UNIJERPS
Unizik Journal of Educational Research and Policy Studies VOL.19 (2);
January-June, 2025 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*

INTEREST AND SELF ESTEEM AS A CORRELATES OF SECONDARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT IN CHEMISTRY IN OGIDI EDUCATION ZONE

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ABSTRACT

This study explored the correlation between student's interest, test anxiety, self-esteem and their academic achievement in Chemistry. The study was guided by two research questions and two null hypotheses, the study employed a correlational research design. It was conducted in Ogidi Education Zone, Anambra State, with a total population of 1,754 SS2 Chemistry students across 40 public secondary schools. Using a two-stage sampling technique, 375 students were selected as the study sample. Data were collected through four structured instruments: Student's Academic Interest Scale (SAIS) Rosenberg Self-Esteem Scale (RSES) and student's cumulative internal examination scores as a measure of academic achievement. The instruments were validated by three experts, and their reliability was confirmed using Cronbach's Alpha, yielding values of 0.87 (SAIS), and 0.81 (RSES). Data collected was analysed using was conducted using Pearson correlation and multiple regression analysis. The findings of the study indicated a moderate positive correlation between student's interest, self-esteem and their academic achievement in Chemistry. Based on these findings, it is recommended amongst others that teachers should incorporate student-centered instructional methods, such as inquiry-based learning, problem-solving approaches, and hands-on laboratory activities, to spark students' interest in Chemistry. These strategies can make learning more engaging and relatable, thereby improving academic performance. Guidance counselors and educators should design and implement programs that build students' self-esteem. Activities such as leadership training, peer mentoring, and positive reinforcement can enhance students' confidence, which is critical for their academic success.

Keywords: Interest, Self-esteem, Academic Achievement, Secondary school, Education, Science, Zone.

Introduction

Science education equips individuals with the knowledge, skills, and mindset needed to thrive in a rapidly changing world and make informed decisions that benefit society. Additionally, science education fosters innovation, technological advancement, and a deeper appreciation for the natural world. It equips individuals with the skills needed to navigate complex issues and contribute positively to society, (Bybee, 2010). The Federal Republic of Nigeria (FRN, 2013) in its national policy on education set as a goal for science in Nigeria that government shall popularize the study of science and production of adequate number of scientists to inspire and support national development. This emphasis by the Federal government on science and technology is due to the expected outcome of science programmes at the secondary school level. Science is primarily taught in schools through subjects such as chemistry, physics, biology, and mathematics.

Chemistry, as a core subject in secondary education, plays a crucial role in developing a scientific and technological culture. The National Research Council (2012) emphasizes that by studying chemistry, students gain insights into the chemical processes that influence everyday life, from the food we consume to the medications we use. This foundational knowledge enhances critical thinking and problem-solving skills while promoting innovation and the application of scientific principles in technology and industry. World Bank (2010), says that chemistry is a key discipline that connects scientific concepts to practical applications, significantly contributing to national development and technological advancement.

Jegede (2012) opines that Chemistry is vital for human development, as it connects knowledge to real-life situations. Ojokuku (2017) also contributed that Knowledge of chemistry opens diverse career paths in research, healthcare, engineering, education, and industry, serving as a prerequisite for fields like medicine and pharmacy. The versatility of chemistry skills is a valuable asset in today's job market. It involves the utilization of natural substances and the creation of artificial ones, underpinning the infrastructure that delivers the essentials of modern life (Samuel, 2008; American Chemical Society, 2015). The Federal Ministry of Education (2012) said that the objectives of chemistry education at the senior secondary level are to demonstrate its links with industry, everyday life benefits, and hazards, as well as to offer a comprehensive course for individuals not pursuing higher education. Chemistry education requires students to apply problem solving technique, analytical reasoning and a deep understanding of fundamental principles. These skills are crucial not only in chemistry but across various academic subjects. Peters and Barlow (2018) suggested that the challenges posed in chemistry such as balancing equations, understanding reaction mechanism and analyzing data help improve critical thinking and analytical skills which are transferable to other disciplines and Academic task and thus help in improving academic achievement. Research shows that students who excel in chemistry tend to achieve better academically overall, benefiting from the enhanced cognitive skills developed through studying the subject.

