

**EMOTIONAL INTELLIGENCE AS A DETERMINANT OF
INTEREST AND ACADEMIC ACHIEVEMENT IN SECONDARY
SCHOOL BIOLOGY STUDENTS IN ABIA STATE**

Odo, Collens Ikechukwu *PhD*

&

Pius, Samuel

Department of Science Education
Michael Okpara University of Agriculture,
Umudike, Abia State

Abstract

The study investigated the relationship between emotional intelligence and interest as well as academic achievement of secondary school Biology students in Abia state, Nigeria. A correlational research design was adopted for the study. Emotional Intelligence Scale (EIS), Biology Interest Scale (BIS) and Biology Achievement Test (BAT) were the instruments used for the study. The instruments were face validated by three experts in Michael Okpara University of Agriculture, Umudike. Cronbach Alpha was used to determine the reliability of EIS and BIS which gave reliability coefficients of 0.76 and 0.72 respectively. Kuder Richardson 20 (KR20) was adopted in determining the reliability of BAT which yielded a coefficient of 0.81. The instruments were trial tested in a school in Abia state that was not sampled. The population for the study comprised 32,849 Biology students in Abia state. Stratified and simple random sampling techniques were used to select a sample size of 329 Biology students for this study. Two hypotheses were formulated and tested at 0.05 level of significance. Pearson's Product Moment Correlation was used to test the null hypotheses. The result of the study revealed that there was significant relationship between emotional intelligence and interest in Biology. There was also a significant relationship between emotional intelligence and academic achievement of secondary school Biology students in Abia state. Thus, it was recommended that curriculum designers and developers should integrate emotional intelligence into the curriculum in order to help students manage their emotions and emotions of others. Furthermore, teachers should be trained on emotional intelligence through seminars, conferences and workshops in order to provide the necessary information for enhancing the emotional intelligence of their students.

Keywords: *Emotional Intelligence, Interest, Academic Achievement, Biology.*

Introduction

Emotions are essential to human interaction. Emotion has to do with the outward expressions of strong inner feelings which are aroused by one's behaviours or that of others. Intelligence on the other hand can be described by words such as clever, bright, sharp or ability to think, learn, remember, communicate, and problem-solving capacity (Dakun, 2018). Emotion acts as a signal which requires one of the three following responses: a change in the relationship, between individual, and the environment or an internal perception of a change in relationship while intelligence is the ability to think abstractly (Adolphus, Odo and Madu, 2021). On the other hand, emotional intelligence is being able to monitor one's own and others' feelings and emotions. Emotional intelligence is a level of social intelligence that is responsible for the quality of social interaction in learning context. Emotionally intelligent person is skilled in identifying, using, understanding and regulating emotions. It gives the students the power to manage their emotions and those of others as well as directing their thinking processes and actions (Muiga, 2020). Salovey and Mayer (2019) defined emotional intelligence as the capability of an individual to manage his own emotions and the emotions of other individuals, to differentiate among them and to utilize information to facilitate one's activities, reasoning and thinking. In another submission, Suleman, Hussain, Syed, Parveen, Lodhi and Mahmood (2019), opined that emotional intelligence includes interpersonal and intrapersonal intelligence. The authors continued that interpersonal intelligence refers to the ability of an individual to understand and maintain relationship with other individuals, while intrapersonal intelligence is the ability of an individual to understand himself for self-awareness, acceptance, inspiration and regulation. Emotional intelligence can therefore be said to be an intelligence in which an individual is able to control himself in every situation, understands other people's feelings and treat them as fellow humans despite individual differences. Student who has the ability to communicate, feel, remember, recognize, describe, learn from and manage emotions of one self and those of others is said to be emotionally intelligence . Educational psychologists have studied extensively emotional intelligence as a predictor of academic achievement. Adolphus, Odo and Madu (2021) reported that student's emotional management skills were significantly related to academic performance. Emotional intelligence is a level of social intelligence that is responsible for the quality of social interactions in learning contexts. It gives the students the power to manage their emotions and those of others as well as directing their thinking processes and learning processes which enhance academic achievement.

The ability of an individual to manage both intrapersonal and interpersonal emotions is crucial for one's academic and professional achievement. For an individual to progress academically and otherwise, such an individual must have interest in the career he/she has chosen.

Interest is the feeling of intentness, concern or curiosity about an object. It is referred to as the condition of being eager to know or learn about something. It is an important variable in the teaching and learning of Biology. Nwanne (2018) defined interest as a condition in which an individual associates the essence of certain things or situations with his needs or wants. Nworgu (2015) posited that interest is a persistent tendency to pay attention and enjoy some activities or contents. This suggests that though some students may be intellectually and physically capable of learning, they may never learn until their interest is stimulated. Once the students are stimulated, they will come to learn as long as the teacher is capable of sustaining their interest in the subject matter. If there is direct interest, attention is guaranteed and learning is assured (Nworgu, 2015). I'vebe (2016) opined that teachers need to arouse the learners' interest in learning activities to obtain optimum academic achievement.

