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# Self-Concept As A Correlate of Academic Achievement of Students of Basic Science in Secondary School in Oyo State

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***Abstract-*** ***This study examined the relationship between self-concept and academic achievement of students in basic science in secondary school in Oyo State. The study utilized a Descriptive correlation survey design using the survey method. Two instruments which comprised a questionnaire and the Broad Sheet of Academic Performance (BSAP) in the 2022/2023 session, were used to gather information on the topic. The sample consisted of 200 Basic science students' in upper basic schools in Oyo. Data were analyzed using Pearson's Product Moment Correlation to test the relationship between the variables and t-test was used to test the differences in the variables. The findings of the study showed that, a significant relationship exists between students' self-concept and their academic achievement with a correlation index of 0.60 and p-value of 0.00. The study also established that there is no significant difference between male and female students' academic self-concept and academic achievement. However, the study concluded that a positive students' self-concept will significantly contribute to improving their achievement in basic Science. Consequently, it was recommended among others that: Teachers, governments, and curriculum developers should organize progorammes to educate students on the need to develop self-concept as it is considered to be a protective factor that promotes academic achievement.***

***Keywords: Academic Performance, Students, Self-Concept and Basic Science***

## I. INTRODUCTION

The student, who is one of the fundamental elements of the education system, has always been regarded as the future of society and has been included in a continuous development process. Learning in a classroom depends to a great extent on the structure and patterns of inter-personal relationships particularly students-teacher relationship, that exist within the learning group at a given point in time. The transition from secondary school to tertiary institution of learning is a major life change and a time of facing many psychosocial problems such as peer pressure, different interpersonal relationships, living far from parents and facing a new environment. Basic science serves as the gate way science through which students are exposed to fundamental principle of science. The science studied at this basic level to prepare students for the core science subjects at the senior secondary and higher institutions which is an integral part of objectives that established Basic Science as stated in NPE 2014.

These objectives of basic science are to enable learners to:

i. Develop interest in science and technology
ii. Acquire basic knowledge and skills in science and technology
iii. Apply their scientific and technological knowledge and skills to meet societal needs
iv. Take advantage of the numerous career opportunities offered by science and technology
v. Become prepared for further studies in science and technology

However, it has been observed that the aforementioned objectives are not practically achieved. This is evident in the poor academic performances of students in basic science in secondary schools over the years. This situation has been a serious concern to all well-meaning stakeholders in the education sector, probing into the major causes of the poor performances in the subject with differing opinions; some attributing it to the difficult nature of the subject, others have attributed it to poor and inadequate teaching and learning facilities and inadequate laboratories, while a vast majority have attributed it to students self-concept and teachers handling the subject.

It is a fact that the student's academic achievement, which is one of the most basic and indispensable aims of education institutions, is also an expectation of society. Therefore, when educational goals and objectives are set, academic achievement is usually prioritize. Achievement can be expressed as progress made towards attaining the goals determined by individuals or institutions. In terms of the student, achievement means reaching the objectives framed in the curriculum (Kazazoglu, 2013). Academic achievement as it was described by Jackson (2021), it is outcomes that indicate the extent to which a student has achieved their learning goals. Academic achievement may refer to completing educational benchmarks such as a bachelor's degree. Academic achievement may be measured through students' grade point average, whereas for institutions, achievement may be measured through graduation rates. Also, Completion of educational benchmarks such as secondary school diplomas and bachelor's degrees represent academic achievement (Wikipedia, 2021). Academic achievement is often measured through examinations or continuous assessments (Glossary2020). Academic achievement is the extent to which a student or institution has achieved either short or long term educational goals. Academic achievement refers to what the student has learned or what skills the student has learned and is usually measured through assessments like standardized tests, performance assessments and portfolio assessments.

Despite the fact that basic science is a foundation for further science studies, the achievement of students at the junior secondary school has not been encouraging over the years. This is attributed to many challenges. According to Irogbin, Okoh, Abegunrin and Abubakar (2012) the problems facing the teaching and learning of basic science and technology are those related to the students, the teachers, nature of the subject, the school and the society at large. Of all these, the teacher's factor is seen to be central in having greater effects on basic science and technology learning scenario. Akom and Ugbodubu (2017) provided evidences that the achievement of students at the junior secondary schools has not been impressive. It was further confirmed by the reports of Agogo (2017) Darier and Gauer (2019) who stated that the achievement of junior secondary school students in the area of science and technology is below expectations. This was attributed to lack Self-concept which is the central focus of this study.

