Research in Education and Rehabilitation 2025; 8(2): 504-517 **DOI**: 10.51558/2744-1555.2025.8.2.504

SELF-CONCEPTS AND STUDENTS' ATTITUDE AS CORRELATES OF ELEMENTARY SCHOOL STUDENTS PERFORMANCE IN SCIENCE LEARNING

SAMOPOIMANJE I STAVOVI UČENIKA KAO KORELATI USPJEHA UČENIKA OSNOVNE ŠKOLE U UČENJU PRIRODNIH NAUKA

Tunji Henry Ogunyebi[1*]

Department of Science Education, Bamidele Olumilua University of Education, Science and Technology, Ikere, Ekiti, Nigeria

Original Scientific Article

Received: 26/09/2025
Revised: 04/11/2025
Accepted:10/11/2025

ABSTRACT

This study examined the self-concept and students' attitude as correlates of their performance in elementary science learning in Ikere Ekiti, Nigeria. The design was correlational research type. The population size for the study was all public 2,440 elementary school students from Ikere Local Government Area of Ekiti, Nigeria. The sample size for the study was 244 elementary school students from the entire population. Five hypotheses were raised to guide the study. The instruments used to elicit the relevant data were: A twenty item instrument questionnaire called Elementary Science Attitudinal Scale (ESAS) and a twenty item instrument questionnaire called Self- Concept towards Elementary Science (SCES)" designed by the researcher and the 1st, 2nd and 3rd terms examination scores of students were obtained as the students' academic performance. The reliability coefficients of 0.80 and 0.83 for ESAS and SCES respectively were obtained. The data collected were analyzed using multiple regression analysis. The hypotheses were tested at 0.05 level of significance. The results revealed that: there is significant relationship between students' attitude, self-concept and their academic performance. A significant difference between male and female students' attitude, self-concept and their academic performance in elementary science was also found in favour of female. Based on the findings of the study, it was concluded among others that female students had higher self-concept and a better attitude than male students, and that there is a strong correlation between students' attitudes and self-concept and how well they performed academically in science classes.

Key words: Attitude, Elementary, Learning, Performance, Self-concept.

[*] Correspondence author: Tunji Henry Ogunyebi, Department of Science Education, Bamidele Olumilua University of Education
E-mail: ogunyebi.tunji@bouesti.edu.ng

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SAŽETAK

Ova studija ispitivala je samopoimanje i stavove učenika kao korelate njihovog uspjeha u učenju prirodnih nauka u osnovnim školama u Ikere Ekitiju, Nigerija. Istraživanje je provedeno korištenjem korelacijskog istraživačkog dizajna. Populaciju istraživanja činilo je svih 2.440 učenika javnih osnovnih škola s područja lokalne uprave Ikere u saveznoj državi Ekiti, Nigerija. Uzorak istraživanja obuhvatio je 244 učenika osnovne škole odabrana iz ukupne populacije. Postavljeno je pet hipoteza koje su usmjeravale istraživanje.

Instrumenti korišteni za prikupljanje relevantnih podataka bili su: upitnik od dvadeset čestica pod nazivom Skala stavova prema osnovnoškolskoj nastavi prirodnih nauka (Elementary Science Attitudinal Scale – ESAS) i upitnik od dvadeset čestica pod nazivom Samopoimanje prema osnovnoškolskoj nastavi prirodnih nauka (Self-Concept towards Elementary Science – SCES), koje je konstruirao istraživač. Kao pokazatelj akademskog uspjeha korišteni su rezultati učenika na ispitima iz prvog, drugog i trećeg tromjesečja. Koeficijenti pouzdanosti iznosili su 0,80 za ESAS i 0,83 za SCES.

