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EFFECT OF PRACTICAL BIOLOGY ACTIVITIES ON INTEREST OF SENIOR SECONDARY SCHOOL STUDENTS IN KOGI STATE

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Abstract

The paper investigated effect of practical biology activities on the interest of senior secondary school students in Kogi State. *Three research questions and three hypotheses guided the study. Quasi-experimental research design was adopted for the study. The population of the study consists of 11,391 (6,082 males and 5,309 females) senior secondary school II students offering Biology for 2024/2025 academic session in Kogi State. The sample for the study consisted of ninety five (95) students selected from four schools by simple random sampling technique. The schools were grouped into two, experimental and two control. Only co-educational schools were used for the study. Since it is a non-randomized, non-equivalent control group design as intact classes were used for the study. The instrument for data collection was Biology Interest Scale (BIS). Reliability coefficient obtained on BIS using Cronbach Alpha formular is 0.88. After administration of instrument, data collected were analyzed using mean and standard deviation to answer research questions while analysis of co-variance was used to test the hypotheses at 0.05 level of significance. Findings showed that practical activities fostered interest of male and female students in Biology. Also, findings revealed that practical biology activities enhanced interest more among the female students than their male counterpart. It is recommended among other things that Biology teachers should engage students more in practical activities to stimulate their interest in Biology.*

Keywords: Practical Activities, Biology, Interest, Gender

Introduction

Science is the study of the natural world. It is essential for a nation's social, economic, and technological development. Science is the bedrock of civilization and development. Nigeria has made various efforts to realize educational objectives for science, technology, and mathematics (STM). Science is a body of knowledge. Aniodoh

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(2018) viewed science as a body of knowledge arrived at through systematic and procedural processes based on tentative observation and experiment. Science is a product as well as a process. Opuli and Eze (2015) noted that today's world would not have been what it is without science. Technological advancements have completely changed the world into a global village, with technological advancements in communication, agriculture, etc; nations rely on science as a major endeavour to advance technologically. Therefore, due to the importance and relevance of science to life and society, science is given much attention in education. It is also taught in physics, chemistry and biology in secondary schools.

The knowledge of Biology makes students well-informed and motivated to assume roles in which the practical and theoretical aspects are used in unraveling some fundamental problems of life (Ude, 2017). Biology plays a crucial role in industrialization and other sectors of the economy. It is a practical subject that equips students with valuable concepts and skills in solving their day-to-day problems. The study of Biology aims to provide the learner with the necessary knowledge to control or change the environment for the benefit of an individual, family, or community. Some of the usefulness of Biology include: It helps in scientific research and development of new tools, application in medicine, dentistry, veterinary science, agriculture and horticulture. Other includes fields like genetic engineering, biotechnology, hydro technology and dealing with ecological issues such as overpopulation, food shortage, erosion, plant and animal diseases.

Biology is one of the science subjects offered at the secondary school level in Nigeria. Biology is a prerequisite for most science courses, such as medicine, pharmacy, nursing, microbiology, and agriculture. West Africa Examination Council (WAEC) chief examiner's reports from 2019 - 2023, which reported that only about 50% of secondary school leavers pass senior secondary certificate examination (SSCE) Biology at credit level. Some factors identified as the causes of poor performance in Biology include; inadequate instructional facilities, poor classroom management, poor communication, the use of unfamiliar vocabulary and use of inappropriate teaching

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strategies which influence students' interest negatively in Biology thereby affecting their performance. To arouse students' interest in Biology, students need to be taught with a hands-on mind using practical methods and different learning materials to acquire the cognitive competence they need in Biology. When a student has high interest in a subject, they tend to have a high performance in the subject. That is, high interest is concomitant to high performance in a subject; in this case Biology.