Self-concept refers to individual's holistic view about himself that are formed and transformed with individual's own personal experience and others' interpretation of that experience. According to Klobal and Musek (2008), self-concept is an individual's perception of himself; it is a psychological entity and includes one's feeling, evaluation and attitudes, as well as descriptive categories. Self-concept is an important construct in education because of its relationship to academic achievement of students.

Empirically literature claims that self-concept refers to backbone of person's inspiration (Bandura, 2001), individuals' confidence on hidden potential (Van der Bijl & Shortridge-Baggett, 2002), humans' opinions regarding their talent to carry out particular assignments (Axtell & Parker, 2003), one's trust to complete a challenging task applying his/her skills (Pajares, 2002), and task-oriented description of individual's self-worth (Lunenburg, 2011). Essential code of self-efficacy states that more efficacious people remain engaged in diverse activities to accomplish certain tasks (Van der Bijl & ShortridgeBaggett, 2002). Self-concept significantly affects individual's capabilities, inspirations and working towards goal achievement by applying capacities based on their confidence, potential and abilities (Bandura, 2001; Tschannen, Moran & Hoy, 2001; Zimmerman, 2008; Lunenburg, 2011).

Several studies have revealed an association between students' self-concept and academic achievement. Marsh and Craven, (2006) and Areepattamanni and Freeman (2008) showed a strong associations between students' self-concept and academic achievement. Similar researches conducted by Lotfabadi (2004) and Swiaatek (2005) revealed a clear positive relationship between self-concept and academic achievement of students. The studies also affirmed that people with a positive self-concept acquire more success in areas of social, scientific and occupation. The study of Martin, et al (2000) also substantiates a clear relationship between self-concept and science achievement using the TIMSS data. The studies further reiterate that, internationally, 26 percent of students on average developed a high self-concept in the sciences.

In the course of focusing on the student's performance, mental ability, and gender usually suffice and oftentimes, students' mental ability might affect their achievement in basic science. Ibitoye (2021) reported that mental ability has been established to impact the achievement of learners in biology. Adewumi, (2014) described mental ability as the level of cognitive achievement demonstrated when pupils are exposed to education processes that make them progress from a state of ignorance to a level where knowledge, talents, and skills are acquired and utilized. The students with high mental ability were able to understand their studies very well, grasp vital information and perform excellently in the examination compared with low mental ability students. Akinbobola, (2015) observed that the educational system in Nigeria is made up of students with various mental ability levels. Therefore, any improvement in instructional strategy will impact and affect learners' mental ability level. When mental ability is high or strong learning is fast and easy, conversely when mental ability is low or weak, learning becomes a struggle and difficult. Gender has also remained an important variable which is significant to education since it has been linked with students' achievement. Gender refers to the classification of human being on the basis of sex due to the roles they perform. Previous studies show that on the average the performance of girls outweighed that of boys (Adewumi, 2014). The study of Yuniskurin, Noviyanti, Mukti, Mahana, and Zubidah (2019) also show that female has better spelling ability and thus do well in writing, literacy, and tests of general knowledge in education. In contrast, Ekon and Eni (2015), and Okafor (2021), showed that women were not only weakly represented, their levels of achievement in the fields of sciences and technology where low compared to the males.

Based on the above contradictory findings on the connections between students' attitude to science, self-concept and academic achievement, this study is sought to examine the strength and direction of the relationship between self-concept and achievement of Junior Secondary School students in Basic Science in Oyo State, Nigeria.

