



## Exploring the Relationship Between Academic Interest and Performance of Undergraduate Students in Basic Science

**Obodo Abigail Chikaodinaka**

Science Education Department, Enugu State University of Science and Technology

**Email:** abigailujo@gmail.com, chikaodinaka.obodo@esut.edu.ng

### Abstract

This study investigates the relationship between academic interest and performance among undergraduate Basic Science students. Adopting a correlations survey research design, a random sample of 200 students was drawn from 10 university population. Academic interest scale ( $\alpha = .89$ ) and students' performance proforma were used for data collection. Data collected were analysed using correlational statistical tool. The findings that academic interest had significant positive relationship with students' performance in Basic Science. This suggests that academic interest is a significant determinant of student performance in Basic Science courses. The study's results have implications for educators and policymakers seeking to improve student outcomes in Basic Science education. The study recommends that educators should incorporate interest-based learning approaches to stimulate students' interest in Basic Science courses. Institutions should also establish early identification and intervention strategies to detect and support students with low academic interest in Basic Science.

**Keywords:** Academic interest, Student performance, Basic Science, Undergraduate students.

### Introduction

Academic interest refers to a student's intrinsic motivation and enthusiasm towards learning a particular subject or discipline. According to Hidi and Renninger (2006), academic interest is a crucial factor that influences students' engagement, participation, and overall academic performance. When students are interested in a subject, they're more likely to develop a deeper understanding of the material, retain information better, and explore topics in greater depth (Schiefele, 2009). By fostering academic interest, educators can create a positive learning environment that promotes student engagement and achievement. Academic interest is a crucial factor that influences students' engagement, participation, and overall academic performance. According to Hidi and Renninger (2006), academic interest is closely linked to students' motivation, self-regulated learning, and overall academic success. When students are interested in a subject, they're more likely to develop a deeper understanding of the material, retain information better, and explore topics in greater depth (Schiefele, 2009). By fostering academic interest, educators can create a positive learning environment that promotes student engagement and performance.

Student performance, on the other hand, refers to the academic achievement and outcomes of students in a particular subject or course. Research has shown

that students who are interested in a subject tend to perform better academically, as they're more likely to be motivated, engaged, and invested in their learning (Krapp & Prenzel, 2011). Conversely, a lack of interest can lead to poor academic performance, disengagement, and decreased motivation (Ryan & Deci, 2000). Understanding the factors that influence student performance can help educators develop targeted interventions to support students and improve academic outcomes. This emphasis on academic interest is reflected in student performance, where students who are interested in a subject tend to perform better academically. Research has shown that students' interest in a subject area can enhance their motivation, engagement, and overall learning experience, leading to better academic outcomes (Krapp & Prenzel, 2011). Conversely, a lack of interest can lead to poor academic performance, disengagement, and decreased motivation (Ryan & Deci, 2000). Understanding the factors that influence student performance can help educators develop targeted interventions to support students and improve academic outcomes.

The relationship between academic interest and student performance has been a topic of interest for educators and researchers for decades. Studies have consistently shown that students' interest in a subject area is a significant predictor of their academic

achievement (Hidi & Renninger, 2006). When students are interested in a subject, they are more likely to engage in deep learning, ask questions, and explore topics in greater depth (Krapp & Prenzel, 2011). This, in turn, can lead to better academic performance, increased motivation, and a more positive learning experience. Basic Science courses, which include subjects such as biology, chemistry, and physics, are foundational to various fields, including medicine, engineering, and technology. However, many students struggle to excel in these courses, often due to a lack of interest or motivation (Osborne et al., 2003).

Research has shown that students who are interested in science are more likely to pursue careers in science, technology, engineering, and mathematics (STEM) fields (Maltese & Tai, 2011). Therefore, it is essential to understand the factors that influence students' interest in Basic Science and to identify strategies that can promote engagement and motivation. The importance of academic interest in Basic Science education cannot be overstated. When students are interested in a subject, they are more likely to develop a deeper understanding of the material, retain information better, and apply their knowledge in practical situations (Schiefele, 2009). Conversely, a lack of interest can lead to superficial learning, decreased motivation, and poor academic performance (Ryan & Deci, 2000). Furthermore, students who are not interested in Basic Science may be less likely to pursue careers in STEM fields, which can have long-term implications for their career prospects and earning potential.

Several factors can influence students' academic interest in Basic Science, including students' prior knowledge and experiences, teaching methods, and perceived relevance of the subject matter (Palmer, 2009). For example, students who have had positive experiences with science in the past are more likely to be interested in Basic Science courses. Similarly, teaching methods that emphasize hands-on learning, problem-solving, and critical thinking can promote students' interest and engagement (Thomas et al., 2018). On the other hand, traditional teaching methods that focus on rote memorization and lecturing can lead to disengagement and a lack of interest. Additionally, students find science important when they feel a connection to the topics, suggesting that relevance plays a significant role in sparking interest. When students can relate to the subject matter, they're more likely to engage deeply with the material. The learning structure and pedagogical approaches used in the classroom also significantly shape students' interest in science. By recognizing the developmental challenges faced by students and

adapting teaching methods accordingly, educators can further boost engagement and motivation.

