BSU Journal of Science, Mathematics and Computer Education (BSU-JSMCE) Volume 5, Issue 1, June 2025

EXPLORING THE MEDIATING ROLE OF INTEREST IN ENHANCING ACADEMIC PERFORMANCE AND SELF-ESTEEM OF BASIC II STUDENTS IN BENUE STATE, NIGERIA

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Abstract
This study explored the mediating role of interest in enhancing academic performance and self-esteem of Basic II students in Benue State, Nigeria. Two research questions and two hypotheses guided the study. The study adopted a cross-sectional survey. The population for the study was upper basic II Students. The population of the study consisted of 15,623 Upper Basic II students from 162 UBE schools. A total of 390 Upper Basic II students in 36 schools were sampled using multi-stage sampling technique. Three validated instruments were used for data collection namely; Basic Science Performance Test (BSPT), Students' Interest in Basic Science Questionnaire (SIBSQ) and Basic Science Students' Self-Esteem Questionnaire (BSSSQ. The reliability coefficients of 0.82, 0.70, and 0.90 were obtained for the SIBSQ, BSSSQ using Cronbach's Alpha and BSPT using Kuder-Richardson Formula 20 (KR-20) respectively. Basic Science teachers from the sampled schools were trained as research assistants to administer the instruments directly. Mean scores and standard deviations were used to answer the research questions. T-test was used to test the null hypotheses at 0.05 level of significance. The findings reveal that there was a significant difference in the mean self-esteem ratings in Basic Science between students with high, and low interest ($t= 1.852$, $p=0.045 < 0.05$). There was a significant difference in the mean performance scores in Basic Science between students with high interest and those with low interest. ($t = 2.842$, $p=0.005 < 0.05$). Therefore, it was concluded that students with high interest and those with low interest recorded a significant difference in their mean performance scores particularly in Basic Science. It was recommended that, Basic Science teachers should endeavor to create opportunities for learners to engage in learning Basic Science during planning; delivering and assessment of their lessons to enable students develop interest which could lead to high self-esteem and also which may tend to improve students' performance in Basic Science.

Keywords. Interest, self-esteem, academic performance and Basic Science

Introduction

Science is very important in the technological development of every nation. This is why science is seen as the bedrock of human development. United Nations (2019) state that the developed nations have achieved their status of development through science and technology application and education. This implies that the knowledge of science obtained by citizens of a nation is a vital factor in the development of the

nation. Therefore, science education stands as a life wire through which learners are trained to attain goals of scientific and technological advancement to bring about the desired development and change (Agbidye, 2019).

Nigeria as a nation has demonstrated interest in utilizing science for socio-economic development. The Federal Republic of Nigeria (FRN, 2014) emphasized funding of science programmes at all levels of education in Nigeria to improve scientific literacy. This is an attempt to ensure that most, if not all, citizens are scientifically literate. To ensure that learners are well grounded in science, understand the facts, laws, theories, concepts and are competent enough to face daily challenges relating to science, such learners must go through a science programme that is well planned, implemented and assessed (Samuel, 2017). At the Upper Basic Education level, science programme is introduced to students through a subject known as Basic Science.

Basic Science is considered as the bedrock of all science subjects. It prepares students at the Upper Basic level for the study of the core science subjects like Biology, Physics and Chemistry at senior secondary level of education (Ode & Eriba, 2019). The overall objective of Basic Science curriculum as stated by Nigeria Educational Research and Development Council (NERDC, 2015) is to enable the learners: develop interest in science and technology: apply scientific and technological knowledge and skills to meet contemporary social need, take advantage of the numerous career opportunities provided by science and technology and become prepared for further studies in science and technology.

In spite of the importance of Basic Science to students' future careers in science, students still lack interest in Basic Science and science at large. Researchers such as Tofi, Adejoh and Ochu (2017), Agu and Samuel (2018), Eriba and Samuel (2018) opine that students' lack of interest in Basic Science could be attributed to several factors such as poor teaching methods, psychological factors like anxiety and low self-esteem, unpreparedness on the part of the students to learn Basic Science, poor learning environment and dearth of qualified teachers among others. Furthermore, students' lack of interest in science subjects particularly Basic Science according to Okwara and Upu (2017), is partially attributed to poor foundation at the early stage of introducing science and instructional methods used by the teachers. In addition, other factors include bullying, incompetency in teaching on the part of teachers, difficult syllabus, and fear of assessment by students. Getting bullied by other students in school on a regular basis could affect students' self-esteem. Regular bullying in school harms students' self-esteem by making them feel worthless, isolated, and anxious, leading to serious long-term emotional, social, and academic consequences. Such students may lose interest in their studies and may refuse to attend classes or participate in class activities. Mazer (2015) states that students' interest can be triggered if teachers exhibit good behaviours. The author observes that increase in emotional arousal heighten students' attention. This makes it easier to encode more information. Violent teachers who resort to harsh punishments could push students away from studying. Ineffective assessment practices may also result to students developing low interest in learning Basic Science or learn only to pass test thus have little grasp of the concepts which may lead to poor academic performance.