Academic achievement represents outcome that indicates the extent to which a person has accomplished specific goals that were the focus of activities in instructional environment, specifically in school, college and university (Steinmayr, Meibner, Weidinger and Wirthwein, 2017). Rana and Iqbal (2015) stated that academic achievement is referred to as measurable behaviour in a standardized series of tests. This therefore, implies that academic achievement is the extent to which a student, teacher or institution has attained short and long term educational goals.

Emotional intelligence, interest and academic achievement have been concepts of discussion among researchers. Dakun (2018) posited that an emotionally intelligent child has high tendency of paying full attention to learning task. For such a child, his interest in a particular activity cannot be lowered by distractions because he is emotionally intelligent. On the other hand, Ibe (2016) posited that interest in learning activities needs to be sustained in order to obtain optimum academic achievement. Suleman, *et.al.* (2019) stated that there was a strong positive relationship between emotional intelligence and academic success among undergraduate students in Pakistan. In another submission, Muiga (2020) found out that emotional intelligence and academic achievement had a significant positive relationship in Kenya. In the same vein, Chukwuka (2014) posited that emotional intelligence influenced

students' academic achievement in chemical quantitative problem solving. However, Bell and Bradshaw (2008) studied the relationship between emotional intelligence and learning outcomes among college students in Zaria using correlational research design. The result showed that there was no significant correlation between emotional intelligence of college students and their learning outcomes. These inconsistent results elicit a continuous debate on the relationship between emotional intelligence interest and academic achievement, hence the necessity for this study.

Academic achievement is one of the major foci of teaching and learning process. This Academic achievement cuts across all disciplines in school including Biology. Biology is one of the science subjects offered in senior secondary schools. It is a pre-requisite to the study of other science disciplines such as medicine, nursing, agronomy, pharmacy, environmental studies among others. In spite its relevance, the academic achievement of Nigerian students in Biology have been poor over the years. The result of Biology students in West Africa Senior School Certificate Examination shows that only 47.39%, 46.89%, 44.93%, 50.52% and 46.48% passed Biology at credit level in 2015, 2016, 2017, 2018 and 2019 respectively (WAEC, 2019). Ibe (2015) posits that there are prominent learner and teacher factors that are responsible for poor performance and interest in Biology. It is on this basis that the researchers surveyed the relationship between emotional intelligence, interest and academic achievement of secondary school Biology students in Abia state, Nigeria.

Two research questions and two hypotheses tested at 0.05 level of significance guided the study and they include:

1. What is the relationship between emotional intelligence and interest of secondary school Biology students in Abia State?
2. What is the relationship between emotional intelligence and academic achievement of secondary school Biology students in Abia State?

H₀₁: There is no significant relationship between emotional intelligence and interest of secondary school Biology students in Abia State.

H₀₂: Emotional intelligence has no significant relationship with academic achievement of secondary school Biology students in Abia State.

Method

A correlational research design was adopted for this study. This type of study is concerned with determining the extent of relationship between two or more

variables. It enables one to measure the degree to which variations in one variable are related to variations in another variable (Nkwocha and Akanwa, 2017). The population for the study comprised 32,849 Biology students from 231 public secondary schools in the three education zones of Abia state; Aba, Umuahia and Ohafia for 2021/2022 academic session (SEMB, 2022). Stratified and simple random sampling techniques were used to select the sample. The three strata were Aba, Umuahia and Ohafia education zones. Two secondary schools from each education zone were selected through simple random sampling. SS 2 class was also randomly selected from the three senior secondary school classes (SS1, 2 and 3). SS 2 intact class in each sampled school was therefore used for the study which gave a total sample size of 329 Biology students. Three instruments were used to carry out this study; Emotional intelligence Scale (EIS), Biology Interest Scale (BIS) and Biology Achievement Test (BAT). EIS was adapted from Muris (2001) to elicit information on emotional intelligence of the students. BIS was adapted from Duruaku (2019) to find out how interested students were in Biology. A four-point modified Likert rating scale was used for EIS and BIS. EIS has options such as Never (1), Rarely (2), Sometimes (3) and Always (4). BIS has options which include Strongly Disagree (1), Disagree (2), Agree (3) and Strongly Agree (4). BAT was adapted from West African Senior School Certificate Examination past questions from 2016 to 2020. Only questions from SS2 syllabus were selected. The content validity of the BAT was not further established since WAEC had already done that. EIS and BIS had 20 items each while BAT had 40 questions with options A - D. Each question from the BAT answered correctly had two marks. The highest marks obtainable from each of the three instruments were 80. This is because the highest marks for each item in EIS and BIS was 4 (Always (4) for EIS and Strongly Agree (4) for BIS). The three instruments were validated by three experts one in Measurement and Evaluation, Psychology and Biology Education in Michael Okpara University of Agriculture, Umudike, Abia State. The instruments were trial tested in a school in Abia State which was not sampled for the study. Cronbach Alpha used to determine the reliability of EIS and BIS which gave reliability coefficients of 0.76 and 0.72 respectively. On the other hand, Kuder Richardson 20 (KR20) was adopted to determine the reliability of BAT which yielded a coefficient of 0.81. The reliability coefficients of the three instruments indicated that the instruments were reliable. The researchers personally administered the instruments on the spot, after obtaining permission from the school authorities. Twenty minutes were given to the learners to complete the EIS and BIS, while 40 minutes were used to respond to the BAT. EIS was completed before BIS after which BAT was answered.

