Self-Perception and Expression as Predictors of Students' Achievement in Basic Science in Akwa Ibom State North West Senatorial District, Nigeria

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ABSTRACT

This study investigates the predictive powers of self-perception and expression on students' achievement in Basic Science. The study adopted a correlational research design. The population consisted of 23,294 JS2 students from 92 government secondary schools in Akwa Ibom State North West (Ikot Ekpene) Senatorial District. A multistage sampling technique was used in selecting 1,164 students from the schools in the local government areas. Self-perception and Expression Inventory (SEI) and Basic Science Achievement Test (BSAT) were instruments for the data collection. The coefficient of determination scores was the model to test the convertible research hypotheses. The results revealed that self-expression was more independent and statistically significant on students` achievement. Self-perception was the last independent predictor with a -2.217 predictive value. However, the joint predictive power of the domains of self-perception and expression on students` achievement in Basic Science was statistically significant with .884 predictive values. Based on the findings, the State government should organize seminars and workshops for teachers in Ikot Ekpene Senatorial District to enable them to understand students' self-perception and expression to build their emotions and that of the students. Also, the principals should encourage teamwork in the school system by considering the teachers and the students in the decision-making of the school to enable them to express their emotions.

Keywords: Self-perception and Expression, Basic-Science and students' achievement

INTRODUCTION

Globally, there have been concerns about the influence on academic achievement among students in learning institutions from pre-school to tertiary level. Some Studies have revealed that socio-economy, motivation, peer relationships, teacher-student relationships, parental engagement, personality traits, emotional intelligence, self-perception, and self-expression influence academic achievement. Many people are curious about how student self-perception and expression (SE) might help them learn and perform better in school. The notion has prompted some researchers to investigate and uncover other characteristics that may contribute to success and self-perception and expression appear to play more roles.

Self-perception and expression have gotten a lot of attention in academics. It is rapidly becoming acknowledged as a measure of overall success across multiple areas, according to (Babli, Rashmi and Sapna, 2013). Studies on intelligence measurement have focused on cognitive intelligence while overlooking non-cognitive elements, the most significant of which are self-perception and expression (Al-Rfou, 2012). Hence, a new idea known as self-perception and expression emerges (Mayer and Salovey, 1990). Self-perception and expression are the ability to monitor individual worth, recognize and classify different values and use emotional information to influence thinking and actions (Kiruki and Orodho, 2015). Emotions play a role in everything people do, including their actions, decisions, and judgments. Emotionally intelligent people are aware of this, rather than being controlled by their emotions, their thinking manages them.

Low and Nelson (2015) opined that self-perception and expression are critical to a student`s health and academic success. Emotionally intelligent students are better with the hard and challenging college experience. Those who can lead a successful academic life can concentrate and achieve well to operate better as a team, work under pressure, and contribute to productivity and achievement. Based on this, the researcher investigates the domains of self-perception and expression as predictors of students' achievement in basic science.

Basic science is a tool for development and productivity in a nation. The development of a nation is a measure of its development in the area of science. Knowledge of science and technology is also a requirement in all countries and people globally due to the many challenges that people faced (Kiruki and Orodho, 2015). The basic technology has become a dominant power development indicator. Science is the basis of modern-day technology break-through. It is a search for evidence to answer questions or solve problems that ultimately promote academic achievement (Agbaje and Alake, 2014).

Intelligence is one of the most prized possessions a person can have. It is a fundamental concept that has become a convenient evaluative expression (Nwadinigwe and Azuka-Obieke, 2012). Recently, intelligence has passed through the laboratories of many psychologists, who find a definition and explanation for the term. For example, singers are described as having intelligent voices, footballers as having intelligent feet, and horses as running intelligent races (Nwadinigwe and Azuka-Obieke, 2012). People use the term in their daily language in a way that suggests that there is agreement about what intelligence is, but Psychologists cannot agree at all. Shamsaei, Yousefi and Sadeghi (2016) argue that the most intelligent people have not agreed on how to define intelligence. Some experts like Mayer

and Salovey describe it as the capacity to adapt and learn from experiences. Some still argue that intelligence includes characteristics such as creativity and interpersonal relationship (Shamsaei, Yousefi, & Sadeghi 2016). In a nutshell, some psychologists see intelligence as a single aptitude, while others see it as representing a cluster of aptitudes or mental capacities (Durgut, Gerekan & Pehlivan, 2013).

