

## Effects of Team Teaching strategy on students' academic performance in Basic Science in Junior Secondary Schools in Ekiti State, Nigeria

<sup>1</sup>Adebisi O. AWODUN (Ph.D) & <sup>2</sup>Ese M. ALAKE (Ph.D).

<sup>1,2</sup>Department of Science Education, Bamidele Olumilua University of Education, Science and Technology, Ikere-Ekiti, Ekiti State, Nigeria.

<sup>1</sup>E-mail: awodun.adebisi @bouesti.edu.ng,

<sup>1</sup>Phone No: +2348038527974.

<sup>2</sup>E-Mail: [alake.esse@bouesti.edu.ng](mailto:alake.esse@bouesti.edu.ng) ,

<sup>2</sup>Phone No: +2348057733314.

### Abstract

*The study examined the Effects of Team Teaching on students' academic performance in Basic Science in junior secondary schools in Ado Local government Area, Ekiti State, Nigeria. The study was a pre-test post-test quasi-experimental design. Purposive and stratified random sampling techniques was used to select a total sample of 140 JSS II Basic Science students (70 each experimental and control group respectively) from four junior secondary schools in Ado Local Government Area, Ekiti State. Three null hypotheses were formulated and tested at 0.05 level of significance. The instrument for this study was Basic Science Achievement Test (BSAT) and the treatment package used for the study was tagged: Team Teaching Instructional Package (TTIP). The instrument was subjected to validity and reliability mechanism. The reliability of the instrument (BSAT) was 0.89. The data collected were analysed using t-test and ANCOVA statistical analysis packages. The result of the findings showed that team teaching strategy significantly influenced students' Academic performance in Basic Science in junior secondary schools. The implications of the results on students' academic performance in Basic Science were discussed. Based on the findings, it was recommended that teaching Basic Science by the teachers should be encouraged through Team Teaching Strategy to enhance better understanding and good academic performance.*

**Keywords:** Team teaching, Basic Science, Science Education, instructional package, academic performance.

### Introduction

Team teaching can be defined as a group of two or more teachers working together to plan, conduct and evaluate the learning activities for the same group of learners. Team-teaching (also often called "collaborative teaching") is an opportunity to expose students to more perspectives and content knowledge than a single instructor may be able to provide (Team-Teaching Guide, 2023). Team teaching is articulated as an act that occurs in a single physical space in order to deliver instruction and that the team of teachers have joint responsibilities for planning, teaching, assessing and evaluation (Akpan, Usoro, Akpa & Ekpo, 2010).

Team teaching involves two or more teachers whose primary concern is the sharing of teaching experiences in the classroom, and co-generative dialoguing with each other. They take collective responsibility for maximizing learning to teach or becoming better at teaching while providing enhanced opportunities for their students to learn (Tobin et al., 2001; Roth et al., 2002; Roth & Tobin, 2002). Effective Teaching Strategies encourages students to become actively engaged with the material and helps them develop critical thinking skills. It also fosters creativity and innovation among students, as they are encouraged to think outside of the box when approaching a certain topic or problem.

The concept of team teaching is attributed to William Alexander, known as the "father of the American middle school," who delivered a presentation at a 1963 conference held at Cornell University (Father of team teaching, 2023). Team-teaching aims to facilitate students' understanding of concepts from a variety of viewpoints. The objectives that inform team-teaching approaches are designed to encourage a cooperative effort in which students and teachers are engaged in an intellectual exchange that ultimately benefits both parties (Team Teaching Strategy, 2023).

Friend (2008) confers with Buckley's explanation and considers team teaching as an act of co-teaching between two professionals who jointly delivering the learning instruction. The two

educators actively participate in the delivery of instruction, share responsibility for all their students, assume accountability for student learning and acquire instructional resources and space (Friend, 2008).

Collaborative teaching is a natural fit for interdisciplinary courses, in which two instructors represent different disciplinary perspectives. Collaborative teaching can take a variety of forms, ranging from inviting a colleague to give a one-time guest lecture, to dividing responsibilities according to content areas, to working together on every aspect of the course (Team Teaching Guide, 2023).

