

Comparative Analysis Between Attitude and ... Abdullahi, S., Et. al. (2026)

Comparative Analysis Between Attitudes and Academic Performance in Mathematics and Physics among Senior Secondary School Students in Zamfara State, Nigeria

ABDULLAHI, Sani¹

E-mail Address: saniabdullahi146@gmail.com

Tel. +234 8162298328

MALAMI, Nuraddeen²

E-mail Address: drnurandeenmalami1983@gmail.com

Tel. +234 8030803191

IBRAHIM, Nasiru Tambuwal³

E-mail Address: natambuwal68@gmail.com

Tel. +234 8036084320

¹Department of Science Education, Faculty of Education Zamfara State University, Talata Mafara, Zamfara State Nigeria

²Faculty of Science and Science Education, Shehu Shagari University of Education Sokoto, Sokoto State, Nigeria

³Department of Science Education, Faculty of Education, Sokoto State University, Sokoto State, Nigeria

Abstract

This study investigated Comparative Analysis between Attitudes and Academic Performance in Mathematics and Physics among Senior Secondary School Students in Zamfara State, Nigeria. Four research objectives, research questions with corresponding null hypotheses were formulated. Correlational research design was employed, with a sample of 364 students drawn from four public senior secondary schools in the state, Using convenient and cluster sampling techniques. Data was collected using Secondary School II Physics Performance Test (SSII PPT), Secondary School II mathematics Performance Test (SSII PPT), and questionnaires on students' attitudes toward mathematics and physics. Descriptive statistics of mean and standard deviation were used for answering research questions, Spearman's correlation and Pearson product moment correlation PPMC were used for testing the null hypotheses at significance level of 0.05. Findings of the study revealed that, there is statistically significant positive correlation between students' attitudes and their academic performance in mathematics and physics among senior secondary schools in Zamfara State. Results suggested the need for targeted strategies to improve performance among students in Mathematics to foster positive attitudes in Physics, ultimately enhancing students' engagement and academic success in Zamfara State's senior secondary schools. The finding also recommended among others that. Researchers should conduct further research to identify specific factors affecting performance disparities and develop targeted interventions, such as curriculum review or teacher training, to balance student outcomes across both subjects.

Keywords: Students' Attitudes, Mathematics, Physics, Academic performance

Introduction

Physics is one of the core science subjects taught at the senior secondary level in the Nigerian education system. As a fundamental science, its significance in advancing knowledge, technology, and innovation cannot be overstated. The discipline is closely linked with other sciences such as astronomy, geology, chemistry and biology, and it is generally perceived as both mathematical and experimental in nature. Physics plays an essential role in understanding the principles underlying life and the physical world, with applications ranging from engineering to medicine. Importantly, it is a prerequisite subject for many fields of study in tertiary institutions, including engineering, technology, medicine, and applied sciences. As such, physics has been described as the bedrock of technological development, since its principles, laws, and theories provide the foundation for innovations that drive national progress (Awodun & Ojo, 2014). In educational research, student's attitude has been recognized as a critical factor influencing learning outcomes. Attitude is a psychological construct that reflects emotional, cognitive and behavioral components, even though it cannot be observed directly; it is inferred through behavior (Newbill, 2015). For instance, a child's refusal to follow instructions may be taken as evidence of a negative attitude. In the context of learning, positive attitudes often translate into higher motivation, better confidence and greater achievement. Although much attention has focused on students' attitudes toward mathematics, the relationship between these attitudes and performance in physics is of particular interest. Students who display positive attitudes toward mathematics are more likely to enjoy the subject, recognize its value and prioritize its study factors that can also enhance their performance in physics (Lipnevich, Preckel, & Krumm, 2016). Mathematics itself occupies a central



