



SELF-AWARENESS AND MOTIVATION AS CORRELATES OF ACADEMIC ACHIEVEMENT IN BIOLOGY AMONG SENIOR SECONDARY SCHOOL STUDENTS IN KOGI STATE

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Abstract

This study investigated the relationship between emotional intelligence components self-awareness and motivation and academic achievement in Biology among senior secondary school students in Lokoja Local Government Area of Kogi State. Grounded in emotional intelligence theory, particularly the works of Daniel Goleman and Mayer, Caruso and Salovey, the study examined how these psychological traits influence performance in science learning. A correlational research design was adopted. The population comprised 1,429 SS II Biology students from 11 government-owned secondary schools, from which a sample of 313 students was selected using a multistage sampling technique. Data were collected using the Questionnaire on Self-Awareness and Motivation (QSAM), validated by experts and tested for reliability (Cronbach Alpha coefficients of 0.85 for self-awareness and 0.88 for motivation). Academic achievement was measured using students' Biology performance records. Data were analyzed using correlation statistics, mean and standard deviation. Findings revealed a moderate positive and statistically significant relationship between self-awareness and academic achievement in Biology ($r = .42$, $R^2 = .18$). Motivation showed a stronger positive and significant relationship with achievement ($r = .51$, $R^2 = .26$). Furthermore, self-awareness and motivation jointly accounted for 38% of the variance in students' academic achievement ($R = .62$, $R^2 = .38$), indicating a significant combined predictive effect. The null hypotheses were rejected at the 0.05 level of significance. The study concludes that self-awareness and motivation are significant psychological correlates of academic achievement in Biology. It recommends integrating emotional intelligence enhancing strategies into Biology instruction to improve students' academic outcomes.

Keywords: Emotional Intelligence, Self-Awareness, Motivation, Academic Achievement, Biology Education and Science Learning

Introduction

Academic achievement, particularly in science subjects such as biology, is influenced not only by cognitive factors but also by emotional and psychological traits. In recent years, educational researchers have drawn attention to emotional intelligence (EI) as a critical factor that contributes to students'

academic achievement. Among the various components of EI, self-awareness and motivation stand out as key predictors of learners' performance. These emotional capabilities are essential for understanding personal learning needs and sustaining effort in the face of academic challenges. As educational demands continue to increase,



exploring how emotional intelligence affects performance in core subjects like Biology has become increasingly relevant. Hence self-awareness which is an aspect of emotional intelligence needs to be investigated.

Self-awareness refers to the ability of individuals to recognize and understand their own emotions, behaviors, strengths and limitations and how these influence their actions and performance. It is considered a foundational element of emotional intelligence. Goleman (2021) describes self-awareness as the capacity to monitor one's internal emotional states and use that knowledge to guide behavior. Mayer, Caruso and Salovey (2016) define it as a person's ability to perceive their own feelings and understand how those feelings affect their interactions. Bar-On (2018) views self-awareness as the ability to be in tune with one's emotions and use that awareness to make rational decisions. Cherniss (2020) explains that self-awareness fosters self-confidence and clarity, which are essential for coping with academic stress and responsibilities.

Empirical studies have highlighted the relevance of self-awareness in academic settings. For instance, Aydin and Kaya (2019) found that students who are self-aware tend to plan better, manage study time effectively, and seek help when necessary. Beri and Jain (2021) also observed that students with strong self-awareness skills display better emotional regulation and academic resilience. However, most existing studies have either examined self-awareness in university populations or focused broadly on emotional intelligence as a whole without isolating the unique contribution of self-awareness. In addition, the specific relationship between self-awareness and achievement in secondary school Biology as a subject that requires both conceptual understanding and emotional engagement

has received limited attention. This gap underscores the need for focused research on how self-awareness influences Biology achievement among senior secondary students specifically in Lokoja local government area of Kogi state.

Secondly Motivation, which is another critical component of emotional intelligence, refers to the internal or external drive that energizes and sustains behavior toward achieving academic goals. It is responsible for initiating, guiding, and maintaining goal-directed activities. Deci and Ryan (2020) define motivation as the force that drives behavior through either intrinsic satisfaction or extrinsic rewards. According to Wigfield and Cambria (2018), motivation involves learners' beliefs, goals and values that determine the direction and intensity of their learning efforts. Alrabai (2018) defines motivation as the internal energy that influences learners' engagement and performance in learning tasks. Similarly, Schunk, Pintrich, and Meece (2017) emphasize that motivated learners are more likely to set learning goals, persist through challenges and demonstrate academic success.

Motivation is particularly important in the learning of science subjects, which require consistent engagement, abstract thinking and often practical application. Studies such as those by Ahmed, Hussain, and Farooq (2020) and Wigfield et al. (2021) have shown that motivated students tend to be more committed to their academic tasks and perform better in subjects that demand critical thinking and sustained effort. Nevertheless, the majority of studies have examined motivation as a broad construct across general academic performance or in disciplines outside the sciences, such as language and social studies. Very few have investigated how motivation alone relates success in Biology, especially at the



secondary school level, where students often face challenges such as complex terminologies, unfamiliar processes and practical laboratory activities. This reveals a need to study the motivational factors specific to Biology achievement in this student population.