Prikupljeni podaci analizirani su primjenom višestruke regresijske analize, a hipoteze su testirane na nivou značajnosti od 0,05. Rezultati su pokazali da postoji statistički značajna povezanost između stavova učenika, njihovog samopoimanja i akademskog uspjeha. Također je utvrđena statistički značajna razlika između učenika i učenica u stavovima, samopoimanju i akademskom uspjehu u prirodnim naukama, u korist učenica. Na osnovu nalaza istraživanja zaključeno je, između ostalog, da učenice imaju viši nivo samopoimanja i pozitivnije stavove u odnosu na učenike, te da postoji snažna povezanost između stavova i samopoimanja učenika i njihovog akademskog uspjeha u nastavi prirodnih nauka.

Ključne riječi: vještačka inteligencija, roditelji, obrazovanje, povjerenje, digitalno informisanje.

INTRODUCTION

Elementary sciences serve as the cornerstone for developing students' understanding of the natural world and scientific inquiry. It encompasses various scientific disciplines, including biology, physics, chemistry, and earth science, providing young learners with a foundational knowledge base and skills necessary for future scientific exploration. According to Essien, Joseph, & Ituen (2024), elementary science at the elementary level introduces children to fundamental concepts, principles, and processes that form the basis of scientific inquiry. Through hands-on activities, experiments, and observations, pupils develop critical thinking skills, problem solving abilities, and scientific reasoning. It plays a crucial role in fostering environmental awareness, promoting sustainability, and preparing pupils to become informed and responsible citizens of the world.

According to Wikipedia (2024) Science education which also known as Elementary Sciences is the teaching and learning of science to school children, college students, or adults within the general public. For young children to develop scientific literacy and inquisitive skills, elementary science education is essential. It cultivates curiosity, critical thinking, and

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problem-solving abilities essential for navigating the complexities of the modern world. Rather than focusing solely on memorization, elementary science education emphasizes the development of conceptual understanding.

Many factors have an influence on the performance of the students but vary from person to person and institution to institution.. Based on many literature surveys, these factors range from environmental, economic, social, and psychological which have a strong influence on students' academic performance (You, 2018). Other factors such as the role of course experience, effort, motives, learning strategies among others have also contributed to student academic performance. In view of Sæle, Dahl, Sørlie, & Friborg, (2017), several studies have identified casual factors responsible for weak academic performance in schools. In addition, most of these studies focus on three elements which are personal, teacher, and institutional factors in students' performance. Among the identified factors, self-concept and attitudes of students to learning sciences are considered in this study.

Concept of Attitude and Self-Concept

Attitudes are our likes and dislikes towards anything and anyone that can be evaluated. Attitudes are specific judgements towards an object; attitudes can be positive and negative. A range of studies have investigated how values and attitudes towards specific topics are associated. The rationale for most studies is that people's values guide whether they like certain people, an object, or an idea. Past research reflected the traditional notion that attitudes are simple tendencies to like or dislike attitude objects, while contemporary research has begun to adopt more complex perspectives. Recent advances on the mental structure of attitudes have suggested that attitudes (and their components) might not always be simply positive or negative, but may include both positivity and negativity. In addition, strong and weak attitudes are associated with many different outcomes. Hanel, Foad, & Maio (2024).

Self-concept in educational psychology is broadly defined as an individual's perception and evaluation of their own abilities, competencies, and worth within a learning context. Lazarides, & Raufelder, (2021) opined that Students' self-concept of ability is an important predictor of their achievement emotions. However, little is known about how learning environments affect these interrelations. In other words, academic self-concept is all about how students view their own abilities and feelings regarding their success in school. This includes their interest levels, how they value science, and their tendencies to engage and stick with scientific activities and how well students grasp science concepts and skills that align with what they're supposed to learn, usually evaluated through tests, grades, and hands-on tasks. Understanding these ideas is crucial for conducting research and interpreting how they impact learning outcomes in terms of performance in relation to gender differences in science education

Academic performance in elementary science holds profound importance in shaping students' cognitive development, scientific literacy, and lifelong learning habits. Early science education introduces fundamental concepts that foster critical thinking and inquiry skills, which are essential for understanding more complex subjects and real-world phenomena in later schooling. Al Husaini, & Shukor (2022) stated that students' academic performance is

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vital for assessing a student's standing within a school. It makes it possible for academic staff, educational administrators, and decision makers to precisely evaluate students taking various courses throughout a semester. Additionally, it served as a cautionary tale for the students to assess their performance level and make subsequent improvements.

