INFLUENCE OF SELF-ESTEEM AND LEARNED HELPLESSNESS ON THE ACADEMIC ACHIEVEMENT OF CHEMISTRY STUDENTS IN AWKA EDUCATION ZONE

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Abstract

The study examined the Influence of self-esteem and learned helplessness on the academic achievement of Chemistry students in Awka Education Zone of Anambra State. Three research questions guided the study and three hypotheses were tested at .05 level of significance. The study utilized a survey research approach with a 2×2(two by two) factorial design. The population of the study was 2,198 senior secondary school two students offering chemistry in Awka Education Zone, out of which a sample size of 150 students was drawn using the simple random sampling technique. Two instruments were used for data collection; Self-esteem scale (RSES) by Rosenberg (1965) and Learned Helplessness Questionnaire (LHQ) by Quinless and Nelson (1988). The exam scores of the students were obtained from the teachers. The instruments were validated by two experts from the Department of Science Education Nnamdi Azikiwe University, Awka. The reliability was established using Cronbach's Alpha statistical analysis. Data collected were analysed using a two-way analysis of variance (2-WAY ANOVA). The result of the analysis showed that self-esteem does not have a significant influence on the academic achievement of chemistry students. However, learned helplessness was found to significantly influence the academic achievement of chemistry students, where participants who had high scores on learned helplessness significantly performed poorly academically. The study also showed that there is no significant interaction between self-esteem and learned helplessness in influencing the academic achievement of chemistry students. Based on the study findings, it was recommended that interventions and support systems targeting the issue of learned helplessness should be implemented, while also promoting self-esteem and providing support to enhance overall student-wellbeing and improve the academic achievement among chemistry students.

Introduction

Chemistry is the branch of science that deals with the composition, structure, properties, and transformations of matter, as well as the energy changes that accompany these transformations (Chang, 2019). It holds great importance for students across various disciplines due to its wide-ranging applications and contributions to scientific knowledge. According to Tro (2017), Chemistry provides a foundation for understanding the composition, properties, and behavior of matter in the natural world. It helps students comprehend the structure and properties of substances, chemical reactions, and the interactions between different elements and compounds. Chemistry has strong connections to other scientific fields, such as Biology, Physics, Environmental Science, and Medicine (Zumdahl & Zumdahl, 2017). It forms the basis for fields like Biochemistry, Pharmacology, and Materials science, contributing to advancements in these areas. Studying chemistry enhances critical thinking and problem-solving abilities. It teaches students to analyze data, interpret experimental results, and draw logical conclusions (Chang, 2019). According to Ojokuku (2019), chemical processes, products of chemistry, chemical research and technology are put into use in agriculture, medicine, industries, transportation, military, teaching and space science. Chemistry is a fascinating and ever-evolving field that plays a critical role in changing the world around us.

Having defined chemistry and its various dimensions, it is evident that a comprehensive understanding of this scientific discipline is crucial for students. However, it is equally important to assess how this understanding translates into tangible outcomes, specifically in terms of academic achievement. According to Egwu and Okigbo (2021) academic achievement is the level of attainment in a given discipline. Academic achievement in chemistry can be regarded as a course accomplished with special ability, effort, and great courage through chemistry scientific process (George &Abumchukwu, 2021). It encompasses the development of critical thinking skills, the ability to synthesize complex information, and the capacity to apply this knowledge to new situations (Noveron& Liu, 2019). Academic achievement which encompasses the measurable outcomes of student's educational pursuit is influenced by various factors. One factor that has been recognized in educational research is student's psychological well-being. Self-esteemdefined as one's self-evaluation of his ability to perform certain tasks (Subon et al., 2020), plays a significant role in the academic achievement of students.Self-esteem predicts academic achievement, confidence level, job satisfaction, in relationships and in marriage (Gebresilase, & Zhao, 2023). Self-esteem may be defined as an individual's subjective evaluation of his own worth and value, encompassing feelings of self-acceptance, self-respect, and self-confidence (Mruk, 2019). It is a reflection on how we see ourselves and our sense of worth (Sutton, 2020). Another psychological factor that affects the academic achievements of students is learned helplessness (Suleiman,2016). The construct of learned helplessness as one of the noticeable emotional issues in education has been investigated and approved its prominent place in education for its stimulus on student's accomplishment, enthusiasm and commitment in learning (He,2021). Learned helplessness is a psychological condition associated with feelings of loss of control, and it creates students who disengage from effort, even if the effort is within reach and will clearly lead to success (Myers,2020). It is a mindset where people believe that they are powerless to control a series of negative situations (Cook & Hurst, 2021).