Comparative Analysis Between Attitude and ... Abdullahi, S., Et. al. (2026)

role at the senior secondary level in Nigeria. It is taught in two forms: General Mathematics, which is compulsory for all students regardless of specialization and Further Mathematics, an elective subject for those interested in advanced studies (Dehipawala, Shekoyan, & Yao, 2014; Baskan, Alev, & Karal, 2010). General Mathematics is not only a requirement for university admission but also provides the intellectual foundation for the growth of science and technology (Ahmed, Mohamed, & Fahar, 2015). Without mathematics, scientific knowledge, technological advancement and innovation are severely limited, underscoring its role as the gateway to modern development (Awodun & Ojo, 2014). Academic performance in mathematics, therefore, becomes a critical index of students' future prospects in today's competitive world. It encompasses ability, performance and growth across cognitive, emotional, social and physical domains (Mohamed & Aron, 2017). At the senior secondary school level in Nigeria, mathematics is taught in two forms: General Mathematics and Further Mathematics. General Mathematics is compulsory for all students regardless of their field of specialization, while Further Mathematics is elective and often chosen by students pursuing science- related disciplines (Dehipawala, Shekoyan, & Yao, 2014; Baskan, Alev, & Karal, 2010). General Mathematics also serves as a prerequisite for university admission across most disciplines, underscoring its central role in education (Ahmed, Mohamed, & Fahar, 2015). Academic performance in mathematics has become a key index of students' future potential in an increasingly competitive world. According to Mohamed and Aron (2017), performance is a multidimensional construct that reflects students' abilities, performances, and growth in cognitive, emotional, social and physical domains. It is not limited to a single outcome but represents a cumulative process occurring across different stages of a student's life. Mathematics education, therefore, requires more than theoretical knowledge; it must be applied in practice to produce meaningful learning outcomes. True learning occurs when mathematical knowledge influences behavior and equips students with the ability to apply concepts in practical and real-life contexts. Despite the importance of physics as a foundation for science and technology, students' academic performance in physics has remained persistently low one of the major reasons is the widespread perception among students that physics is a difficult and abstract subject, particularly when it involves mathematical applications, several factors contribute to this poor performance, including lack of student interest, limited teacher motivation, inadequate incentives for instructors, insufficient instructional materials, shortage of qualified teachers, reliance on teacher-centered methods, and students' inability to effectively use learning resources. Additionally, the use of abstract, standardized instructional materials further hinders understanding (Ugwuanyi, Eze, Magbo, & Ugwoke, 2017). In education, performance is generally defined as the extent to which learners achieve set objectives and demonstrate mastery of learning outcomes at a given level (Butts, Clery, Abeywardana, & Phillips, 2017). Ideally, students' performance in physics should be high, given the subject's significance to national development. However, research indicates otherwise. Abah, Ada, and Taangahar (2016) reported that students' performance in physics at the school certificate level has consistently remained low. Veloo, Nor, and Khalid (2015) found that optimistic attitudes toward mathematics are linked with improved physics outcomes, while negative perceptions reduce performance in both subjects. Guo, Marsh, Parker, Morin, & Yeung, 2015; Naki, (2018), found that optimistic attitudes toward mathematics are linked with improved physics outcomes, while negative perceptions reduce performance in both subjects. Gender differences have also been identified in attitudes toward mathematics. Research shows that female students generally hold less positive attitudes, experience greater anxiety, and perceive mathematics as a male-dominated subject, which often diminishes their confidence and performance. This study therefore attempted to correlate attitudes of students and their academic performance toward mathematics and physics among senior secondary school students in Zamfara State, Nigeria.

Statement of the Problem

The academic performance of senior secondary school students in physics in Zamfara State has remained consistently poor in recent years. Reports from the West African Examinations Council (WAEC) Chief Examiners between 2021 and 2023 highlighted persistent challenges, including students' inability to apply mathematical knowledge in solving physics problems, difficulties in interpreting graphs, and lack of precision in measurements and frequent misinterpretation of mathematics- related physics questions, which often lead to incorrect solutions. Preliminary investigation showed that Parents and communities have also expressed dissatisfaction with the low performance of their students in both internal and external examinations, while a government effort has yielded limited improvement. Furthermore, many students recognize physics as a difficult and male-dominated subject, which discourages enrollment and reinforces gender disparities in physics. A significant factor contributing to these challenges is students' negative attitude toward mathematics, which extends to physics due to the subject's heavy reliance on mathematical concepts. Consequently, poor



Comparative Analysis Between Attitude and ... Abdullahi, S., Et. al. (2026)

mathematical competence not only affects students' performance in physics but also fuels fear and disinterest in the subject. Against this background, the study seeks to examine Comparative Analysis between Attitudes and Academic Performance in Mathematics and Physics among Senior Secondary School Students in Zamfara State, Nigeria.

