

SELF-AWARENESS AS CORRELATE OF STUDENTS' INTEREST AND PERFORMANCE IN BASIC SCIENCE IN TARABA STATE, NIGERIA

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ABSTRACT

The study investigated the relationship between Self-awareness and students' interest and performance in basic science in Takum Education Zone of Taraba State. Two research questions and two hypotheses guided the study. A correlational research design was used for the study and the population of the study was 3,492 with a sample size of 346 students. Three instruments were used for data collection: Emotional Intelligence Self-Assessment Scale (EISAS), Basic Science Interest Scale (BSIS) and Basic Science Academic Performance Test (BSAPT). The reliability indices of EISAS, BSIS and BSAPT were found to be 0.93, 0.82 and 0.71 respectively. Data was analyzed using linear regression. The findings revealed that there is a significant relationship between self-awareness and students' interest ($0.40 < r < 0.60$; $p < 0.05$) and students' performance in basic science ($0.40 < r < 0.60$; $p < 0.05$). It was concluded that Self-awareness is related to students' interest towards basic science as well as their performance in the subject. The study recommended among others that teachers should activate the affective domains of students by incorporating objectives and strategies that will build the affective domains of the learners since self-awareness as an element of emotional intelligence is an affective component of learning.

Key words: Basic Education, Basic Science, Self-awareness, Interest and Performance.

INTRODUCTION

Science Education is a comprehensive and integrated process of teaching learners about science, its methods and applications in relation with the society, technology and the environment. Therefore, Science Education prepares students for future careers in Science, Technology, Engineering and Mathematics (STEM) fields and empowering them to engage in complex scientific and societal challenges (Bybee, 2019). Science education is also a transformation and student-centered process that fosters scientific literacy, critical thinking, problem-solving, and inquiry skills, enabling students to understand and address complex real-life problems, make informed decisions, and participate in building the global economy and society, Next Generation Science Standards (NGSS, 2019). In particular, Science Education is an important way to develop innovative solutions related to global challenges such as climate change, sustainable development and healthcare by equipping learners with adequate knowledge, abilities, and attitudes relevant to the understanding of those issues driving economic growth and improvement in the quality of life, United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020). Science Education is essential for preparing students for careers in STEM fields, driving innovation, economic growth, and societal progress, as it provides students with the knowledge, skills, and attitudes necessary to succeed in these fields, addressing workforce needs and promoting global

competitiveness, National Science Board (NSB, 2020). Having highlighted some of the importance of science education in nation building, it becomes very important to educate the citizenry in science. It is in line with this advocacy that the Nigerian child is introduced to science education in the form of Basic Science at the primary education level.

Basic Science refers to the fundamental scientific discipline that study the natural world, including Biology, Chemistry, Physics, Earth sciences, and Mathematics, with a focus on understanding the underlying principles and mechanisms that govern the natural world. It provides a foundation for applied research, technological innovation, and addressing complex societal challenges, National Academy of Sciences, Engineering and Medicine (NASEM, 2019). It encompasses the systematic study of the structure, behaviour, and relationships of natural phenomena, aiming at developing theoretical frameworks, models, and concepts that explains and predicts natural events. It involves curiosity-driven research, experimentation, and evidence-based reasoning, laying the groundwork for breakthroughs in various fields and improving human understanding of the world (Argon-mendes et. al, 2019). Basic Science is crucial for driving innovation, economic growth, and societal progress by providing a foundation for applied research, technological advancements, and addressing complex challenges like climate change, healthcare, and sustainable development. It fosters critical thinking, problem-solving, and analytical skills, enabling individuals to make informed decisions and participate in the global economy (UNESCO, 2020). The study of Basic Science is essential for developing a scientifically literate population, enabling individuals to understand and address complex real-world problems, make informed decisions, and participate in the global economy and society. Basic Science pertains to the fundamental scientific discipline that delves into the natural world, encompassing Biology, Chemistry, Physics, Earth sciences and Mathematics. Its primary focus lies in comprehending the underlying principles and mechanisms governing natural phenomena. This field serves as a cornerstone for applied research, technological innovation, and tackling intricate societal issues, (NASEM, 2019). It entails the methodical examination of the structure, behaviour, and interconnections of natural occurrences, with the goal of formulating theoretical frameworks, models, and concepts that elucidate and forecast natural phenomena. Basic Science involves inquiry-driven exploration, experimentation, and evidence-based rationale, laying the foundation for advancements across various domains and enriching human comprehension of the universe (Argon-mendes et. al, 2019). It is essential for propelling innovation, economic expansion, and societal advancement, Basic Science underpins applied research, technological progress, and the resolution of intricate predicaments such as climate change, healthcare, and sustainable development. It nurtures critical thinking, problem-solving abilities, and analytical acumen, empowering individuals to make well-informed decisions and engage in the global economy (UNESCO, 2020). The study of Basic Science proves indispensable in fostering a scientifically literate populace, equipping individuals to grasp and tackle complex real-world challenges, make informed choices, and partake in the global economic and social landscape. Students need to develop interest in Basic Science to be able to appreciate its vast objectives.