Interest is a factor that determines how far an individual can go in achieving a desired goal. It is one of the variables that scholars and psychologist have found to be responsible for learners' success in any field of human endeavor. Interest is a state of mind, a desire, and the act of being fond of something (Webster, 2021). Increased focus and attention in academic and classroom activities are signs of enthusiasm for education. A motivational factor and an emotionally focused personality trait determine the learner's motivation to engage in academic activities. According to Okoro (2016), learners' interest represents an essential aspect of their knowledge value system, indicating that their value on an activity or body of knowledge affects their interests. Students are guided and inspired by their interests to think critically and to persevere until success is attained. Interest has been considered a crucial element of academic success for over a century. Many social cognitive psychologists believe interest plays a significant role in motivation, fostering persistence in science, technology, engineering, and mathematics. Research evidences suggests that interest because of its roles has been seen as an essential variable for research in science education and biology education in particular (Renninger, 2015; Shell, 2018). Interest and performance are related and interdependent in the teaching and learning process. On the one hand, great interest increases student performance, while high-performance fosters interest. Conversely, Low interest slows down learning and leads to poor performance. Therefore, it becomes essential that students' interests are motivated as they engage in hands-on activities (Awolaju, 2016).

Practical activities are supported by constructivist theory, which argues that individuals' active interaction can obtain knowledge, and meaning can be formed based

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on their experiences. Students should, therefore, set up work and observe the concepts in Biology lessons on their own through practical activities in the laboratory (Zember & Blume, 2011). Students tend to understand better when they have practical experiences and are involved in experiments; they tend to understand better and develop interests in Biology as a course (Watts, 2013). Practical activities can be regarded as a strategy that could be adopted to make the task of a teacher (teaching) more accurate to the students as opposed to the abstract or theoretical presentation of facts, principles and concepts of subject matter using a variety of instructional materials/equipment to drive the lesson home, (Meregine, 2015). Using practical activities (approaches) to teaching biology should be compulsory for biology teachers to produce students who can acquire the necessary knowledge, skills, and scientific competence to meet society's scientific and technological demands.

Practical activities are the life wire of Biology; their removal from Biology teaching is detrimental to understanding the actual biological concepts. Despite the importance of taking biology learning from the realm of theory to practical, schools seem disadvantaged due to non-provision or inadequate biology laboratories (Nworgu, 2015). Biology practical exercises allow students to practice science rather than learn about it. Practical work confers many advantages, including developing laboratory skills and scientific knowledge and understanding science concepts and theories (Schwichow et al., 2016). Practical activities in biology are crucial for concretizing theoretical classroom learning experiences and stimulating the student's urge to study biology. It also provides an opportunity for students to interact with materials and ideas and, by so doing, stimulate the development of affective and psychomotor dimensions of learning alongside the cognitive dimension to ensure an all-round and comprehensive development of the student. In view of the foregoing, it is therefore, not only to explore ways practical activities can stimulate students' cognitive development in biology, but to also consider the interaction of practical activities and gender on students' interest in biology.

Gender includes the social, psychological, cultural, and behavioural aspects of

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being a man or a woman. It is seen in this sense as socially defined status, roles, and actions that differentiate men from women (Edo, 2016). Gender can be viewed as social relations between men and women proportionally by sex, which refers to the biological differences between men and women. However, it is not associated with physical characters. Webster (2021) defined gender as an essential characteristic that differentiates males from females. It is also comprised of personal attributes that are differentiated by sex, which are biologically and universally determined. The proper terms for sex are male and female, while those of gender are masculine and feminine (Achimugu, Achufusi, Negedu, & Salami, 2023).

In recent years, research evidences in literature revealed that interest of male and female students in science subjects differs. This gender differences in interest of students could be as a result of influence of factors such as teaching method, teacher attitude and nature of curriculum materials among other things. For instance, Bilesanmi-Awoderu (2020) found no significant effect of gender on students' interest in Biology. Allahnana et al. (2018) have found that male students' interest is higher than that of females, while Tukura (2015), in his research, noted that gender was not significant to the interest of the students. However, Croxford (2020) reported that male students achieved significantly better than female students in science education. These findings imply a need for more research on the effect of practical biology activities on student interest and performance based on gender due to the inconsistent nature of the findings. Therefore, this study investigated the efficacy of practical activities as a strategy for improving students' interest in learning of biology at senior secondary schools in Kogi State. The purpose of the study was to investigate the effect of practical biology activities on the interest of senior secondary school students in Kogi State. Three research questions and three hypotheses guided the study.