Team teaching provides us with a zone of proximal development, the interaction between individuals and a new form of societal activity. The central purpose of co-generative dialoguing is to further develop the existing understanding of the teaching situation in order to increase professional growth. Roth et al. (2002) considered team teaching as an effective means of achieving deep learning of science concepts while learning alternative ways to teach the same subject-matter. Team teaching also provides opportunities for new teachers to obtain greater opportunities of learning to teach (Roth et al., 2004). The presence of co-teachers increases access to social and material resources—thereby increasing opportunities for actions that would not otherwise occur. In whole-class situations, the coordination and reciprocity of the teachers' actions are crucial where the potential arises for miscues and non-complementary actions to occur (Tobin et al., 2003). Because co-teachers teach together, interactions continuously occur; thus the actions of any of the participants in the new classroom structure in the field are resources that provide ample opportunities for others' action.

Team teaching gives teachers the opportunities to act on their ideas and reflect in and upon their actions. Their understandings evolve through a meaning negotiation process, in which they discuss their own ideas and consider the ideas of others (Bayer, 1990). Team Teaching (TT) is different from Single Teacher Teaching (STT) because it involves two or more teachers each with distinctive roles, sharing responsibilities for planning, presentation and evaluation of lessons for the same group of students. Main & Brye (2006) defined team teaching as two or more teachers who combine their talents, expertise, interests and resources to take joint responsibility for any or all aspects of teaching the same students.

Goetz (2000) perceived team teaching as a group of two or more teachers working together to plan, conduct and evaluate the learning activities for the same group of learners. It also means that both the instructors team-teach students mutually and simultaneously. It is a situation whereby co-educators shoulder the burden of instruction at the same time (Tobin, 2005). According to Francis (2000) team teaching is perceived as a pedagogical technique that shifts the role of instruction from the individual to a team - provides students with the opportunity to take a more active role in learning. It can be a classroom instruction in which several teachers combine their individual subjects into one course which they teach as a team to a single group of students.

In the words of Merrill (2014) cited in Darma (2018), Team teaching is opined as an instructional situation where two or more teachers possessing complimentary teaching skills cooperatively plan and implement the instruction for a single group of students using flexible scheduling and grouping techniques to meet the particular instructional needs of students. In other words team teaching brings together two or more colleagues - often academics working together, but sometimes also working with professional and/or administrative colleagues - to plan, conduct and evaluate the unit of study, including assessment, for the same group of students. By its nature, team teaching assumes appropriate involvement of all colleagues in the team and good communication between them. It involves a group of instructors working purposely, regularly, cooperatively and complementarily to teach a group of students. Teaming teachers together set goals for a course, design a syllabus or prepare lesson plan or guide, teach students and together evaluate the result.

Darma (2018) cited Robinson & Schaible (1995) that in a collaborative team teaching experience (when the two teachers present their respective content to the same class at the same time) the students witness and partake in a dynamic display of two minds and personalities. The benefits of collaborative learning include higher achievement, greater retention, improved interpersonal skills and an increase in regard for group work for both students and teachers.

Team teaching is traditionally a pedagogic approach or process in which more than one teacher are involved in instruction within a classroom. According to Akpan, Usoro, Akpa & Ekpo (2010) cited Robinson & Schaible (1995), in team teaching a group of teachers, working together, plan, conduct, and evaluate learning activities for the same group of students. Team generally comprise staff members who may represent different areas of subject expertise but who share the same group of students and a common planning period to prepare for the teaching.

Team teaching can open a student's eyes to accepting more than one opinion and to acting more cooperatively with others. Team teaching may even provide educational benefits such as increasing the student's level of understanding and retention, in addition to enabling the student to obtain higher achievement (Darma, 2018). Exposure to the views of more than one teacher permits students to gain a mature level of understanding knowledge; rather than considering only one view on each issue or new topic brought up in the classroom, two or more varying views help students blur the black-and-white way of thinking common in our society, and see many shades of gray.

One of the approaches that could be used to facilitate instruction and learning of Basic Science is team teaching. Team teaching is traditionally a pedagogic approach or process in which more than one teacher are involved in instruction within a classroom. According to Robinson & Schaible (1995) cited in Akpan, Usoro, Akpa & Ekpo (2010) that in team teaching a group of teachers, working together, plan, conduct, and evaluate learning activities for the same group of students. Teams generally comprise staff members who may represent different areas of subject expertise but who share the same group of students and a common planning period to prepare for the teaching.