Objectives of the Study

The aim of this study is to investigate Comparative Analysis between Attitudes and Academic Performance in Mathematics and Physics among Senior Secondary School Students in Zamfara State, Nigeria. Specifically, the objectives are:

1. Examine the relationship between student's attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria
2. Determine the relationship between students' academic performance in mathematics and physics among senior secondary schools in Zamfara State, Nigeria.
3. Find out the relationship between student's attitudes and their academic performance in mathematics among senior secondary schools in Zamfara State, Nigeria.
4. Find out if there is relationship between student's attitudes and their academic performance in physics among senior secondary schools in Zamfara State, Nigeria.

Research Questions

The following research questions were raised to guide the study:

1. What is the relationship between student's attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria?
2. What is the relationship between students' academic performance in mathematics and physics among senior secondary schools in Zamfara State, Nigeria?
3. What is the relationship between student's attitudes and their academic performance in mathematics among senior secondary schools in Zamfara State, Nigeria?
4. What is the relationship between student's attitudes and their academic performance in physics among senior secondary schools in Zamfara State, Nigeria?

Null Hypotheses

Null Hypotheses were formulated and tested at 0.05 levels of significance.

- H₀₁: There is no significance correlation between student's attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria.
- H₀₂: There is no significance correlation between students' academic performance in mathematics and physics among senior secondary schools in Zamfara State,
- H₀₃: There is no significance correlation between student's attitudes and their academic performance in mathematics among senior secondary schools in Zamfara State, Nigeria.
- H₀₄: There is no significance correlation between student's attitudes and their academic performance in physics among senior secondary schools in Zamfara State, Nigeria.

Methodology

The study employed correlational research design. Correlational research has to do with the measurement of two or more factors to determine the extent to which the values of the factors are related. Co-relational research design was used to investigate students' attitudes and their academic performances in mathematics and physics. The population of this study consists of all public senior secondary school students offering mathematics and physics in Zamfara State. Convenience and cluster sampling techniques were used for select four schools, comprised one school from each of the four education Zones of the State with the sample 364 students purposely selected from, Government Day Secondary School, Maradun, Government Day Senior Secondary School Sabon Gari, Gusau, Government Day Science Secondary School, Bukkuyum and Government Day Secondary School, Kaura Namoda, based on the classes offering physics and mathematics. Four instruments were used in this study, these are: Secondary School II Physics Performance Test (SSII PPT): The instrument was adopted by the researcher from West African Examination Council WAEC and National Examination Council NECO. The performance test comprised (30) multiple-choice questions in physics, with letter A-D with only one correct answer while others are used as distractors. While Secondary School II Mathematics Performance Test (SSII MPT) were also adopted from West African Examination Council WAEC and National Examination Council NECO. with (30) multiple-



Comparative Analysis Between Attitude and ... Abdullahi, S., Et. al. (2026)

choice questions in mathematics, with letter A-D with only one correct answer while others are used as distractors. In addition Secondary School II Questionnaire on Students Attitudes toward Physics (QSATP) were also adopted from ABC model of attitudes it was divided into two parts, part one consist of bio-data of student, while part two consist of twenty items on the attitude of students toward physics, students are required to respond with one options out of the followings: Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD), The items were scored on the basis of the mark allocated to each point. That is, 4, 3, 2, 1 for SA, A, D, SD. With the purpose of the research been explained to the students.

Presentation of Results

RQ1. What is the relationship between student’s attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria?

Table 1: Summary of Mean and standard deviation on relationship between student’s attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria

Variable	N	Mean	Std. Deviation
Attitude toward Physics	364	3.41	0.63
Attitude toward Mathematics	364	3.35	0.52

Table 1: revealed relationship between students’ attitude towards Mathematics and Physics among senior secondary school students in Zamfara State is characterized by nearly identical descriptive means attitude towards Mathematics 3.35 (SD = 0.52) and attitude towards Physics 3.41 (SD = 0.63) indicating similar average attitude across the two subjects, suggested a possible positive relationship student’s attitudes in mathematics and physics.

RQ2. What is the relationship between students’ academic performance in mathematics and physics among senior secondary schools in Zamfara State, Nigeria?

