



Academic Interest as Predictor of Students Achievement in Physics in Secondary Schools in Abak, Akwa Ibom State, Nigeria

Uboh, Daniel Effiong, Utibe, Uduak James & Abasi, Andrew Umo

*Department of Science Education, Akwa Ibom State University,
Ikot Akpaden, Mkpata Enin, Akwa Ibom State, Nigeria
ubohdaniel@gmail.com*

Abstract

This study investigated the predictive role of academic interest on students' achievement in Physics in secondary schools in Abak, Akwa Ibom State, Nigeria. A sample of 115 SS2 Physics students was drawn from 6 intact classes of selected schools. Physics Academic Interest Scale (PAIS) and Physics Academic Achievement scores were extracted from the students' terminal examination of 2023/2024 academic session were used to collect data. Results of the predictive power of physics students' interest on their academic performance in physics is 0.006 and it was not significant $\{T(114) = 0.806, p = 0.422\}$. The predictive power of physics students' interest on their academic performance in physics as moderated by gender is 0.015 and it was not significant $\{F(3, 111) = 0.567, p=0.64\}$. Furthermore, the predictive power of physics students' interest on their academic performance in physics as moderated by gender is 0.027 and it was not significant $\{F(3, 111) = 1.04, p=0.38\}$. It was recommended that students' interest in Physics should be sustained during physics lessons and practical. Other moderating variable should be used to determine the predictive power of physics students' interest on their academic performance in physics.

Keywords: Achievement, interest, physics, gender, location

Introduction

Physics is a science subject that studies matter, objects, energy and their interaction in a given system or environment. Physics is the most fundamental and the root of every field of science (Eryilmaz, 2016). Utibe, Onwuiouokit & Babayemi (2017) defined physics as a natural science that involves the study of matter and energy and their interactions. It is the study of natural phenomenon at its most fundamental levels and manner. This is because, physics, being one of the core subjects offered in Nigerian schools forms the basis for the nation's technological advancement and human resource development. The production of equipment, instrument and devices for scientific and technological activities hinges on the knowledge of physics (Izaak, 2015; Utibe, 2015). The knowledge of physics is essential for national development in all ramifications including economic, scientific and technological inventions (Utibe & Agwagah, 2016). However, it has been observed that most science students regard physics as a very difficult subject due to its abstract nature and this is being reflected in external examinations results conducted by West African Examinations Council (WAEC) and National Examinations Council (NECO) over the years now bringing about poor achievement in physics (Utibe & Agah, 2015). Hence, several researches have been carried to find out some of the factors responsible for this. Such factors include lack of interest of students, method of teaching, lack of suitable and adequate physics equipment, among other. In this study we investigate to see if students 'academic interest can predict students' academic achievement.



Interest is the kind of awareness inclination for understanding the world and acquiring cultural and scientific knowledge. When students are interested in a certain field, they may pay special attention to it, observing carefully, memorizing well and thinking actively. Only by arousing students' interest in learning physics can we enhance students' enthusiasm for learning physics; help them master physics conceptual knowledge and techniques better, and form the scientific spirit and attitude. According to Eze (2016) students with an interest in a subject like physics are likely to be more motivated to manage their own learning and develop the requisite skills to become effective learners of Physics. Hence, interest in physics is relevant when considering the development of effective learning strategies for physics. In contrast, anxiety about learning physics can act as a barrier to effective learning. Students who feel anxious about their ability to cope in physics learning situations may avoid them and thus lose important career and life opportunities. Godpower-Echie & Ihenko (2017) opined that physics teachers should try to identify a teaching approach/method that can motivate or arouse students' interest.