The formative years of elementary education are pivotal for establishing a robust knowledge base and cultivating interest in science domains, which significantly influence students' academic trajectories and career choices. Numerous factors contribute to academic success in elementary students, including cognitive abilities, learning environments, socio-economic background, parental involvement, and, importantly, psychological constructs such as self-concept and attitude. Understanding the relative impact of self-concept and attitude on student performance in science can provide invaluable insights into how educators might optimize both emotional and cognitive learning environments for elementary-aged learners .

Another variable considered in this study is gender. Sex alludes to state of being male or female. For a long time, sexual orientation was recorded by analysts as one of the variables that affected the scholastic accomplishment of the child. Thus, there have been parcels of talk about whether sexual orientation truly influences scholastic execution. A few analysts accepted that boys frequently out-perform their young ladies partners in most subject zones, whereas a few conclude the other way. For instance, Wrigle, Ackah, & Frimpong, (2023) found in their study that the academic performance of males was better than females at the senior high school level, whilst at the tertiary level, the academic performance of females appeared to have improved relative to that of males. Whilst gender stereotypes contributed greatly to differences in academic performance at the high school level, factors such as teaching methodologies and styles, motivation and support from parents, and advocacy campaigns on women's empowerment accounted for the improved academic performance of females at the tertiary level.

Empirical Studies

In a study conducted by Novitasari, & Prijambodo (2022) on students' attitudes towards an online learning platform, Quizlet, in English vocabulary learning. Three major findings are concerned with the students' attitudes toward Quizlet; the influence of the students' attitudes towards their English vocabulary learning using Quizlet; and how Quizlet facilitates their English vocabulary learning. Findings indicate that 1) students' attitudes were all positive, deriving from their opinions, thoughts, feelings, and experiences towards Quizlet; 2) the positive attitudes gave encouragement to their English vocabulary learning; and 3) Quizlet facilitated the students' English vocabulary learning through its features, namely; Card, Study, Game, and Test modes.

Similarly, Nzomo, Rugano, & Njoroge, (2023) supported that students' attitudes are important predictors of academic achievement. Their study sought to establish whether Inquiry Based Learning has been used in the teaching of chemistry and if it had any influence on students' attitudes towards chemistry. The study employed a correlational research design that involved conducting a survey of 21 teachers who were purposively selected, and 357 students selected through simple random sampling from the 21 classrooms that these teachers taught. The results revealed that teachers used IBL once a week and students had positive attitudes towards chemistry. In the same vein, Marsh, Sharpe, & Graham, (2024) carried out a study

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on the relationships between U.S. high school students' STEM-related educational experiences, expectancy-value attitudes, achievement, course-taking, and college major choices. Their results suggest that a sense of identity as a math or science person is the most important attitude related to students' decision to complete further math and science coursework and major in STEM.

Asanjarani, & Zarebahramabadi (2021) in their study investigated the effectiveness of cognitive-behavioral therapy (CBT) on math anxiety and math self-concept in elementary school students using an experimental design and their finding shows that participants in the treatment group reported statistically lower mathematics anxiety and higher mathematics self-concept after participating in group sessions based on CBT intervention. Also, Valls, M. (2022) explored the associations between self-concepts (i.e., Language learning, Mathematics and Social), attitudes towards school and social comparison processes in school settings; and the influence of social comparison processes on components of academic self-concept across gender. A sample of 238 elementary school students (M_{age} = 10.12, SD = 1.25; 52% boys) completed a questionnaire assessing self-concepts and attitudes towards school, as well as a questionnaire measuring four social comparison processes. Results indicated that girls used negative processes (i.e., upward contrast and downward identification) more than boys. In addition, boys reported better self-concept in mathematics while girls reported better self-concept in language learning (small effect). Results of stepwise multiple linear regression analyses showed that upward contrast best explained gender differences, with a stronger effect for girls. Attitudes towards school only explained gender differences in language learning self-concept.