Table 2: Summary of Mena and Standard Deviation on Relationship between students’ academic performance in mathematics and physics among senior secondary schools in Zamfara State, Nigeria

Test	N	Mean	Std. Deviation
Maths Academic Performance	364	29.98	2.09
Physics Academic Performance	364	29.95	2.33

Source: Field work (2025)

Table 2 Showed relationship between Mathematics and Physics performance among senior secondary school students in Zamfara State is characterized by identical descriptive means Mathematics 29.98 (SD = 2.09) and Physics 29.95 (SD = 2.33) indicating similar average performance across the two subjects.

RQ3. What is the relationship between student’s attitudes and their academic performance in mathematics among senior secondary schools in Zamfara State, Nigeria?

Table 3: Summary of Mean and Standard Deviation on Relationship Between Student’s Attitudes and their Academic Performance in Mathematics Among Senior Secondary Schools Students in Zamfara State.

Variable	N	Mean	Std. Deviation
Maths Academic Performance	364	29.98	2.09
Attitude toward Mathematics	364	3.35	0.52

Source: Field work (2025)

Based on the findings in Table 3 there is an observable but limited relationship between students’ attitudes toward mathematics and their academic performance mathematic. Specifically, the mean of mathematics performance is 29.98 (SD 2.09) while the average attitude toward Mathematics is 3.35 (SD 0.52). The mean scores suggest that both the variables are at moderate to high level, implying that students who hold relatively favorable attitudes toward Mathematics tend to perform better in mathematics.



Comparative Analysis Between Attitude and ... Abdullahi, S., Et. al. (2026)

RQ4. What is the relationship between student's attitudes and their academic performance in physics among senior secondary schools in Zamfara State, Nigeria?

Table 4: Summary of Mean and Standard Deviation on Relationship Between Student's Attitudes and their Academic Performance in Physics Among Senior Secondary Schools in Zamfara State

Variable	N	Mean	Std. Deviation
Attitude toward Physics	364	3.41	0.63
Physics Academic Performance	364	29.95	2.33

Source: *Field work (2025)*

Based on the findings in Table 4, there is an observable relationship between students' attitudes toward Physics and their Physics performance among senior secondary school students in Zamfara State. Particularly, the average attitude toward Physics is 3.41 (SD = 0.63) while the average Physics performance is 29.95 (SD = 2.33). The means indicate that, descriptively, students who hold more favorable attitudes toward Physics showed higher average in physics performance. The mean for attitude suggested a possible positive relationship; students with more positive attitudes tend to have higher performance.

Null Hypotheses

H₀₁: There is no significance correlation between student's attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria.

Table 5: Summary of Spearman's correlation between student's attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria

Variable	N	Mean	Standard Deviation	df	Rho	P-value	Decision
Attitude to Physics	364	3.41	0.63	363	0.69	0.01	H ₀₁ Rejected
Attitude to Mathematics	364	3.35	0.52				

Source: Field Work (2025)

Level of significance ($\alpha=0.05$)

Table 5 presented the observed Spearman's correlation between student's attitudes in Mathematics and Physics among senior secondary students in Zamfara State. The sample comprised N = 364 participants, with Physics attitude reported a mean of 3.41 (SD = 0.63) and Mathematics attitude with a mean of 3.35 (SD = 0.52). The computed Spearman's correlation coefficient is rho = 0.69, with an associated p-value of 0.01. Based on $\alpha = 0.05$, the null hypothesis of no significant correlation between student's attitude in Mathematics and Physics is rejected, indicating a statistically significant positive correlation between the two domains.

H₀₂: There is no significance correlation between students' academic performance in mathematics and physics among senior secondary schools in Zamfara State.

Table 6: Summary of PPMC Result on Correlation between Students' Academic Performance in Mathematics and Physics among Senior Secondary Schools Students in Zamfara State

Variable	N	Mean	Standard Deviation	df	r-cal.	P-value	Decision
Physics performance	364	29.98	2.09	363	0.54	0.032	H ₀₂ Rejected
Mathematics performance	364	29.95	2.33				

Source: *Field Work (2025)*

Level of significance ($\alpha=0.05$)

Table 6 presented the observed correlation between Mathematics and Physics performance among senior secondary students in Zamfara State. The sample comprises N = 364 participants, with Physics Academic Performance reported a mean of 29.98 (SD = 2.09) and Mathematics Academic Performance reported a mean of 29.95 (SD = 2.33). The computed Pearson correlation coefficient is r = 0.54, with an associated p-value of 0.032. Based on $\alpha = 0.05$, the null hypothesis of no significant correlation between Mathematics and Physics performance is rejected, indicating a statistically significant positive correlation between the two subjects.