Purpose of the study

1. To study the relationship between self-concept and academic achievement in junior secondary school in Oyo state.
2. To compare the study self-concept and academic achievement of male and female students in Oyo State

Research Hypotheses

The following null hypotheses were formulated to guide the study

H01: There is no significant relationship between the self-concept and academic achievement of students in basic science in junior secondary school in Oyo State

H02: There is no significant difference in the self-concept and academic achievement of male and female students in basic science in junior secondary school in Oyo State

## II. METHODOLOGY

Research Design

Descriptive correlation survey design which is one of the quantitative research methods was used in the study. The variables involved in the study are: Independent variable (Self-concept), Dependent variable (Academic Achievement in basic science) and Moderator variable (Gender)

Population and Sampling

The population of this study consists of all junior secondary school students in Oyo state and the sample for the study was taken from the Four Local Government Areas of Oyo state comprising Atiba, Oyo East, Oyo West and Afijo. A total number of 200 science students were randomly selected from eight junior secondary schools from the four local government areas, whereby two secondary schools were selected from each of the 4 local government areas. Hence, a total of 8 junior secondary schools were selected. The selection of schools and the participants were based on simple random sampling.

Research Instruments

The research instruments used for data collection was a questionnaire titled: Personal Self-concept (PSQ) Questionnaire and Broad Sheet of Academic Performance (BSAP) in 2022/2023 Session. The constructed research questionnaire has two main parts; section A and B. section A contains the personal data of the respondents such as name of school, gender, class etc. while section B contain twenty (20) items which were structured to elicit information on the study habit of basic science students. The questionnaire has four-point rating scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). For the purpose of this study, the face and content validity of the Personal Self-concept (PSQ) Questionnaire was ensured by giving it to two experts in the field of science education. After which, the instrument was taken to sampled schools for administration. Each selected school received twenty-five (25) questionnaires. The two hundred (200) questionnaires distributed to all students were collected immediately after their responses. As a result, it indicates a one hundred percent return rate. Pearson's Product Moment Correlation and t-test was used to test the research hypotheses. Pearson's product moment correlation is ideal for ascertaining the extent of relationship between two variables while the t-test was to ascertain the degree of difference.

Results

H01: There is no significant relationship between the self-concept and academic achievement of students in basic science in junior secondary school in Oyo State

Table 1: Relationship between students' academic self-concept and student academic performance in basic science.

| Variables | N | MEAN | S.D | Pearson Correlation (r) | P |
|---|---|---|---|---|---|
| Students' Self-Concept | 200 | 75 | 9.1 | 0.60 | 0.000 |
| Students' Academic Achievement | 200 | 31 | 11.0 | | |

**. Correlation is significant at 0.01 levels (2-tailed).

Table 1 shows the result of data analysis based on the relationship between academic self-concept and academic performance in Basic science, at the junior secondary level. The result revealed that there is positive significant relationship between self-concept and academic performance of junior secondary school students in the study area ($r = 0.60$, $p \leq 0.00$). This shows that students' self-concept has a significant relationship on the students' academic performance. Hence, the null hypothesis which states that there is no significant relationship between students' self-concept and students' academic performance is hereby not accepted.

Ho2: There is no significant difference in the self-concept and academic achievement of male and female students' basic science in junior secondary school in Oyo State

Table 2: Relationship between students' gender in self-concept and academic performance of male and female students in basic science

| Variables (Gender) | N | MEAN | S.D | Pearson Correlation (r) | P |
|---|---|---|---|---|---|
| Male | 53 | 75.1 | 18.88 | 0.60 | 0.000 |
| Female | 47 | 74.3 | 19.20 | | |

**. Correlation is significant at 0.01 levels (2-tailed).

Table 2 shows that the correlation between students' gender in self-concept and academic performance of male and female students' in Basic science was positive and significant at ($r = 0.60$, $p < 0.000$) level of significance. Hence, the null hypothesis which states that there is significant relationship between students' gender in self-concept and academic performance of male and female students' in Basic science is here by accepted.

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Table 3: Correlation of students' gender and performance in Basic Science

| Gender | N | MEAN | S.D | Pearson Correlation (r) | P |
|---|---|---|---|---|---|
| Male | 53 | 9.04 | 1.6 | 0.432 | 0.000 |
| Female | 47 | 8.6 | 1.4 | | |

Table 3 shows that there was a low, positive and significant relationship between students' gender and performance in Basic Science ($r = 0.432$, $p < 0.000$). The null hypothesis which states that, there is no significant relationship between students' gender and performance in Basic Science was rejected. This implies that there was a significant relationship between students' gender and performance in Basic Science.