Close your eyes and imagine a chemistry classroom filled with students. Some of them exude confidence, eagerly participating in discussions, and embracing challenges with enthusiasm. Others seem withdrawn, hesitant to speak up, and often doubting their abilities. Now, consider the influence of these differing mindsets on their academic achievements. How does one's self-esteem, the belief in their own worth and capabilities influence their motivation, perseverance, and ultimate success in chemistry? Furthermore, what role does learned helplessness, the belief that one's efforts will be fruitless, play in shaping the academic outcomes of chemistry students? These intriguing questions lie at the heart of our research. By examining the influence of self-esteem and learned helplessness on the academic achievements of chemistry students, we aim to unlock valuable insights into the psychological factors that underpin academic success. Join us on this journey as we explore the fascinating interplay between mindset, self-belief, and academic achievement, paving the way for targeted interventions that empower chemistry students to reach their full potential. While numerous studies have explored the factors influencing academic achievement in students, limited research has specifically investigated the combined impact of self-esteem and learned helplessness on the academic achievements of chemistry students. Understanding how self-esteem and learned helplessness interact and contribute to academic outcomes in the context of chemistry education is crucial for developing effective interventions and support systems. By addressing this gap, this study aims to determine the influence of self-esteem and learned helplessness on the academic achievement of secondary school chemistry students. Through a comprehensive examination of self-esteem, learned helplessness, and academic achievements, this research seeks

to provide valuable insights for educators, teachers, and curriculum planners in fostering a supportive learning environment for chemistry students.

Purpose of the Study

The purpose of this study is to examine the influence of self-esteem and learned helplessness on academic achievement among secondary chemistry students. Specifically, this study aims to examine:

1. The influence of self-esteem on academic achievement among secondary chemistry students
2. The influence of learned helplessness on academic achievement among secondary chemistry students
3. The interaction between self-esteem and learned helplessness in influencing academic achievement among secondary school chemistry students.

Research Questions

1. Does self-esteem influence academic achievement among secondary school chemistry students?
2. Does learned helplessness influence academic achievement among secondary school chemistry students?
3. Does there be an interaction between self-esteem and learned helplessness in influencing academic achievement among secondary school chemistry students?

Hypotheses

1. Self-esteem does not significantly influence academic achievements of chemistry students.
2. Learned helplessness does not significantly influence academic achievements of chemistry students.
3. There is no significant interaction between self-esteem and learned helplessness in influencing academic achievement among secondary school chemistry students.

Literature Review

Self-esteem is within the theoretical framework of social cognitive theory. The theory indicates that internal processes such as self-awareness, beliefs, perceptions and values can affect behaviors (Bandura, 2007). Alokan et al., (2014) investigated the influence of self-esteem on academic performance among secondary school students in Ondo State. They found that there is a significant difference in academic performance of students with high self-esteem and those with low self-esteem. Kariuki et al., (2019) investigated the influence of self-esteem on the academic performance of secondary school students in Thraka-Nithi County, Kenya. They found that self-esteem has no significant influence on student's academic performance. Another study was also carried out by Ugwuanyi et al., (2020) they found that self-esteem had significant predictive power on student's academic achievement.

Learned helplessness on the other hand, is within the theoretical framework of attribution theory. The theory is concerned with how individuals interpret success and failures and how this relates to their thinking and actions. Learned helplessness is a factor that significantly influences the academic achievements of students (Nenty & Ogwu (2009). Suleiman (2016) employed a correlation design in investigating the influence of learned helplessness and home background on the academic achievements of students in Abuja. He found that there is a statistical significant relationship between learned helplessness and academic performance of senior secondary school students. Nenty and Ogwu (2009) also investigated the Influence of gender and learned

helplessness on some mathematics-related affective behaviors of Lesotho Senior Secondary School Students. Using a two-way ANOVA, the analysis showed that learned helplessness significantly influence student's attitude towards Mathematics.

