UNIJERPS
Unizik Journal of Educational Research and Policy Studies VOL.16 (3);
https://unijerps.org
2023 Impact Factor:* 6.834;** 2022 ***Impact Factor*:** 5.156; ***2021 Impact Factor: 5.641;
2020 Impact Factor: 5.355.
Indexing and Impact Factor URL: http://sjifactor.com/passport.php?id=21363
July-December, 2023

EMOTIONAL INTELLIGENCE AS PREDICTOR OF SECONDARY SCHOOL STUDENTS' ATTITUDE TO AND ACHIEVEMENT IN PHYSICS IN ENUGU STATE, NIGERIA

Ebele Chinelo Okigbo
Department of Science Education
Nnamdi Azikiwe University,Awka
ec.okigbo@unizik.edu.ng
&
Obinna Chigbo Anosike
Department of Physics
University of Nigeria Secondary School Enugu.
Obinnauregy@gmail.com

ABSTRACT

The study determined emotional intelligence as predictor of secondary school students' attitude to and achievement in Physics in Enugu State, Nigeria. Two research questions guided the study while two hypotheses were tested at 0.05 level of significance. The research design was Predictive correlation research design. The population of the study involved 12,879 Senior Secondary two (SS 2) students offering Physics in the 297 public secondary schools in Enugu State. A sample size of 388 SS2 Physics students were obtained in the three stages using multi-stage sampling procedure. Two instruments were used for data collection, namely; Modified Mayor-Salovey-Caruso Emotional intelligence Scale (MSCEIS), and the modified Fennema-Sherman Physics Attitude Scale (PAT). The unified promotion examination results of SS2 students in 2022/2023 academic year were used to determine the achievement scores of the students in Physics. The instruments were validated by three experts from Faculty of Education, Nnamdi Azikiwe University, Awka. Cronbach Alpha method was used to determine the coefficient of reliability of the instruments. The internal consistencies of the instruments are 0.78 for MSCEIS and 0.77 for PAT. The data collected were analyzed using moderated multiple regression analysis. The research questions are answered using unstandardized coefficient (B) in the model table, while t- and p-value in the model table were used to test the null-hypotheses. The findings showed that Emotional intelligence predicted attitude of students in Physics but failed to predict achievement of students in Physics. There is an independent significant contribution of emotional intelligence in predicting the attitudes of students but there is no significant contribution of emotional intelligence in predicting achievement of students in Physics. The study recommends that School counselors from the psychological counseling units established in secondary schools should help to train the students to develop high emotional intelligence skills in order to cope during critical thinking situations and develop effective leadership skills and efforts to increase and enhance

students' emotional intelligence should be considered and enforced by Physics teachers during the process of teaching and learning of Physics in the classrooms.

.**Keywords:** Emotional Intelligence, Attitude, Achievement, Physics.

Introduction

Science is an important tool for development and productivity in any nation. It is also important for every nation that wants to maintain its independence, sovereignty, self-reliance, ensure growth and have its head held high among civilized nations (Gabriel, 2012). This is because, science provides the basic tools of industrialization and economic development in the areas of communication, transportation, information, energy, pollution and waste management control among others. Shaibu (2013) defines science as some form of organized knowledge on which we can describe a sort of prescribed esoteric procedure from unraveling the nature. Science Teachers Association of Nigeria (STAN, 2015) views science as a process of social activity in which people seek to discover and understand the natural world. Anosike and Okigbo (2020) summarized these definitions by stating that science is a body of empirical, theoretical and practical knowledge about the world, accumulated through scientific methods, which emphasizes observation, experimentation and explanation of the real world phenomenon.