H₀₃: There is no significance correlation between student's attitudes and their academic performance in mathematics among senior secondary schools in Zamfara State, Nigeria.



Comparative Analysis Between Attitude and ... Abdullahi, S., Et. al. (2026)

Table 7: Summary of PPMC Result on Correlation Between Student's Attitudes and their Academic Performance in Mathematics Among Senior Secondary Schools in Zamfara State

Variable	N	Mean	Standard Deviation	df	r-cal.	P-value	Decision
Maths Academic Performance	364	29.98	2.09	363	0.732	0.047	H ₀₃
Attitude toward Mathematics	364	3.35	0.52				Rejected

Source: Field Work (2025)

Level of significance ($\alpha=0.05$)

Table 7 presented the correlation between students' attitudes toward mathematics and their academic performance in mathematics among senior secondary school students in Zamfara State. The sample consisted of N = 364 participants. Mathematics performance has a mean of 29.98 (SD = 2.09), while attitude toward mathematics has a mean of 3.35 (SD = 0.52). The Pearson product moment correlation $r=$ is 0.732, with a p-value of 0.047. And $\alpha = 0.05$, the null hypothesis of no significant correlation between students' attitudes and mathematics performance is rejected, indicating a statistically significant positive correlation between these variables.

H₀₄: There is no significance correlation between student's attitudes and their academic performance in physics among senior secondary schools in Zamfara State, Nigeria.

Table 8: Summary of PPMC Result on Correlation Between Student's Attitudes and their Academic Performance in Physics Among Senior Secondary Schools Students in Zamfara State.

Variable	N	Mean	Standard Deviation	df	r-cal.	P-value	Decision
Attitude toward Physics	364	3.41	0.63	363	0.845	0.039	H ₀₄
Physics Academic Performance	364	29.95	2.33				Rejected

Source: Field Work (2025)

Level of significance ($\alpha=0.05$)

Table 8 showed the correlation between students' attitudes toward physics and their physics performance among senior secondary school students in Zamfara State. The sample consists of N = 364 participants. Attitude toward physics yields a mean of 3.41 (SD = 0.63), whereas physics performance has a mean of 29.95 (SD = 2.33). The Pearson product moment correlation coefficient is $r = 0.845$, with an associated p-value of 0.039. At 0.05 significance level, the null hypothesis that state of no significant correlation between students' attitudes and physics performance is rejected, indicating a statistically significant positive correlation between these subjects.

Discussions of Findings

Findings of the study revealed that, there is statistically significant positive correlation between students' attitude towards mathematics and their attitudes toward physics among senior secondary schools in Zamfara State. Furthermore, the findings of the study showed that, there is significant positive correlation between students' performance in mathematics and physics among senior secondary school students in Zamfara State. The findings of the study revealed that Mathematics students' performance has significant moderate positive correlation with their Physics academic performance in senior secondary schools. However, the finding also showed that there is a strong positive and significant correlation between attitudes toward mathematics and mathematics academic performance among senior secondary school students the State. The result indicated that students who hold more favourable attitudes toward mathematics tend to perform higher scores in the subject. The positive correlation indicated that attitude rather than competency, the convergence of findings underscores that fostering a positive attitude toward mathematics can be as impactful as strengthening mathematical skills. Furthermore, findings of the study indicate a strong, positive and statistically significant correlation between attitudes toward physics and physics academic performance among senior secondary school students in Zamfara State. Students who express more favourable attitudes toward physics tend to perform higher scores in the subject. The studies reinforce the notion that students' academic performance in mathematic are influenced by complex socio-cultural and economic factors. Addressing these barriers through targeted policies, teaching approaches and community awareness is essential to promoting equal



Comparative Analysis Between Attitude and ... Abdullahi, S., Et. al. (2026)

educational opportunities and improving students' performance in mathematics and physics among senior secondary school students in Zamfara State.

Conclusion

The findings of this study provided valuable insights into the Comparative Analysis between Attitudes and Academic Performance in Mathematics and Physics among Senior Secondary School Students in Zamfara State, Nigeria. The findings revealed a statistically significant positive correlation between students' academic performance in mathematics and physics and a significant correlation between students' attitudes and their scores in both subjects, confirming that more favourable affective, behavioural, and cognitive are connected with higher academic outcomes. These results suggested a need for targeted strategies to improve performance among students in Mathematics and to foster positive attitudes in Physics, ultimately enhancing students' engagement and academic success in Zamfara State senior secondary schools.