Research Questions

The research questions are:

i. What are the interest mean ratings of students taught biology using practical activities and those taught using conventional method?

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ii What are the mean interest ratings of male and female students taught biology using practical activities?

iii What is the interaction effect of gender and teaching methods on students' mean interest ratings in Biology?

Hypotheses

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

Ho1. There is no significant difference in the interest mean ratings of students taught biology using practical activities and those taught with conventional method.

Ho2. There is no significant effect of gender on the interest mean rating of students taught Biology using practical activities

Ho3. There is no significant interaction between teaching methods and the gender of students' interest mean rating in Biology.

The study adopted a quasi-experimental research design. This study used intact Senior Secondary School two (SSS1I) biology classes as experimental and control groups, ensuring that the natural classroom dynamics were preserved. The study was conducted in Kogi State, Nigeria's North-Central Zone. The state shares boundaries with Niger, Kwara, Nassarawa, and the Federal Capital Territory to the north; Benue and Enugu States to the east; Enugu and Anambra States to the south; and Ondo, Ekiti, and Edo States to the west. The state is divided into 21 Local Government Areas (LGAs), each with unique cultural heritage and economic activities. The major ethnic groups in the state are the Igala, Ebira, and Okun (Yoruba), along with smaller groups such as Bassa, Nupe, and Gwari. The choice of Kogi State for this study is justified by the observed consistent poor performance and lack of interest in Biology among secondary school students in the region. The study population is made of 11,391 SSS 1I students offering Biology in public senior secondary schools in Kogi State for the 2024/2025

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academic session. That is, 6,082 males and 5,309 females (source: Kogi State Ministry of Education).

The study sample consisted of 95 SSS 1I Biology students selected from four public secondary schools across the three senatorial districts in Kogi State. A multi-stage sampling technique was employed to ensure representativeness and coverage of the study area. In the first stage, schools were stratified based on their senatorial districts (Kogi East, Kogi Central, and Kogi West). Each senatorial district selected one school using sampling without replacement, ensuring no school was selected more than once. This method allowed for unbiased selection while maintaining diversity across the districts. In the second stage, intact SSS1I classes within the selected schools were assigned to either the experimental group (practical activities) or the control group (conventional method). This ensured the natural classroom arrangements were preserved, as students were not randomly reassigned between groups.

The instrument for data collection was Biology Interest Scale (BIS). The Biology Interest Scale (BIS) consisted of two sections: Section A contained the respondents' demographic data. In contrast, Section B contained 25 test items with a four-point modified Likert-type response scale. This scale was used to ascertain students' interest level in biology, which the researcher developed. Students were expected to indicate their degree of agreement or disagreement on their interest in biology by a tick (√) in the appropriate column. The responses of strongly agree (SA), agree (A), disagree (D), and strongly disagree (SD) were respectively assigned value points of (4, 3, 2, 1) for positive items and the reverse (1, 2, 3, 4) for harmful items. The maximum obtainable score was four while the minimum score was 1. The total raw scores of the students' responses to the items were used to ascertain their level of interest in biology.

The face and content validation of the instrument was done by three experts. Two experts were from the Science Education Department, and one was from the Measurement and Evaluation. All from the Faculty of Education, Prince Abubakar Audu University, Anyigba. Only three experts in science education, the Faculty of

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Education and Prince. The reliability of BIS instrument was determined using Cronbach's alpha coefficient, yielding a reliability value of 0.88.

With the help of trained research assistants, students were taught using biology practical activities and conventional teaching method in experimental and control schools respectively for four weeks. Before the commencement of the experiment/teaching, the students were given a pre-test to obtain the pre-test scores for the study. At the end of the treatment, a post-test for questionnaire BIS was administered to the students. Different schools were used for the two treatment groups to avoid students and school variables. Data for the pre-test and post-test were analyzed using the mean and standard deviation. While, the hypotheses were tested using Analysis of Covariance (ANCOVA) at 0.05 level of significance.