Interest refers to a psychological state characterized by curiosity, fascination, and enthusiasm for learning, driving students to engage deeply with subject matter, explore concepts, and develop a sense of purpose and meaning (Hidi & Renninger, 2019). When students are interested in a course, they are more likely to invest effort, persist in the face of challenges, and develop love for learning that extends beyond the classroom. It is a

complex and multifaceted construct that encompasses cognitive, emotional and motivational components, influencing students' learning outcomes, academic achievement, and career choices (Krapp, 2020). Interest has a profound impact on students' career choices and professional development, as it influences their goals, values, and aspirations. When students are interested in a subject, they are more likely to pursue related careers, develop expertise, and become innovative thinkers, driving creativity, innovation, and progress in various fields, and ultimately leading to a more skilled and productive workforce as a result of an improved performance.

Performance is the demonstration of knowledge, skills, and abilities through observable behaviours, actions, and outcomes, showcasing students' mastery of learning objectives and academic standards (Popham, 2019). It encompasses various aspects, including cognitive, affective, and psychomotor skills, providing a comprehensive picture of students' learning progress. Performance is a multifaceted construct that encompasses students' achievement, accomplishment, and demonstration of learning, influenced by cognitive, motivational, and contextual factors (Wiggins, 2019). It involves the application of knowledge, critical thinking, problem-solving, and creativity, reflecting students' ability to transfer learning to real-world situations. The feelings of the learners of Basic Science shows in their emotions enabling them to do well when given a task to perform and they are self-aware of the exact problem presented them.

Self-awareness is the ability to have an honest and accurate understanding of one's own feelings, thoughts, values, motivations, and behaviours, involving emotional awareness, thought awareness, value awareness, motivation awareness, and behavioral awareness (Boyatzis, 2019). Saikia and Dutta (2024) explored the role of emotional intelligence and self-awareness in enhancing academic achievement. The results of the study showed a significantly strong positive association between EQ, self-awareness, and academic achievement. The regression analysis demonstrated that emotional intelligence was responsible for 21.3% of the variation in academic achievement, whereas self-awareness accounted for 7.7%. Wardana et al. (2025) also examined the relationship between Self-Awareness and learning outcomes in the Aqidah Akhlak subject at MTs Daarul Ma'arif Tegineneng. The research results showed that although self-awareness has a significant effect on learning outcomes (significance value 0.001), its contribution is relatively small, only 1.1% emotional triggers, strengths, weaknesses, and tendencies, as well as being aware of how one's emotions and behaviors impact others.

Self-awareness is essential for effective decision-making, emotional regulation, building strong relationships, confidence, and personal growth. Goyal and Goyal (2024) studied self-awareness and its impact on the academic and non-academic performance of university students. The findings from the study states that students with higher levels of self-awareness were found to perform well in their academics and extracurricular, subject to the person's capability. The study concluded that self-awareness is linked to students' academic performance. This findings had a lot of educational implications for practice. Self-awareness involves being able to reflect on one's own emotions, thoughts, and behaviors, and being open to feedback and new experiences (Goleman, 2020). Developing self-awareness can be achieved through practices such as mindfulness, journaling, and seeking feedback from others (Boyatzis, 2019). By cultivating self-awareness, individuals can gain a deeper understanding of themselves, leading to improved relationships, increased confidence, and greater overall well-being (Joseph & Newman 2020). Self-awareness is a vital link between learners' interest and performance, enabling them to navigate their

learning journey with confidence, motivation, and a growth mindset. Tendolkar et al. (2021) investigated self-awareness as a predictor of adolescent behaviour among nursing students. Four specific objectives guided the study. They found that self-awareness has positive non-significant ($r=0.004$, $p=0.91$) relationship with the social behavior among adolescents. It was concluded that as self-awareness improves, there are chances of improving the social behavior of adolescents.