Academic achievement is commonly defined as the extent to which a student meets specific learning goals, often assessed through grades, test scores and performance in academic tasks. Steinmayr, Meißner, Weidinger and Wirthwein (2018) describe academic achievement as measurable outcomes that reflect a student's mastery of curriculum content. Fan and Williams (2018) argue that achievement is shaped not only by intellectual ability but also by affective and motivational factors. In Biology, achievement is typically evaluated through written examinations, practical assessments, and continuous evaluations. Academic achievement in this subject requires not only the retention of scientific knowledge but also an emotional disposition that supports inquiry, critical thinking and resilience.

Several researchers have reported that emotional intelligence significantly influences students' academic achievement. For instance, Zhenfei Zhou et al. (2024) found that emotional intelligence positively correlates with students' academic performance and educational achievement. Similarly, Ye Shengyao et al. (2024) observed that emotional intelligence, together with motivation and self-efficacy, significantly predicts academic achievement among students. In another Nigerian study, Chijioke E. Ohuakanwa (2024) reported that self-awareness and self-motivation, as dimensions of emotional intelligence, strongly enhance students' academic adjustment and learning outcomes in universities. Likewise, John A. Fadahunsi et al. (2025) established that emotional

intelligence has a significant effect on senior secondary school students' academic achievement in Biology. Furthermore, C. O. Obialor et al. (2024) revealed a positive relationship between emotional intelligence and students' achievement in Biology among secondary school students in Awka South Education Zone. Despite these findings, most studies have treated emotional intelligence as a broad construct or focused mainly on tertiary-level students, with limited attention given to how self-awareness and motivation jointly influence Biology achievement among senior secondary school students in Lokoja Local Government Area of Kogi State. This therefore creates a gap in literature which the present study seeks to fill.

To this effect, there remains a gap in understanding how some components of emotional intelligence, such as self-awareness and motivation, specifically influences academic achievement in biology in senior secondary school students' academic achievement in biology specifically in Lokoja local government area of Kogi state

Purpose of the study

The general purpose of this study is to explore how self-awareness and motivation correlate with students' academic achievement among senior secondary school students in Biology in Kogi State. Specifically, the study aims to:

1. examine the relationship between self-awareness and academic achievement in biology among senior secondary school students in Kogi State
2. investigate the relationship between motivation and academic achievement in biology among senior secondary school students in Kogi State
3. determine the joint relative power of self-awareness and motivation in biology among senior secondary school students in Kogi State



Research Questions

1. what is the relationship between self-awareness and academic achievement in biology among senior secondary school students in Kogi State
2. what is the relationship between motivation and academic achievement in biology among senior secondary school students in Kogi State
3. To what extent do self-awareness and motivation jointly relate to academic achievement in biology among senior secondary school students in Kogi State

Hypotheses

The following null hypotheses guided the study;

1. there is no significant relationship between self-awareness and academic achievement in biology among senior secondary school students in Kogi State
2. there is no significant relationship between motivation and academic achievement in biology among senior secondary school students in Kogi State
3. there is no significant relationship between self-awareness and motivation, and academic achievement in biology among senior secondary school students in Kogi State

Methodology

The study adopted a correlational research design. The design aims to determine the relationship between emotional intelligence (self-awareness and motivation) and students'

Table 1: *Relationship between self-awareness and academic achievement in biology among senior secondary school students in Biology*

Variable	N	R	R ²
Academic Achievement in Biology	313	.420	0.18
Self-awareness			

Key: N=Number of respondents, R = correlation coefficient, R² = Coefficient of determination

The result in table 1 shows that there is a relationship between students' academic achievement and self-awareness. This indicates that there is a moderate, positive relationship between self-awareness and

academic achievement. The population of the study comprised 1,429 Biology Students enrolled in Senior Secondary School (SSII) across 11 government-owned senior secondary schools in Lokoja Local Government, Kogi State. The sample for the study was 313 SS II Biology students drawn from the population using a multistage sampling procedure. Three research questions and three null hypotheses guided the study. The instrument questionnaire on Self-awareness and motivation in Biology (QSAM) was used for data collection with two clusters, which have four Likert scales of Strongly Agree 4 to Strongly Disagree 1. The instrument was subject to face validation by three experts in faculty of education. Two from the department of science education and one from educational psychology department, their suggestions were incorporated to the final instrument. To ensure the reliability of the instrument, a small sample of students outside the study area were used to conduct a pilot study. The internal consistency coefficient of 0.85 (Self-awareness) and 0.88 (motivation) were obtained using Cronbach Alpha. The questionnaire was self-administered to the selected respondents and collected back immediately; this was to ensure maximum return of the instrument. Data were analyzed using mean and standard deviation.

Results

academic achievement in biology among senior secondary school students in Kogi State. This implies that students with higher self-awareness tend to perform better in biology.



Hypothesis 1: *There is no significant relationship between self-awareness and academic achievement.*

From table 1, we reject the null hypothesis. This is because $r = .42$, which is higher than the p -value of 0.05 level of significance.