Results

The results obtained from the analysis are presented using tables based on the research questions and the corresponding hypotheses raised for this study.

Research Question One

What are the interest mean ratings of students taught Biology using practical activities and those taught using the conventional method?

Table 1: Mean and Standard Deviation on the Mean Interest Scores of Students Taught Biology Using Practical Activities and Those Taught Using Conventional Method

Teaching Method		Pre-Test		Post-Test			
	N	Mean	SD	Mean	SD	Mean Gain	Mean Difference
Practical Activities	44	28.77	4.06	63.41	10.41	34.64	13.32
Conventional Method	51	26.84	4.10	48.16	12.65	21.32	
Mean Difference		1.93		15.25			

Table 1 indicates the mean interest scores of students taught Biology using

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practical activities and those taught using conventional method. From the results, students taught biology using the practical activities method had a mean interest score of (n=44, X = 28.77, SD=4.06) for the pre-test and (n=44, X= 63.41, SD=10.41) for the post-test with a mean gain of 34.64.

More so, Table 1 shows that students exposed to the lecture method had a mean interest score of (n=51, X= 26.84, SD=4.10) for the pre-test and (n=51, X= 48.16, SD=12.65) for the post-test with a mean gain of 21.32. A mean difference of 13.32 was obtained from the result. This indicates that practical activities and conventional methods are potent in improving the interest scores of students in biology. Nevertheless, practical activities proved to be more potent in increasing the interest scores of biology students than the conventional method.

Research Question Two
What are the interest mean ratings of male and female students taught biology using practical activities?

Table 2: Mean and Standard Deviation on the Mean Interest Ratings of Male and Female Students Taught Biology Using Practical Activities

Gender		Pre-Test		Post-Test			
	N	Mean	SD	Mean	SD	Mean Gain	Mean Difference
Male	19	30.05	3.84	64.11	7.43	34.06	2.02
Female	25	27.80	4.03	59.84	11.15	32.04	
Mean Difference		2.25		4.27			

The result in Table 2 shows the mean and standard deviation on the interest ratings of male and female students taught Biology. The result shows that male students

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taught biology had a pre-interest rating score of (n=19, X= 30.05, SD=3.84) and a post-interest rating of (n=19, X= 64.11, SD=7.43) with a mean gain of 34.06 while female students taught biology had a pre-interest rating score of (n=25, X= 27.80, SD=4.03) and post-interest (n= 25, X= 59.84, SD=11.15) with a mean gain of 32.04. The result showed that a mean difference of 2.02 was obtained. The result means that the interest rating score of male students taught biology was higher than that of their female counterparts.

Research Question Three

What is the interaction effect of gender and teaching methods on students' interest mean ratings in Biology?

Table 3: Mean and Standard Deviation of the Interaction Effect of Teaching Methods and Gender on Students` Interest Rating in Biology

			Pre-Test		Post-Test			
Teaching Methods		**N**	**Mean**	**SD**	**Mean**	**SD**	**Mean Gain**	**Mean Difference**
Practical	Male	19	30.05	3.84	64.11	7.43	37.61	
Activities	Female	25	27.80	4.03	59.84	11.15	32.04	5.57
Conventional	Male	21	27.57	4.11	54.14	17.19	26.57	
Method	Female	30	26.33	4.08	43.97	8.56	17.64	8.93

Results in Table 3 show the interaction effect of teaching method and gender on students` interest rating in biology. The result shows that male students taught Biology using the practical method had a pre-test mean rating of 30.05 with a standard deviation of 3.84 and a post-test mean interest rating of 64.11 with a standard deviation of 7.43. The mean gain of 37.61 was obtained for male students. On the other hand, female students exposed to practical activities had a mean interest rating of 27.80 with a standard deviation of 4.03 and a post-test score of 59.14 with a standard

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deviation of 11.15. The mean gain was 32.04 for female students, while the mean difference of 5.57 was obtained. The result further shows that practical activities improved the mean interest rating of both male and female students. However, male students' mean interest was higher than female students. Also, the result showed that male students taught biology using the lecture method had a pre-test mean interest rating of 27.57 with a standard deviation of 4.11 and a post-test score of 54.14 with a standard deviation of 17.19. The mean gain was found to be 26.57. Similarly, female students exposed to the conventional method had a mean interest rating of 26.33 and a standard deviation of 4.08 for the pre-test, while the post-test mean score was 43.97 with a standard deviation of 8.56. The mean gain was found to be 17.64. The result also showed a mean difference of 8.93. This result implies that the conventional method improved the mean interest rating of both male and female students taught biology. However, the conventional method improved the mean interest of male students' more than female students.