Interest is a psychological state of engaging or having the tendency to re-engage in a particular content in the course of time. The contemporary theorists on interest carved three components of interest as personal interest, situational interest and academic interest. Personal interest is one's innate liking or appreciative tendencies towards a concept. Personal interest is more enduring, and trait-like, and endures over time. It can be considered a disposition that individuals take with them from one context to the next. For instance, when a student has personal liking for physics that spurs him to always do physics tasks and discuss physics problems, such a student would be said to have developed personal interest in physics. Irrespective of circumstances, such students would want to take the interest with him or her to any place he or she goes. On the other hand, situational interest is the interest that is prompted by the situational affiliation. Situational interest could emanate from a good and conducive learning environment, use of instructional materials, and application of appealing teaching approach or students' centred teaching approach. It is more momentary and depends on the environment of the student. This is the kind of interest that arouses when a person watches an entertaining video clip like audio visual games as angry bird to demonstrate concepts of projectile motion or engages in incisive conversation with teachers. For physics students, individual interest will normally develop gradually and tends to have lifelong effects on the physics student achievement. Situational interest is an emotional state of a student that is evoked by interestingness of the content and context and partially under the regulation of teachers (Okafor, 2020).

Academic Interest is the kind interests that are integral of personal and situational interest to achieve educational goal. For instance, if a Physics student who develops innate or personal interest for physics and encounters situational interest engagement such as well trained teachers, integration of instructional material and method; and personality trait of the teacher will eventually lead to good academic achievement (Onah, 2022).

Teacher's ability to arouse student interest is essential for higher achievement. Interest is therefore the motivation in a learner which results in the option of object and activity that is enjoyable, profitable, and will ultimately bring complete satisfaction in itself (Serdyukov, 2017). Some empirical studies in Nigeria have shown that interest has a significant positive effect on academic achievement of the students. In physics, Onah & Achufusi (2022) observed that meta-conceptual teaching approach was capable of boosting students' interest



which consequently improved their academic achievement. Again, Okafor (2020) noted that academic interest was able to predict academic achievement up to 57% from their initial 5%. In Biology, Femi-Adeoye & Adekunle, 2016 observed that academic interest could predict academic achievement with about 25% and 34% respectively. In Chemistry (Eze, 2016), noted that interest could predict about 21.6% of the academic achievement of the students, there is the need to understand the academic achievement of students in physics.

Academic achievement is the outcome of an educational process which serves as a measure to the extent a student, teacher or institution has achieved a set of objectives or goals and which is commonly measured by continuous assessment or examination. Academic achievement of the student can be graded as high or low (good or poor). Academic achievement is said to be poor when the achievement falls below the expected standard (Hassan, Alasmari & Ahmed, 2015). On the other hand, an achievement that is equal to or above the standard expected of a student can be termed high academic achievement. Some of the reasons for poor academic achievement in physics may be declining interest and lack of enthusiasm to take physics course in school or avoiding physics as one of the basic science subjects by students the world over. Students in secondary school averred that physics is more difficult and uninteresting than any other subject in the school curriculum (Ugwu, Fagbenro & Akano, 2019). A gender based study from Godpower-Echie and Ihenko (2017) revealed that interest is gender driven but gender in itself does not significantly predict Integrated Science achievement,

Gender according to Utibe & Olah (2024) is described as personality traits, attitudes, behaviors, values, relative power, influence, roles and expectation (femininity and masculinity) that society ascribes to the two sexes on a differential basis. Operationally, gender may be seen as any distinguishing feature, characteristics or behavior that separates males from females in the society. One could logically assert that gender is important in the educational system as it appears to be capable of influencing the curriculum, instructional materials, career choices and the general behavior of students and teachers.

Studies have shown that gender plays a major role in influencing the achievement of students in physics, a study conducted by Elejere, Omeke & Eze (2018) revealed that a significant difference exists between the achievement of male and female students in favor of the males for both in mathematics and physics. On the other hand, Amalu (2017) reported higher academic achievement in English language and mathematics in favour of the female students. The environment in which an individual learns could also influence academic interest of a learner. Thus, there is a need to consider school location of the students since environment plays major role in determining how and what an individual learn.