The authors further listed the benefits which may accrue from team teaching to include:

1. For the instructors, who so often work alone, team teaching provides a supportive environment that overcomes the isolation of working in self-contained or departmentalized classrooms. Being exposed to the subject expertise of colleagues, open critique, different styles of planning and organization, as well as methods of class presentation, teachers can develop their approaches to teaching and acquire a greater depth of understanding of subject matter of concern.
2. Team teaching leads to better student performance in terms of greater independence and assuming responsibility for learning. Exposure to views and skills of more than one teacher can develop a more mature understanding of knowledge often being problematic rather than right or wrong. Learning can become more active and involved. Students could eventually make inputs into team planning.

Basic science formerly known as Integrated Science is the first form of science a child comes across at the secondary school level (Awodun & Joshi, 2022). Basic science is a core subject in the National curriculum at the upper basic level (Chukwunke & Chinkwenze, 2012). All students from upper basic I-III classes must offer and study the subject. According to Awodun & Joshi (2022), Basic Science is considered the bedrock of all science subjects at the Senior Secondary School (SSS) level. Oludipe (2012) cited in Awodun & Joshi (2022) that basic science subject prepares students at the upper basic level for the study of core science subjects (biology, chemistry and physics) at the Senior Secondary School (SSS) level. Resultantly, Oludipe (2012) cited in Awodun & Joshi (2022) further emphasized that for a student to be able to study single science subjects at the senior secondary level successfully; such a student has to be fully grounded in Basic Science at the upper basic level. Based on this, it is generally taught as a single science subject, until in the SSS level, and then split into specialized science subjects (Biology, Chemistry and Physics). It is expected that those students who perform well in Basic Science should be given the opportunity to study the separate science subject at the SSS level.

According to Trustee of Princeton University (2013) cited in Awodun & Joshi (2022), Basic Science is a revolutionary new introductory science curriculum developed at Princeton intended for students considering a career in science. Basic Science emphasizes scientific literacy and research oriented learning (Gunseli & Guzin, 2017). The subject encourages exploration of student's immediate environment. As a result, Basic Science teachers continue to learn along with their students.

The teaching of Basic Science is therefore, based on the philosophy of active learner participation in the process whereby, students are encouraged to learn by constructing their own

knowledge based on what they already understand as they make connection between new information and old information, guided or facilitated by the teacher (Piaget) as quoted by (Anna, 2015).

Under this philosophy, students are encouraged and let to discover concepts and generalizations based on their experiments. In the study of Akomolafe as quoted by Anna (2015), rightly pointed out that, when children learn science using the process of activity approaches, they improve their ability to apply intellectual skills to solve problems, improve their language development, become more creative, master science content better and develop positive attitude towards Science and Scientists.

Research by Aniaku (2012) has shown that the above desires are not being achieved as expected. The learning environment is expected to be democratic, the activities are interactive and student-centered and the teacher facilitates the process of learning in which students are encouraged to be responsible and autonomous. Though the curriculum of Basic Science specifies “hand-on” and “mind-on” activities and skill acquisition, most students are not exposed to these real situations in the schools (FRN, 2004). Emaikwu (2012) in his research discovered that Basic Science is generally taught using conventional strategy which does not follow the theories put forth by Kolb as quoted by Anna (2015) and the theory of learning process.

The problem therefore, what are the challenges that confront the effective teaching of Basic Science at the upper basic level? This directly leads to the following question:

1. How did Basic Science Education evolve?
2. What are the objectives of Basic Science?
3. What is the importance of Basic Science to everyday life?
4. What are the challenges confronting the teaching of Basic Science?
5. What are the prospects in the teaching of Basic Science at the upper basic level?

*How did Basic Science Evolve in Basic Education?*

Basic Science is a concept in science teaching in Nigeria that came to replace integrated science. A study by Chukwunke & Chinkwenze (2012) revealed that the scientific, vocational and technological aspects of education are not effectively implemented in the school system. Based on this, Basic Science curriculum review became a necessity. This led to the Federal Government in Nigeria to take the decision to introduce the 9-year of Basic Education. The need to attain the Millennium Development Goals by the year 2015 together with the need to meet the critical target for the National Economic Empowerment and Development Strategies (NEEDS), summarized as follows: value reorientation, poverty eradication, job creation, using education to empower the people among others (FRN, 2004).