Academic achievement is fundamental to sustainable social development, directly influencing a nation's social and economic progress (Alemu & Feyssa, 2020). In the face of rapid scientific and technological advancements, societies are increasingly emphasizing the qualitative aspects of education to keep pace with these changes (Almezughi, 2011). This focus has led researchers to examine academic achievement through both educational and psychological lenses, seeking to understand and enhance the factors that contribute to effective learning and societal advancement.

Academic achievement is generally regarded as the outcome of learning. Okoli and Egbunonu (2012) opined that achievement in teaching-learning means the attainment of set objectives of instruction. Steinmayer, Meibner, Weidinger, and Wirthwein (2018) asserted that academic achievement can determine whether a student will have the opportunity to continue their education. Academic achievement is vital for students' opportunities in education and career advancement, influencing access to scholarships and prestigious institutions (Steinmayr, 2019). Poor achievement can limit these opportunities and perpetuate cycles of poverty, affecting self-esteem and motivation (Smith and Johnson, 2020). Baker and Montalvo (2019) suggested that factors such as socioeconomic status, home environment, teaching quality, and student motivation significantly impact academic achievement.

The West African Examinations Council (WAEC) has reported inconsistent chemistry performance from 2015 to 2019, raising concerns about achievement levels (WAEC, 2019). The inconsistent performance of students in chemistry, as highlighted by the West African Examinations Council (WAEC, 2019), may stem from issues such as teaching quality, curriculum relevance, and socioeconomic challenges. To address these problems, it is essential to provide professional development for teachers to enhance their effectiveness (Darling-Hammond, 2017), revise the curriculum to include real-life applications and hands-on learning (National Research Council, 2012) and establish tutoring programs for students from disadvantaged backgrounds (Baker and Montalvo, 2019). Addressing academic challenges requires targeted interventions and improved teaching quality. Schunk and Zimmerman (2012) opines that academic achievement is driven by interest, which boosts engagement and persistence. Passionate students invest more time and effort, leading to better performance and higher success (Miller and O'Rourke, 2021; Schunk, 2019). Ainley, (2012) has said that when students are passionate about a subject, they are more inclined to invest time and effort, leading to deeper understanding and higher academic achievements. This intrinsic motivation drives them to actively participate in class take out additional resources and tackle complex problems with enthusiasm. Consequently, their increased engagement and efforts translate into better grades and higher levels of academic achievements. For instance, students who find chemistry intriguing are more likely to experiment with concepts, participate in discussion and overcome difficulties which not only improves their grasp of chemistry but also positively affect the overall academic achievement. Thus, cultivating interest in

subject can be a powerful strategy to boost academic achievements and enhance learning outcomes. Interest plays a crucial role in academic achievement and learning outcomes.

Interest refers to a student's curiosity and enthusiasm for specific subjects or areas of study, significantly influencing their engagement and motivation in learning. It enhances their desire to explore concepts in depth, leading to improved academic performance (Schiefele and Schaffner, 2015). A high level of interest is a key factor in academic achievement, as engaged students invest more time and effort in their studies, leading to improved performance. When students find a subject fascinating, they actively participate in discussions, seek additional resources, and engage in independent study, enhancing their understanding and retention of knowledge. Students passionate about their studies tend to show greater resilience and perseverance, driven by intrinsic motivation to overcome challenges. Research indicates a significant correlation between teachers' instructional choices aligned with student interests and increased engagement (Schiefele and Schaffner, 2015). Educators can foster interest by designing relevant curricula, incorporating interactive learning experiences, and creating supportive classroom environments (Dietrich, 2017). By nurturing students' interests, educators cultivate lifelong learners who are curious and motivated, ultimately leading to improved academic achievement and personal fulfillment. When students are genuinely interested, they derive satisfaction from the learning process, promoting intrinsic motivation and deeper understanding (Schunk, 2019).