Recommendations

1. Researchers should conduct further research to identify specific factors affecting performance disparities and develop targeted interventions, such as curriculum review or teacher training, to balance student outcomes across both subjects.
2. Teachers should Design engaging and practical Physics lessons that align with students' interests. Organize extracurricular activities, science clubs and demonstrations to stimulate curiosity and positive attitudes toward Physics.
3. Teachers Maintain balanced instructional approaches for both subjects and reinforce positive perceptions through student-centered teaching to sustain overall favorable attitudes.
4. Researchers should identify factors contributing to attitude differences and develop targeted motivational strategies, such as integrating real-world applications or interactive learning methods to foster positive attitudes in both subjects.

References

- Abah, C. O., Ada, N. A., & Taangahar, B. A. (2016). Effect of teacher-improvised equipment on secondary school students' achievement in physics in Makurdi Metropolis. *Journal of Science, Technology, Mathematics and Entrepreneurial Education*, 1 (1), 90-97.
- Ahmed, I, Mohamed, N., & Fahar, H. (2015). The role of physics and mathematics courses in influencing students' performance in engineering programs. In *Science Proceeding (Engineering Leaders Conference (2014))*. <https://doi.org/10.5339/qproc.2015.elc2014.61>.
- Awodun, A. O., & Ojo, O. J. (2014). Mathematics skills as predictors of physics students' performance in senior secondary schools. *International Journal of Science and Research (IJSR)*: India Online ISSN: 2319. 7064 2(7):391-394.
- Baskan, Z, Alev, N., & Karal, I.S. (2010). Physics and mathematics teachers' ideas about topics that could be related or integrated. *Procedia – Social and Behavioural Sciences*, 2, 1558-1562.
- Butt, S., Clery, E., Abeywardana, V. & Phillips, M. (2017). Welcome trust monitor1. London: *Welcome Trust*.
- Dehipawala, S., Shekoyan, V., & Yao, H. (2014). Using mathematics review to enhance problem solving skills in general physics classes. *Proceedings of 2014 Zone 1 Conference of the American Society for Engineering Education (ASEE Zone 1)*. Bridgeport: IEEE. <https://doi.org/10.1109/ASEEZone1.2014.6820631>.
- Guo, J, Marsh, H. W., Parker, P. D., Morin, A. J., & Yeung, A. S. (2015). Expectancy-value in mathematics, gender and socioeconomic background as predictors of achievement and aspirations: A multi-cohort study. *Learning and Individual Differences*. 2(1) 161- 168.
- Lipnevich, A. A., Preckel, F., & Krumm, S. (2016). *Mathematics attitudes and their unique contribution to achievement: Going over and above cognitive ability and personality*. *Learning and Individual Differences*, 2 (7), 70–79.
- Mohamed, I. B. & Aron, A. C. M. (2017). Interest in mathematics and academic achievement of high school students in Chennai district. *International Journal of Innovative Science and Research Technology*, 2(8), 260 – 265.
- Naki, E. (2018) Determining the effect of reducing procrastination tendency on the academic achievement in physics course. *International Journal of Educational Administration and Policy Studies*, 11(1), 1–11.
- Newbill, M. (2015). Motivational and Gender difference sixth grade students Mathematics problem solving behavior. *Journal of educational psychology*, 92(2).308-315.
- Odogwu, H. N. & Babajide, V. F. (2018). Effect of students' knowledge of Mathematics on students' achievement in Physics. *A paper presented at the 7th international conference of global education network in conjunction with school of education and leadership*, university of Ghana.



Comparative Analysis Between Attitude and ... Abdullahi, S., Et. al. (2026)

Ugwanyi, S.C., Eze, E.J., Magbo, R.C., & Ugwoke, E.(2017). Assessment of the efficacy of students' improvised instructional materials on their academic achievement in Physics concepts. *60th Annual conference of STAN Proceedings*, 356 -363.

Veloo, A. Nor, R., & Khalid, R. (2015). Attitude towards physics and additional mathematics achievement towards physics achievement. *International Education Studies*, 8(3), 35 – 43.