

IMPACT OF INTRINSIC ACADEMIC MOTIVATION AND INTRAPERSONAL EMOTIONAL INTELLIGENCE ON ACADEMIC PERFORMANCE OF UNDERGRADUATE BIOLOGY STUDENTS IN A NIGERIAN TERTIARY INSTITUTION

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Abstract

This study investigated the impact of intrinsic academic motivation and intrapersonal emotional intelligence on undergraduate biology students' academic performance. The study employed descriptive survey, 393 undergraduate biology students randomly chosen from the Biological Sciences Department at Tai Solarin University of Education in Ogun State made up the sample for this study. The Academic Intrinsic Motivation Questionnaire and Emotional Intelligence Scale were adapted and used in this study. The research hypotheses were tested using correlational and regression statistics. Based on our findings, undergraduate biology students' academic performance was significantly influenced by their intrinsic academic motivation and intrapersonal emotional intelligence ($F_{2, 388} = 3.040$; $p = 0.049$; $R^2 = 0.016$); intrinsic academic motivation was negatively correlated with academic performance ($r = -0.110$, $p = 0.030$) and intrapersonal emotional intelligence was also inversely associated with academic performance of undergraduate biology students ($r = -0.115$, $p = 0.024$). In order to foster students' innate academic motivation and intrapersonal emotional intelligence, it was recommended that school administrators work with teachers to give them timely in-service training and hands-on seminars. This would arm them with teaching strategies and educational technology tools.

Keywords: Intrinsic Academic Motivation, Intrapersonal Emotional Intelligence, Academic Performance, Undergraduates, Biology Students

Introduction

Education researchers continue to be interested in intrinsic motivation because they believe it is essential in determining what influences students' academic performance and forecasting their success in school (Asif, Kamal, Fahim, Naveen, & Yousaf, 2018). The most effective form of motivation, suggested by Fabien (2015), is intrinsic

motivation. Peer pressure, complacency, and indecision are less likely to demotivate a student who has intrinsic motivation (Fabien, 2015).

Since academic achievement and future success are both influenced by a variety of factors, educational researchers are increasingly interested in studying academic motivation, particularly intrinsic motivation.

Numerous studies on intrinsic motivation have been carried out all over the world in order to assess the efficacy of instruction and curriculum, comprehend the attitudes of students toward academic learning and to develop interventions that are truly student-centered (Adamma, Ekwutosim, & Unamba, 2018).

Positivity toward learning and completing tasks for their own sake are two examples of intrinsic motivation for academic performance (Adele, 2019). It talks about what drives someone on the inside to perform at the highest academic levels. A person who is driven to learn will work hard to accomplish their objectives. Some students push themselves to the highest levels of academic success, but most students are encouraged to work toward their goals by others' support. Since they take pride in meeting demanding academic requirements, this group of students is said to have a strong psychological foundation (Gottfried, 2019).

Intrinsic motivation, which is often referred to as the basis of profound and sustained learning (Garcia & Jurado, 2019), is one of the psycho-educational factors that has the highest impact on learning in the classroom. Students who are motivated adequately pay more attention to what they are doing, keep looking for answers to their difficulties, and put in more time and effort than students who are not sufficiently driven. They are eager to comprehend all they are studying in depth and to develop the necessary abilities.

Adamma et al. (2018) argued that naturally motivated students pick up knowledge on their own and always opt to tackle challenging assignments. They show positive emotions while they are learning, they persevere in completing the task they have started, they combine

the knowledge they have learned in school with experiences they have had outside of school, they frequently ask questions to further their knowledge, and they do so in spite of any outside pressures or teacher assistance. They are also proud of their work. Students with high intrinsic motivation are better able to grasp new concepts and show a deeper comprehension of the subject. Educators are still interested in intrinsic motivation since it is essential to comprehending what influences students' academic progress and forecasting their success in school (Asif et al., 2018).

Nakamura and Csikszentmihalyi (2014) asserted that experiencing emotions is a multifaceted process that involves understanding and expressing a situation, preparing to act, and, eventually, the physiological and mental changes that follow the process as a whole. As numerous theoretical perspectives on emotional intelligence emerge in academic studies and as various ideas give rise to different measures of emotional intelligence, there is the potential for disagreement about definitions and conceptualizations (Hughes & Evans, 2018).