Students who are more interested in what they are learning tend to exhibit higher levels of engagement, motivation, and persistence, which in turn positively influence their academic outcomes, Smith (2020). Personal relevance, curiosity, and intrinsic motivation are factors that contribute to the development and maintenance of interest. Zhang and Ziegler (2016) uncover those improvements in academic self-concept precede increases in academic interest, suggesting that positive perceptions of one's academic abilities serve as a precursor to developing interest in the corresponding academic domain. Interest in a subject can significantly impact test anxiety and academic achievement. When students are genuinely interested in a subject, they often experience lower levels of test anxiety, as their engagement and passion can mitigate feelings of stress and apprehension (Pekrun and Linnenbrink-Garcia, 2012). This is because interest fosters greater engagement and preparation, making students feel more confident and less apprehensive about tests (Baker and Inventado, 2014). Students' level of interest in learning activities is often closely linked to their self-esteem, as increased engagement can enhance confidence and a sense of academic competence.

Self-esteem refers to the overall subjective evaluation of one's worth and value as a person. It includes beliefs about oneself, such as perceptions of competence, attractiveness, and likability, and significantly influences thoughts, feelings, and behaviors (Crocker and Knight, 2015; Orth and Robins, 2021). High self-esteem involves feeling confident, capable, and

deserving of respect, while low self-esteem is characterized by feelings of inadequacy, worthlessness, and self-doubt (Neff, 2011; Kearns, 2021). In an academic context, self-esteem refers to a student's perception of their own academic abilities, worth, and value within the context of their education. It encompasses beliefs about one's intelligence, competence, and potential for success in academic endeavors (Schunk and Zimmerman, 2012; Gibbons and Eikelenboom, 2021).

Self-esteem plays a crucial role in academic achievement and personal development. Students with high self-esteem tend to be more motivated, resilient, and engaged in their learning (Hattie, 2017; Gibbons and Eikelenboom, 2021). They are more likely to set and achieve goals, take on challenges, and persist in the face of setbacks. Conversely, low self-esteem can hinder academic performance, as students may doubt their abilities, avoid challenges, and experience heightened anxiety in academic settings. Therefore, fostering positive self-esteem among students is important for their overall success and well-being in school (Schunk and Zimmerman, 2012; Gibbons and Eikelenboom, 2021). High self-esteem can be advantageous for students. It provides them with a strong sense of confidence in their abilities and a belief in their capacity to succeed (Kearns, Flett, and Hewitt, 2021). Moderate self-esteem in an academic context can be beneficial. It allows students to strike a balance between confidence and humility. (Schunk and Zimmerman, 2012; Dweck, 2016). They believe in their abilities while also recognizing areas for improvement. Low self-esteem in an academic context can present challenges for students. It may lead to feelings of inadequacy, self-doubt, and a lack of confidence in one's abilities (Covington and Omelich, 2018).

Although, literature abounds on interest, self-esteem and academic achievements, the researcher observed that there seems to be paucity of empirical investigations in which academic achievements is used as a dependent variable against interest and self-esteem as independent variables among secondary school students in Ogidi Education Zone. It is against this backdrop the researcher sought to study interest and self-esteem as correlates of secondary school chemistry students' academic achievement in Ogidi Education Zone. Specifically, the study sought to achieve the following objectives:

1. Relationship between students' interest and their academic achievement in chemistry in Ogidi Education Zone.
2. Relationship between students' self-esteem and their academic achievement in chemistry in Ogidi Education Zone.

Research Questions

Two research questions were raised to guide the study.

1. What is the relationship between interest scores and academic achievement scores of secondary school students in Chemistry in Ogidi Education Zone?
2. What is the relationship between self-esteem scores and academic achievement scores of secondary

school students in Chemistry in Ogidi Education Zone?

Hypotheses

The following null hypotheses were tested at .05 level of significance.

1. There is no significant relationship between interest scores and academic achievement scores of secondary school students in Chemistry in Ogidi Education Zone.
2. There is no significant relationship between self-esteem scores and academic achievement scores of secondary school students in Chemistry in Ogidi Education Zone.

