

The Influence of Emotional Intelligence on Academic Achievement of Senior Secondary School Students in Physics in Educational District IV of Lagos State, Nigeria

¹Babajide, V.F.T. & ²Amosu, John A. M.

^{1&2}Department of Science and Technology Education,
Faculty of Education, University of Lagos, Nigeria

Abstract

This study investigated the influence of emotional intelligence on academic achievement of senior secondary school students in Physics. A descriptive survey research design was adopted for the study. A sample of three hundred and fifteen (315) Senior Secondary School 2 students were randomly selected from twenty (20) schools in Educational District iv of Lagos state, Nigeria. The sample comprised of ten (10) public and ten (10) private schools in the Educational District under study. A self-designed instrument titled Emotional Intelligence Questionnaire (EIQ) and Physics Achievement Test (PAT) were used to collect data. Six (6) research hypotheses were tested the study and Analysis of Variance was being used to test the hypotheses at 0.05 level of significance. Result showed there is significant influence of senior secondary school students' emotion intelligence on academic achievement in physics. Based on the finding, it was recommended that school managers and administrators should organize work shop on regular bases to train the teachers and students on the importance of developing a higher level of emotional intelligence.

Keywords: *Emotional intelligence, Self-awareness, Self-motivation, Self-regulation, Empathy, Social skills, Achievement*

Corresponding Author: Babajide, V.F.T.

Background to the Study

Students' intelligence has been conceptualized in diverse ways. Literally, it involves ability to exhibit high level of logical reasoning, ability to think fast, to understand facts and concepts at ease and to communicate in a manner that anyone can understand. It could also be viewed as the ability to think, to learn and act in any situation. Emotion is the state of the mind that is related to feelings and thought which may result to some degree of pleasure or displeasure. Emotional intelligence is therefore the power of a student to be aware of one's emotion, be able to control, express such emotion and handle interpersonal relationship effectively. There are numerous factors that influence students' achievement in science specifically physics an aspect of science and technological development of any nation. These factors are government, teachers, environmental, parents and student's factors. Teachers factors which include the teacher characteristics and methods of instruction have been over researched. However, an aspect of students' factor such as emotional intelligence has not been fully researched in Physics education. This justified the topic of this study.

Emotional intelligence is one of the pertinent factors influencing achievement of students in science and physics in particular. This is in agreement with the submission of Connor (2018) who identified ten qualities of an emotional intelligent person as empathy, self-awareness, curiosity, analytical mind, belief, needs and want, passionate, optimistic, adaptability, and desire to help others to succeed. Empathy is the ability to understand or feel what another person is experiencing. It also refers to as thoughtfully considering other students' feeling in the process of making decisions (Goleman, 2004). For students to be effective and efficient, they need empathy to develop and keep good interpersonal relationship with other students.

Self-awareness means the ability of a student to have a deep understanding of his or her feelings, strengths, weaknesses, needs, and passion. Student with high self-awareness are said to be honest with themselves and with other students. Varunpa (2013) opined that such students usually speak precisely in specific terms and are open about their feelings and also like to discuss how their feeling impact their academic work. He further argued that students who are able to recognize how their feelings affect them, other students, and their academic performance are in a good position to achieve high academic scores both at the internal and external examinations.

Curiosity is an act of been passionate and wanting to put in the best to achieve or acquire knowledge. Analytical mind is the ability to analyze information, think about new information and think deeply to process new information. Belief is the ability to belief in one's self, ability to have self-control, and have the power of faith that everything you work out for good. Needs and want is the ability to discern between the things needed versos thing that would be nice to have as want. Needs include safety, survival, and sustenance among others. Passion is an act exhibiting strong and barely uncontrollable emotions to achieve desired goals, and lastly, optimistic is an act of improving relationship constructively; adaptability is the ability to think of an alternative solution when something does not work and lastly the desire to help others to succeed. It is possible for a student to have the best training in the world such as an incisive, analytical mind, and endless supply smart ideas; however, without

emotional intelligence such a student won't be able to achieve his or her career and academic goals. Therefore, student needs to develop a strong emotional intelligence to achieve and sustain their long term academic goals (Goleman, 2004).

