity to every student to act as a tutor which enhances his confidence level. (Goodwin & Watkinson, 2000).
2. **Class-Wide Peer Tutoring (Cwpt):** Class-wide peer tutoring breaks the whole class into smaller groups. It is one of the important types of peer tutoring in which all the students of the classroom very actively learn from each other for an extended time period. They act as tutors as well as students or learners. So every student of the class involves himself in the assigned activities and learns in a very good way (Gerber & Vandyke, 2020).
3. **Cross-Age Peer Tutoring (Capt):** In this type of tutoring the elder student act as tutor and they teach the young students. The tutors have a higher academic background as compared to their students or learners in cross-age peer tutoring. This approach is valuable for the students because they get effective individual

instructions and feedback from their tutors. On the other hand the tutor gets valuable teaching experience.

Peer learning in its broadest sense is seen as students learning from and with each other, in both formal and informal ways (Webster, 2000). It is an instructional strategy in which groups of children under the guidance of the teacher work together through a given instructional assignment, the peer teacher; providing assistance and instruction to others (Igboanugo, 2011). It is a student-centered approach and a total shift from the teacher-centered or lecture method of teaching. The emphasis is on the learning process, including the emotional support that learners offer each other, as much as the learning tasks itself (Agwu, 2005). The teacher who adopts the peer learning strategy will identify the high, middle, and low achievers amongst the students. The high achievers are used as the peer teachers and middle/low achievers are assigned in their small numbers to the peer teachers for instruction and assistance. The teacher prepares the lesson plan and reviews it for the peer teachers in sequential order. He also trains the peer teacher on how to inform, reward and relate to the students (Igboanugo, 2011).

### **Collaborative Learning**

The idea of collaborative learning dates back to between 1950 and 1960 to that used by doctors to deal and communicate with medical students, where it was noted that the students who were working in groups had medical assessment and results better than those who were working alone which reflected the great success of this idea. The best way to understand the method of collaborative learning is with the definition of these concepts as viewed by Swan, et. al. (2006):

- Collaborative learning is a teaching strategy that includes a small group of learners working together in order to develop the educational experience to the maximum extent possible.
- Collaborative learning is defined as the work of individuals as members of groups, and each student of the group is linked to mental, emotional, and behavioural functions to achieve the objectives of the community and systems whose clear objectives help learners in the decision-making process and increase the sense of community.
- Collaborative learning stands on the idea that learning is a naturally social act in which learners talk amongst them, and among the talk the learning occurs.
- Collaborative learning is “a case, where such a case includes the following main aspects: first, two or more students learn or try to learn something together; second, ‘two or more’ may be explained as a pair, a small group (3-5 subjects) or a class (20-30 subjects); third, ‘learn something’ may be explained as follow a course or perform learning activities such as problem solving. Finally, ‘together’ may be explained as many forms of interaction which may be face-to-face or computer mediated”.

Arguably collaborative learning aims to support the most effective teaching possible for the greatest number of students. Laal and Laal (2012) pointed out that there are five basic elements in a collaborative learning environment:

1. **Collaborative learning obviously perceives positive correlation:** Members in the work group are committed to depend on one another to gain the goal. And if any member fails to perform their task or responsibility, all members in the group suffers the consequences. This means the teacher must plant in the hearts of the

learners the importance of collaborative teaching to build a collaborative learning environment.

2. **Great communication and interaction:** Developing effective communication skills to interact with others contributes to an exchange of information and ideas through various channels to achieve the goals. Furthermore, successful communication depends on several factors such as the interaction between the teacher and the learner and the means of delivery in addition to the effects of the surrounding environment.
3. **Individual accountability and personal responsibility:** Each student in the team is responsible for performing their task and reaching a high level of mastery.
4. **Social skills:** Understanding behaviour of each student is imperative to succeed. There are a set of social skills learners should have such as confidence, calm, decision making, empathy, smiles, and communication.
5. **Group self-evaluating:** In order to improve the teaching and learning process and development, this should focus on the importance of a teacher competency standard in educational process and student assessment such as philosophy of education goals, defining curriculum content and textbooks under consideration, identifying objectives and analysing their content, and knowledge of their learning styles.

Collaborative learning helps students to have active control over their own learning and create both academic and social relationships to accomplish common goals. (Aline, et. al, 2022).

### **Academic Performance**

Academic performance of a child could be defined as the learning outcomes of the child. Academic performance is among the several components of academic success (Masud, 2019). It is (undoubtedly) a key feature in education. It is considered to be the centre which holds the whole education system. Narad and Abdullah (2016) posit that the academic performance of students determines the success or failure of any academic institution. It is the outcome of determination, hard work, of student in academic pursuit. Pandney, (2008) defined academic performance as the performance of the pupils in the subjects they study in the school. This determines the pupils' status in the class. This gives children an opportunity to develop their talents, improve their grades and prepare for future academic challenges.