Research Method

Correlation survey research design was adopted for this study. The choice of correlational survey design is because the study seeks to examine the relationship between two or more variables in order to explain or predict the result. The study was carried out in Ogidi Education Zone of Anambra State, Nigeria. The population of the study comprised of 1,754 senior secondary school two students (SS 2) offering Chemistry. The sample size for this study consisted of 375 SS2 Chemistry students. The sample for this study was obtained using two-stage sampling procedures. The instruments that were used for data collection are: Students Academic Interest Scale (SAIS), was used to assess student's interest in academic subjects. It comprises 25 items categorized into four sections: interest in science, science learning motivation, science career aspirations, and science related activities. Rosenberg Self-Esteem Scale (RSES), is a standardized 10-item questionnaire designed to measure global self-worth through positive and negative self-perceptions, responses are rated on a four-point Likert scale, ranging from Strongly Agree (1) to Strongly Disagree (4) and Students' academic achievement in Chemistry, was assessed using their cumulative internal examination scores in Chemistry. Student's Academic Interest Scale (SAIS), the Revised Self-esteem scale (RSES) were validated to ensure clarity, appropriateness of the language and instructions used, and the extent to which the instruments covered the specified domain. The instruments were given to three experts: two experts from the Department of Science Education and one expert from the Department of Educational Foundations (Measurement and Evaluation Unit). These experts are all lecturers in the Faculty of Education at Nnamdi Azikiwe University, Awka. The internal consistency of SAIS and RSES were tested using Cronbach's alpha method, resulting in reliability values of 0.87 and 0.81 respectively. The researcher personally administered the research instrument with the assistance of six chemistry teachers who were briefed on the procedures for administering the instruments in the sampled schools. Out of the 400 copies of the instruments administered, 375 were validly completed and returned for analysis. The data collected were analysed using Pearson Product Moment Correlation

Coefficient (PPMC) and Multiple Regression Analysis (MRA). The choice of statistical tool was due to the fact the study was correlational in nature.

Results

1. What is the relationship between interest scores and academic achievement scores of secondary school students in Chemistry in Ogidi Education Zone?

Table 1: Pearson r on the relationship between interest scores and academic achievement scores of secondary school students in chemistry in Ogidi Education zone

Sources of Variation	N	Interest r	Academic Achievement r	Decision
Academic Interest		1.	0.413	
	375			Moderate positive relationship
Academic Achievement		0.413		

Table 1 shows a correlation analysis between interest scores and academic achievement scores of secondary school students in Chemistry in Ogidi Education Zone. The result showed a moderate positive relationship (r = 0.413) between interest scores and academic achievement scores of secondary school students in Chemistry. This indicates that as students' interest in Chemistry increases, their academic achievement in the subject tends to improve as well.

Research Questions 2: What is the relationship between self-esteem scores and academic achievement scores of secondary school students in chemistry in Ogidi Education zone?

Table 2: Pearson r analysis on the relationship between self-esteem scores and academic achievement scores of secondary school students in chemistry in Ogidi Education zone

Sources of Variation	N	Self-Esteem r	Academic Achievement r	Decision
Self-Esteem		1.	.336**	
	375			Moderate Positive Relationship
Academic Achievement		.336**	1	

Table 2 reveals a correlation analysis between self-esteem and academic achievement scores. The relationship between self-esteem scores and academic achievement scores of secondary school students in Chemistry in Ogidi Education

Zone is a moderate positive relationship (r = 0.336). This result indicates that higher self-esteem is associated with higher academic achievement, while lower self-esteem is linked to lower academic achievement.

Hypothesis 1: There is no significant relationship between interest scores and academic achievement scores of secondary school students in chemistry.

Table 3: Summary of Pearson r analysis on the significant relationship between interest scores and academic achievement scores of students in Chemistry

Sources of variations	N	Interest Scores r	Achievement Scores r	p-value	Decision
Interest Scores	375	1	0.413	.028	Sig.
Achievement Scores		0.413	1		

Table 3 reveals a moderate positive correlation (r = 0.413) between interest scores and academic achievement scores of students in Chemistry. The p-value of 0.028 is less than the 0.05 level of significance, indicating that the relationship is statistically significant. Therefore, reject the null hypothesis. Thus, there is a significant relationship between academic interest scores and academic achievement scores of students in Chemistry.