Hypotheses Testing

H_{01}: There is no significant difference in the mean interest ratings of students taught biology using practical activities and those taught with conventional method

H_{02}: There is no significant effect of gender on students' mean interest ratings in biology using Practical Activities

H_{03}: There is no significant interaction effect between teaching methods and the gender of students' mean interest ratings in biology.

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Table 4: ANCOVA Result on the Significant Difference in the Mean Interest Ratings of Students Taught Biology Using Practical activities and those taught with Conventional Method

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7906.722[a]	4	1976.681	15.310	.000	.405
Intercept	9325.612	1	9325.612	72.232	.000	.445
Pre-interest	395.052	1	395.052	3.060	.084	.033
Methods	5518.653	1	5518.653	42.745	.000	.322
Gender	2254.579	1	2254.579	17.463	.000	.163
Treatment * Gender	11.020	1	11.020	.085	.771	.001
Error	11619.635	90	129.107			
Total	309216.000	95				
Corrected Total	19526.358	94				

a. R Squared = .405 (Adjusted R Squared = .378)

Concerning hypothesis one (H_{01}), Table 4 shows the ANCOVA result for the significant difference in the mean interest ratings of students taught Biology using practical activities and those taught with conventional method. The result shows that an F-ratio (1, 90) = 42.745, $p<0.000$ was obtained. The associated exact probability value of 0.000 obtained is less than the 0.05 level of significance set for decision-making. Hence, the null hypothesis was rejected. Inference drawn is
that, there is a significant difference in the mean interest score of students in biology when taught using the Practical activities method and conventional method in favour of practical activities with higher mean scores. More so, the result shows a partial eta square (η^2p) of 0.322. This means that 32.2% of the increase in the mean interest scores of students in biology was due to the effect of the teaching method.

Also, concerning hypothesis three (H_{02}), The result presented in Table 4 also shows a significant difference in the mean rating of students taught biology based on

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gender. The result shows that the F-value (1, 90) = 17.463, $p<0.05$ were obtained. The null hypothesis is rejected since the exact probability value of 0.003 is less than the 0.05 level of significance set for decision-making. Thus, it is concluded that gender significantly affects students' mean rating in biology in favour of males with higher mean scores. The partial eta square (η^2p) of 0.163 obtained in implies that 16.3% of the variance interest in the mean rating of students in biology was due to the effect of gender.

Furthermore, concerning hypothesis three (H_{03}), the result shows the interaction effect of teaching methods on the gender of students' mean interest rating in biology. Based on the result, an F-value (1, 90) = 0.085, $p>0.000$ were obtained. The p-value of 0.771 obtained is more significant than the 0.05 significance level. Thus, the null hypothesis was not rejected. The inference drawn is that there is no significant interaction effect between teaching methods and gender of students' mean interest rating in biology. The partial eta square, 2 effect size) of 0.001 indicates that only a 0.1% variance increase in the mean interest rating of students in biology is due to the interaction effect of gender and teaching methods.

Discussion of the Findings

The finding of the study presented in Table 1 shows that students taught Biology using practical activities method gained higher interest than those taught using lecture method. Analysis in Table 1 indicates that there is a significant difference between practical activities and lecture teaching method on students' interest in biology in favour of practical activities. This implies that the null hypothesis was rejected. The reason for this result could be due to the fact that practical activities is more exciting and interacting, whereby students gets to watch the procedures, activities and have a first-hand information concerning what is being learnt. The finding of this study is in agreement with that of Obi (2017) and Babalola, Johnson, & Ibrahim (2022) who found that students who are exposed to practical activities performed better than their counterparts. This study is in conformity with the findings of Audu (2018) that the use of appropriate teaching techniques by teacher during the teaching-learning process

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enhances students' interest and achievement in Biology.