The study of cognitive processes and how emotions affect them is the basis for the idea of emotional intelligence. Although it was considered to be a distinct cognitive phenomenon, general intelligence was also linked to it. Intrapersonal emotional intelligence is exemplified by the ability to manage and reflect on one's own thoughts, feelings, and behaviors as well as the capability to utilize the optimal strategies to face and engage in each individual social setting (Franco, Beja, Candeias, & Santos, 2017). It has been associated with academic achievement, fewer learning difficulties, student motivation, their willingness to

participate in scientific activities, and their capacity to collaborate effectively (Sternberg, 2015).

Roy, Sinha and Suman (2013) investigated the relationship between the emotional intelligence of students and their motivation for academic success in secondary schools in India. One hundred and five (105) students were chosen at random from among fifty seven (57) girls and forty eight (48) boys who completed the emotional intelligence achievement motivation assessments for the study. Academic performance, motivation, and emotional intelligence have a strong relationship, according to the data analysis utilizing Pearson correlation. The study also revealed that children's emotional intelligence varied among those with high, moderate, and low levels of academic performance motivation. Maraichelvi and Rajan (2013) conducted research in India to determine how college students' academic success was influenced by their emotional intelligence. Three hundred (300) female college students who took Psychology as a course made up the sample. An emotional intelligence questionnaire was used to calculate emotional intelligence quotient. The findings demonstrated that academic success is highly predicted by emotional intelligence.

Research on emotional intelligence as a predictor of academic achievement among secondary school students was done by Amalu (2018) in the Benue State capital of Makurdi. She found that the components of emotional intelligence—self-awareness of one's emotions, social skills, empathy, self-regulation, and self-motivation—significantly influenced the academic success of the students. According to Ogunsaju, Adeyanju and Oshinyadi

(2015), students' academic success was significantly impacted by their emotional intelligence. According to studies by Roy et al. (2013) and Chamundeswari (2013), academic achievement and emotional intelligence are strongly correlated.

The decline in the academic performance of students in secondary schools in Nigeria has been a major cause of worry for policymakers and stakeholders in the education system. Government initiatives at all levels to address this issue and raise student academic achievement have tended to place more emphasis on infrastructure development, school equipment, and the hiring of trained instructors, which may not have had the desired impact. Poor academic performance in secondary school limits students' opportunities for job advancement and hinders their capacity to thrive in a world that is becoming more and more competitive. Although secondary school curricula have been designed in order to fulfill this natural gap, it is possible that the significance of students' emotional performance standards has been overlooked, misunderstood, or overlooked. The development and improvement of emotional intelligence abilities, which have been found to be important predictors of academic achievement, is crucial to halting the unfortunate trend of low academic achievement among secondary students. A student may heal from physical discomfort or harm, but he or she might never do so from the horror and degeneration of their emotional state (Nwadinigwe & Azuka-Obieke, 2012).

It is a well-known fact that discussions on educational challenges in society often center on students' academic performance (Ogbonnaya, 2023). Parents, teachers, the

government, curriculum designers, and planners have all expressed serious concern regarding students' academic performance. These stakeholders are happy when the output of education in terms of academic performance are result-oriented biology examinations but reverse is the case when output does not measure up to input which is evident in poor academic performances (Ogbonnaya, 2023).

Having examined the concept of intrinsic academic motivation, intrapersonal emotional intelligence and its impact on the academic performance, it is therefore imperative for this study to investigate the impact of intrinsic academic motivation and intrapersonal emotional intelligence on academic performance of undergraduate biology students in a Nigerian tertiary institution.

Research Questions

The following research questions guided this study:

- i. Is there any significant impact of intrinsic academic motivation and intrapersonal emotional intelligence on academic performance of undergraduate biology students?
- ii. Is there any significant correlation between intrinsic academic motivation and academic performance of undergraduate biology students?
- iii. Is there any significant correlation between intrapersonal emotional intelligence and academic performance of undergraduate biology students?

Research Hypotheses

The following research hypotheses were tested for this study:

- i. Intrinsic academic motivation and intrapersonal emotional intelligence have no significant impact on academic performance of undergraduate biology students;
- ii. There is no significant correlation between intrinsic academic motivation and academic performance of undergraduate biology students; and
- iii. There is no significant correlation between intrapersonal emotional intelligence and academic performance of undergraduate biology students.

Methodology

Research Design

For this study, a descriptive survey design was adopted.

Population

All undergraduate biology students from Tai Solarin University of Education in Ogun State, Nigeria, made up the study population.

Sample and Sampling Technique

Three hundred and ninety-three (393) undergraduate biology students who were enrolled for the 2021/2022 academic year were chosen using a simple random sampling procedure. A total of 97 out of 393 participants (25%) were males, and 296 out of 393 (75%) were females. This was due to the Biological Sciences Department's higher proportion of females.