In secondary schools in Nigeria, the science subjects include Physics, Chemistry, Biology, Agriculture and Mathematics. Among these, Shaibu (2013) explained Physics as the bedrock of all the science subjects. Physics deals with the study of laws that determine the structure of the universe with reference to matter and energy in the universe (Ike, 2012). Ivowi (2018) defines Physics as that branch of science concerned with the study of matter and how it interacts with its energy through space and time. The principles of Physics are widely used for various scientific and technological advancement such as in information and communication technology. The knowledge of Physics has also led to the production of manpower in science and technologically-oriented career needed in the area of industrialization for improvement of materials useful for the wellbeing of human race. According to Nwadike and Okigbo (2021), Physics is the most utilized core science subjects in most technological and technologically related professions.

Surprisingly, students' results in the various Physics examinations (both external and internal) are replete with poor achievements. For instance, the Joint Admission and Matriculation Board (JAMB) and the West African Examination Council (WAEC) continue to register high increases and incidents of students' poor achievements in Physics, internally the situation is virtually the same. Teachers complain of the high poor achievements in this subjects. Nigeria as a country has set out a number of laudable programmes for its vision 20:20 in all spheres of its endeavor especially in science education. For instance, new Physics curricular are being mapped out, more inclusive education is being proposed and a

more serious march toward scientific and technological advancement is being charted. Yet students' achievements in the subjects are not meeting the expected demand.

Many causes have been identified as being responsible for these poor achievements, prominently among these are shortage of qualified Physics teachers, poor science facilities, inadequate science laboratory equipment and instructional resources, teaching methods, skills and strategies, large classroom size, poor academic self-concept, poor academic achievement motivation, and some government policies (Salman, Mohammed, Ogunlade and Ayinla, 2012). This declining rate in enrollment and in academic achievement of students in Physics at all levels has been an issue of concern to all stake holders in Education.

Academic achievement involves meeting goals, achievements and objectives set in the program or course that a student attends. These are expressed through grades which are the result of an assessment that involves passing or not certain tests, subjects or courses. According to Wilcox (2012), academic achievement is the level of knowledge shown in an area or subject compared to the norm, and it is generally measured using the grade point average. Akinsolu (2014) stated that the purpose of the school or academic achievement is to achieve an educational goal through learning. The academic achievement are influenced by certain factors such as the intellectual level, personality traits, motivation, skills, interests, study habits, self-esteem or the teacher-student relationship (Akinsolu, 2014). It has always been associated with the evaluation of tests results, which are those corresponding to students' IQ, and leaving aside other personal characteristics. Among such characteristics, according to Malykh (2017) are dimensions associated to personality traits example, emotional intelligence.

Emotional intelligence is a form of social intelligence that involves the ability to monitor one's own and others feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and action (Mayer and Salovey, 2020). Goleman (2015) also refers to it as the ability to sense, understand, value and effectively apply the power and acumen of emotions as a source of human energy, information, trust, creativity and influence. Mestre and Barchard (2017) opined that individuals who have developed high level of emotional intelligence are able to recognize and regulate their own emotions. Nasir and Masour (2012) opined that effective learning takes place when students have an understanding of how to learn and this understanding requires high emotional intelligence quotient and also emotional skills such as confidence, self-control, and the ability to communicate and cooperate with others.

Again, much is still needed to be uncovered about the underlying factors that affect the achievement of students in Physics especially in Nigeria. Identification of the underlying factors is of great importance to widen our understanding of the problems relating to the achievement of students in the subject. Most importantly, some of the students that were studying Physics in secondary schools were found incapable because of their attitude towards Physics

learning. Attitude as a major factor affecting learning processes, may be implicit and has not attracted enough attention from all stakeholders in education. Therefore, it is important to consider the fact that learners can mainly contribute to their learning outcomes as a result of their belief and perceptions about the subject matter for example, whether they like it or not and whether they see any value in it. Attitudes are seen as more or less positive and encompasses emotions, beliefs, values and behaviour and hence affect individual way of thinking, acting and behaviour which has a lot of implications to teaching and learning (Mensah *et al*, 2013).The question still remains, can emotional intelligence predict secondary school students' attitude to and achievement in Physics in Enugu state? The study sought to answer the question.