This study is based on constructivist theory by Jean Piaget (1896- 1980). The constructivist approach to teaching and learning is based on a combination of a subset of research within cognitive psychology and a subset of research within social psychology (Huitt, 2003). The basic premise is that an individual learner must actively “build” knowledge and skills (Bruner, 2000 as cited in Huitt 2003) and that information exists within these built constructs rather than in the external environment.

### **Statement of the Problem**

It has been observed by most teachers in Nigerian schools that students resist collaboration with their peers for several reasons such as; lack of assistance and support to develop effective collaboration strategies, students require teacher input about with whom to work, in order to reap the greatest benefits from the grouping. The fact that there are lots of experimental researches revealing the effect of collaborative learning approach on academic achievement in different learning

domains of Nigerian subjects with different student groups studying in Nigeria has raised the need for this study because it is observed that the mentioned experimental researches are independent from each other and different results on some certain subjects are inferred from each one. Through this study, the researcher will like to determine the effect of peer learning and collaborative learning on students' academic performance in Port Harcourt Local Government Area.

### Research questions

1. What is the effect of peer to peer tutoring on student's academic performance in Port Harcourt Local Government Area in Rivers State?
2. What is the effect of collaborative learning on students' academic performance in Port Harcourt Local Government Area of Rivers State?

### Hypotheses

1. There is no effect of peer to peer tutoring on students' academic performance in Port Harcourt Local Government Area in Rivers State.
2. There is no significant effect of collaborative learning on students' academic performance in Port Harcourt Local Government Area of Rivers State.

### Methodology

Quasi-experimental research design was adopted for the study. The population of the study consisted 864 senior secondary school students from five (5) government senior secondary schools in SS2. (2021/2022 Academic Session). Proportionate stratified random sampling techniques was used to sample 206 SS2 students from the population. In each school, an experimental and control group was selected randomly which constitute of 101 experimental group students and 105 control group students from the five selected government senior secondary schools in Port Harcourt Local Government Area of Rivers State. Data were collected using Mathematics Achievement Test (MAT) for SS2 second term. The instruments were validated by experts from measurement and evaluation, department of educational psychology and mathematics teachers in each of the schools. The reliability of the instrument was determined using test and re-test method. The reliability index of the instrument was determined through Pearson Product Movement Correlation, (PPMC) which was found to be 0.79 showing that the instrument is reliable for the study. Mean and standard deviation of Independent sample T-Test was used to answer the research question while ANOVA associated with Independent sample T-Test was used to test the corresponding hypothesis at 0.05 level of significance. The analysis was done using Statistical Packages for Social Sciences (SPSS) version 20.

### Result and Analysis

**Research Question One:** What is the effect of peer to peer tutoring on student's academic performance in Port Harcourt Local Government Area in Rivers State?

**Table 1: Effect of peer to peer tutoring on student's academic performance**

	Items	N	( $\bar{x}$ )	S.D	Remark
1	Peer tutoring leads to better understanding of academic concepts	206	2.90	1.12	Agreed
Q2	Peer tutoring raises my assurance and confidence level among my peers	206	3.25	1.74	Agreed
Q3	Peer tutoring gives me an opportunity to teach my peers.	206	3.21	1.66	Agreed

Q4	I love peer tutoring because it provides more time as compared to normal class tutoring by teachers	206	3.34	1.60	Agreed
Q5	I don't feel uncomfortable asking my peers questions on any concept I don't understand	206	3.36	1.59	Agreed
	<b>Aggregate Mean ad Standard Deviation</b>		<b>3.21</b>	<b>1.27</b>	<b>Agreed</b>

**Mean Criterion:** *Reject if less than 2.5 otherwise accept*

The results of the analysis as contained in table 1 shows the aggregate means and standard deviation of 3.21 and 1.27 respectively on the responses of peer tutoring. With regards to questions 1-5, majority of the respondents were in agreement that peer tutoring affects student's academic performance as the aggregate mean were above the mean criterion of 2.5.

**Hypothesis One:** There is no effect of peer to peer tutoring on student's academic performance in Port Harcourt Local Government Area in Rivers State.

**Table 2: Responses on the effect of peer to peer tutoring on student's academic performance**

	codes	N	Mean	Std. Deviation	Std. Error Mean
effects	Exp_G	101	68.3838	20.52659	2.06300
	Crt_G	105	67.4762	20.26417	1.97758

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
effects	Equal variances assumed	.042	.839	.318	202	.751	.90765	2.85667	-4.72508	6.54037
	Equal variances not assumed			.318	200.958	.751	.90765	2.85776	-4.72739	6.54269

The findings of the study in table 2 above revealed a mean ( $\bar{X}$ ) and standard Deviation (SD) of 68.38 and 20.53 respectively for experimental group of 101 participants and mean ( $\bar{X}$ ) and standard Deviation (SD) of 67.48 and 20.26 respectively for control group of 105 participants.