Academic performance refers to the ability of students to study, remember facts and communicate the knowledge gained verbally or through writing (Mwaniki, 2015). In other words, academic performance refers to how students deal with their studies and how they cope with or accomplish different learning tasks given to them by their teachers. There is

increasing concern by researchers on students' academic performance due to the unimpressive reports by researchers and examiners. For instance, from 2015 to 2022 there was inconsistency in performance of students in Basic Science, as is evident in the result analysis, the highest rate (52.88%) of failure was recorded in 2021 while the least rate (1.3%) was recorded in 2016 (Basic Education Certificate Examination, 2015-2022).

The increasing nature of poor academic performance of upper basic school students especially in BECE tends to shift the blame on the teaching methodology adopted by teachers, lack of funds from the government to provide quality textbooks. However, these might not be the main reasons why students perform poorly in examinations. It is obvious that most upper basic school students have low interest which may result in lack of desire to learn a subject like Basic Science, which could lead to poor academic performance (Moradi Sheykhjan, Jabari & Rajeswari, 2014).

Self-esteem is an individual's sense of his or her value or worth. It is the extent to which a student values, approves of, appreciates, prizes, or likes himself or herself. It is generally considered to be the evaluative component of self-concept, a broader representation of the self that includes cognitive and behavioural aspects as well as evaluative or affective ones (Harris & Orth, 2020). Related concepts such as self-confidence imply a sense of self-esteem. It is believed that self-esteem works like a trait and is stable across time within individuals (Li, Han, Wang, Sun & Cheng, 2018). Student's self-esteem is influenced by many factors including; parents, teachers, friends; fellow classmates and the environment. It has been related to virtually every other psychological concept or domain, including personality, task performance and similar behaviour, cognitive (attribution bias) and clinical concepts such as anxiety and depression (Cvencek, Fryberg, Covarrubias & Meltzoff, 2018).

Onah and Anamezie (2022) found that interest relatively and significantly contributed to students' academic performance in science. Wong and Wong (2019) observe that interest only significantly and positively influences the achievement of the low performance students and is not significant predicator of the already high performance students. Despite the importance of interest to academic performance, studies that evaluate the influence of interest on science performance and self-esteem among Upper Basic school students in Education Zone A of Benue State are lacking. Therefore, the level of learning difficulty of students is minimized for those with high level of educational interest in a particular subject. Consequently, effort must be made to see that students' interest is improved so as to foster their performance and self-esteem. Given the crucial role of interest in enhancing students' academic performance and self-esteem, especially in a foundational subject like Basic Science, this study investigated how students' interest mediates these outcomes among Upper Basic students in Education Zone A of Benue State.

Statement of the Problem

Basic Science plays a crucial role in helping students understand their immediate environment and contributes significantly to individual, community, and national development. However, there is a concerning trend of poor academic performance and low self-esteem among students in this subject. A review of past Basic Education Certificate Examination (BECE) results reveals inconsistent performance, with as many as 52.88% of students failing Basic Science in 2021 (BECE, 2013–2022). This poor performance may be linked to ineffective teaching methods, inadequate assessment practices, and students' lack of interest in

Basic Science. Low interest may often leads to reduced self-esteem and poor academic outcomes.

The persistent low performance and diminished self-esteem in Basic Science at the Basic Education level could hinder many students from pursuing science-related courses at the tertiary level, such as biotechnology, engineering, renewable energy, medicine, pharmacy, artificial intelligence, space exploration, and entrepreneurship. Interest is a potential key factor influencing this relationship, serving as a driver of student engagement and persistence in learning. Students with higher interest in Basic Science are more likely to perform better, which can, in turn, boost their self-esteem, while those with low interest may disengage due to fear of failure or perceived difficulty. Despite this, there is limited empirical research exploring this dynamic in the study area. Therefore, this study investigates the mediating role of interest in enhancing academic performance and self-esteem among Basic II students in Benue State, Nigeria.

Purpose of the Study

The study investigated the mediating role of interest in enhancing Basic Science academic performance and Self-esteem among students' in Benue State Nigeria. The study specifically sought to:

1. Find out the academic performance in Basic Science between students with high interest and those with low interest in Benue State.

2. Determine the self-esteem in Basic Science between students with high interest and those with low interest in Benue State.

Research Questions

This research was guided by the following research questions:

1. What is the difference in the mean academic performance scores in Basic Science between students with high interest and those with low interest?
2. What is the difference in the mean self-esteem ratings in Basic Science between students with high interest and those with low interest?