As documented by Chukwunke & Chinkwenze (2012), it became necessary for the existing curriculum for the upper basic level to be reviewed, restructured and realigned to fit into the 9-year basic education programme. With this, the National Council on Education (NCE) therefore in her meeting of 2005 directed the NERDC to ensure the review which also approved the new curriculum. This restructuring curriculum review took effect from September 2007 (Dauda & Udofia, 2010). It was during this restructuring and review of curricular that Basic Science replaced Integrated Science (in Nigeria). During this time, human rights education, family life, HIV/AIDS education, entrepreneurial skills, globalization, ICT were fused into the 9-year basic education curricular (FRN, 2004) while the following themes were fused into Integrated Science curriculum to form the Basic Science curriculum:

- Environmental Education
- Drug Abuse Education
- Population and Family Life Education
- Sexually Transmitted Infection (STI) including HIV (FRN, 2004).

Basic Science is basic training in scientific skills which are required for human survival, sustainable development and societal transformation (Chukwunke & Chinkwenze, 2012). Basic Science is expected to make Nigerians scientifically literate.

The importance of Basic Science in everyday life can never be over emphasized. It serves as the bedrock which provides the required training in scientific skills to meet the growing needs of the society. It is the fundamental knowledge acquired through Basic Science at the upper basic level that

leads to the transformation of the world through dramatic advances in almost all fields including Medicine, Engineering, Electronics and Aeronautics among others (Guyana, 2018).

The application of scientific knowledge acquired through Basic Science, as reported by Guyana (2018) has helped many countries like China and India to transform from poor feudal type economies to become economic and industrial power houses and in several ways compete effectively with developed countries. Basic Science is of great importance because early experiences in science help students to develop problem-solving skills that empower students to participate in an increasingly scientific and technological world (Guyana, 2018).

Basic Science is the type of science which provides unique training of students in observation, reasoning and experiment in the different branches of science; it also helps students to develop a logical mind (Owolabi & Oyeniyi, 2020). Basic Science enables students to be systematic and enables them to form an objective judgment. Basic Science, if taught according to its philosophy, equips students with the necessary introductory scientific and technological knowledge and skills necessary to build a progressive society. This forms the bedrock on which scientific and technological studies rest (Ochu & Haruna, 2014).

According to Owolabi & Oyeniyi (2020), in Nigeria, in spite of the enormous role that Basic Science plays in providing a solid foundation for the mastering of basic concepts in science and technology for national development, and the efforts of government and other stakeholders in improving science education, results in Basic Science in most certified examination bodies like the results of examination conducted by National Examinations Council (NECO) and Ekiti State Ministry of Education, Science and Technology have not been satisfactory. The broad aim and expectations of any teaching and learning programme is productivity and positive evaluated end-product (achievement).

Lakpini (2012) cited in Owolabi & Oyeniyi (2020) that researchers have given some reasons why students always perform below average in Basic Science which include methods of teaching adopted by the teachers in teaching Basic Science which is mostly conventional method, which is not recommended for teaching Basic Science. This is because lecture method entails one way flow of communication from the teacher to the students and it is teacher-centered approach whereby most of the decisions are carried out by the teacher while the students remain passive listeners. In this process, the students are denied the opportunity to develop the required manipulative skills needed in learning science.

Topics in Basic science have been sequentially structured for the purpose of effective teaching. The implementation of Basic science programme is as crucial as its development. One of the approaches that could be used to facilitate instruction and learning in Basic science is team teaching techniques.

Darma (2018) cited Yaga (2014) that investigated impact of team-teaching strategy on academic achievement and Interest in Basic Science Concepts among Junior Secondary School Students in Potiskum, Yobe State Nigeria. The studies revealed that Students develop high interest in learning of Basic Science Concepts when Team Teaching Strategy is used in learning and teaching. Also, Darma (2018) cited Esomonu, Akudolu & Ezenwosu (2015) that examined the effects of Team Teaching Approach (TTA) on the achievement of students in English language comprehension and how the effects vary across gender. The findings showed that the students taught English language comprehension with team teaching approach achieved significantly higher than those of the control group who were taught with single teacher teaching approach. The female students in TTA group achieved significantly higher than their male counterparts.