Research Instrument

Academic Intrinsic Motivation Questionnaire (Regina, 1998) and Emotional Intelligence Scale (Schutte et al., 1998) were employed as data collection instruments. There are 19 and 18 items altogether on the questionnaire

and scale, respectively. Peer acceptance, authority expectations, fear of failure and power motivations are among the factors stated in the Academic Intrinsic Motivation Questionnaire. The statements that make up the 19 items are found in each of the factors. Of the 33 total items on the Emotional Intelligence Scale, 18 are related to intrapersonal emotional intelligence.

Validity and Reliability of Instrument

Item analysis was carried out prior to the application stage using 40 students from the target population who were not involved in the main study. The purpose of this item analysis was to standardize the questionnaire and scale items. When the scale and questionnaire items' reliability was tested using Cronbach Alpha, the results for intrinsic academic motivation and intrapersonal emotional intelligence showed good internal consistency reliability coefficients of 0.797 and 0.773 respectively.

Administration and Data Analysis

During the administration phase, 400 copies of the instruments were given to undergraduate biology students who were chosen at random and who completed them the same day they were given. Only 393 copies were actually retrieved at the point of retrieval, representing a 98% return rate. The Biological Sciences Department at the Tai Solarin University of Education in Ogun State, Nigeria provided the information on academic performance. Mean, frequency counts, and percentages (descriptive statistics) were used to analyze the data. The research hypotheses were tested using Product Moment Correlation (PPMC) and Regression.

Results

Table 1 below shows the demographic data of respondents. Based on the analysis of the participants' gender, 97 respondents (25%) were males, and 296 respondents (75%) were females and based on ages, 60 respondents (15%) were within the age range of 20 and below, while 333 respondents (85%) were between the ages of 20 and 34. It was also found that 200 (51%) and 193 (49%) of the respondents were in the 200L and 300L, respectively.

Table 1: Demographic Data of Respondents

	Frequency	Percentage (%)
Gender		
Male	97	25
Female	296	75
Age		
Below 20 years	60	15
20-34 years	333	85
Level		
200L	200	51
300L	193	49
Total	393	100

Research Hypothesis 1: Intrinsic academic motivation and intrapersonal emotional intelligence have no significant impact on academic performance of undergraduate biology students

Intrinsic academic motivation has a positive and statistically significant impact on undergraduate biology students' academic performance, as shown in Table 2 ($\beta = -0.203$, $t = -3.083$ and $p = 0.002$). This suggests that a unit increase in intrinsic academic motivation for learning is linked to a -0.203 decrease in undergraduate biology students' academic performance. Additionally, intrapersonal emotional intelligence had a positive non-

significant effect on undergraduate biology students' academic performance ($\beta = 0.036$, $t = 0.547$, and $p = 0.585$). Additionally, the regression model's R^2 value of 0.016 indicates that intrinsic academic motivation (IAM) and

intrapersonal emotional intelligence (IEI) only jointly explain 1.6% of the variance in undergraduate biology students' academic performance. However, the model was significant ($F_{2, 388} = 3.040$; $p = 0.049$; $R^2 = 0.016$).

Table 2: Impact of Intrinsic Academic Motivation and Intrapersonal Emotional Intelligence on Academic Performance of Undergraduate Biology Students

Model	Unstandardized Coefficients	Standardized Coefficients	T	Sig.
	$(R^2 = 0.016, F_{2, 388} = 3.040, P = 0.049).$			
	B	Standard Error	Beta	
IAM	-0.156	0.051	-0.203	-3.083 0.002
IEI	0.061	0.111	0.036	0.547 0.585

IAM means Intrinsic Academic Motivation.

IEI means Intrapersonal Emotional Intelligence.

Research Hypotheses 2: There is no significant correlation between intrinsic academic motivation and academic performance of undergraduate biology students

Using Pearson correlation analysis, Table 3 shows the correlation of intrinsic academic motivation and intrapersonal emotional intelligence with academic performance of undergraduate biology students. The result revealed that intrinsic academic motivation was negatively correlated to academic performance of undergraduate biology students ($r = -.110^*$, $p = 0.030$).

Table 3: Correlation of Intrinsic Academic Motivation with Academic Performance of Undergraduate Biology Students

	AP r(p)
IAM	-.110*(0.030)

* Significant at 0.05

IAM means Intrinsic Academic Motivation.