The results showed that male biology students had a higher interest rating in biology than their female counterparts. Further analysis of significant differences revealed a significant difference in the effect of gender on student's interest rating in Biology in favour of the male. Therefore, the null hypothesis was rejected. The result of this study may be due to variation in the teaching methods as the male students could find it exciting and entertaining when engaging in constructive argument and during practical-oriented activities, unlike the female students who sometimes shy away from engaging themselves in practical-oriented activities. Hence, the reason for the higher interest of the male students than their female counterparts. Also, because there exist individual differences in learning methods, different methods of learning appeal differently to individuals; hence, a particular teaching method could be sensitive to a particular gender, thereby enhancing their interest in biology. The finding of this study is in line with that of Okoro (2016), who reported a significant difference between the interest of male and female students in favour of male students in Biology (Alake, 2021). However, the findings of this study disagree with that of Aniaku (2016), who stated that gender has no significant effect on students' interest in Biology. Also, Oludipe (2015) reported that no significant difference exists in the interest of boys and girls in Biology. The difference might be due to differences in teaching methods and student's level of engagement in practical activities.

The findings of the study revealed that male students had a higher interest rating than their female counterpart when exposed to practical activities method. Also, when exposed to lecture teaching method it was formed that the male students had higher mean interest rating than their female counterpart. The analysis of significant difference showed that there is no significant interaction effect of teaching method and gender on the mean interest rating of students in Biology. The result of this study could be due to the fact that the two teaching methods are sensitive to gender thereby engaging both the male and the female students in the teaching and learning process which could lead to students developing interest on the subject matter irrespective of their gender. The

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finding of this study is in line with that of Igboanugo (2018) who reported that interaction effect of gender and teaching method on students' interest was not significant. Also, in the same vein Obi (2017) also found out that there was no interaction effect of instructional modes and gender on students' interest mean rating.

However, the finding of the study disagrees with that of Allahnana et al., (2018) who found out that there is significant interaction effect of instructional method and gender on students' interest. Also, in the same vein Igboanugo (2018) and Oluwatosin et al (2017) found out that interaction effect of gender and science technology and society instructional approach on students' interest was not significant. This is as a result of the study area or the way the method was used in the teaching and learning of biology.

Conclusion

Based on the findings and discussion of the study, the following conclusions were made: There is a significant difference in the mean interest rating of Biology students when taught with practical activities and conventional method in favour of practical activities method. There is a significant difference in the mean performance scores of students in biology when taught using practical activities and lecture methods in favour of practical activities method. There is a significant effect of gender on students' mean interest rating in Biology in favour of male students. Also, there is a significant effect of gender on students' mean performance score in biology in favour of males; there is no significant interaction effect of teaching methods and gender on the mean interest scores of students in Biology.

Recommendations

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

1. Practical activities should be encouraged in biology classes in senior secondary schools to enhance students' academic performance and interest in Biology.
2. Seminars and workshops should be organized for teachers to update their knowledge of using practical activities in teaching and learning.

3. Teachers should manage the time allocated well to accommodate the practical activities during the teaching-learning process to foster male and female students' interest in Biology.
4. Pre-service biology teachers should be trained to effectively carry out practical classroom activities and use practical activities as a teaching method.

References

Achimugu, L. Achufusi, N. N. Negedu, S. A.A. & Salami, D. (2023). Adapting to virtual laboratory teaching strategy during COVID-19: Its effects on physics students' attitude in Kogi State, Nigeria. *Journal of Science, Technology and Mathematics Pedagogy, (JOSTMP)*, *1(1)* 97-107

Alake, E. M. (2021). Gender differences in students' interest in science subjects. *International Journal of Education,* 15(2), 45–58.