Intelligence is a word that is socially constructed; different cultures and groups see it as being whatever attributes bring success within that group (Sternberg 2021). A working definition would encompass academic and non-academic, and be applied to people of all social and cultural backgrounds. In addressing these issues, contemporary research on intelligence has opened new dimensions that make the definition of intelligence more comprehensive. Durgut, Gerekan and Pehlivan (2013) asserted that intelligence comprises learning and adaptive abilities; the ability to understand and control oneself; practical problem-solving ability; verbal and social competencies. It is the ability to learn from experience, apply knowledge to solve problems, and adapt and survive in a different environment. Sternberg (2021) suggested intelligence encompasses a greater variety of abilities.

Emotional intelligence is a construct that has to do with the evaluation and suppression of emotions experienced by oneself and the ability to understand and regulate such emotions. According to Adigwe (2015), emotional intelligence is an individual ability to perceive, integrate and understand in a manner that enables him/her to facilitate his/her thought – processes and promotes personal growth and development. It is that part of the human spirit which motivates people to perform and gives them the energy to demonstrate behaviors such as intentionality, persistence, creativity, impulse control, social deftness, compassion, intuition, and integrity (Kapp, 2012). It is a cross-section of interrelated emotional and social competencies and facilitators that determine how effectively one understands and expresses himself, understands others and relates with them, and copes with daily demands and pressures (Bar-on, 2006). Individuals' knowledge and overall intelligence must be augmented by the ability to understand, perceive and regulate emotions (Brackett, & Geher, 2006).

Self-perception is a domain of emotional intelligence that needs to be studied because various studies found that self-perception determines students` achievement in basic technology (Bonaccio & Reeve, 2010). The students' feelings of whether they are adequately prepared for an examination and the perception of low self-efficacy and incompetence could predict failure in the academic achievement of the students. Subsequently, lack of self-perception, striving for flawlessness, and setting excessively high-performance standards or "maladaptive perfectionism" and low scores in emotional stability (or neuroticism) (Bonaccio & Reeve, 2010) could be indicative of a lack of self-perfection and expression.

Self-expression describes students` inclination to openly communicate and proclaim perceptions, observations, and feelings irrespective of what third parties think (Agrawal and Teotia, 2015). Multi-Health System (2011) describes self-expression as emotional expression, assertiveness and independence. Students can freely express their feelings verbally or nonverbally; self-expression is key in displaying academic talent and worth. Students' achievement is on how well students can express themselves either verbally or nonverbally in

a manner that would motivate and maximize scores. People who are low in the area of self-expression are prone to feelings of low self-confidence (Agawal and Teotia, 2015). People who are inability to self-express are prone to feelings of distress, whereas high people are more resilient to life`s setbacks and upsets. The author went further to report that people with high ability in self-expression attained more to the subtle social signals that indicate what others need or want. Students need to have self-expression skills as well as interpersonal relationships.

Mati, Gatumu and Chandi (2016) studied the influence of emotional intelligence on achievement in chemistry among secondary students. The study indicates a significant positive relationship between emotional intelligence and the achievement of higher secondary students in chemistry. It also highlights self-motivation, emotional stability, and self-awareness as factors of emotional intelligence on achievement in the chemistry of higher secondary students. The study relates to this study as both are interested in emotional intelligence and student achievement but differ in the design, as the current study design is correlational and in Ikot Ekpene Senatorial District.

Evidence from the literature on emotional intelligence indicates that there are still more areas where research on emotional intelligence appears scarce. The acquisition and application of these domains of emotional intelligence by students in Akwa Ibom State Secondary Education Board may help to minimize some of the emotional problems identified as restiveness, deviance, lack of concentration, low self-concept, dropping out of school, etc. These may enhance their interest and motivation leading to improved achievement in the school**.** Most children have emotional problems sometimes during their school years. A small percentage has problems seriously and persistently that they have emotional and behavioural disorders (Billings *et al.*, 2014)

Emotional and behavioural disorders consist of persistent problems that involve relationships, aggression, and depression, fears associated with personal or school matters, and other inappropriate socio-emotional characteristics like anxiety. The researchers sought the predictive power of the domains of self-perception and expression as a predictor of students` achievement in Basic Science.