Location of schools as a factor that affects students' achievement in Physics can be examined. Ntibi & Edoho (2017) refer to a particular place, in relation to other areas in the physical environment (urban and rural) where the school is sited. In Nigeria, rural life is uniform, homogenous and less complex than that of urban centers with cultural diversity which often are suspected to affect students academic achievement. The rural areas are less favoured in the distribution of educational facilities and teachers. Akissani, Muntari, & Ahmed (2019) opined that schools in urban areas have electricity, water supply, more qualified teachers, more learning facilities and infrastructure. Alordiah, Akpadaka and Oviogbodu (2015) opined that students attending rural schools face challenges of higher poverty than those attending urban schools. Urban schools have advantages such as



availability of resources, library facilities, good environment and qualified teachers. However, one of the greatest advantages of rural schools is the tendency to have smaller classes which promises increased student interaction and evaluation and provides greater flexibility in teaching strategy.

The above perhaps, can lead to underachievement since environment plays a part in what a child learns, thus if the environment is not conducive to enhance learning, achievement can be tainted. According to Umar (2019), location does not influence academic achievement of students. This of course is different from the view of Inyang, Utibe, Uko & Uboh (2023) who indicated that students in the urban areas achieve more than students in the rural areas. Onah & Ugwu (2010) found that school location does not significantly influence academic achievement of secondary school students in physics.

Conclusively, it is seemingly clear that there exist a lot of disagreement on the part of researchers with respect to whether school location influences academic achievement of students or not and more so, whether or not academic interest of students in Physics are influenced by school location. Such disagreements as above require further investigation, in order to adequately ascertain the influence of school location on the achievement of students.

The students' poor achievement in physics in particular and sciences in general has been attributed to many factors. These include; poor methods of physics instruction by the teachers, insufficient number of qualified physics teachers, lack of indigenous textbooks, inadequate apparatus in the physics laboratory, poor classroom management by physics teachers, teacher's belief and attitude towards physics, physics teacher's inability to improvise, inadequate instructional materials and aids, educational background and parental expectations on the learners and finally students' related factors or variables like students' academic anxiety, academic self-efficacy, academic locus of control, academic motivation and more (Olah & Utibe). This study therefore, is set to find out the predictive power of students' academic interest on their achievement in Physics secondary schools in Abak, Akwa Ibom State, Nigeria.

Despite the place of physics in science and technology, secondary school students have not maintained relative high physics achievement in both internal and external examinations in Nigeria, poor academic achievement in physics are declining interest and lack of enthusiasm to take physics course in school or avoiding physics. Physics being one of the seemingly difficult science subjects, the extent to which interest could predict their achievement is crucial for educational policies that would boost student achievement in physics and national development in particular. Due to lack of consensus regarding the issue of gender and science and more importantly to capture the interest of girls, and consequently improve their achievement in physics and other science related carriers, there is a need therefore to investigate the predictive power of interest to on achievement of male and female students in the sciences especially Physics. Based on the problem of the study, the study will investigate the magnitude of prediction of physics students' achievement by their academic interest among secondary schools Physics students in Abak, Akwa Ibom State.

Purpose of the Study

The main aim of this study is determine the relationship between physics students' interest as a predictor of academic performance in secondary schools in Abak local Government Area, Akwa Ibom State, Nigeria, Specifically, the study sought to:



1. Ascertain the predictive power of physics students' interest on their academic performance in physics.
2. Determine the predictive power of physics students' interest on their academic performance in physics as moderated by gender.
3. Determine the predictive power of physics students' interest on their academic performance in physics as moderated by location.

Research Questions

The following research questions were posed to guide the study in line with the purpose:

1. What is the predictive power of physics students' interest on their academic performance in physics?
2. What is the predictive power of physics students' interest on their academic performance in physics as moderated by gender?
3. What is the predictive power of physics students' interest on their academic performance in physics as moderated by gender?