Alkhateeb, Abushihab, Alkhateeb, & Alkhateeb, (2022) studied the academic self-concept and the relationship between the academic self-concept, attitude and students' academic achievement among university Qatari students. Research of the academic self-concept is well documented in Western cultures, but the academic self-concept research is limited among Qatari students. A sample composed of 274 undergraduate university students was utilized in their study and the study revealed a significant relationship between the academic self-concept, attitude and the academic achievement.

The connection between self-concept and attitude in learning environments is becoming more recognized in educational theory. It's suggested that these two elements work together to shape how engaged and successful students are academically. For example, when a student has a positive self-image regarding their academic abilities, it can lead to a more favorable attitude towards subjects like science. This boost in confidence can spark greater enthusiasm and determination to learn. On the flip side, having a strong, positive attitude can also enhance a student's self-concept by reinforcing their positive experiences and successes in the classroom. Models like the motivational reciprocal model highlight how self-concept and attitude interact dynamically, showing that they don't just exist separately but actually influence one another, amplifying their overall impact on academic performance. This interplay suggests that effective educational strategies should focus on nurturing both self-concept and attitude to truly enhance learning outcomes.

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Statements of the Problem

Elementary Science in elementary schools is a prerequisite subject for many fields of learnin that contributes immensely to the technological growth of a nation. This includes medicines, pharmacy, nursing, agriculture, forestry, biotechnology, nanotechnology, and many other areas.

In spite of the importance of the subject, the researcher observed that some factors such as the teaching methods adopted by teachers, class size, school variables, students' attitude, self concept, home variables among others have been contributing to the low performance of students in the subject. To address these challenges, there is need for an instructional system that support high learners centered teaching method that takes into consideration learners interest, attitude, self-concept among others. Hence, it is of interest exploring self- concepts and students' attitude as correlates of elementary school students performance in science learning.

Research Objective

The main purpose of this study is to investigate students' attitude and self-concept as correlates of their performance in science learning and the differences in the relationship between students' self-concept, their performance in science learning based on gender. Focusing on younger students is important because it's a key time when they form foundational attitudes and self-views that can shape their future academic path.

Hypotheses

The following hypotheses were formulated to guide the study.

1. There is no significant relationship between students' attitude and their performance in science learning
2. There is no significant relationship between students' self-concept and their performance in science learning
3. There is no significant difference in the relationship between students' attitude and their performance in science learning based on gender
4. There is no significant difference in the relationship between students' self-concept and their performance in science learning based on gender
5. There is no significant inter-relationship between students' attitude, self-concept and their performance in science learning

Methodology

The design of this study is correlational research design which seeks to establish what relationship exists between two or more variables. The study was conducted in Ikere Local Government Area of Ekiti, Nigeria. The population size for the study was all public 2,440 elementary school students from Ikere Local Government Area of Ekiti, Nigeria. The sample size for the study was 244 elementary school students from the entire population. Therefore, 10% of total populations of each school were selected using stratified random sampling

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technique to cater for both male (122) and female (122) from all the 22 elementary school students to ensure that equal numbers of male and female students were selected.

Three instruments were used for data collection. The first was a 20 item self-report questionnaire titled "Elementary Science Attitudinal Scale (ESAS)" The second instrument was 20 item self-report questionnaires titled "Self- Concept towards Elementary Science (SCES)".