Hypotheses

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

1. There is no significant difference in the mean academic performance scores in Basic Science among students with high interest and those with low interest.
2. There is no significant difference in the mean self-esteem ratings in Basic Science between students with high interest and those with low interest.

Methodology

The research design adopted for this study was a cross-sectional survey. A cross-sectional survey design is a research methodology used to collect data from a sample of participants at a single point in time. Wang and Cheng (2020) view a cross-sectional study as observational study that analyzes data from a population at a single point in time. This design aims to gather information about the characteristics, attitudes, behaviors, or opinions of a population at a specific moment. The population of the study consisted of 15,623 Upper Basic II students from 162 UBE schools in the study area (State Universal Basic Education Board, Makurdi, 2023). The study sample comprised 390 Upper Basic II students from 36 UBE schools in Benue State, Nigeria. Multi-stage sampling procedure was adopted.

In the first stage, simple random sampling technique was used to select three local government areas in each district. This was

done to give each student in each school in the area an equal chance to participate in the study. In the second stage, purposive sampling technique was used to select four schools in each local government areas with well-equipped learning environment, teaching aids, and learning materials and qualified Basic Science teachers. In the third stage, students were selected in each school proportionate to the population of students in the school. This allowed each member within each school to have an equal chance of being selected. Three research-structured instruments were used for data collection in this study, namely; Basic Science Performance Test (BSPT), and Students' Interest in Basic Science Questionnaire (SIBSQ) and Basic Science Students' Self-Esteem Questionnaire (BSSSQ). The instruments contained items measuring issues on students' emotional security, classroom supportiveness, intimacy, acceptance, dependability, emotional reliance, warmth and relatedness.

The instruments that were used for the study were face validated by three experts. One of the experts is a specialist in Measurement and Evaluation, while the other two experts are in Science Education, from the Departments of Educational Foundations and Science and Mathematics Education respectively, all from Faculty of Education, Benue State University, Makurdi. Their corrections, suggestions, modifications, criticisms and clarifications guided the final draft of the instruments. The instruments (SIBSQ, BSSSQ and BSPT) were subjected to reliability test. The instruments were administered to 30 respondents who were not part of the sample, but part of the population.

Data collected were analyzed for reliability using Cronbach's Alpha for the SIBSQ and BSSSQ instruments, while the Kuder-Richardson Formula 20 (KR-20) was applied to the BSPT. The results showed reliability coefficients of 0.82, 0.70, and 0.90 for the SIBSQ, BSSSQ, and BSPT respectively, indicating that all instruments were reliable for this study. This aligns with Emaikwu's (2013) assertion that reliability coefficients between 0.55 and 0.99 are acceptable for research purposes. Basic Science teachers from the sampled schools were recruited and trained as research assistants to help administer the instruments using a direct delivery technique. The completed instruments were collected immediately by the research assistants under the supervision of the researcher. The data were then analyzed using mean, standard deviation, and t-test statistics.

Results

Research Question One: What is the difference in the mean academic performance scores in Basic Science between students with high interest and those with low interest?

Table 1: *Mean and Standard Deviation of Academic Performance Scores of Students with High Interest and those with Low Interest Levels*

Levels of Interest	N	Mean	Std. Deviation	Mean Difference
Low	45	12.60	5.42	
				1.93
High	345	14.53	4.13	

Result in Table 1 reveals that Basic Science students with high interest have mean performance scores of 14.53 and standard deviation of 4.13 while those with low interest have mean performance scores of 12.60 and standard deviation of 5.42. The standard deviation value of 5.42 for students with low interest implies that their performance scores are more scattered about the mean value compared to students with high interest who have standard deviation value of 4.13. The mean difference between the groups is 1.93 in favour of students with high interest. The implication is that students with high interest in Basic Science have higher mean performance scores in Basic Science than those with low interest.

Research Question Two. What difference exists in the mean self-esteem ratings in Basic Science between students with high and low interest?

Table 2: *Mean and Standard Deviation Scores of Self-Esteem Ratings of Students with High Interest and those with Low Interest Levels*

Level of Interest	N	Mean	Std. Deviation	Mean Difference
Low	45	2.57	0.38	0.13
High	345	2.70	0.45	

Result in Table 2 reveals that Basic Science students with high interest have mean self-esteem ratings of 2.70 and standard deviation of 0.45 while those with low interest have mean self-esteem ratings of 2.57 and standard deviation of 0.38. The standard deviation value of 0.38 for students with low interest implies that their self-esteem ratings are more clustered about the mean value compared to students with high interest who have standard deviation value of 0.45. The mean difference in self- esteem between the groups is 0.13 in favour of students with high interest. The implication of this result is that students with high interest in Basic have higher mean self-esteem ratings in Basic Science than those with low interest

Testing of Hypotheses

Ho1. There is no significant difference in the mean academic performance scores in Basic Science between students with high interest and those with low interest.