From this background, it is clear that a strong emotional intelligence will be an exceptional advantage to physics students in pursue of higher academic performance and career development as a science student. Studies have established that emotional intelligence is one of the major predictor of academic achievement of students in both external and internal examinations and it is also what equipped them as an employee after a university's degree in a working world (Oyewunmi, Osibanjo & Adeniji, 2016). It is against this background that this study investigated the influence of emotional intelligence on academic achievement of senior secondary school students in physics.

Statement of Problem

It has been proven that being emotionally intelligent can equip students for achieving academic excellence and building a good interpersonal relationship with others. Emotional intelligence has been seen as an indispensable skill that supports students to meet up and manage their academic goals. Researchers have affirmed that students' emotional intelligence can predicts higher academic achievement in examinations. In essence, students with strong emotionally intelligence are more successful, effective and efficient in their schools and consequently, are able to achieve higher academic scores. Hence, it is necessary for students to be equipped with the skills of emotional intelligence as to achieve academic success. Therefore, this study investigated the impacts of emotional intelligence on academic achievement of senior secondary school students in physics.

Objectives of the Study

This study was sought out to determine;

1. The influence of senior secondary school students' self-awareness of their emotions on academic achievement in physics.
2. The influence of senior secondary school students' self-regulation of their emotions on academic achievement in physics.
3. The influence of senior secondary school students' self-motivation on academic achievement in physics.
4. The influence of senior secondary school students' empathy feelings on academic achievement in physics.
5. The influence of senior secondary school students' social skill on academic achievement in physics.
6. The influence of senior secondary school students' emotion intelligence on academic achievement in physics.

Research Hypotheses

The following research hypotheses guided the study and were tested at 0.05 level of significance.

- Ho1:** There is no significant influence of senior secondary school students' self-awareness of their emotions on academic achievement in physics.
- Ho2:** There is no significant influence of senior secondary school students' self-regulation of their emotions on academic achievement in physics.
- Ho3:** There is no significant influence of senior secondary school students' self-motivation on academic achievement in physics.
- Ho4:** There is no significant influence of senior secondary school students' empathy feelings on academic achievement in physics.
- Ho5:** There is no significant influence of senior secondary school students' social skill on academic achievement in physics.
- Ho6:** There is no significant influence of senior secondary school students' emotion intelligence on academic achievement in physics.

Theoretical Frame work

This study is based on the emotional intelligence theory of Daniel Goleman (1998). He proposed that emotional intelligence is an array of abilities and skills that drive performances, and it consists of five components which are self-awareness, self-regulation, self-motivation, empathy, and social skill.

Component One: Self-awareness is an act of knowing one's feelings, weaknesses, strong point, zeal, and core values and knowing how such characteristics affect others while taking decisions. Physics students are therefore required to be aware of their emotions and how it affects others during and after academic activities. In a physics class where the students are not happy to learn, they are emotional imbalance and disturbed, such students will not concentrate to learn nor contribute during the class activities and such will performed poorly.

Component Two: Self-regulation is the ability to control feelings and impulses and adjust to unforeseen circumstances. It is germane for physics students to be able to control and adjust their feeling which is a major factor in effective learning. A physics student who is emotional imbalance will not able to concentrate on learning and as such performed poorly in physics.

Component Three: Self-motivation is an internal quality that drives one to achieve a set goal. A self-motivated Physics student will passionately pursue his/her academic goals. Such Physics students are zealous about solving physics problem and make meaningful contributions in the class.

Component Four: Empathy is an act of knowing, comprehending, and putting into consideration other people's emotion when making decision. A physics student who exhibits an empathy feeling will put other class mate into consideration when solving problem and share the solutions with them. He will be ready to share idea with others and likewise learn from them as they cooperatively solve physics problems together.