Purpose of the **Study**

The purpose of the study was to determine Emotional intelligence as predictor of secondary school students' attitude to and achievement in Physics in Enugu state, Nigeria. Specifically, the study sought to find out:

1. Contribution of Emotional intelligence in predicting the attitude of secondary school students towards Physics in Enugu state
2. Contribution of Emotional intelligence in predicting the academic achievement of secondary school students in Physics in Enugu state

Research Questions

The following research questions guided the study:

1. What is the contribution of Emotional intelligence in predicting the attitude of secondary school students towards Physics in Enugu State?
2. What is the contribution of Emotional intelligence in predicting the academic achievement of secondary school students in Physics in Enugu State?

Hypotheses

Two null hypotheses were formulated and tested at 0.05 level of significance:

1. There is no significant contribution of Emotional intelligence in predicting the attitude of secondary school students towards Physics in Enugu state.
2. There is no significant contribution of Emotional intelligence in predicting the academic achievement of secondary school students in Physics in Enugu state.

Research Method

Predictive correlation research design was employed in the study. The design is preferred because data were collected and analyzed using regression analysis in order to ascertain the contributions of Senior Secondary two (SS2) students' Emotional intelligence in predicting their attitude to and achievement in Physics. The population of the study is 12,879 SS2 students offering Physics in the 297 Public Secondary Schools in Enugu state. A sample size of 388 SS2 students offering Physics in 2022/2023 academic year was selected from 297 public secondary schools in the state using multi-stage sampling procedure involving

purposive and simple random sampling technique. Two instruments were used for data collection namely;

1. Modified Mayer–Salovey-Caruso Emotional Intelligence scale (MSCEIS).
2. Modified Fennema-Sherman Physics attitude scale (PAS).

The Modified Mayer–Salovey-Caruso Emotional Intelligence scale (MSCEIS) is a 42-item instrument developed by Mayer –Salovey-Caruso in 2012 to assess the Emotional Intelligence of secondary school students based on Mayer and Salovey ability based theory on Emotional intelligence. These 42 items were selected from the 134 items of the whole scale. The modification is purposefully to fit specifically Physics students in so far as the original scales were made for general purpose. The participants' responses was measured using 4-point rating scale ranging from strongly agree to strongly disagree.

The modified Fennema-Sherman Physics attitude scale (PAS) is a 40-item instruments developed by Fennema-Sherman in 2012 to assess the attitude of secondary school students. These 40 items were selected from the 47 items of the whole scale. The modification is purposefully to fit specifically Physics students in so far as the original scales were made for general purpose. Participants' responses was measured using 4-point rating scale ranging from strongly agree to strongly disagree.

SS2 Students' achievement scores in Physics for the 2022/2023 academic year was used to represent their achievement scores for the study. The Scores were collected from the result sheets through school records in the sampled schools.

The instruments were validated by three experts from Nnamdi Azikiwe University, Awka. The reliability of the instruments was established using Cronbach Alpha. The internal consistency reliability coefficient of 0.78 and 0.77 were obtained for MSCEIS and PAS respectively. The researcher with the help of three Physics teachers in the sampled schools, who were briefed and exposed to the objectives of the study, administered the copies of the instruments to the respondents. The respondents were given enough time to express their honest feelings without bias. The copies of the instruments were collected from the respondents immediately after completion to ensure maximum 100% copies retrieved. The data collected for the study were analyzed statistically using moderated multiple regression analysis. In testing the hypothesis, the null hypothesis was rejected when p-value is less than or equal to the significant level of 0.05, ($P \leq 0.05$) otherwise ($p \geq 0.05$), it was accepted.

Presentation of Results:

Table 1: Contribution of Emotional intelligence in predicting the attitude of secondary school students towards Physics.