Hypotheses

The following null hypotheses were formulated for the study; which was tested at 0.05 level of significance

1. There is no significant predictive power of physics students' interest on their academic performance in physics.
2. There is no significant predictive power of physics students' interest on their academic performance in physics as moderated by gender.
3. There is no significant predictive power of physics students' interest on their academic performance in physics as moderated by location.

Methods

A correlational survey research design was employed for the study. The correlational survey design was preferred because it is the kind of study that seeks to establish what relationship exist between two or more variables and as well predict the relevance of one over another (McLeod, 2023). The study was carried out at Abak Local Government Area. Abak lies on the South West of Akwa Ibom State and is bounded in the North by Ikono Local Government Area, North West by Essien Udim Government Area, West by Etim Ekpo and Ukanafun Local Government Areas, South by Oruk Anam and in the East by Uyo Local Government Area. Abak town, the local government headquarters is located about 18 kilometers from Uyo, the State capital. Abak has 11 public government secondary school.

The population for the study consisted of SS2 Physics students from 11 public coeducational secondary schools in Abak. SS2 physics students (males & females) were drawn through multi-stage sampling approach from six co-educational secondary schools in Abak. From the 11 public coeducational secondary schools, 3 school were randomly selected from urban area and 3 from rural area. In each school selected, 1 arm of SS2 intact class was selected to draw sample for the study. A total of 115 SS2 physics students were drawn from the 6 intact classes of the selected schools for the study. The instruments used for data



collection were two; Physics Academic Interest Scale (PAIS) adapted from Wong and Wong (2019) and Physics Academic Achievement scores were extracted from the students' terminal examination of 2023/2024 academic session. PAIS comprises 25 items adapted from a 27-item Mathematics Interest Inventory used in Wong and Wong (2019). Originally, the scales are for students' general interest inventory for mathematics students but were modified to specifically physics academic interest. It is a four-point scale, ranging from 1 = strongly disagree to 4 = strongly agree, which was used for all items in this instrument. The scale consists of four subscales of emotion, value, knowledge and engagement. The PAIS consists of 30-item statements structured on a 4-point scale type of SA = 4, A = 3, D = 2, and SD = 1. The instrument (PAIS) was face validated by three experts and tested for reliability using Cronbach alpha which yielded a coefficient of 0.84. The data were analyzed using linear and multiple regression. The research questions were answered using coefficient of determination and hypotheses were tested using regression t-test and F-ratio. All the hypotheses were tested at 0.05 level of significance.

Results

Research question one: What is the predictive power of physics students' interest on their academic performance in physics?

Table 1: Model summary of the Predictive Power of Physics Students' Interest on their Academic Performance in Physics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.076	0.006	-0.003	7.10167

As shown in Table 1, the calculated R value, which shows the magnitude of the relationship of academic performance, is 0.076 which is extremely low. The result further shows that the coefficient of determination (R^2) associated with the correlation coefficient of 0.076 were 0.006. Thus, the predictive power of physics students' interest on their academic performance in physics is 0.006. This coefficient of determination (R^2) indicates that 0.6% of academic performance in physics is predicted by physics students' interest.

Hypothesis 1

H₀₁: There is no significant predictive power of physics students' interest on their academic performance in physics.

Table 2: T-test analysis for the Significance of Regression: Environmental Mastery and Marital Satisfaction

Variables	Df	Unstandardized Coefficient		Unstandardized Coefficient		Sig	Decision
		B	Std. Error	Beta	T		
(Constant)	-	26.666	2.562		10.409	0.000	
Interest	114	0.046	0.057	0.076	0.806	0.422	NS

$\alpha = 0.05$, Df= Degree of freedom, NS = Not Significant



In order to test hypothesis 1 (H_{01}), t-test was used to test for the significance of regression. The result in Table 2 shows that $\{T(114) = 0.806, p = 0.422\}$ was obtained. This probability value of 0.422 was greater than 0.05 set as the level of significance for testing the hypothesis and it was found not significant. The null hypothesis which stated that; There is no significant predictive power of physics students' interest on their academic performance in physics was not rejected. The inference drawn was that there is no significant predictive power of physics students' interest on their academic performance in physics.