Methods

The study is survey research which adopts a 2×2 factorial design. A 2×2 design is used because the study has two independent variables (self-esteem and learned helplessness), each with two levels, (high self-esteem& low self-esteem; High level of learned helplessness & low level of learned helplessness).The appropriate statistical method adopted for data analysis in this present study is a two-way analysis of variance (2-way ANOVA). The population of the study consisted of 2,198 SS2 Chemistry Students from the 62 secondary schools in Awka Education Zone of Anambra State (Post Primary Service Commission). The sample for this study was 150 SS2 Chemistry students drawn using a convenience sampling technique from three secondary schools in Awka Education Zone. Two instruments: The Rosenberg's Self-Esteem Scale (RSES) developed by Rosenberg (1965) and Learned Helplessness Questionnaires (LHQ) developed by Quinless and Nelson (1988) were used for data collection. Academic achievement was measured using the student's term performance in chemistry. The questionnaires were face and content validated by two experts from science education department of Nnamdi Azikiwe University Awka. The experts examined the instrument based on the clarity of language used and the relevance of the item towards eliciting the right information. The researcher conducted a pilot study to test for internal consistency of the Rosenberg Self-Esteem Scale (RSES) and learned helplessness questionnaire (LHQ). The two instruments were distributed to 20 participants from a secondary school. Cronbach's alpha was used to determine the reliability coefficient; the RSES has an alpha value of .70 while the LHQ has .90.

Results

Table 1: Descriptive statistics (Showing the means and standard deviation of study variables)

Self-esteem	Learned helplessness	Mean	Std. deviation	N
Low self-esteem	Low level	70.85	12.365	54
	High level	66.23	13.810	31
	Total	69.16	13.023	85
High self esteem	Low level	76.06	13.273	17
	High level	62.32	16.727	47
	Total	65.97	16.925	64
Total	Low level	72.10	12.690	71
	High level	63.87	15.657	78
	Total	67.79	14.856	149

Dependent variable: Academic achievement

The above table is a descriptive statistic of all study variables. Data shows that 85 participants have a low self-esteem. Out of these 85 participants, 54 of them also show low levels of learned helplessness with a mean score of 70.85 on academic achievement, while 31 of them had high levels of learned helplessness with an average mean of 66.23 on academic achievement. 64 participants out of the study sample show a high self-esteem. Out of these 64 participants, 17 show

low level of learned helplessness with an average achievement score of 76.06, while 47 of them show high level of learned helplessness with an average achievement score of 62.32.

Table 2:T wo-way analysis of variance showing the influence and interaction effect of self-esteem and learned helplessness on academic achievement.

Source	Type III sum of squares	df	Mean square	F	Sig
Corrected Model	3151.162[a]	3	1050.387	5.161	.002
Intercept	579750.252	1	579750.252	2848.327	.000
Self-esteem	12.919	1	12.919	.063	.801
Learned helplessness	2577.232	1	2577.232	12.662	.001
SELF * LHS	634.630	1	634.630	3.118	.080
Error	29513.388	145	203.541		
Total	717431.000	149			
Corrected Total	32664.550	148			

a. R squared = .096 (Adjusted R squared = .078

Research question one: Does self-esteem influence academic achievement among secondary school chemistry students?

Based on research findings, in table 2 above, result shows that self-esteem did not significantly influence academic achievement of study participants (F = .063, *P*>.05). This implies that self-esteem has no significant effect on academic achievement of students. Based on research findings, the first hypothesis which states that "self-esteem will significantly influence academic achievement among secondary school chemistry students" is hereby not accepted.

Research question two: Does learned helplessness influence academic achievement among secondary school chemistry students?

According to findings, result in table 2 above shows that learned helplessness significantly influenced academic achievement of study participant (F= 12.66, *P*<.05). This implies that learned helplessness is a significant factor that affects the academic achievement of secondary school chemistry students. Based on this finding, the second hypothesis which states that "learned helplessness will significantly influence academic achievement among secondary school chemistry students" is hereby accepted. Table 3 below shows how learned helplessness influences academic achievement.

Table 3: Estimated marginal means showing the mean difference of learned helplessness on academic achievement.