Allahnana, K. M., Akande, M. T., Vintseh, I. M., Usman, A. E. & Monica, E.A. (2018). Assessment of gender and interest in mathematics achievement in Keffi Local Government Area of Nasarawa State, Nigeria. *International Journal of Operational Research in Management, Social Sciences & Education, (4),* 1, 127-140

Aniaku, P. T. (2016). Gender differences in the interest of students in Biology. *Nigerian Journal of Education, 6(1*), 112-119.

Aniodoh, I. (2018). Effects of science learning on students' academic achievement. *Journal of Educational Studies*, *12(2*), 98–105.

Awolaju, B.A. (2016). Instructional materials as correlates of students' academic performance in Biology in senior secondary schools in Osun State. *International Journal of Information and Education Technology*, *9(6),* 705-708.

Audu, K. S. (2018). The effectiveness of practical work: Research and evidence. *Science Education, 90(2), 288–310.*

Babalola, A., Johnson, T. & Ibrahim, S. (2022). The impact of practical activities on students' interest and academic performance in biology. *Journal of Science Education and Practice*, *15*(3), 45-58.

Bilesanmi, J. & Awoderu, O. (2020). The effect of hands-on activities on students' interest and performance: A case study of senior secondary schools. *Nigerian Journal of Education, 12(3), 211-224.*

Croxford, A. (2020). The role of experiential learning in enhancing creativity among college students. *Creativity Research Journal, 32(4), 245–258.*

Edo, S. (2016). Examining the relationship between practical activities and learning outcomes. *International Journal of Human Psychology, 5(2), 89–102.*

Igboanugo, B. I. (2018). Interactive effects of science-technology-society instructional approach, teacher experience, gender and school location on students' achievement and interest in chemistry. *International Journal of Educational Research*, *7(2*), 113-123.

Meregine, H.C. (2015).The interplay of a biology teacher belief teaching practice and gender based student teacher classroom. *Interaction Educational Research*, *42(1)* 100-111.

Nworgu, B.G. (2015). The impact of practical work on senior secondary school students' performance in integrated science. *Journal of Science and Education, 3(4),* 47–56.

Okoro, N. (2016). Outdoor learning experiences and their benefits for young children. *Early Childhood Education Journal, 7(2), 145-159.*

Oludipe, D. I. (2015). Gender difference in Nigeria junior secondary students' academic achievement in basic science. *Journal of Educational and Social Research*, *2 (1*), 93-99.

Oluwatosin, V.A., Terver, S.A. & Terfa, M.A. (2017). Effect of gender on students' interest in standard mixture separation techniques using ethno-chemistry teaching approach. Sky *Journal of Educational Research, 5(5)*, 53 – 59

Opuli, O. & Eze, N. (2015).The role of laboratory work in school science educators and students' perspective. *International Journal of Educational Research*, *6(2*), 82-87.

Renninger, K. A., Nieswandt, M. & Hidi, S. (2015). Interest in mathematics and science learning. *Washington, DC: American Educational Research Association. Science Education, 86*(2), 205-224.

Schwichow, M., Zimmerman, R., Cracker, S. & Harig, H. (2016). Inquiry-based learning in science education: Effects on student achievement. *International Journal of Educational Research, 13(4), 256-270.*

Shell, D. (2018). Addressing challenges in special education through practical interventions.
Special Education Review, 14(3), 222-236.

Tukura, D. J. (2015). The effect of Biology practicals on academic performance in high school students. *Journal of Educational Research, 32(4*), 17-28.

Ude, V. C. (2017). Relationship between academic self-concept, worldview and

misconceptions in photosynthesis and senior secondary students' performance in biology in Enugu Urban area. Unpublished PhD Thesis. ESUT, Enugu.

Watts, A. (2013). *The assessment of practical science: a literature review. London:* Cambridge Press.

Webster, M. (2021). Webster dictionary of contemporary English. Retrieved 12th May, 2025 from *Http/www/gender.com.*

West African Examination Council (WAEC, 2019-203). *Chief Examiner Report.* Abuja: NERDC Press.

Zember, T. & Blume, K. (2011). Gender differences in academic achievement among secondary school students. *Journal of School Psychology*, *27(2*), 34-44.