Similarly, Akpan, Usoro, Akpa & Ekpo (2010) in their studies on the effects of Team Teaching on Students Performance in Introductory Technology in Secondary Schools in Akwa Ibom State reported that a significant difference exists between the performances of students; both male and female taught using the team teaching approach and those taught by individual instructors. They also reported that no significant difference between the mean performance of male and female students in introductory technology when taught by a team of teachers and when taught by an individual teachers alone.

The influence of gender in students' academic achievement has been a major concern to educational researchers for long, yet no consistent result has emerged. Okeke (1999) and Udofia

(2009) reported and cited in Akpan, Usoro, Akpa & Ekpo (2010) that gender had no significant influence on achievement, while Mbaba (2006) and Ugonabo (2009) cited in Akpan, Usoro, Akpa & Ekpo (2010) reported otherwise. The situation therefore sustains the curiosity of researchers and thus makes it necessary to continue investigating the influence of gender and team teaching on students' mean performance in Basic Science. The focal point of the problem for this investigation has been necessitated by the limited or absence of research evidence to indicate the influence of team teaching, among other related variables, on students' performance in Basic Science.

### **Research Hypotheses**

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

**H0<sub>1</sub>**: There is no significant difference in the achievement mean scores of students in experimental (team teaching) and control (conventional teaching) groups before the treatment.

**H0<sub>2</sub>**: There is no significant difference in the achievement mean scores of students in experimental (team teaching) and control (conventional teaching) groups after the treatment.

**H0<sub>3</sub>**: There is no significant difference in the achievement mean scores of male and female students taught in experimental (team teaching) and control (conventional teaching) groups.

### **Methodology**

The study examined the Effects of Team Teaching on students' academic performance in Basic Science in junior secondary schools in Ado Local government Area, Ekiti State, Nigeria. The study was a pretest, posttest, control group quasi-experimental design.

The population of the study was made up of all Junior Secondary School two (JSS II) Basic Science students in public Secondary Schools in Ado Local Government Area of Ekiti State, Nigeria.

Purposive and stratified random sampling techniques was used to select a total sample of 140 public JSS II Basic science students (this sample was divided into the experimental and control groups in ratio 1:1 meaning that, 70 students from each group) from four (4) Junior secondary Schools in Ado Local Government Area, Ekiti State. Two schools each for experimental and control groups respectively.

The instrument used for the study was thirty (30) standardized objectives questions tagged: "Basic Science Achievement Test (BSAT)" drawn from topics (Pollution: Concept of pollution, land pollution, water pollution, air pollution, etc) with four options (A-D) considered for the study. The reliability of the instrument was determined through the split-half method with the reliability coefficient of 0.89. The treatment package used for the study was tagged: "Team Teaching Instructional Package (TTIP)".

The administration of the instrument was in three stages: the pre-treatment stage (two weeks), the treatment stage (four weeks) and the post-treatment stage (two weeks). Eight weeks altogether were used for the whole study. The experimental group was taught using Team Teaching Instructional Package (TTIP) while the control group was taught using the conventional method of teaching.

Three null hypotheses formulated were tested at 0.05 level of significance. The data collected were analysed using t-test and ANCOVA statistical analysis packages.

### **Results and Discussion**

#### **Hypothesis 1**

There is no significant difference in the achievement mean scores of students in experimental (Team Teaching) and control (Conventional Teaching) groups before the treatment.