Table 3: t-test Analysis on Academic Performance scores in Basic Science between Students with High Interest and those with Low Interest

Variable	Interest	N	Mean	SD	df	t-value	P	Remark
Performance	Low	45	12.60	5.42	388	2.842	0.005	Sig.
	High	345	14.53	4.13				

Table 3 shows that t = 2.842, p=0.005< 0.05. Since the probability level (0.005) is less than the specified alpha level of 0.05, the null hypothesis is rejected. This means that there is a significant difference in the mean academic performance scores in Basic Science between students with high interest and those with low interest.

Ho2. There is no significant difference in the mean self-esteem ratings in Basic Science between students with high interest and those with low interest.

Table 4: t-Test analysis on Self-Esteem Ratings in Basic Science between Students with High Interest and those with Low Interest

Variable	Interest	N	Mean	SD	df	t-value	P	Remark
	Low	45	2.57	0.38				
Self-Esteem					388	1.852	.045	Sig.
	High	345	2.70	0.45				

Table 4 shows that t = 1.852, p=0.045< 0.05. Since the probability level (0.045) is less than the specified alpha level of 0.05, the null hypothesis is rejected. By implication, there is a significant difference in the mean self-esteem ratings in Basic Science between students with high interest and those with low interest.

Discussion of Findings

This study investigated exploring the mediating role of interest in enhancing academic performance and self-esteem of Basic II students in Benue State, Nigeria. The discussion is done based on the 2 research questions and their corresponding hypotheses set for the study. The findings revealed a significant difference in the mean academic performance scores in Basic Science between students with high interest and those with low interest. High interest students are more likely to study more actively, ask questions, explore topics further, and take initiative in their learning compared to their counterparts with low interest. This intrinsic motivation fosters a deeper connection with the material which may have enhanced both understanding and improved their academic performance in Basic Science. The finding agrees with finding by Olatunde (2017) who reported that, if a student shows high interest in a course, this helps the student to put in more time, effort and energy in learning leading to higher performance. *This* also *finding agrees with Hidi and Renninger (2020)* who found that students with high interest in science showed better emotional responses to learning tasks, which in turn positively affected their academic performance. Similar finding was reported by Mappadang, Khusaini, Sinaga and Elizabeth (2022) that academic interest determines significantly students' academic performance. High academic interest students possessed a bigger chance to have better academic performance. The study highlights that students with high interest in Basic Science performed better academically and had higher self-esteem than those with low

interest. This suggests that fostering student interest through engaging teaching methods and a supportive learning environment can significantly enhance academic performance. Educators, curriculum developers, and policymakers should prioritize strategies that cultivate interest to improve students' academic performance and self-esteem.

Findings from this research revealed a significant difference in the mean self-esteem ratings in Basic Science between students with high interest and those with low interest. This could be as a result of the fact that high-interest students are likely to engage more deeply in Basic Science, leading to better understanding, mastery of the subject, and, consequently, higher self-esteem. The satisfaction of succeeding in a subject they find enjoyable boosts their sense of competence and worth. Conversely, students with low interest may struggle more with the learning Basic Science and experience lower feelings of competence, which can negatively affect their self-esteem. This finding agrees with the finding of Kumar and Varma (2018) who reported that if we can secure an interest in a given set of facts or ideas, we may be perfectly sure that the student will direct his energies towards mastering them. Said, Al-Emadi, Friesen and Adam (2018) found that students are positive interest leads higher self-esteem. The author further added that strong interest captures students' attention and this attention leads to strong efforts to achieve a goal which may be related to academic, sports, society and curricular activity. The finding that students with high interest in Basic Science have significantly higher self-esteem implies that cultivating student interest can play a key role in boosting their academic performance and emotional self-esteem. Educators should therefore adopt teaching strategies that make learning more engaging and enjoyable to help students feel more competent and motivated. Schools and curriculum planners should also create supportive learning environments that encourage student curiosity and personal connection to the subject, as this can lead to higher academic performance and self-esteem.

Conclusion

This study concludes that students' interest in Basic Science plays a significant mediating role in enhancing both academic performance and self-esteem among Basic II students in Benue State, Nigeria. High interest leads to deeper engagement, improved understanding, and greater confidence, while low interest is associated with poorer academic outcomes and reduced self-worth. Therefore, fostering student interest through engaging, supportive, and student-centered teaching approaches is essential for promoting their academic performance and self-esteem.

Recommendations

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

1. Basic Science teachers should endeavour to create opportunities during planning, delivery and assessment of their lessons for students to develop interest in learning tasks for enhanced self-esteem and academic performance in Basic Science.
2. Teacher training institutions like colleges of education and faculties of education of universities should train pre-service teachers on how to arouse and sustain students' interests in order to improve students' interest and academic performance in basic science.

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