Component Five: Social skill is the ability to manage, direct and control other peoples' emotions to achieve a desire goal. This skill is a paramount skill for all senior secondary physics students, a physics student with social skill will be able and ready to work with other class mate

irrespective of their background. Such physics student will be ready to learn from other class mate and his teachers and as such will performed better in his or her examinations.

Empirical Framework

The following researchers; Abisamra (2000), Bar-On (2006), Tella and Tella (2003), Adeyemo (2007), Ogundokun and Adeyemo (2010), Maizatul, Norhaslinda and Norhafizah (2012), and Oyewunmi, Osibanjo and Adeniji (2016) worked on emotional intelligence and found that cognitive intelligence, toughness, determination, and vision are insufficient to maintain and keep track of students' excellence academic achievement. They reported that Emotional Intelligence are found to be significantly and positively associated with students' academic achievement. Truly, excellence students are distinguished by a high degree of emotional intelligence, which includes self-awareness, self-regulation, motivation, empathy, and social skill.

Oyewunmi, Osinbajo and Adeniji (2016) investigated emotional intelligence and academic performance of students and reported that there is a significant relationship between emotional intelligence and students' academic performance. They also reported that emotional intelligence predicts students learning outcome. Maizatul, Norhaslinda, and Norhafizah (2012) studied the influence of emotional intelligence on academic achievement. Their study revealed that the students that were used for the study have high a level of emotional Intelligence and are found to be significantly and positively associated with their academic achievement. Amalu (2018) researched on emotional intelligence as predictor of academic performance among secondary school students in Makurdi metropolis of Benue state and reported that students' self-awareness of their emotion, empathy, social skill, self-motivation and self-regulatory which are the component of emotional intelligence, significantly contributed to the success of the student academic achievement. Ogunsaju, Adeyanju, and Oshinyadi (2015) also reported that emotional intelligence significantly influenced the academic achievement of students.

Methodology

This study adopted a descriptive survey research design to answer the research questions of the study. A sample of three hundred and fifteen (315) Senior Secondary School (SS2) students who returned the instruments were randomly selected in twenty (20) schools in Educational District iv of Lagos state, Nigeria. The sample comprised of ten (10) public and ten (10) private schools in the Educational District under study. Self-designed instruments titled Emotional Intelligence Questionnaire (EIQ) and Physics Achievement Test (PAT) were used for the collection of data. The EIQ questionnaire is divided into 2 parts; part A seek the demographic data of physics students, and part B consisted of 32 items which sought for the opinion of physics students on students self-awareness of their emotion (item 1 – 7), students' self-regulation of their emotion (item 8 – 12), self-motivation (item 13 – 17), social skills (item 18 – 25), and empathy (item 26 – 32) using a 5-likert scale of strongly agree(SA), agree(A), undecided(UN), disagree(D) and strongly disagree(SD). The Physics Achievement Test (PAT) consisted of 25 items with multiple choice options ranging from a – d and only one option of each item is the correct answer. The West African Examination Council (WAEC) chief

examiners (2017) reported that physics students performed poorly in heat transfer, simple harmonic motion, machine, and waves which is why the PAT questions are based on these topics. The reliability coefficient ($r = 0.88$) of the EIQ and the reliability coefficient ($r = 0.78$) of the PAT was calculated using Cronbach alpha and KR – 20 respectively.

Results

Ho1: There is no significant influence of senior secondary school students' self-awareness of their emotions on academic achievement in physics.

Table 1: ANOVA on Self-awareness of Physics Students' Emotions on Academic Achievement in Physics

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	238.044	7	34.006	102.642	.000
Within Groups	96.742	292	.331		
Total	334.787	299			

Table 1 shows that $F_{cal} = 102.642$ which is significant at 0.05 level of significance. This implies that there is significant influence of senior secondary school students' self-awareness of their emotions on academic achievement in physics. Thus, we reject the null hypothesis.