**Table 1: t-test analysis of achievement mean scores of students in experimental (Team Teaching) and control (Conventional Teaching) groups before treatment.**

Group	N	X	SD	df	t-cal	t-tab	Result
Team Teaching strategy	70	12.51	6.71	138	0.55	1.98	**
Conventional teaching Method	70	11.92	5.89				

**P > 0.05 (Result Not significant at 0.05 level), \*\* = Not Significant.**

As shown in table 1, when the mean score of students in the experimental (Team Teaching) and control (Conventional Teaching) groups before the treatments (pre-test) were statistically compared, a *t-value* (t-cal = 0.55) with  $p > 0.05$  alpha level was obtained, which was not significant at 0.05 level. The achievement mean scores difference of the two groups (12.51-11.92) was 0.59. This implies that there is no significant difference between experimental (Team Teaching) and control (Conventional Teaching) groups in pretest achievement mean score. Consequently, the null hypothesis which states that there is no significant difference in the achievement mean scores of students in experimental (Team Teaching) and control (Conventional Teaching) groups before treatment was accepted. This shows that the two groups are homogeneous before the treatments.

### Hypothesis 2

There is no significant difference in the achievement mean scores of students in experimental (Team Teaching) and control (Conventional Teaching) groups after the treatment.

**Table 2 : t-test analysis of achievement mean scores of students taught using Team Teaching strategy and students taught using Conventional Teaching method after the treatment.**

Group	N	X	SD	df	t-cal	t-tab	Result
Team Teaching strategy	70	24.84	10.62	138	4.47	1.98	*
Conventional teaching Method	70	17.92	7.42				

**P < 0.05 (Result Significant at 0.05 level). \* = Significant.**

As shown in table 2, when the mean scores (posttest) of students taught using Team Teaching strategy and students taught using conventional method were statistically compared, a *t-value* (t-cal = 4.47) with  $P < 0.05$  alpha level was obtained, which was significant at 0.05 level. The achievements mean scores difference (24.84-17.92) was 6.92. This implies that there exists significant difference between the Team Teaching strategy and conventional method of teaching achievement mean scores after the treatment in favour of students taught using team teaching strategy. Consequently, the null hypothesis which states that there is no significant difference in the achievement means scores of students taught using team teaching strategy and conventional teaching method was rejected. As such, the conventional method of instruction can be said to be less potent compared with team teaching strategy.

### Hypothesis 3

There is no significant difference in the achievement mean scores of male and female students taught in experimental (team teaching) and control (conventional teaching) groups.

In order to test the hypothesis, scores relating to basic science achievement scores of male and female students taught using team teaching strategy and conventional methods were computed and analyzed using Analysis of Covariance (ANCOVA) statistics at 0.05 level of significance. The result is presented in Table 3.

**Table 3: ANCOVA showing Basic science achievement scores of team teaching strategy and conventional methods by Gender.**

Source	Type III Sum of Squares	df	Mean Squares	F	Sig.	Partial Eta Squared
Corrected Model	2296.757	4	1653.276	233.231	.000	.946
pretest Achievement	1606.213	1	1606.213	231.267	2.68	.998
Sex	55.873	1	55.873	2.036	.108	.084
Group	312.563	1	312.563	163.682	.000	.976
Sex * Group	12.431	1	12.431	.302	.425	.008
Error	1687.334	115	25.316			
Corrected Total	1967.356	119				
Total	61243.322	140				

**R Square = 0.946 , P > 0.05 (Result Significant at 0.05 level).**

Table 3 showed that the computed F-value ( $F_{cal} = 0.302 < F_{tab} = 0.425$ ) with a P-value ( $P > 0.05$  alpha level) obtained from the analysis of the difference in Basic science achievement mean scores of male and female students taught using team teaching strategy and conventional methods. The null hypothesis, therefore, was not rejected. This implies that there is no significant difference in Basic science achievement means scores of male and female students taught using team teaching strategy and conventional methods.

### Discussion

Research Hypothesis seeks to find significant difference in the achievement mean scores of students in experimental and control groups before treatment. As shown in table 1, when the mean score of students in the experimental and control groups before the treatments (pre-test) were statistically compared, a *t-value* ( $t_{cal} = 0.55$ ) with  $p > 0.05$  alpha level was obtained, which was not significant at 0.05 level. This implies that there is no significant difference between experimental and control groups in pretest achievement mean score. Consequently, the null hypothesis which states that there is no significant difference in the achievement mean scores of students in experimental and control groups before treatment was accepted.