Coefficients

Model	**Unstandardized Coefficients**		**Standard Coefficients**		
	B	**Std. Error**	**Beta**	**t**	**Sig**
Constants	36.114	7.300		4.947	.000
Emotional Intelligence	.249	.061	.194	4.080	.000

Table 1 displays the unstandardized coefficient with t- and p-values of the contribution of Emotional intelligence in predicting the attitude of secondary school students towards Physics. The table shows an unstandardized coefficient $B = .249$. This proves that emotional intelligence predicted 24.9% of attitude of students towards Physics when other variables are constant. The results in table 1 also indicated that emotional intelligence predicted attitudes to Physics positively and significantly ($t = 4.080$, $p = .000 < .05$), thus the null hypothesis is rejected.

Table 2: Contribution of Emotional intelligence in predicting the academic achievement of secondary school students in Physics.

Coefficients

Model	**Unstandardized Coefficients**		**Standard Coefficients**		
	B	**Std. Error**	**Beta**	**t**	**Sig**
Constants	66.726	11.603		5.151	.000
Emotional Intelligence	-.149	.097	.194	-1.535	.126

Table 2 displays the unstandardized coefficient with t- and p-values of contribution of Emotional intelligence in predicting the academic achievement of secondary school students in Physics. The table shows an unstandardized coefficient $B = -.149$. This proves that for every one point decrease in emotional intelligence, the academic achievement of students increases by 14.9%, when other variables was held constant. The results of Table 2 also indicated that emotional intelligence failed to predict achievement in

Physics (t = 1.535, p= .126>.05), thus the null hypothesis is hereby accepted.

Discussion

Results of the study revealed that emotional intelligence positively and significantly predict attitude of students to learning. The finding is in consistence with the work of (Parimala and Pazharivelu, 2015 and Najeemah and Nilk, 2012) which in their independent studies revealed that there was a positive significant relationship between emotional intelligence and students' attitude to learning. However, the findings is not in agreement with the findings of Carl and Greenan, (2011) which found out that there was no significant relationship between emotional intelligence and attitude to learning.

Furthermore, the finding also proved that there was no relationship between emotional intelligence and achievement since emotional intelligence failed to predict achievement in Physics. This findings is in line with the finding of Tahira, Aqdas, Khizar and Saleam, (2020) that the relationship between emotional intelligence and academic achievement is insignificant and that the higher emotional intelligence, the lower is academic achievement. On the contrary, the finding is in conflict with the finding of Babjide and Amosu, (2019) and Njoku and Okigbo, (2021) who revealed that there was a strong positive relationship between emotional intelligence and secondary school students' achievement in Physics and mathematics respectively.

Conclusion

Based on the findings, the study concluded that emotional intelligence significantly predicted attitude of students to Physics learning but failed to predict the achievement of secondary school students in Physics. Therefore, emotional intelligence affects students' attitude towards Physics but do not affect their academic achievement in Physics.

Recommendations

1. School counselors from the psychological counseling units established in secondary schools should help to train the students to develop high emotional intelligence skills in order to cope during losses situations and develop effective leadership skills.

2. Efforts to increase and enhance students' emotional intelligence should be considered and enforced by physics teachers during the process of teaching and learning of physics in the classrooms.

3. Finally, measures to cross check the emotional intelligence abilities of students should be included as part of admission criteria by secondary schools management boards in order to check the high level of drop outs in the school system.

REFERENCES

Akinsolu, O .A. (2014), teachers and students' Academic Achievement in Nigerian Secondary Schools: Implication for planning. *Florida Journal of Educational Administration & Policy*, 3 (2), 88-103.

Anosike, O. C and Okigbo E. C. (2020), Secondary School Physics Extent of Awareness and use of professional ethics and codes of conduct in teaching. *UNIZIK, Journal of education*, 3 (2) 147-160.

Babajide, V; F and Amosu, J. M (2019), The Influence of emotional intelligence on Academic achievement of Senior Secondary School Students in Physics in Educational District IV of Lagos State, Nigeria: *Education & Science Journal of Policy Renew and Curriculum Development*, 9(2).23-34.