Research questions were answered using Pearson (r) statistics thus indicating the coefficient of relationship between the variables in the study while the hypotheses were tested with t-test for simple correlation thus indicated the “significance” or “non-significance” of the relationship existing between the variables. The hypotheses were tested at 0.05 level of significance.

Results

Table 1: Relationship between emotional intelligence and interest of secondary school biology students

Variables	$\frac{\sum X}{\sum Y}$	$\frac{\sum X^2}{\sum Y^2}$	$\sum XY$	S ²	Covariance	R
Emotional Intelligence	18,332	56,477,392		21.463		
			57,081,496		17.462	0.82
Interest	18,576	57,809,912		33.635		

Table 1 shows the relationship between Emotional intelligence and interest of secondary school Biology students. Through the variances and the covariance, a coefficient of 0.82 was realized. The coefficient shows that there was a positive relationship between emotional intelligence and interest of secondary school Biology students.

Table 2: Relationship between emotional intelligence and academic achievement of secondary school biology students

Variables	$\frac{\sum X}{\sum Y}$	$\frac{\sum X^2}{\sum Y^2}$	$\sum XY$	S ²	Covariance	R
Emotional Intelligence	18,332	56,477,392		22.551		
			57,108,752		19.132	0.81
Academic achievement	18,628	58,213,864		36.723		

Table 2 shows the relationship between Emotional intelligence and academic achievement of secondary school Biology students. Through the variances and the covariance, a coefficient of 0.81 was realized. The coefficient shows that there was a positive relationship between emotional intelligence and academic achievement of secondary school Biology students.

Table 3: Pearson's Product Moment Correlation Coefficient Analysis of the Significant Relationship between Emotional Intelligence and interest of Secondary School Biology Students

Variables	$\frac{\sum X}{\sum Y}$	$\frac{\sum X^2}{\sum Y^2}$	$\sum XY$	df	r-cal	r-crit
Emotional Intelligence	18,332	56,477,392	57,081,496	327	0.871	0.195
Interest	18,576	57,809,912				

The result in table 3 reveals that the calculated r - value of 0.871 is greater than the critical r - value of 0.195 at 0.05 level of significance. With this result, the null hypothesis is rejected. It therefore means that there is a significant relationship between emotional intelligence and interest of secondary school Biology students in Abia State.

Table 4: Pearson's Product Moment Correlation Coefficient Analysis of the Significant Relationship between Emotional Intelligence and Academic Achievement of Secondary School Biology Students

Variables	$\frac{\sum X}{\sum Y}$	$\frac{\sum X^2}{\sum Y^2}$	$\sum XY$	df	r-cal	r-crit
Emotional Intelligence	18,332	56,477,392	57,108,752	327	0.460	0.195
Academic Achievement	18,628	58,213,864				

The result in table 4 shows that the calculated r - value of 0.460 is greater than the critical r - value of 0.195 at a significance level of 0.05. This result indicates that the null hypothesis which states that there is no significant relationship between emotional intelligence and academic achievement of secondary school Biology students in Abia state is rejected. Therefore, there was significant relationship between emotional intelligence and academic achievement of secondary school Biology students.

Discussion

The result of this study indicates that there is a positive relationship between emotional intelligence and interest of Biology students. The corresponding hypothesis affirmed that there is a significant relationship between emotional intelligence and interest of secondary school Biology students in Abia state. This finding is in agreement with the finding of obtained by Dakun (2018) who stated that emotionally intelligent child has high tendency of paying full

attention to learning task. This could be that the emotionally intelligent students have the capability to resist distractions that can jeopardise their attention.