Research Hypothesis two seek to find out the effects of team teaching strategy and conventional method of teaching on the performance of Basic science students in junior secondary schools in Ekiti State. It was discovered that students' taught using team teaching strategy had significantly higher academic achievement than their counterpart taught using conventional method. This result is not entirely surprising as it confirms the assumptions that students' taught using team teaching strategy (experimental) performed significantly better than those taught using the conventional teaching method. This was confirmed by their calculated mean academic performance in Basic science which was 24.84 and 17.92 by experimental and control group students' respectively. This outcome agreed with findings of Yaga (2014) cited in Darma (2018) that investigated impact of team-teaching strategy on academic achievement and Interest in Basic Science Concepts among Junior Secondary School Students in Potiskum, Yobe State Nigeria. The studies revealed that Students develop high interest in learning of Basic Science Concepts when Team Teaching Strategy is used in learning and teaching.

Research Hypothesis three seek to find out the difference in the achievement mean scores of male and female students taught in each of team teaching strategy and conventional method. The findings revealed that: there was no significant difference in the academic achievement of male and female students in Basic science in each of the experimental and control groups before and after the treatment. In other words, the achievement of male and female students exposed to team teaching strategy did not differ significantly as female students were found to have similar achievement in Basic science as their male counterparts in the team teaching strategy and conventional methods of teaching in this study. The implication of this result is that gender was not a significant predictor of



students' achievement in Basic science. This finding agreed with the findings of Akpan, Usoro, Akpa & Ekpo (2010) in their studies on the effects of Team Teaching on Students Performance in Introductory Technology in Secondary Schools in Akwa Ibom State reported no significant difference between the mean performance of male and female students in introductory technology when taught by a team of teachers and when taught by an individual teachers alone.

### Conclusion

This study focused on the effects of mother tongue teaching strategy on Students' academic Achievement in Basic Science in Junior Secondary Schools, Ekiti State, Nigeria. Based on the findings of this study, it can be concluded that team teaching strategy is more potent in stimulating students' achievement in Basic science in secondary schools than the conventional method. It can also be concluded that the effect of teaching method on junior secondary school Basic science was also found not to vary with gender of students. This simply implies that performance of students taught using different teaching methods is not in any manner affected by their gender.

### Recommendations

Based on the findings of this study, the following recommendations were made:

- i. Since the commonly used conventional method of instruction has been empirically discovered in this study to be less effective than team teaching strategy in improving junior secondary school students' academic performance in basic science, the conventional method presently in use by Basic science teachers should be improved upon or modified or replaced (as the case may be) with team teaching strategy and other activity-based teaching method.
- ii. Basic science teachers should be encouraged to adopt team teaching strategy as this will expose the students to doing by themselves which is the foundation for tomorrow's scientists thereby leading to the development of our dear country, Nigeria since the needed man-power would have know the developmental rudiments right from their secondary school days.
- iii. State and Federal Government should equip all schools with necessary facilities for the application of team teaching strategy.

### References

- Akpan, G.A., Usoro, H.S., Akpan, I.G & Ekpo, A.B. (2010). Effects of Team Teaching on Students Performance in Introductory Technology in Secondary Schools in Akwa Ibom State, Nigeria. *African Research Review*, 4(3b), 41-54.
- Aniaku, O.L. (2012). Effects of guided and unguided inquiry teaching methods on secondary school students' achievement and interest in Biology in Enugu State. *An unpublished Ph.D Thesis at University of Nigeria Virtual Library*.
- Anna, A. (2015). Challenges and prospects in the teaching of Basic Science at the upper basic level in Nigeria. *Journal of Quantitative Education*, 11(1), 1-8.
- Awodun, A.O. & Joshi, R. B.(2022). Effects of Mother Tongue Interference in teaching on Students' Academic Performance in Basic Science in Junior Secondary Schools for Sustainable Development. *International Journal of Early Childhood Special Education (INT-JECSE)*, 14(06), 1006-1013.
- Bayer, A. S. (1990) *Collaborative-apprenticeship learning: language and thinking across the curriculum*, K-12 (London, Mayfield).Be or Not to Be.
- Chukwunke, B.U. & Chinkwenze, A.R. (2012). Reform in Integrated Science curriculum in Nigeria: Challenges and Prospects. *Journal of Research and Development*, 4(1), 83-88.
- Darma, I.A. (2018). Effects of Team Teaching Approach on Academic Performance of Social Studies Students in Colleges of Education in Kano State, Nigeria. Unpublished M.Ed. Dissertation of Department of Arts and Social Science Education, Faculty of Education, Ahmadu Bello University, Zaria-Nigeria.
- Dauda, D.M. & Udofia, N. (2010). Comparing the objectives, themes and sub-themes of the integrated and basic science curriculum of the junior secondary schools (JSS). *Journal of Science Teachers Association of Nigeria (JSTAN)*, 45(1&2), 36-46.