The third instrument which is "Elementary Science Achievement Scores" is the average of students' academic record in their 1st, 2nd and 3rd term examination. Both Attitudinal Scale and Self-concept Scale are four point scale namely; strongly Agree= 4, Agree=3, Disagree=2, and Strongly Disagree=1.

The two questionnaires of twenty items each constructed were given face validation by three experts, two from measurement and evaluation from Bamidele Olumilua university of Education, Science and Technology, Ikere, Nigeria and one expert from Ekiti State University Ado, Nigeria. Some items the experts did not support were recast to suit the research purposes.

The reliability coefficient of an instrument was estimated using Cronbach- Alpha to establish internal consistency. This was done using Elementary Schools that were not among the sampled students for the main work. Thirty students were given Attitude Scale questionnaire and Self-Concept Scale Questionnaire. The data collected was analyzed using Cronbach Alfa. The reliability coefficient of 0.80 and 0.83 were obtained for Attitude Scale and Self-Concept Scale respectively. This indicates that the instruments are highly reliable.

The researcher sought for the services of Elementary teachers in the sampled schools who assisted to distribute the questionnaire. The respondents were adequately informed of the purpose of the research and the need to respond objectively. Two questionnaires were administered to the respondents simultaneously. After then, the questionnaires were retrieved from the respondents. At the end the researcher collected the past term scores of students' academic performance in Elementary Science. Regression Analysis was used for testing the hypotheses, at 0.05 level of significant.

RESULTS

The results are presented in line with the hypotheses that guided the study.

Research Hypothesis 1:

HO_1: There is no significant relationship between students' attitude and their academic performance in Elementary Science

Table 1: Regression Analysis of the relationship between students' attitude and their academic performance in Elementary Science

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	763.053	1	763.053	62.021	.000
Residual	4123.621	243	12.550		
Total	4886.674	244			

$\alpha = 0.05$

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In order to test hypothesis 1 (H_{O1}), regression analysis was used. The result in Table 1 shows that an F-ratio of 62.02 with associated exact probability value of 0.00 was obtained. This exact probability value of 0.00 was less than 0.05 level of significance set as bench mark and it was found to be significant. The null hypothesis which stated that there is no significant relationship between students' attitude and their academic performance in Elementary Science was therefore rejected and inference drawn was that, there was a significant relationship between students' attitude and their academic performance in Elementary Science

Research Hypothesis 2:

HO_2: There is no significant relationship between students' self-concept and their academic performance in Elementary Science

Table 2: Regression Analysis of the relationship between students' self-concept and their academic performance in Elementary Science

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	461.534	1	461.534	56.320	.000
Residual	3223.159	243	8.700		
Total	3684.693	244			

$\alpha = 0.05$

In order to test hypothesis 2 (H_{O2}), regression analysis was used. The result in Table 2 shows that an F-ratio of 56.32 with associated exact probability value of 0.00 was obtained. This exact probability value of 0.00 was less than 0.05 level of significance set as bench mark and it was found to be significant. The null hypothesis which stated that there is no significant relationship between students' self-concept and their academic performance in Elementary Science was therefore rejected and inference drawn was that, there was a significant relationship between students' self-concept and their academic performance in Elementary Science.

Research Hypothesis 3:

There is no significant relationship in the difference between students' attitude and their academic performance in Elementary Science based on gender

Table 3: Regression Analysis of the relationship in the difference between students' attitude and their academic performance in Elementary Science based on gender

	Model	Sum of Squares	df	Mean Square	F	Sig.
Male	Regression	373.540	1	484.650	26.139	.000
	Residual	2714.527	121	15.123		
	Total	3088.067	122			
Female	Regression	282.732	1	282.732	35.319	.000
	Residual	1573.381	121	11.204		
	Total	1856.113	122			

$\alpha = 0.05$

In order to test hypothesis 3 (H_{O3}), regression analysis was used. The result in Table 3 shows that an F-ratio of 26.14 with associated exact probability value of 0.00 was obtained for male.