Table 2: ***relationship between motivation and academic achievement in biology among senior secondary school students in Biology***

Variable	N	R	R^2
Academic Achievement in Biology	313	.510	0.260
Self-awareness			

Key: N=Number of respondents, R = correlation coefficient, R^2 = Coefficient of determination

The result in table 2 shows that there is a relationship between students' academic achievement and motivation. This indicates that there is a strong positive relationship between motivation and academic achievement in biology among senior secondary school students in Kogi State. This implies that students with higher self-awareness tend to perform better in biology.

Hypothesis 2: *There is no significant relationship between motivation and academic achievement.*

Therefore, there is a significant difference in the relationship between self-awareness and students' academic achievement in biology in Kogi State. This implies that students with higher self-awareness tend to perform better in biology.

From table 2, we reject the null hypothesis. This is because $r = .51$. Which is higher than the p -value of 0.05 level of significance. Therefore, there is a moderate positive and statistically significant difference in the relationship between motivation and students' academic achievement in biology in Kogi State. This implies that students with higher self-awareness tend to perform better in biology.

Table 3: To what extent do self-awareness and motivation jointly relate to academic achievement in biology?

Variable	N	R	R^2	F	Sig
Academic Achievement in Biology	313	.62	0.38	95.42	0.10 ^b
Self-awareness					

Key: N=Number of respondents, R = correlation coefficient, R^2 = Coefficient of determination

From the table 3, it shows that Self-awareness and motivation jointly relate 38% of the variance in academic achievement in biology among the students. These indicate that both relateors contribute significantly, with motivation having a slightly stronger influence.

There is no significant relationship between self-awareness and motivation, and academic

achievement in biology among senior secondary school students in Kogi State

The result in Table 3 shows that $F(2, 312) = 95.42$, $p = .01 < .05$ for the joint relationship between self-awareness, motivation, and students' academic achievement in biology. Since the observed p -value is less than the level of significance (.05), the null hypothesis is rejected. This confirms that self-awareness



and motivation significantly relate students' academic achievement in biology.

Discussion

The finding that self-awareness significantly correlates with academic achievement in biology among senior secondary school students aligns with prior research highlighting the role of self-concept and emotional awareness in improving academic outcomes. For example, Nwosu and Samuel (2022) reported that self-concept and achievement motivation significantly related biology performance among secondary school students in Anambra State. Their study emphasized that students who possess a clearer understanding of themselves and their goals are more likely to engage effectively in learning. Similarly, Sakarya and Onanuga (2022) found that intrinsic motivational factors, which are often associated with self-awareness, contributed meaningfully to improved science learning outcomes. These studies support the current finding. However, contrasting evidence from Odukoya and Odetunde (2021) showed no significant relationship between emotional awareness and academic achievement, suggesting that the effect of self-awareness may depend on other contextual or instructional factors.

The second finding revealed that motivation had a strong and significant relationship with academic achievement in biology. This agrees with the findings of Ibrahim and Ismail (2024), who discovered that both intrinsic and extrinsic motivation were significant relaters of academic performance among senior secondary school students in Katsina State. Similarly, in Bayelsa State, Okoli and Obasi (2021) found that motivation positively correlated with academic success in biology, noting that motivated students demonstrate increased classroom engagement, goal-setting and persistence. Conversely, Oladipo and Akanbi

(2018) reported a weak and non-significant relationship between motivation and achievement in science subjects, proposing that environmental and instructional variables may play a mediating role.

The third finding indicated that self-awareness and motivation jointly related to students' achievement in biology, accounting for a substantial proportion of the variance. This aligns with Nwosu and Samuel (2022), who demonstrated that the combination of self-concept and motivation significantly explained variance in biology achievement among secondary school learners. Their findings confirm that internal psychological traits are important contributors to academic success. Likewise, Wu, Qi, and Zhong (2022), in an international study, found that self-related traits and motivation jointly and significantly related students' science achievement, confirming that the interplay between these two factors enhances learning. However, Udo and Etim (2019) found that motivation alone related to academic performance, while self-awareness had no significant contribution in their model, implying that the role of self-awareness might be contingent upon instructional strategies or student demographics.

Conclusion

The findings of this study revealed that self-awareness and motivation are significant psychological correlates of academic achievement in biology among senior secondary school students in Kogi State. Their individual and combined contributions suggest that educators should adopt strategies that promote emotional intelligence to support academic performance. As such, integrating activities that enhance students' self-awareness and motivation into the biology curriculum can foster deeper engagement and improved outcomes in science learning.



Recommendations

1. Biology teachers should use instructional strategies that enhance students' self-awareness and motivation through reflective activities, goal-setting, and encouragement during learning.
2. Students should be encouraged to develop positive study habits, set academic goals, and engage in self-monitoring practices that can improve their motivation and academic performance in Biology.
3. School counsellors and administrators should organize motivational programmes and emotional intelligence training to improve students' interest and engagement in Biology.
4. Curriculum planners should integrate emotional intelligence components, particularly self-awareness and motivation, into the secondary school curriculum to improve academic achievement.
5. Parents should provide emotional support and a conducive learning environment that encourages students to develop positive attitudes toward Biology learning.

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