Research question two: What is the predictive power of physics students' interest on their academic performance in physics as moderated by gender?

Table 3: F-test for the Significance of Regression: Physics Students' Interest on their Academic Performance in Physics as Moderated by Gender.

R	R_square	MSE	df1	df2	F	p	Dec
0.123	0.015	50.858	3	111	0.567	0.64	NS

$\alpha = 0.05$, $df =$ Degree of freedom, moderator = State

The result in Table 3 shows that R value, which shows the magnitude of the relationship of between physics students' interest and their academic performance in physics as moderated by gender is 0.123. The result further shows that the coefficient of determination (R^2) associated with the correlation coefficient of 0.123 were 0.015. Thus, the predictive power of physics students' interest on their academic performance in physics as moderated by gender is 0.015. This coefficient of determination (R^2) indicates that 1.5% of academic performance in physics is predicted by physics students' interest as moderated by gender. The result indicates that gender strengthened the predictive power of physics students' interest on their academic performance in physics when it acts as a moderator.

Hypothesis 2

H₀₂: There is no significant predictive power of physics students' interest on their academic performance in physics as moderated by gender

In order to test hypothesis 2 (H_{02}), F-ratio was used to test for the significance of regression. The result in Table 3 shows that $\{F(3, 111) = 0.567, p=0.64\}$ was obtained. This probability value of 0.64 was greater than 0.05 set as the level of significance for testing the hypothesis and it was found not significant. The null hypothesis which stated that; There is no significant predictive power of physics students' interest on their academic performance in physics as moderated by gender was not rejected. The inference drawn was that there is no significant predictive power of physics students' interest on their academic performance in physics as moderated by gender.

Research question three: What is the predictive power of physics students' interest on their academic performance in physics as moderated by school location?



Table 4: F-test for the Significance of Regression: Physics Students' Interest on their Academic Performance in Physics as Moderated by School Location

R	R_square	MSE	df1	df2	F	p	Dec
0.1654	0.027	50.2251	3	111	1.0406	0.38	NS

$\alpha = 0.05$, df= Degree of freedom, moderator = State

The result in Table 4 shows that R value, which shows the magnitude of the relationship of between physics students' interest and their academic performance in physics as moderated by school location is 0.165. The result further shows that the coefficient of determination (R^2) associated with the correlation coefficient of 0.165 were 0.027. Thus, the predictive power of physics students' interest on their academic performance in physics as moderated by school location is 0.027. This coefficient of determination (R^2) indicates that 2.7% of academic performance in physics is predicted by physics students' interest as moderated by school location. The result indicates that school location strengthened the predictive power of physics students' interest on their academic performance in physics when it acts as a moderator.

Hypothesis 3

H₀₃: There is no significant predictive power of physics students' interest on their academic performance in physics as moderated by school location

In order to test hypothesis 2 (H₀₂), F-ratio was used to test for the significance of regression. The result in Table 3 shows that $\{F(3, 111) = 1.04, p=0.38\}$ was obtained. This probability value of 0.38 was greater than 0.05 set as the level of significance for testing the hypothesis, and it was found not significant. The null hypothesis, which stated that there is no significant predictive power of physics students' interest on their academic performance in physics as moderated by school location, was not rejected. The inference drawn was that there is no significant predictive power of physics students' interest on their academic performance in physics as moderated by school location.

Discussion of the Findings

The findings of the study show the magnitude of the relationship of academic performance was extremely low leading to only 0.6% of academic performance in physics is predicted by physics students' interest. The near zero level of relationship may implies that interest is a very weak predictor of academic performance in physics. This find is not in line with the Okafor, (2020), Akissani *et al* (2019), Femi-Adeoye & Adekunle (2016) and Ezike (2018) who found out that academic interest of the students enables them to remember concept taught in physics by reading the context regularly and consequently aided their improved academic achievement. Thus the findings suggest a re-evaluation of teaching methods and exploration of alternative factors influencing academic success.