The findings of this study also indicate that there is a positive relationship between emotional intelligence and academic achievement of secondary school Biology students. The corresponding hypothesis affirmed that there is a significant relationship between emotional intelligence and academic achievement of secondary school Biology students. This finding is in line with the finding of obtained by Suleman *et al.* (2019) who found out that there was a strong positive relationship between emotional intelligence and academic success among undergraduate students in Pakistan. Similarly, Muiga (2020) also found out that emotional intelligence and academic achievement had a significant positive relationship in Kenya. The study is also in agreement with the finding of Chukwuka (2014) who posited that emotional intelligence influences students' academic achievement in chemical quantitative problem solving.

On the other hand, this finding oppose the finding of Bell and Bradshaw (2008) who opined that there was no significant correlation between emotional intelligence of college students and their learning outcomes. The outcome of the present study may be on the basis that when learners are emotionally intelligent, they are devoid of distractions thereby enhancing their interest in learning which in turn improves their academic achievement. This therefore points out that emotional intelligence is closely linked with interest and academic achievement.

Conclusion

A student who has the ability to communicate, feel, remember, recognize, describe, learn from and manage emotions of one self is an emotionally intelligence learners. Learners with these attributes maintain interest in learning which in turn enhance academic achievement. Since the outcome of this research showed that emotional intelligence is related to interest and academic achievement of students in biology. Students should try to be emotionally suitable to enhance their performance in schools.

Recommendations

The following recommendations were made based on the findings of the study.

1. Curriculum designers and developers should integrate emotional intelligence into the curriculum in order to help students understand

themselves and other individuals. This will enable them manage their emotions and the emotions of others.

2. Teachers should be trained on emotional intelligence measuring scales through seminars, conferences and workshops in order to provide the necessary information for enhancing the emotional intelligence of their students. Through this, learners' interests and academic achievements will be improved.

References

- Adolphus, Odo & Madu (2021). Dimensions of Emotional Intelligence and Guidance Counsellors effectiveness in secondary schools in Imo State. *Journal of Evaluation*, 6(1), 73-83.
- Bell, D. & Bradshaw, H. (2008). The relationship between emotional intelligence and learning outcomes among college students in Zaria. *Journal of Research in Educational psychology*, 6(1), 43 – 68.
- Chukwuka, C.U. (2014). Influence of emotional intelligence on secondary school student's achievement in chemical quantitative problem solving. *An unpublished M.Ed thesis, University of Nigeria, Nsukka, Enugu State.*
- Dakun, W.S. (2018). *Child Development: A Course textbook for undergraduates*. Jos: Golden Graphic Production.
- Duruaku, I.C. (2019). Effects of simulation and jigsaw teaching methods on student's achievement and interest in Senior Secondary Biology. *An unpublished thesis, Imo State University, Imo State.*
- Ibe, H.N. (2015). Effects of learning styles on the performance of Senior Secondary School Biology Students. *International Association of African Researchers and Reviewers*, 9(1), 36-42.
- Ivbe, H.N. (2016). Facilitating creativity in Science Students through teacher professional development. *African Research Review* 10(2), 266 – 274.

- Muiga, W.S. (2020). Emotional intelligence and academic self-efficacy beliefs as predictors of academic achievement among form four students in Kiambu Country, Kenya. *An Unpublished M.Ed thesis, Kenyatta University, Kenya.*
- Nkwocha, P.C. & Akanwa, U.N. (2017). *Comprehensive educational research guide with illustrations.* Owerri: Mercy Divine.
- Nwanne, S. (2018). Effect of computer assisted instruction on the academic achievement and interest of Physics students in Abia State. *Unpublished M.Ed thesis, Michael Okpara University of Agriculture, Umudike, Abia State.*
- Nworgu, B.G. (2015). *Educational Research Basic Issues and Methodology.* Enugu: University Trust Publishers.
- Rana, U. & Igbani, I.M. (2015). Collaborative learning instructional strategy. Retrieved from <https://www.eduhub.com>.
- Salovey, P & Mayor, J.D. (2019). Emotional intelligence. *Imagination, cognition and personality Researchers*, 9, 185 – 211.
- Secondary Education Management Board (SEMB), (2022). Abia State Ministry of Education.
- Steinmayr, R., Meibner, A. Weidinger, A.F & Wirthwein, L. (2017). *Academic Achievement.* London: Rout ledge Press.
- Suleman Q. Hussainm I., Syed, M.A., Parveen, R., Lodhi, S.I. & Mahmood, Z. (2019). Association between emotional intelligence and academic success among undergraduates: A Cross Sectional Study in Kustr, Pakistan. *PLOS ONE*, 14(7), 1 – 22.
- West African Examination Council (WAEC) (2019). *Chief examiner's report.* Lagos: WAEC Press.