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Also an F-ratio of 35.31 with associated exact probability value of 0.00 was obtained for female. These exact probability values of 0.00 were less than 0.05 level of significance set as bench mark for testing the hypothesis and it was found to be significant. The null hypothesis which stated that there is no significant relationship in the difference between students' attitude and their academic performance in Elementary Science based on gender was therefore rejected and inference drawn was that, there was a significant relationship in the difference between students' attitude and their academic performance in Elementary Science based on gender.

Hypothesis 4:

There is no significant relationship in the difference between students' self-concept and their academic performance in Elementary Science based on gender

Table 4: Regression Analysis of the relationship between students' self-concept and their academic performance in Elementary Science based on gender

	Model	Sum of Squares	Df	Mean Square	F	Sig.
Male	Regression	13.180	1	13.180	1.480	.243
	Residual	1630.329	121	11.429		
	Total	1643.509	122			
Female	Regression	1238.009	1	1238.009	262.069	.000
	Residual	653.991	121	5.049		
	Total	1892.00	122			

$\alpha = 0.05$

In order to test hypothesis 4 (H_{O4}), regression analysis was used. The result in Table 4 shows that an F-ratio of 1.48 with associated exact probability value of 0.24 was obtained for male. Also an F-ratio of 262.07 with associated exact probability value of 0.00 was obtained for female. The exact probability values of 0.24 were greater than 0.05 level of significance set as bench mark for testing the hypothesis and it was found not significant based on male. Also, the exact probability values of 0.00 was less than 0.05 level of significance set as bench mark for testing the hypothesis and it was found to be significant for female. The null hypothesis which stated that there is no significant relationship in the difference between students' self-concept and their academic performance in Elementary Science was not rejected for male while the null hypothesis which stated that there is no significant relationship in the relationship between students' self-concept and their academic performance in Elementary Science was rejected for female. The inference drawn was that, there was no significant relationship in the difference between students' self-concept and their academic performance based on male. Also there was significant relationship in the difference between students' self-concept and their academic performance in Elementary Science based on female.

Hypothesis 5:

There is no significant inter-relationship between students' attitude, self-concept and their academic performance in Elementary Science

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Table 5: Regression Analysis of the inter-relationship between students' attitude, self-concept and academic performance in Elementary Science

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1490.274	2	745.137	41.807	.000
Residual	5124.153	241	14.748		
Total	6614.427	243			

$\alpha = 0.05$

In order to test hypothesis 5 (H_{O5}), multiple regression analysis was used. The result in Table 5 shows that an F-ratio of 41.81 with associated exact probability value of 0.00 was obtained. This exact probability value of 0.00 was less than 0.05 level of significance set as bench mark for testing the hypothesis and it was found to be significant. The null hypothesis was therefore rejected and inference drawn was that, there is a significant inter-relationship between students' attitude, self-concept and their academic performance in Elementary Science.

DISCUSSION

The result in Table 1 shows that an F-ratio of 62.02 with associated exact probability value of 0.00 was obtained and it was found to be significant. This means there was a moderate positive relationship between students' attitude and their academic performance in Elementary Science. Hence, there was a significant relationship between students' attitude and their academic performance. The finding of this study support the findings of other previous researchers such as Novitasari, & Prijambodo (2022) who found that achievement correlated positively with attitudes. This finding is also supporting the finding of Nzomo, Rugano, & Njoroge, (2023) that students' attitudes are important predictors of academic achievement and found positive correlation between students' attitude and academic achievement. By virtue of this finding, this research has joined the school of thought that relates student attitude significantly to students' academic performance.

The result in Table 2 shows that an F-ratio of 56.32 with associated exact probability value of 0.00 was obtained and it was found to be significant. This means that, there exist a direct positive relationship between students' self-concept and their performance in Elementary Science but the relationship was moderate. Hence, there was a significant relationship between students' self-concept and their academic performance. This finding suggests that the views that students hold about their academic competence and capabilities are valuable variables that have the potential to facilitate the realization of students' goals in a range of settings including the school.