Discussions of Findings

The use of the Pearson Product Moment Correlation statistics revealed that there is significant relationship existing between Students Self-Concept and Students Academic Achievement, this shows that the Students' self-concept has an existing relationship with the students' Academic performance. Hence, the null hypothesis which suggests that there is no significant relationship between academic self-concept and academic performance of senior secondary school students Oyo State is here by rejected. This is supported the work of Vincent and Simon (2005), who investigated on how self-concept and anxiety influence students' academic performance, Their result shows that, there is significant relationship between students self-concept and academic performance among secondary school students, and there is significant relationship between students level of anxiety and academic performance. It is also supported by Abdullahi (2010), who studied on Self-concept and academic achievement of secondary school students in Zaria educational zone. Another investigation by Foekens (2011) on Self-concept and the changeability of conceptions in students with learning 70 difficulties. His result shows a relationship between learning disabilities and less favourable self-concept which support the relationship found in this study.

Their responses on the research question showed that both male and female are of the opinion that they are good students in school as this attracted their highest mean response. Details of the male respondents on this item showed that most of them were in agreement while twenty undecided and the rest seven in disagreement. The female response on this item showed that most of them were also in agreement while six were undecided and the rest sixteen in disagreement. In the same vein both male and female respondents believe that they have positive academic self-concept as they are good in school, this view attracted their second highest mean responses by male and females respectively. Therefore there is no difference between male and female students in their academic self-concept as both male and females believe that they are good students. This is supported by Vincent and Simon (2005) on their investigation on how self-concept and anxiety influence students‟ academic performance. Their result shows that male students do not perform significantly better than females‟ students in academic activities. It is also contrary to the study of Abdullahi (2010) who studied on self-concept and academic achievement of secondary school students in Zaria educational zone. The result shows that male and female students are different in their self-concept measures. And that female students' have high self-concept than their male counterpart.

## CONCLUSION

The main objective was to determine the relationship between self-concept and academic achievement in basic science of secondary school students in Oyo State, Nigeria. From the findings of this study, it is concluded that a positive students' self-concept will go a long way in improving their achievement in Basic Science. The high point of the analysis includes: Significant relationship exists between academic self-concept and academic performance of students in government senior secondary schools and there is no difference between male and female students' self-concept in junior secondary schools in basic science. Therefore, teachers must assist their students in this

direction to further develop right attitude and self-concept towards the subject.

Recommendations

Based on the finding of the study, the following recommendations were made:

1. Students should maintain their academic self-concept and improve their academic performance by striving to have good grades in their exams.
2. Positive attitudes towards academic activities yield to better academic performance, therefore, students should maintain good attitude that can improve their academic performance.
3. Basic science teachers should be committed to their work, establish good relationship with their students, they should be role models and demonstrate positive compliance.
4. Government should take good measures by providing infrastructure, provision of qualify teachers and adequate supervision that can improve the students' academic performance.
5. Parents should motivate their children to maintain positive self-concept, encourage their positive attitudes towards academic activities and compliance by paying attention to all their welfare issues such as school fees, books, feeding and being involved in their after school activities.
6. The school teachers and counsellors have the responsibilities of assisting the students through teaching and training on how to improve self-concept

REFERENCES

[1] Adewumi, G. S. (2014). Effect of project and inquiry strategies on students' academic achievement in some selected abstract concepts in biology. An unpublished M.Ed Thesis, University of Ibadan.

[2] Akinbobola, A. O. (2015). Effects of Learning Style and Instructional Strategies on Students' Achievement in Nigeria Senior Secondary School Physics. International Institute for Science, Technology and Education (IISTE). *E. Journals* 41.

[3] Akom, K.A.&Ugbodubu, W.K. (2017).Teachers' effectiveness and students' academic achievement in basic science and technology. *Journal of Education*, 66(2), 103-115.

[4] Agogo, P.O. (2017). Topics in primary science education in Nigeria. Makurdi: Azeren Publishers.