Carl, B. and Greenen, J. (2011), The relationship between emotional intelligence and attitude towards computer based instruction of post-secondary hospitality students. *Journal of career and technical education*. 26(1), 61-84.

Gabriel, U. E (2012), *Effect of guided Inquiry teaching method on students' academic achievement in upper science(Physics).* Published Master Degree (Thesis). University of Nigeria Nsukka.

Goleman, D (2015), *Emotional Intelligence*. New York Bantan Books.

Ike, E. E (2014), *Essential Principles of Physics*. Jos: Eric Publishers.

Ivowi, U. M. O (2018), The process model of Curriculum Development in Physics in U.M. O Ivowi (Ed). *Curriculum and teaching in Nigeria foremost Educational studies Itd*, lagos. 41-54.

Malykh, S (2017), The Role of Personality Traits and Intelligence in Academic Achievement of Russiona High School Studies. *J Social and behavioral sciences.* 237, 1304-1307.

Major,D. and Salovey,P. (2020), *what is emotional intelligence? In P. Salovey & D Slyter (Eds) Emotional Development and Emotional Intelligence*: implication for Education New York: Basic Books: Santoro.

Mensah, J. k, Okyere, M and Kuranchie (2013), Student Altitude towards mathematics and Achievement: Does the teacher Attitude matter? *Journal of Education and practice*, 4, 132-139.

Mestre, J. M and Barchard, K. A (2017) *Four signs of you have high emotional intelligence. 17th SCEINCE Edition.* Retrieved from Https://www.iflsscience.com/editiors-blog/four-signs-you-have-high-emotional-intelligence.

Najeemah M. Y and Nilk R. Y (2012), Emotional intelligence and attitude of students from public institutes of higher learning towards uniform bodies malaysia. *Science Journal of psychology* 100:10.7237/sjpsych/263.

Nasir, M and Masour, R (2012), An Exploration of Emotional Intelligence o the Students of 1101 in Relation to Gender, Age and Academic Achievement *Bulletin of Education and Research*. 32 (1), 37-51 (Online) Available

http://pu.edu.pk/images/journal/ier/PDF-FILES/3-Revised. Article.PDF.

Njoku, I. O and Okigbo, E. C. (2021), Mathematics Anxiety and Emotional intelligence as Predictors of Secondary School Students' Achievement in Mathematics in Imo State. *World Journal of Innovative Research (WJIR)*, 10(6) 63-69.

Nwadike, C. C and Okigbo E. C (2021), Effects of 7e's Learning Cycle model on secondary school students interest in Physics in Awka North Local Government Area. *African Journal of Science and Technology and Mathematics Education (AJSTME)*, 7(2), 1-6, Retrieved on 28/05/2022 from https://www.oystome.com.ng.

Parimala, M and Pazhanirelu, G (2015), Relationship between Emotional Intelligence and attitudes: *International journal of advanced research in education and technology*. 2(3), 161-162

Salman, M. F., Mohammed, A. S., Ogunlade, A. A., & Ayinla, J. O. (2012). Causes of mass failure in senior secondary school certificate Mathematics examination as viewed by Secondary school teachers and students in Ondo Nigeria. *Journal of Education and Practice*, 3(8), 79-88.

Shaibu A. A (2012), The humanistic view of sciences and its implication for sciences teaching in school. *A Journal of STAN*, 34 (1), 132-133.

Tahira, A., Rama, A., Umbreen, K. and Been,S. (2020) Emotional intelligence as a predictor of academic achievement among university students: *An implication for the educational managers Hammard Islamicus*, 43(2), 132- 142.

Wilcox, M Del, R (2012): Factors de Riesgi y Proteccion para el rendime, to academic. Un studio descriptiro en estudiantes de psicologia de una universadad privada. *Revista Iberoa ericana de Education*, 55(1), 1-9. Recuperado de https://www.neoei.org/delos lectores/3878cricox.pdf.