Ho2: There is no significant influence of senior secondary school students' self-regulation of their emotions on academic achievement in physics.

Table 2: ANOVA on Students' Self-regulation of their Emotions on Academic Achievement in Physics

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	149.417	5	29.883	47.395	.000
Within Groups	185.370	294	.631		
Total	334.787	299			

Table 2 shows that $F_{cal} = 47.395$ which is significant at 0.05 level of significance. This implies that there is significant influence of senior secondary school students' self-regulation of their emotions on academic achievement in physics. Thus we reject the null hypothesis

Ho3: There is no significant influence of senior secondary school students' self-motivation on academic achievement in physics.

Table 3: ANOVA on Students' Self-motivation on Academic Achievement in Physics

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	152.119	6	25.353	40.667	.000
Within Groups	182.668	293	.623		
Total	334.787	299			

Table 3 shows that $F_{cal} = 40.667$ which is significant at 0.05 level of significance. This implies that there is significant influence of senior secondary school students' self-motivation on academic achievement in physics. Thus we reject the null hypothesis

Ho4: There is no significant influence of senior secondary school students' empathy feelings on academic achievement in physics.

Table 4: ANOVA on Students' Empathy Feelings on Academic Achievement in Physics

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	262.267	7	37.467	150.859	.000
Within Groups	72.520	292	.248		
Total	334.787	299			

Table 4 shows that $F_{cal} = 150.859$ which is significant at 0.05 level of significance. This implies that there is significant influence of senior secondary school students' empathy feelings on academic achievement in physics. Thus we reject the null hypothesis.

Ho5: There is no significant influence of senior secondary school students' social skill on academic achievement in physics.

Table 5: ANOVA on Students' Empathy Feelings on Academic Achievement in Physics

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	256.564	7	36.652	136.820	.000
Within Groups	78.222	292	.268		
Total	334.787	299			

Table 5 shows that $F_{cal} = 136.820$ which is significant at 0.05 level of significance. This implies that there is significant influence of senior secondary school students' social skill on academic achievement in physics. Thus we reject the null hypothesis.

Ho6: There is no significant influence of senior secondary school students' emotion intelligence on academic achievement in physics.

Table 6: ANOVA on Students' Emotion Intelligence on Academic Achievement in Physics.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	277.852	10	27.785	141.039	.000
Within Groups	56.934	289	.197		
Total	334.787	299			

Table 6 shows that $F_{cal} = 141.039$ which is significant at 0.05 level of significance. This implies that there is significant influence of senior secondary school students' emotion intelligence on academic achievement in physics. Thus we reject the null hypothesis.

Summary of Findings

1. There is significant influence of senior secondary school students' self-awareness of their emotions on academic achievement in physics.
2. There is significant influence of senior secondary school students' self-regulation of their emotions on academic achievement in physics.
3. There is significant influence of senior secondary school students' self-motivation on academic achievement in physics.
4. There is significant influence of senior secondary school students' empathy feelings on academic achievement in physics.
5. There is significant influence of senior secondary school students' social skill on academic achievement in physics.
6. There is significant influence of senior secondary school students' emotion intelligence on academic achievement in physics.

Discussion

There is a significant influence of senior secondary school students' self-awareness of their emotions on academic achievement in physics. This is due to the fact that a student who understands himself is very conscious of his/her emotion. Such student knows when he is emotional imbalance, sad, angry, upset and disturb. He cannot comprehend and understand any concept in physics, he cannot solve any problem and cannot think; such negative emotion will have negative effect on his academic achievement. On the other hand, if a student's is emotionally stable, happy, such a student will concentrate in academic activities, be able to solve problems, define, explain and solve physics questions and hence perform better than one with negative emotion. This finding is in line with Oyewunmi, Osinbajo and Adeniji (2016) investigated students self-awareness of their emotional intelligence significantly contributes to their academic performance. It is also supported by Amalu (2018) who affirmed that the student self-awareness of their feeling contribute significantly to their academic achievement both at internal and external examinations.