There has been growing disaffection concerning students` achievement in Basic Science. Some students look at Basic Science as a difficult subject, especially when it involves practical work; others get scared by its volume of contents and concepts. Psychological constructs like self-perception and expression affect students' achievement in basic science, hence their weak achievement in public examinations. Self-perception and expression are cognitive variables in students' achievement in the Ikot Ekpene Senatorial District. However, not much attention has been on exploring these domains in the school system as predictors of students` achievement. Experiential evidence shows that students within the senatorial district have poor self-perception and self-expression in Basic Science.

Could the predictive power of each domain of self-perception and expression on students` achievement in Basic Science be statistically determined? It is on this premise that this research determines the predictive power of self-perception and expression on students` achievement in Basic Science in Ikot Ekpene Senatorial District of Akwa Ibom State. The

aim was to investigate the predictive power of self-perception and expression on students' achievement in Basic Science. The specific objectives are to:

1. Determine the predictive power of self-perception on students `achievement in Basic science
2. Ascertain the predictive power of self-expression on students `achievement in Basic Science.

The following null hypotheses were formulated and tested at a 0.05 level of significance to guide the conduct of the study.

1. The predictive power of self-perception on students` achievement in Basic science was not statistically significant.
2. The predictive power of self-expression on students` achievement in Basic science was not statistically significant.

The findings of this study would be beneficial when published to the teachers, students, schools guidance counsellors, educational administrators, and parents. The results would enable the teachers to understand that if students' self-perception and expression are guided by their strengths and weaknesses could influence their academic achievement in Basic science. The findings would benefit the students, schools guidance counsellors, and parents in solving Basic science problems. Finally, it would be significant for Educational administrators to provide a relationship between self-perception and expression on students` achievement, thereby modifying appropriate teaching approaches that can improve teaching and learning exercises in the secondary school curriculum and for further research.

METHOD

The study was correlational research conducted in public secondary schools in Ikot Ekpene Senatorial District of Akwa Ibom State. The population comprises all the junior secondary two students in the area. There are 92 government secondary schools in the Senatorial District. The total of JSS 2 students was 23294 (Akwa Ibom State Secondary Education Board, 2022). Multi-stage sampling technique drew the sample. In the first stage, a simple random sampling technique was used in drawing three local government areas from 10. The second stage was drawing three schools from local government areas through purposive sampling. Finally, a simple random sampling technique was used to select 150 JSS2 students and above from each local government area. A sample of 1164 (582 male and 582 female) students was selected.

Two instruments were used for data collection. They are Self-perception and Expression inventory (SEI). The SEI was adapted from Bar-Ons` emotional quotient inventory youth version, The Bar-Ons` SEI comprises two sections, A and B. Section A contains the demographic data of the respondents, while section B consists of domains of self-perception and self-expression divided into two clusters. Cluster A sought information on self-perception and B sought information on self-expression. Each cluster has 12 items and a total of 24 items instruments were adopted from items of Bar–Ons`SEI rated on a 4-point Likert scale of strongly agree (SA, 4), agree (A, 3), disagree (D, 2) strongly disagree (SD, 1). A basic science achievement test was used. The test contains 40 multiple-choice items with

response options of A, B, C and D with only one correct option. Each correct response attracts a score of 1 mark, while no attracts a zero (0) score. The total obtainable score is 40 marks. Three experts, one from the Department of Educational Psychology, University of Nigeria, Nsukka, another expert from the Department of Science Education Akwa Ibom State University, and the third expert from Measurement and Evaluation from the Akwa Ibom State University scrutinized and validated the instruments for data collection. To determine the reliability of the instruments, SEI and BSTAT were trial tested with 30 JSS2 students from some schools in the senatorial district that were not part of the study. Table of specifications for content validity; Cronbach Alpha method determined the reliability of SEI. The reliability coefficient of self-perception and expression were 0.79 and 0.77, respectively. The overall reliability for SEI was 0.78, considered reliable for the instrument by the researcher. On the other hand, the reliability of the Basic science achievement test using the estimate of internal consistency and the Split-Half methods determined a coefficient of 0.95.