Hypothesis 2: There is no significant relationship between self-esteem scores and academic achievement scores of secondary school students in chemistry.

Table 4: Summary of Pearson r analysis on the significant relationship between self-esteem scores and academic achievement scores of students in Chemistry

Sources of variations	N	Self-Esteem Scores r	Achievement Scores r	p-value	Decision
Self-Esteem Scores	375	1	336**	0.000	Sig.
Achievement Scores		336**	1		

The analysis in Table 4 reveals a Pearson correlation was conducted to examine the relationship between self-esteem scores and academic achievement scores of secondary school students. The results revealed a moderate positive relationship between self-esteem and academic achievement (r = 0.336), with a statistically significant p-value of 0.000, which is less than the significance level of 0.05. Therefore, the null hypothesis is rejected, indicating that there is a significant relationship between self-esteem scores and academic achievement scores of students in Chemistry.

Discussion

The findings of this study revealed a moderate positive relationship between interest scores and academic achievement scores of secondary school students in

Chemistry in Ogidi Education Zone. This indicates that as students' interest in Chemistry increases, their academic achievement in the subject tends to improve as well. The findings agreed with the study of Onah and Anamezie (2022), which showed that academic interest relatively contributed 18% to the prediction of academic achievement of secondary school Physics. Similarly, another study by Agoesina, Melan, Khusaini, Elizabeth (2022) showed that academic interest was proved to determine significantly the academic performance. Alternatively, the study of Arhin and Yanneh (2020) showed that there is no relationship between interest and academic achievement in mathematics.

In line with the hypotheses formulated for this study, the results indicate a significant moderate positive correlation between student's interest in Chemistry and their academic achievement in the subject. This finding aligns with the study conducted by Adebisi, Adekunle, and Oyewumi (2010), which demonstrated a significant relationship between student's interest in Biology and their academic performance in the subject. Their study emphasized the role of interest in enhancing students' engagement, motivation, and overall academic success. However, the findings of this study contradict those of Isiah, Yusuf, and Zakariyah (2024), who reported that learning interest does not significantly influence the academic performance of senior secondary school students in Islamic Studies. This contrast suggests that the impact of academic interest on achievement may vary across different subjects, learning contexts, and student demographics. It also highlights the need for further research to explore subject-specific factors that may influence the relationship between student's interest and their academic outcomes.

The findings of this study revealed a moderate positive relationship between self-esteem and academic achievement scores in Chemistry. This result indicates that higher self-esteem is associated with higher academic achievement, while lower self-esteem is linked to lower academic achievement. Higher self-esteem boosts confidence, motivation, and resilience, leading to better academic performance. In contrast, low self-esteem can cause self-doubt and fear of failure, which may hinder learning and achievement. This finding is in alignment with that of Umar, Tijiani, Hamza, and Umara (2021) who embarked on an extensive investigation to explore the influence of self-esteem on the academic achievement of public senior secondary school students in the Nashua education zone of Yobe State, Nigeria. The result of the study showed that there was a positive relationship between self-esteem and academic achievement among the respondents, indicating that students with higher levels of self-esteem tended to perform better academically. The finding of this study contradicts that of Okonkwo (2021) who conducted a comprehensive research study to investigate the correlations between academic motivation, self-esteem, and academic achievement in English language among senior secondary school students in Imo State. The result of the study showed that there was a very weak negative relationship between secondary school students' self-esteem and their academic achievement in English language.

The corresponding hypothesis revealed that there is a significant positive relationship between self-esteem scores and academic achievement scores in chemistry. This finding is in agreement with that of Tijiani, Hamza, and Umara (2021) which revealed significant positive relationship between self-esteem and academic achievement among the students. Similarly, the finding of this study aligns with that of Okonkwo (2021) which revealed there was a significant relationship between secondary school students' self-esteem and their academic achievement in English language. This finding contradicts that of Abubakar (2018) which revealed that there was no significant relationship between self-esteem and students' academic performance, indicating that variations in self-esteem levels did not correlate with variations in academic achievement among the students.