[5] Areepattamannil, S. and Freeman, J. G. (2008). Academic achievement, academic self-concept, and academic motivation of immigrant. Adolescent in the greater Toronto Area Secondary Schools. *Journal of Advanced Academics, 19, 4*, 700-743.

[6] Axtell, C. & Parker, S. (2003). Promoting role breadth self-efficacy through involvement, work redesign and training. SAGE Journals, 56(1), 113-131.

[7] Bandura, A. (2001). Guide for construction self-efficacy scales. Stanford, CA: Stanford University.

[8] Dorier, J.L. &Gauer, T.K. (2019).Challenges and opportunity for the implementation of inquiry-based learning in day to day teaching.2DM Mathematics Education, 45(1), 837849.

[9] Ekon, E. E., & Eni, I. E. (2015). Gender and acquisition of science process skills among junior secondary schools students in Calabar municipality: Implication of Universal Basic Education Objectives. *Global Journal of Education Research* 14, 93-99.

[10] Glossary (2020). Academic Achievement. Available at: https://tophat.com/glossary/a/academic-achievement/

[11] Ibitoye, T. M. (2021). Project-based Learning and Self-regulatory Strategies as determinants of Secondary School Students' Achievement, Attitudes and Practical Skills in Biology Concepts in Ibadan, Nigeria. Unpublished Ph.D. Thesis. University of Ibadan.

[12] Iroegbu, T.O., Okoh., F.N.,Abegunrin, A.O.&Abubarkar, I. (2012). Spectrum basic science for junior secondary schools. Ibadan: Spectrum Books Limited.

[13] Jacson, L.L. (2021). The Role of Self-Concept in Students' Academic Achievement in English Language, *ERUDITE Journal of Linguistics and Languages, 3 (1), 1-10*

[14] Kazazoglu, S. (2013). The effect of attitudes towards Turkish and English courses on academic achievement. Education and Science, 38(170), 294-307.

[15] Klobal, D. and Musek, J. (2008). Self-concept and academic achievement: Slovenia and France. *Personality and Individual Differences, 30*, 887-889.

[16] Lotfabadi, H. (2004). *Educational Psychology*. Tehran University Press. Tehran.

[17] Lunenburg, F. C. (2011). Self-efficacy in the workplace: Implications for motivation and performance. *International Journal of Management, Business, and Administration*, 14(1), 1-6.

[18] Marsh, H. W, and Craven, R. G (2006). Reciprocal effects of self-concept and performance from a multidimensional perspective: beyond seductive pleasure and one-dimensional perspectives. *Perspectives on Psychological Sciences, 1, 2,* 133-163.

[19] Martin, M, Mullis, I, Gozalez, E, Gregory, K, Smith, T, Chrostowski, S, Garden, R, and O'Connor, K. (2000). TIMSS 1999, *International Science Report*.

[20] Okafor, N. P. (2021). Enhancing Science Process Skills Acquisition in Chemistry among Secondary School Students through context-based learning. Science Education International, 32(4), 323-330

[21] Pajares, F. (2002). Gender and perceived self-efficacy in self-regulated learning. Theory into Practice, 41, 116-125.

[22] Swiaatek, MA. (2005). Gifted students' self-perception of ability in specific subject domains: Factor structure and relationship with above level test scores. *Paper Review. Bloomfield Hills,* 27, 104-106.

[23] Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: Capturing an elusive construct. Teaching and Teacher Education, 17, 783–805.

[24] Van der Bijl, J. J., & Shortridge-Baggett, L. M. (2002). The theory and measurement of the self-efficacy construct. In E. A. Lentz & L. M. Shortridge-Baggett (Eds.). Self-efficacy in nursing: Research and measurement perspectives (pp. 9-28). New York: Springer.

[25] Wikipedia (2021). Academic achievement. Wikipedia, The Free Encyclopedia. Available at: https://en.wikipedia.org/wiki/Academic_achievement

[26] Yuniskurin, I. D., Noviyanti, N.I., Mukti, W. R., Mahanal, S., & Zubaidah, S. (2019). Science Process Skills Based on Genders of High School Students. International Seminar on Bioscience and Biological Education. *Journal of Physics Conference Series,* 12(41)

[27] Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. American Educational Research Journal, 45, 166–183.