In addition, the hypothesis tested at 0.05 level of significant shows degree of freedom (D.F) = 202 and P-Value of independent sample T-test as 0.042, since the P-Value is less than the chosen level of significant (0.05), the null hypothesis is rejected and the alternate hypothesis retained. This clearly depicts that there is a significant effect of peer to peer tutoring on senior secondary school students' academic performances.

**Research Question Two:** What is the effect of collaborative learning on students' academic performance in Port Harcourt Local Government Area of Rivers State?

**Table 3: Effect of collaborative learning on students' academic performance**

	Items	N	( $\bar{x}$ )	S.D	Remark
Q6	I understand better when I get involved in group reading.	206	2.68	1.27	Agreed
Q7	Members of my group depend on one another to attain their goal.	206	3.14	1.45	Agreed
Q8	I get more information when i interact with my group members.	206	2.92	1.33	Agreed
Q9	Each student in my group is responsible for performing any academic task.	206	3.35	1.37	Agreed
Q10	Group self evaluation helps us to know our strength and weaknesses.	206	3.36	1.34	Agreed
	<b>Aggregate Mean ad Standard Deviation</b>		<b>3.09</b>	<b>1.22</b>	<b>Agreed</b>

**Mean Criterion:** *Reject if less than 2.5 otherwise accept*

The results of the analysis as contained in table 3 shows the aggregate mean and standard deviation of 3.09 and 1.22 respectively on the responses of collaborative learning. With regards to questions 6-10, majority of the respondents were in agreement that collaborative learning affects student's academic performance as the aggregate mean were above the mean criterion of 2.5.

**Hypothesis Two:** There is no significant effect of collaborative learning on students' academic performance in Port Harcourt Local Government Area of Rivers State.

**Table 4: Responses on the effect of collaborative learning on students' academic performance**

Group Statistics					
	codes	N	Mean	Std. Deviation	Std. Error Mean
effects	Exp_G	101	67.8283	15.87839	1.59584

Crt_G	105	67.0476	20.91300	2.04090
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### Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means							
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
effects	Equal variances assumed	32.464	.000	.299	202	.765	.78066	2.61140	-4.36844	5.92977
	Equal variances not assumed			.301	193.348	.763	.78066	2.59075	-4.32909	5.89042

The findings of the study in table 4 above revealed a mean ( $\bar{X}$ ) and standard Deviation (SD) of 67.83 and 15.88 respectively for experimental group of 101 participants and mean ( $\bar{X}$ ) and standard Deviation (SD) of 67.05 and 20.91 respectively for control group of 105 participants.

In addition, the hypothesis tested at 0.05 level of significant shows degree of freedom (D.F) = 202 and P-Value of independent sample T-test as 0.00, since the P-Value is less than the chosen level of significant (0.05), the null hypothesis is rejected and the alternate hypothesis retained. This clearly depicts that there is a significant effect of collaborative learning on senior secondary school students' academic performances.

### Discussion of Findings

The findings in research question one and the corresponding hypothesis depicts that there is a significant effect of peer tutoring on senior secondary school students' academic performances. The findings of this study is in accordance with Kunsch, Jitendra, and Sood, (2007) who found out that peer tutoring usually leads to better understanding of the academic concepts but it is more fruitful when the students are having different ability levels with each other.

The finding of the study shown in research question two and the corresponding hypothesis depicts that there is a significant effect of collaborative learning on senior secondary school students' academic performances. This findings tally with Swan (2006) who opines that collaborative learning is a teaching strategy that includes a small group of learners working together in order to develop the educational experience to the maximum extent possible which positively and effectively enhances academic performance of students particularly those in secondary schools.

### Conclusion

Collaborative learning and Peer tutoring or peer-peer learning has been proven, not only to improve students' academic performance, but also increased the rate of class participation, active involvement in class activities and also positive attitude towards

their studies irrespective of gender. It has also been adjudged to foster sound relationship among students in senior secondary school in particular. This will help to effectively increase the academic performances of students in different subject matter especially science related subjects, here the students will collaboratively solve related science calculative problem in the class.

### **Recommendations**

Following the findings and conclusions thereof, the study thus recommends that;

1. Peer-peer learning should be encouraged in the classroom, so that the bright students who may be fast in understanding classroom instructions might help others to comprehend quicker.
2. Also, Government should sponsor teachers for workshops and training towards using collaborative techniques to improve students' academic performance.
3. Teachers should strive to change from the traditional method of instruction and avail themselves of the opportunity to learn new technology of teaching.

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