Conclusion

This study highlights the significant impact of student's interest and self-esteem on their academic achievement in Chemistry within the Ogidi Education Zone. The findings indicate that students with a strong interest in Chemistry and high self-esteem tend to achieve better academic outcomes. This suggests that fostering an engaging, interactive, and supportive learning environment can play a vital role in enhancing student's motivation and overall achievement.

Recommendations

Based on the findings of the study, few recommendations were made

1. Teachers should incorporate student-centered instructional methods, such as inquiry-based learning, problem-solving approaches, and hands-on laboratory activities, to spark students' interest in Chemistry. These strategies can make learning more engaging and relatable, thereby improving academic performance.
2. Guidance counselors and educators should design and implement programs that build students' self-esteem. Activities such as leadership training, peer mentoring, and positive reinforcement can enhance students' confidence, which is critical for their academic success.

REFERENCES

Abubakar (2018 Abubakar, H. S. (2018). Relationship among self-esteem, attitude to school, and students' academic performance among Federal Government colleges in North-West Zone of Nigeria. *Journal of Education and Practice,* 9(36), 13-20.

Agoesina, Melan, Khusaini, Elizabeth (2022) *Agoesina, O., Melan, A., Khusaini, M., & Elizabeth, T. (2022). Investigating the role of interest and academic achievement in modern education systems. Journal of Educational Innovation, 20(2),*

Federal Ministry of Education (2012 Federal Ministry of Education (2012). Nigeria education sector diagnosis: A framework for re-engineering the education sector. Retrieved from httpp://planipolis.iiep.unesco.org/upload/Nigeria%20Education%20Sector%20Diagnosis.pdf.

Isiah, Yusuf, and Zakariyah (2024 Isiah, A., Yusuf, B., & Zakariyah, C. (2024). Interest test anxiety and self-esteem: Their impact on academic performance in secondary school students. Journal of Educational Psychology, 35(1), 78-92.

Jegede (2012) Jegede, S. A. (2018). Remediation of students' weakness for enhanced achievement in Chemistry. *Greener Journal of Educational Research,* 2(4), 95-99.

Nworgu, B. G. (2015). Educational Research: Basic Issues and Methodology (third edition). University Trust Publishers Nsukka, Nigeria.

Ojokuku (2017 Ojokuku, G. O. (2017). *Understanding chemistry for senior secondary school.* Zaria: MacChin Multimedia Designers.

Okoli and Egbunonu (2012) Okoli, J. N., and Egbunonu, R. N. (2012). Effect of blended learning approach on Nigerian senior secondary school students' achievement in biology. *IJERD* International Journal of Education Research and Development, 4(1), 92.

Okonkwo (2021 Okonkwo, C. J., (2021). Academic motivation and self-esteem as correlates of academic achievement in English Language among senior secondary school students in Imo State. Asian journal of education and social studies, 21(4), 35-43. Retrieved from https//doi.org/10.9734/ajess/ 2021/v2li430515.

Orth and Robins, 2021 Orth, U., and Robins, W. R. (2014). The development of self-esteem. Current Directions in Psychological Science, 23(5), 381-387.

Samuel, 2008; Samuel, N. N. C. (2008). *Effect of teaching relevant mathematical topics before and during the teaching of selected topics in Chemistry.* Unpublished MSc Thesis. Department of Science Education, Nnamdi Azikiwe University, Awka.

Steinmayer, Meibner, Weidinger, and Wirthwein (2018 Steingmayer, R, Meibner, A., Weidinger, A. F., and Wirthwein, L. (2018). Academic achievement. *Psychological Bulletin,* 7(2), 908_918.

Tijiani, Hamza, and Umara (2021 Umar, A. M., Tijiani, S. A., Hamza, H., and Umara, L. B. D. (2021). Influence of self-esteem on academic achievement of public senior secondary school students in Gashu' a Education Zone, Yobe State, Nigeria. *African Scholars Journal of Contemporary Education Research (JCER-8),* 23(8), 151-168.