The primary aim of the study by Zhihao and Kee (2024) was to examine the association between social awareness and the emotional competence of students. Additionally, the research investigated the mediating impact of cognitive appraisal and self-efficacy, as well as the moderating influence of personal well-being. The study was carried out in relation to the educational system of China. The results of the study revealed a significant correlation between Social Awareness (SA) and both Self Awareness (SAW) and self-efficacy (SE). The impact of Cognitive appraisal (CA) on the efficacy of Social Awareness and Self-awareness is also significant. Another study conducted by Kasera et al. (2019) investigated the relationship between self-awareness and indulgence in behavior problems among form II students in public secondary schools in Kenya and the result of the study showed that there was statistically significant, ($n=780$ $r =.210^{**}$; $p<.05$), positive correlation between Self-Awareness and indulgence in behavior among students. The study recommended that the teachers or counsellors should initiate periodical students' psychological assessment on their self-awareness to be able to identify students with low level awareness.

Despite the importance of Basic Science education in fostering students' understanding of fundamental concepts and preparing them for future careers in STEM fields, many students have low interest in the subject and as a result perform low at Basic Education Certificate Examination (BECE) in recent years. This low interest which summersaulted into low performance at BECE could be one of the reasons for students' poor interest and performance in science subjects e.g. Physics, Chemistry, Biology and Mathematics among others, since Basic Science is the foundation of science subjects. Therefore, students' low performance in Basic Science could be related to their low interest rate in the concept.

Studies to examine the relationship between students' self-awareness, their interest and performance has been carried out by researchers in different subject areas but Basic Science. Therefore, teachers of the subject do not usually put into cognizance their self-awareness and that of their learners while delivering their lessons, should self-awareness have any relationship on Basic Science students' interest and performance and it is neglected, may have far-reaching consequences on the learners' interest and academic performance and career prospects.

Purpose of the Study

The study intended to find out the relationship between Basic Education students' self-awareness and Interest as well as their Performance in Basic Science. Specifically, the study investigated the;

- i. Relationship between students' Self-awareness and their interest in Basic Science.
- ii. Relationship between students' Self-awareness and their performance in Basic Science.

Research Questions

The study answered the following questions;

- i. What is the relationship between students' Self-awareness and their interest in Basic Science?
- ii. What is the relationship between students' Self-awareness and their Performance in Basic Science?

Hypothesis

HO₁: There is no significant relationship between students' Self-awareness and their Interest in Basic Science.

HO₂: There is no significant relationship between students' Self-awareness and their performance in Basic Science.

METHODOLOGY

The study used correlational survey design. The design was considered appropriate for the study because it will establish the nature of relationship that exists between Self-awareness and students' Interest and academic Performance in Basic Science. 3,492 formed the population for the study out of which 346 students formed the sample size for the study across 6 out of 47 schools in Takum Education Zone of Taraba State. The multistage sampling involving purposive, stratified and simple random sampling was adopted. The study used three instruments for data collection. They are Emotional Intelligent Self-Assessment Scale (EISAS), Basic Science Interest Scale (BSIS) and Basic Science Academic Performance Test (BSAPT). The EISAS was adapted from Mayer-Salovey-Caruso Emotional Intelligence Test, MSCEIT (Mayer, Salovey, & Caruso, 2002). It was made up of 40 items that were measured on a 4-point Likert scale and give a full point of 160. The items consist of series of statements reflecting on students' self-awareness. The Basic Science Interest Scale (BSIS) was adapted from Nwuba et al (2023) consisted of 30 items measured on 4-likert scale which aided to ascertain the level of interest level of the respondents for the subject and gave a full point of 120. Basic Science Academic Performance Test (BSAPT) was made up of 30 items that were adapted from Basic Education Certificate Examination (BECE) past question papers. The internal consistency reliability index of 0.93 for EISAS was calculated using Cronbach alpha statistic, Basic Science Interest Scale (BSIS) has a reliability coefficient (r) of 0.82, while BSAPT has the reliability index of 0.71 calculated using KR-20 formula.

Data analysis was done using regression analysis to know if there is a relationship between self-awareness and Basic Education students' Interest and Performance in Basic Science. Regression analysis was further used to explain how self-awareness is able to predict students' Interest and Performance in Basic Science. Mean, Standard deviation and Correlation of Linear Regression (R) were used to answer the 2 research questions while ANOVA of Linear Regression was used to test the 2 null hypotheses, this is because it enables the researcher to gain insights into the relationship that exist between students' Self-awareness and their Interest and Performance in Basic Science.

RESULTS AND DISCUSSION

Research Question 1: What is the relationship between students' self-awareness and their interest in Basic Science?