The researchers sought permission from the Principals of the selected schools to use their students and the Basic Science teachers as research assistants for research purposes. The strategy ensured effective administration and recovery of the instruments administered. They allowed each respondent visited some minutes to respond to the items before retrieving the completed questionnaire. The questionnaires were returned on the spot. The total number collected was 1164 out of 1200 administered in all the schools. The data were analyzed using regression and coefficient of determination, while multiple regression analysis tests the null hypotheses at a 0.05 level of significance.

RESULTS AND DISCUSSION

Table 1: Regression analysis of self-perception on students` achievement in Basic Science

Variable	N	r	R-Square	Adjusted R Square
Self-Perception Students` Achievement	1164	.205*	.042	.041
Predictors: (Constant) Self perception				

Table 1 shows the R and R^2 for the strength of the correlation between self-perception and students` achievement in Basic Science. It displays the R-value of .205* and $R^2$ of .042 between self-perception and students` achievement. The R^2 value of .042 as the coefficient of the determination indicates that self-perception contributes only 4.2% to the variations in students` achievement. It further states that self-perception predicts students` Achievement in Basic Science.

Table 2: Regression analysis of self-expression on students` achievement in Basic Science

Variable	N	r	R-Square	Adjusted R Square
Self-expression Students` Achievement	1164	.229	.053	.052
Predictors: (Constant) Self expression				

Table 2 reports the predictive power of self-expression on students` achievement. It shows an R-value of 0.229, and $R^2$ of 0.053 as the coefficient of determination indicates that the predictive power of self-expression is 5.3% to the variations in students` achievement. It further indicates that self-expression predicts students` achievement in Basic Science.

Table 3: Regression analysis of self-perception on students` achievement in basic science

Source of Variance	Sum of Square	df	Mean Square	F	Sig
Regression	937.13	1	937.138	50.74	0.000
Residual	21461.668	1162	18.470		
Total	22398.807	1163			

R=.205, R^2=.042*
*Significant at 0.05 level of significance

Table 3 shows that the relationship between self-perception and students' achievement is statistically significant at a 0.05 level of significance (F = 50.74; p = 0.000, R = 0.205, R^2 = 0.042*). It means the criterion could be predicated on the predictor variable by justifying the regression analysis presented in Table 1. Thus, it rejected the null hypothesis that the predictive power of self-perception on students` achievement in Basic Science was not statistically significant at a 0.05 level of significance. The study sought to determine the predictive power of self-perception on students' achievement in Basic Science. The results revealed the predictive power of self-perception on students' achievement is statistically significant. It implies that self-perception predicts students` achievement in Basic Science. Hence, emotionally intelligent students achieve academic excellence. It also corroborates Mani's (2013) study of the influence of emotional intelligence on students` achievement in chemistry, which indicates a positive relationship between emotional intelligence and students` achievement.

Table 4: Regression analysis of self-expression on students` achievement in Basic Science

Source of Variance	Sum of Square	df	Mean Square	F	Sig
Regression	1176.776	1	1176.776	64.434	0.000
Residual	21222.03	1162	18.263		
Total	22398.807	1163			

R=.229, R^2=.053*
*Significant at 0.05 level of significance

Table 4 shows that the relationship between self-expression and students' achievement is statistically significant at a 0.05 level of significance (F = 64.43; p = 0.000, R = 0.229, R^2 = 0.053*) It implies that the criterion could be predicated on the predictor variable by justifying the regression analysis presented in Table 2. Hence, it rejected the null hypothesis that the predictive power of self-expression on students` achievement in Basic science was not statistically significant at a 0.05 level of significance. Self-expression statistically predicts

students' achievement in Basic Science, a sequel to the fact that emotionally intelligent students are on top of their field academically and otherwise. This study affirms the findings of Preetis (2013), which revealed that academic achievement without emotional intelligence does not indicate future success. Also, Chew *et al.* (2013) concluded that emotionally intelligent students performed better academically.

CONCLUSION AND RECOMMENDATIONS

The study investigated the predictive powers of self-perception and expression on students' achievement in Basic Science from 92 government secondary schools in Akwa Ibom State North West (Ikot Ekpene) Senatorial District. It was correlational research. Based on the results, the predictive power of self-perception and self-expression on students` achievement in Basic Science was statistically significant. Based on the findings, it recommends the following:

1. There should be training and re-training of students and guidance counselors on the different aspects of self-perception and expression in the school through seminars and conferences by the state government.
2. School administrators and teachers should be properly informed on the importance of self-perception and expression among students.

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