This result is in line with the previous findings of Asanjarani, & Zarebahramabadi (2021) who found that there is a moderate relationship between self-concept and performance.

The moderate correlation between self-concept and achievement in elementary science is an indication that the way the students thought of, felt about, acted towards, valued and evaluated themselves in elementary science moderately related to their academic achievement. Thus, the

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way one sees himself is very critical to how that person approaches work, determination and the energy that goes into impetus to succeed.

Differences in the relationship between students' attitude and the academic achievement in Elementary Science based on gender

The result in Table 3 shows that an F-ratio of 26.14 with associated exact probability value of 0.00 was obtained for male. Also an F-ratio of 35.31 with associated exact probability value of 0.00 was obtained for female. This means that, there exist a direct positive relationship between female students' attitude and their academic achievement in elementary science. The difference in the relationship between students' attitude and their academic achievement based on gender was in favour of female students. Hence, there was a significant relationship in the difference between students' attitude and their academic achievement based on gender.
This finding corroborates the results of other researchers that claim that boys and girls present very similar attitudes Asanjarani, & Zarebahramabadi (2021) Gender has also been found to have an effect on academic achievement. However, most surprising is the fact that the female gender achieved better than the male gender in academic achievement. Although the issue of findings in respect to gender and academic achievement has been controversial, generally, with some maintaining that males are better, and others insisting that females were better. Although this finding supported that more female students show positive attitude toward elementary science than their male counterpart. However both male and female students have almost the same attitude. In addition, it was discovered that gender had a statistically significant effect on academic achievement.

Differences in the relationship between students' self-concept and the academic achievement in elementary science based on gender

The result in Table 4 shows that an F-ratio of 1.48 with associated exact probability value of 0.24 was obtained for male. Also an F-ratio of 262.07 with associated exact probability value of 0.00 was obtained for female. This means that, there exist a weak positive relationship between male students' self-concept and their academic achievement in elementary science. The inference drawn was that, there was no significant relationship in the difference between students' self-concept and their academic achievement based on male. Also there was significant relationship in the difference between students' self-concept and their academic achievement based on female. Hence female students have high self-concept towards elementary science than the male students.
This result is in line with Valls, M. (2022) who claimed that the female students had a better self-concept than the male students. There was a statistically significant difference between male and female students in their self-concept.

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Inter-relationship between students' attitude, self-concept and their academic achievement in elementary science

The result in Table 5 shows that an F-ratio of 41.81 with associated exact probability value of 0.00 was obtained. The inference drawn was that, there is a significant inter-relationship between students' attitude, self-concept and their academic achievement in elementary science. This finding is in line with the finding Alkhateeb, Abushihab, Alkhateeb, & Alkhateeb, (2022) studied the academic self-concept and the relationship between the academic self-concept, attitude and students' academic achievement among university Qatari students and revealed a significant relationship between the academic self-concept, attitude and the academic achievement.

CONCLUSION

Based on the study of students' attitudes and self-concept as indicators of how well they performed in science classes, it can be said, among other things, that female students had higher self-concept and a better attitude than male students, and that there is a strong correlation between students' attitudes and self-concept and how well they performed academically in science classes.

Recommendations

1. Students should be discouraged from acquiring stereotyped attitude and self-concept towards certain subjects, because of their sexes. This will improve academic performance and excellence and encourage healthy rivalry between men and women.
2. Teachers should get education to comprehend the causes and consequences of gender differences and to develop pedagogical abilities to accommodate and alter them as needed. Additionally, teaching and learning should be structured to take individual student differences into consideration.
3. Counseling services ought to be offered in schools so that the home and the school can work together to help students who are struggling academically.
4. From an early age, parents should help their children establish a positive self-concept. The best place to achieve this is at home, which is the most significant social factor in forming and preserving a child's sense of self.

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