- Ekiti State Ministry of Education, Science and Technology (2018). Summary of junior secondary school examination results in basic science in Ekiti State between 2012-2018.
- Emaikwu, S.O. (2012). Assessing the relative effectiveness of three teaching methods in the measurement of students' achievement in mathematics. *Journal of Engineering trends in Educational Research and Policy Studies*, 3(4), 479-456.
- Father of Team Teaching (2023). <https://www.thesaurus.com/browse/teacher>.
- Federal Republic of Nigeria, (2004). *National policy on education (4th Edition)*. Lagos, NERDC Press.
- Francis, J. B. (2000). Team Teaching: What, Why and How. An Online Resources Retrieved On 10/08/2019 from <http://www.amazon.com/team-teaching-what-whyhow/dp/0761907440>.
- Friend, M. (2008). Co-teaching: A simple solution that isn't so simple after all. *Journal of Curriculum and Instruction*, 2(2), 9-19. doi:10.3776/joci.2008.v2n2p9-19.
- Goets, K. (2000) Perspective on Team Teaching. An Online Resources Retrieved on 16/09/2021 from <http://people.ucalgary-ca/egallery/goetz.html>.
- Gunseli, Y. & Guzin O. A. (2017). The effect of outdoor learning activities and the development of preschool children. *South African Journal of Education*, 37(2), 1-10.
- Guyana, C. (Online 2018). The vital importance of science education in today's world. Retrieved 2018 April 02 from [http://guyanachronicleonline.com/site/index.php?option=com\\_content](http://guyanachronicleonline.com/site/index.php?option=com_content)
- Main, K. & Brye F. (2006). What does a —goodll team teaching team look like in a Middle School Classroom, 196 -204.
- Ochu, A.N.O. & Haruna, P.F. (2014). Challenges and prospects of creativity in basic science classroom: the perception of basic science teachers. *British Journal of Education Society and Behavioural Science*. 5(2), 237-243.
- Owolabi, O.T. & Oyeniyi, A.D. (2020). Effects of Outdoor Activities and Advance Organizer Teaching Strategies on Students' Academic Performance in Secondary School Basic Science In Ekiti State. *International Journal of Engineering, Science and Mathematics*, 9(7), 86-103.
- Prakash, J. (2012). What is the importance of science education as a school subject? *Preserve A articles*. Retrieved 2013, April 2 from <http://www.preservesarticles.com/201105216961/importance-of-science-education...>
- Roth, W.-M., Tobin, K., Carambo, C. & Dalland, C. (2004) Co-teaching: creating resources for learning and learning to teach chemistry in urban high schools, *Journal of Research in Science Teaching*, 41(9), 882 – 904.
- Roth, W.-M., Tobin, K., Zimmermann, A., Bryant, N. & Davis, C. (2002) Lessons on and from the dihybrid cross: an activity theoretical study of learning in co-teaching, *Journal of Research in Science Teaching*, 39(3), 253 – 282.
- Team Teaching Guide (2023). Adapted from BU CAS Team Teaching Policy <https://www.bu.edu/ctl/files/2017/03/team-teaching-Policy.docx>. Retrieved 15/10/2023.
- Team Teaching Strategy (2023). <https://www.aitsl.edu.au/teach/how-to-guides/collab...>
- Tobin, R. (2005). Co-teaching in language arts: Supporting students with learning disabilities. *Canadian Journal of Education*, 28(4), 784–802.
- Tobin, K., Zurbano, R., Ford, A. & Carambo, C. (2003) Learning to teach through co-teaching and co-generative dialogue, *Cybernetics and Human Knowing*, 10(2), 51 – 73.