Table 1: Mean, standard deviation and relationship between self-awareness and interest

Variables	Mean	Std. dev.	R	R Squared	Adjusted R Squared
Self-awareness	32.97	5.373	0.580 ^a	0.336	0.334
Interest	95.23	14.219			

a. Predictors: (Constant), self-awareness

From the data presented in table 1, it can be seen that the mean Self-awareness and Interest ratings are 32.97 and 95.23 respectively. The correlation, R, is 0.580. This means that there is a positive relationship between Self-awareness and Interest with the magnitude being moderate. R² value is 0.336. This means that Self-awareness accounts for approximately 34% of the variation in students' Interest towards basic science.

Research Question 2: What is the relationship between students' Self-awareness and their Performance in Basic Science?

Table 2: Mean, Standard deviation and relationship between self-awareness and performance

Variables	Mean	Std. dev.	R	R Squared	Adjusted R Squared
Self-awareness	32.97	5.373	0.521 ^a	0.271	0.269
Performance	13.98	4.864			

a. Predictors: (Constant), selfaware

From the data presented in table 2, it can be seen that the mean Self-awareness rating and Performance score are 32.97 and 13.98 respectively. The correlation, R, is 0.521. This means that there is a moderate positive relationship between Self-awareness and Performance. R² value is 0.271. This means that Self-awareness accounts for approximately 27% of the variation in students' Performance in Basic Science.

Null Hypothesis 1

Ho₁: There is no significant relationship between students' Self-awareness and their Interest in Basic Science.

Table 3: ANOVA of linear regression analysis between self-awareness and interest

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	23426.555	1	23426.555	173.976	0.000^b
	Residual	46320.948	344	134.654		
	Total	69747.503	345			

a. Dependent Variable: interest

b. Predictors: (Constant), selfaware

The table 3 above shows that the ANOVA of regression analysis on the relationship between Self-awareness and students' Interest, $F(1,344) = 173.967$, is significant ($p = 0.000 < 0.05$). This means there is a significant relationship between Self-awareness and students' Interest towards Basic Science

Ho₂: There is no significant relationship between students' Self-awareness and their Performance in Basic Science.

Table 4: ANOVA of linear regression analysis between self-awareness and performance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2215.881	1	2215.881	128.197	0.000^b
	Residual	5946.015	344	17.285		
	Total	8161.896	345			

a. Dependent Variable: performance

b. Predictors: (Constant) selfaware

The table 4 above shows that the ANOVA of regression analysis on the relationship between Self-awareness and students' Performance $F(1,344) = 128.197$ is significant ($p = 0.000 < 0.05$). This means there is a significant relationship between the Self-awareness and students' Performance in basic science.

Discussion of Findings

The findings of the study revealed that there is a moderate positive correlation between self-awareness and students' interest towards Basic Science. This relationship is statistically significant. The plausible justification for this observation is that self-awareness helps students recognize their strengths and consequently learning preferences. When students are self-aware, they can comprehend better how science connects to their personal goals and curiosity. This in turn can increase their motivation, engagement, and interest in science subjects, as they see the relevance and feel more confident in their ability to succeed. This is consistent with the findings of Kasera et al. (2024) who found a significant positive correlation between self-awareness and behaviour indulgence of students; show of interest towards a subject is one of the measurable expressions of behaviour. It also agrees with Zhihao and Kee (2024) who also reported a significant association between self-awareness and competence. The finding disagrees with Tendolkar et al. (2021) who found that self-awareness has a weak positive but non-significant relationship with social behaviour. Overall, there is a moderate positive correlation between self-awareness and students' interest towards Basic Science.

Findings on relationship between self-awareness and performance of the students revealed that there is a moderate positive relationship. This relationship was found to be statistically significant. With self-awareness, students get to understand their strengths, weaknesses, and learning styles. This understanding helps them to study more effectively, make better academic choices, and seek help when needed. Such doing is accompanied by an improved performance in Basic Science subject. This finding buttresses the finding of Wardana et al. (2025) who showed that self-awareness has a significant effect on learning outcome. It further agrees with Goyal and Goyal (2024) who observed that self-awareness is positively correlated with students' academic performance. It is also in line with Saikia and Dutta (2024) who reported that there is a positive association between self-awareness and achievement. Therefore, it is worthy of note that self-awareness enhances students' Interest and Performance in Basic Science, this is because when students are aware of their feelings, it enables them to assimilate properly what is being taught and that ultimately increase their Interest in the subject and such is reflected in their improved performance in the subject.

CONCLUSION

The study concludes that self-awareness is strongly positively related to students' interest towards basic science as well as their performance in the subject.

RECOMMENDATIONS

Teachers of basic science should utilize role-playing scenarios to introduce self-awareness into classroom instructions.

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