Gender as a moderating factor of the predictive power of physics students' interest on their academic performance in physics indicate a little improvement in the coefficient obtained. Although there was improvement, the prediction coefficient was still low, which



implies that gender could not substantially influence the predictive power of physics students' interest on their academic performance in physics. It was found that there is no significant predictive power of physics students' interest on their academic performance in physics as moderated by gender. The study was not in line with the findings of Utibe & Olah (2024) and Okafor, (2020) who also observed gender difference in the relationship with academic interest. The study also agreed with Eze (2016), Akissani *et al* (2019) who observed no significant different with gender in the relationship between gender and their academic achievement in physics.

The predictive power of physics students' interest on their academic performance in physics improved, but not substantially, when school Location was used as a moderating factor. here is no significant predictive power of physics students' interest on their academic performance. In this study, the academic performance of students in physics as predicted by physics students' interest when moderated by school location was more substantial than gender. Thus, school location and gender moderate the predictive power of physics students' interest on their academic performance in physics. There is therefore a great need to embark on more studies to shed further light on this issue.

Conclusion

Based on the findings of this study, the researchers concluded that the predictive power of physics students' interest on their academic performance in physics is extremely low and almost non-existent. Also, it was concluded that moderation by gender and school location improved the predictive power of physics students' interest on their academic performance in physics. Although there was visible improvement in the prediction coefficients when gender and school location were used as moderators, there is no significant predictive power of physics students' interest in their academic performance.

Recommendation

Based on findings and discussion, students' interest in Physics should be sustained during physics lessons and practical. Other moderating variable should be used to determine the predictive power of physics students' interest on their academic performance in physics.



Reference

- Akissani, I. Muntari, I. & Ahmed, M. (2019). Effects of gender and school location on mathematics achievement of senior secondary school students in Katsina Educational one, Katsina State, Nigeria. *Abacus Mathematics Education Series*. 44(1).
- Alordiah, O. C, Akpadaka, G & Oviogbodu, O. C. (2015). The influence of gender, school location and socio-economic status on students' academic achievement in mathematics. *Journal of Education and Practice*. 6(17), 130-136
- Amalu, M. N. (2017). Cognitive test anxiety as a predictor of academic achievement among secondary school students in Makurdi Metropolis, Benue State. *International Journal of Scientific Research in Education*, 10(4), 362-372.
- Elejere, U. C., Omeke, N. E & Eze, C. C. (2018). Analysis of gender disparity in students' performance in Mathematics and Physics in West African Senior School Certificate Examination. *African Journal of Science, Technology and Mathematics Education*, 4(1), 25-29.
- Eryilmax, H. (2016). *The effect of peer instruction on students' achievement and attitude towards physics*. (Doctoral dissertation), Dept of secondary science and mathematics, Middle East Technical University.
- Eze, C. U. (2016). *Relationship between secondary school students' cognitive learning skills and their academic interest in Enugu state*. (Unpublished PGDE project), Enugu State University of Science and Technology, Agbani
- Femi-Adeoye, K. O. & Adekunle, R. F. (2016). Students' attitude and interest as correlates of students' academic performance in biology in senior secondary school. *International Journal for Innovation Education and Research*, 4(3), 1 – 6.
- Godpower-Echie, G. & Ihenko, S. (2017). Influence of gender on interest and academic achievement of students in integrated science in Obio Akpor Local Government Area of Rivers State. *European Scientific Journal*, 13(10), 272 – 279.
- Hassan. A. E. H., Alasmari, A. & Ahmed, E. Y. E. (2015). Influences of self-efficacy as predictors of academic achievement: A case study of special education students- University of Jazan. *International Journal of Education and Research*, 3(3), 275 – 284.
- Inyang, F. N., Utibe, U. J.; Uko, P. J. & Uboh, D. E. (2023). Effect of Guided-Discovery and expository instructional methods on secondary schools students' academic achievement in physics in Ikot Abasi local government area, Akwa Ibom State, Nigeria. *Journal of research in education and society*. 14(2) 80-90.
- Izaak, H. W. (2015). The correlation study of interest at physics and knowledge of mathematics basic concepts towards the ability to solve physics problems of 7th grade students at junior high school in Ambon Maluku Province, Indonesia. *Education Research International*, 7(1), 1 – 6.
- McLeod, S. (2023). Experimental Design: Types, Examples & Methods. Retrieved from <https://www.simplypsychology.org/experimental-designs.html>
- Ntibi E. J & Edoho, A. E. (2017). Influence of school location on students' attitude towards mathematics and basic science. *British Journal of Education*. 5(10), 76-85