AP means Academic Performance

Research Hypotheses 3: There is no significant correlation between intrapersonal emotional intelligence and academic performance of undergraduate biology students

Using Pearson correlation analysis, Table 4 shows the correlation of intrapersonal emotional intelligence with academic performance of undergraduate biology students. The result revealed that intrapersonal emotional intelligence was also inversely associated with academic performance of undergraduate biology students ($r = -.115^*$, $p = 0.024$).

Table 4 Correlations of Intrapersonal Emotional Intelligence with Academic Performance of Undergraduate Biology Students

	AP r(p)
IEI	-.115*(0.024)

* Significant at 0.05

IEI means Intrapersonal Emotional Intelligence.

AP means Academic Performance

Discussion

A study that focuses on ways to enhance student's academic performance using the variables under investigation is the investigation of the impact of intrinsic academic motivation and intrapersonal emotional intelligence

on the academic performance of undergraduate biology students in a Nigerian tertiary institution.

The analysis of research hypothesis one revealed that intrinsic academic motivation and intrapersonal emotional intelligence significantly impacted the academic performance of undergraduate biology students. Our findings are supported by the research of Ogundokun and Adeyemo (2010), Mavroveli and Sanchez-Ruiz (2011), and Sontakke (2016), which shows that emotional intelligence improves students' motivation for academic tasks and academic achievement. This can be further explained by the idea that students who are emotionally intelligent will be driven to improve their academic achievement at school. The results of Supervia and Bordas (2018), who discovered that academic achievement, emotional intelligence, and school motivation all have an impact on students' personal and academic development, are also consistent with our findings that intrinsic academic motivation and intrapersonal emotional intelligence had a significant impact on the academic performance of undergraduate biology students.

The result of research hypothesis two showed a statistically significant inverse relationship between undergraduate biology students' intrinsic academic motivation and their academic performance. Our findings are supported by the results of Tariq, Mahmood and Mubeen (2011) research, which found a correlation between gender and academic achievement among Pakistani university students. Our study's findings also agree with those of Oclaret (2021), who discovered that students' intrinsic academic motivation for learning had a significant impact on their academic achievement as

judged by their final grades at the end of the school year. Additionally, the research by Goodman, Jaffer, Keresztesi, Mamdani, Mokgatle, Musariri and Schlechter (2011) found a strong correlation between university students' academic achievement and their own intrinsic academic motivation in South Africa. However, Sarangi (2015) found no significant correlation between tribal boys' and rural students' intrinsic motivation and academic performance, which conflicts our findings. Areepattamannil's (2014) research, which demonstrated that intrinsic motivation was not statistically significantly associated to mathematics academic achievement among Indian immigrant adolescents in Canada, does not support our findings. The research by Triyanto (2019), which found that academic performance among Apua and West Papuan undergraduate students in Indonesia was not significantly correlated with students' intrinsic motivation, does not corroborate the findings of our study.

Analysis of research hypothesis three in our study indicated a significant relationship between the academic performance of undergraduate biology students and intrapersonal emotional intelligence. Rejeki and Isharyanti's (2020) results that there is a significant relationship between intrapersonal intelligence and primary pupils' critical thinking abilities complement our findings. Additionally, Maratusyolihat, Adillah and Ulfah's findings from 2021 that there is a relationship between mathematical creativity and intrapersonal intelligence support our findings. Additionally, the results of Dasari and Ariati (2021), who showed that students' intrapersonal intelligence had a significant impact on students' mathematics learning achievement, are

consistent with our findings. Our results are not supported by Mahmud and Amaliyah's (2017) findings that intrapersonal intelligence has no impact on math achievement or learning outcomes.

Conclusion

It can be concluded that intrinsic academic motivation and intrapersonal emotional intelligence had a significant impact on the academic performance of undergraduate biology students. This implies that intrinsic academic motivation and intrapersonal emotional intelligence can support the academic performance of undergraduate biology students. The result of the findings showed that intrinsic academic motivation was negatively correlated to academic performance of undergraduate biology students. This implies that the impact of intrinsic academic motivation on academic performance of undergraduate biology students is significant in such a way that the motivation undergraduate biology students get from their study and other external sources have ways of influencing their academic performance. In addition, it can also be concluded based on the result of the findings that intrapersonal emotional intelligence showed inverse association with academic performance of undergraduate biology students. It therefore implies that intrapersonal emotional intelligence have significant effect on the academic performance of undergraduate biology students

Recommendations

It was suggested that school administrators should work with teachers to collaborate, and provide timely in-service training and practical seminars, equipping them with teaching

strategies and educational technology tools to foster students' intrinsic academic motivation and intrapersonal emotional intelligence. Parents can encourage, support, and equip their children with the appropriate educational resources to increase their motivation.

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