Learned helplessness	Mean	Std. error
Low level	73.455	1.984
High level	64.272	1.650

Dependent variable: Academic achievement

Table 3 above indicates that students with low levels of learned helplessness had higher achievement score as represented with the mean (73.46), while students with high levels of learned helplessness had lesser achievement score (mean = 64.272). This data indicates that high levels of learned helplessness affect academic achievement negatively and vice versa.

Research question three: Will there be an interaction between self-esteem and learned helplessness in influencing academic achievement among secondary school chemistry students?

Research findings as represented in table 2 above show that there is no significant interaction between self-esteem and learned helplessness in influencing academic achievement among secondary school chemistry students (F = 3.19, *P*>.05). Based on this finding, the third hypothesis which states that "there will be a significant interaction between self-esteem and learned helplessness in influencing academic achievement among secondary school chemistry students" is hereby not accepted.

Discussions and Conclusions

The general purpose of this study was to determine if self-esteem and learned helplessness were possible factors that would influence the academic achievement of secondary school chemistry students in Awka Education Zone. It was discovered that self-esteem did not significantly influence academic achievement among secondary school chemistry students. This finding brings clarity to the first research question which asks; "will self-esteem significantly influence academic achievement among secondary school chemistry students?" This finding is in accordance with the work of kariuki et al., (2019) whose findings also reveal that self-esteem did not significantly influence academic achievement among students in Thraka-Nithi County, Kenya. This could be attributed to the differences in global self-esteem and specific self-esteem. While global self-esteem could be more relevant to psychological wellbeing, specific self-esteem focuses on behavior. For instance, it is possible for an individual to have a high self-esteem towards his ability and performance in sports activity, but generally have a low self-esteem when it comes to overall self-evaluation and well-being. Relative to the study, an individual having a high self-esteem (global self-esteem), does not mean they can't have a low academic self-esteem (specific self-esteem) which could influence their academic achievement. This is a factor to consider for further studies. Emphasis should be placed on students' academic self-esteem to examine its potential role in influencing academic achievement.

However, findings of the study indicate that learned helplessness has a significant influence on academic achievement among secondary school chemistry students in AwkaEducation Zone. This findings answers the second research question; "will learned helplessness significantly influence academic achievement among secondary school chemistry students in AwkaEducation Zone?" This finding supports the work of Nenty et al., (2009) and Suleiman (2016), who found possible links between learned helplessness and academic achievement. Students with learned helplessness see themselves as having no control over the outcome of their behavior. They feel they have no control over achieving the desired outcome of success, and hence, do not think their effort has any impact on the outcome. One can likely link this to having a poor self-efficacy. This finding sheds more light on possible factors which influence academic achievement.

Findings also revealed that no significant interaction exists between self-esteem and learned helplessness in influencing the academic achievement of secondary school chemistry students in Awka Education Zone, therefore bringing clarity to the third research question which asks, "Will

there be an interaction between self-esteem and learned helplessness in influencing academic achievement among secondary school chemistry students?"

In summary, it can be concluded that self-esteem does not have a significant influence on the academic achievement of chemistry students, learned helplessness significantly influence the academic achievement of chemistry students, and no significant interaction exists between the two independent variables in influencing academic achievement of students. These findings suggest that factors other than self-esteem, such as the development of coping strategies and sense of control over one's academic outcomes, may play a more substantial role in determining academic achievement in the field of chemistry. Further research is recommended to explore additional factors like academic self-esteem that can contribute to academic success among chemistry students and to develop interventions that address learned helplessness to enhance their achievements.

Recommendations

1. Based on significant influence of learned helplessness on academic achievement, targeted interventions should be implemented to mitigate learned helplessness among chemistry students.
2. Educators should establish a classroom atmosphere that encourage collaboration, positive peer interaction and open communication.
3. Academic support programs such as tutoring services, study groups or workshops focused on study skills, time management and exam preparation should be provided to help students build confidence, enhance their understanding of chemistry concepts and improve their academic performance.
4. Students should be encouraged to engage in self-reflection and set meaningful goals for their academic journey in chemistry.
5. Government bodies should develop policies that promote holistic approach to education, addressing not only academic achievements but also students psychological well-being
6. Parents as first teacher to their children should foster a positive mindset and healthy self-esteem in their children.

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