- Okafor, O. S. (2020). Interest as predictor of academic achievement of secondary school students' in Physics. *British Journal of Education, Learning and Development Psychology* 3(3) 2682-6704
- Olah, P. O. & Utibe, U. J. (2022) Emotional intelligence and psychological wellbeing of civil servants in Federal Capital Territory, Abuja, Nigeria. *Journal of sociology, psychology and anthropology in practice*, Vol. 11 (3) pp 55 – 67.
- Onah, D. U. & Ugwu, E. I. (2010). *Factors which predict performance in secondary school Physics in Ebony in north educational zone of Ebonyi State, Nigeria*. (Unpublished masters' thesis), Ebonyi State University of Technology, Ebonyi.
- Onah, K .T. & Achufusi, N. N. (2022). Effect of meta-conceptual teaching approach on students' academic achievement and interest in quantum physics in Enugu Education Zone. *African Journal of Science Technology and Mathematics Education* 8(1) 80-90
- Onah, K. T. (2022). Effect of scaffolding teaching approach on students' academic achievement in Quantum Physics in Enugu Education Zone. *Greener Journal of Educational Research*, 12(1); 13-21
- Serdyukov, P. (2017). Innovation in education: what works, what doesn't, and what to do about it? *Journal of Research in Innovative Teaching & Learning*, 10(1), 4-33.
- Ugwu, D. U., Fagbenro, A. B. & Akano, B. U. (2019). Assessment of the effectiveness of physics teaching in senior secondary schools, Owerri Education Zone of Imo State. *International Journal of Education and Evaluation*, 5(5), 1 – 9.
- Umar, U. S. (2019). Impact of academic stress and coping strategies among senior secondary school students in Kaduna State, Nigeria. *International Journal of Innovative Social & Science Education Research* 7(1):40-44.
- Utibe, U. J. & Agah, J. J. (2015). Comparative analyses of physics candidates scores in West African and National Examinations Councils. *Journal of Education and Practice*, 6(25), 34 – 40.
- Utibe, U. J. & Agwagah, U. N. V. (2016). Creating entrepreneurs using physics and mathematics: Implications for economic development in South-South Nigeria. *International Journal of Multidisciplinary Approach and Studies*, 3(2), 18 – 28.
- Utibe, U. J. & Olah, P. O. (2024). Guidance and counseling services, interest and students' performance in physics in Gwagwalada Area Council of FCT, Abuja, Nigeria. *Journal of research in education and society*. Vol. 15(1), 12-25.
- Utibe, U. J. (2015). *Guided-discovery and demonstration methods and senior secondary physics students' acquisition of entrepreneurial skills in household electrification in Akwa Ibom State*. Unpublished PhD Thesis, Department of Science Education, University of Uyo, Uyo.
- Utibe, U. J., Onwuiouokit, F. A. & Babayemi, J. O. (2017) *Application of physics and technology concepts of maintenance of tools for socioeconomic empowerment in STEM*. In Ifamuyiwa, A. S.'s (Ed) *STEM and society*. Port-Harcourt: 60th Anniversary proceedings of STAN. 69 – 77.