There is significant influence of senior secondary school students' self-regulation of their emotions on academic achievement in physics. A student who can regulate his/her emotion will not allow such emotion to disturb his academic activities, such a student will concentrate in physics classroom activities, solve problems, perform practical activities, remember all what has been taught and answer all questions meticulously and will perform better than a student who cannot regulate his emotion which may likely have negative effect on his academic achievement in school. This is in line with Oyewunmi, Osibanjo and Adeniji (2016). In their study, it was revealed that the ability of science student to control and manage his or her emotion significantly influenced their academic performance in the classes. There is significant influence of senior secondary school students' self-motivation on academic achievement in physics. When a student is self-motivated, he or she encourages him/herself and carry out academic activities with little or no supervision. Such students set academic goals that will constantly motivate him/her to study, solve problems and perform assignment as at when due. Self-motivated students are always on the lookout for the next class and are eager to ask questions for clarity. A self-motivated student will perform better than a student who is not self-motivated in physics class room activities. This is in collaboration with Amalu (2018). It is also supported by Ogundokun and Adeyemo (2010) who reported that self-motivation is a predictor of students' academic achievement in physics.

There is significant influence of senior secondary school students' empathy feelings on academic achievement in physics. Physics students who have empathy feeling put other students in consideration and how his or her feelings affect others. They work cooperatively and peacefully with others and brainstorm to solve related physics questions. A student who put others into consideration and shared academic resources with other is in a better position to score higher achievement than others as he or she is well equipped with the academic materials he/she has received from others. This is also in line with Amalu who investigated the influence of emotional intelligence as predictor of academic performance among secondary school students and showed that empathy which is a component of emotional intelligence significantly determine the students' learning outcome.

There is significant influence of senior secondary school students' social skill on academic achievement in physics. A students who is socially skilled, easily makes friend with students and teachers, connect with other students irrespectively of their background. Such students ask questions from their from friends, work assignment together, solve physics problems together and a such they are able to perform better than other students who don't have such social skills. This is supported by Ogunsaju, Adeyanju, and Oshinyadi (2015). They investigated the effect of emotional intelligence skills on the academic achievement of first year university students and revealed that emotional intelligence significantly influence the academic achievement students. It is also backed up by Melvins (2018) and Ogundokun and Adeyemo (2010). The findings of this study revealed that emotional intelligence has significant effect on the academic achievement of senior secondary school students in Physics. The finding is supported by the findings of Abisamra (2000), Bar-On (2003), Ogundokun and Adeyemo (2010), Adeyemo (2007), Tella and Tella (2003), who reported that emotional intelligence predict the academic achievement of senior secondary school

students. Physics students in secondary schools who are able to recognize and control their own emotions do create good interpersonal relationship are with other students. This helps them to brainstorm and work together to achieve common academic goals. The capacity to develop a strong emotional intelligence is very important to physics student because such characteristic is needed to effectively work with other physics student in the class.

Conclusion

The study concluded that there is significant effect of senior secondary school students' empathy feelings, self-awareness and regulation of their emotions on academic achievement in physics. There is significant effect of senior secondary school students' self-motivation and social skill on academic achievement in physics. And lastly, emotional intelligence has significant effect on the academic achievement of senior secondary school students in Physics.

Recommendations

Based on the findings of the study, it is recommended that:

1. Physics teachers should use teaching methods that will foster group and collaborative work in their class room in order to let the student study and work cooperatively.
2. School managers and administrators should organize work shop on regular bases to train the teachers and students on the importance of developing emotional intelligence.
3. Physics curriculum should be restructured in a way that will foster group work in physics classroom and labouratory.
4. Government, school managers and administrators should give out awards and scholarship to motivate group of physics students that have worked cooperatively to achieve academic excellence.

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