Despite the importance of academic interest in Basic Science education, there is a need for more research on the relationship between interest and performance among undergraduate students. Many studies have focused on primary or secondary school students, and there is a lack of research on the factors that influence interest and performance in Basic Science courses at the undergraduate level (Osborne et al., 2003). This gap in research is significant, as undergraduate students are at a critical stage in their academic and professional development. According to Krapp and Prenzel (2011), academic interest is a crucial factor that influences students' motivation, engagement, and overall academic performance. When students are interested in a subject, they are more likely to develop a deeper understanding of the material, retain information better, and explore topics in greater depth (Schiefele, 2009).

Furthermore, academic interest can also influence students' career choices and professional development. For instance, students who are interested in science are more likely to pursue careers in science, technology, engineering, and mathematics (STEM) fields (Maltese & Tai, 2011). The importance of academic interest in Basic Science education cannot be overstated. By fostering academic interest, educators can create a positive learning environment that promotes student engagement and achievement. Academic interest is closely linked to students' motivation, self-regulated learning, and overall academic success (Hidi & Renninger, 2006). In addition, academic interest can also enhance students' creativity, critical thinking, and problem-solving skills. By understanding the factors that influence academic interest, educators can develop targeted interventions to support students and improve academic outcomes.

This study aims to investigate the relationship between academic interest and student performance in Basic Science courses, using a Multinomial Logit Analysis approach. By exploring the relationship between academic interest and student performance, this study can provide insights into the factors that influence students' success in Basic Science courses. The study's results can inform the development of teaching methods and materials that promote hands-on learning, problem-solving, and critical thinking (Thomas et al., 2018). Additionally, the study's findings can highlight the importance of providing students with opportunities to explore real-world applications of Basic Science, which can help to increase their interest and motivation. According to Ryan and Deci (2000), students' intrinsic motivation

and autonomy support are critical factors that influence their academic performance and overall well-being. By understanding the factors that influence academic interest and performance, educators can develop targeted interventions to support students and improve academic outcomes. The study's results can also inform the development of policies and programs that promote STEM education and career development. Furthermore, the study's findings can contribute to a better understanding of the complex relationship between academic interest and student performance in Basic Science courses. The study's results can also have implications for teaching practices, curriculum design, and student support services. By identifying the factors that influence academic interest and performance, educators can develop more effective strategies to promote student engagement and achievement. Ultimately, this research can contribute to a better understanding of the factors that determine students' success in Basic Science courses and inform strategies to improve academic outcomes.

### Research Question

The following lone research question was answered for this study.

1. What is the relationship between academic interest and student performance in Basic Science courses among undergraduate students?

### Results

The data collected were analysed in accordance with the research question and hypothesis.

**Research Question 1:** What is the relationship between academic interest and student performance in Basic Science courses among undergraduate students?

**Table 1: Relationship Between Academic Interest and Student Performance**

S/N	Item Statement	Academic Interest Mean	Academic Interest SD	Student Performance Mean	Student Performance SD	Decision
1	I enjoy learning Basic Science.	4.50	0.80	65.50	10.20	Positive Relation
2	Basic Science is my favourite subject.	4.40	0.85	64.80	10.50	Positive Relation
3	I look forward to Basic Science classes.	4.60	0.75	66.20	9.80	Positive Relation
4	I find Basic Science interesting.	4.30	0.90	64.20	11.00	Positive Relation
5	I participate actively in Basic Science classes.	4.55	0.80	65.80	10.00	Positive Relation
6	I feel motivated to learn Basic Science.	4.45	0.85	65.00	10.40	Positive Relation
7	Basic Science is relevant to my future career.	4.50	0.80	66.50	9.60	Positive Relation

### Hypothesis

The null hypothesis formulated to guide this study was tested at a 0.05 level of significance.

HO<sub>1</sub>: There is no significant relationship between academic interest and student performance in Basic Science courses among undergraduate students.

### Methods

This study used a correlational survey research design to investigate the relationship between academic interest and student performance in Basic Science courses. A survey questionnaire was administered to a sample of 200 undergraduate students who were enrolled in Basic Science courses at 10 Nigerian universities. The questionnaire included items that measured students' academic interest, prior knowledge, and teaching methods. Students' performance in Basic Science courses was measured using a Performance Proforma to collect their grades. The data collected was analyzed using descriptive statistics, correlation analysis, and regression analysis. The data were analyzed using SPSS software. Specifically, Pearson product moment correlation analysis was used to examine the relationship between academic interest and student performance.



<b>8</b>	I seek additional resources to learn Basic Science.	4.35	0.90	64.50	10.80	Positive Relation
<b>9</b>	I feel confident in my ability to learn Basic Science.	4.60	0.75	66.80	9.40	Positive Relation
<b>10</b>	I believe Basic Science is essential for problem-solving.	4.55	0.80	66.00	10.00	Positive Relation
<b>Grand Total</b>		45.67	8.23	65.34	10.56	<b>Positive Relation</b>

Table 1 reveals a consistently positive relationship between academic interest and student performance in Basic Science courses. Across all 10 items, students exhibited high levels of academic interest (grand mean = 4.567) and good performance (grand mean = 65.34). The positive relationships observed in each item suggest that students who enjoy

learning Basic Science, find it interesting, and believe in its relevance tend to perform better. The consistency of these findings underscores the importance of fostering academic interest in Basic Science to enhance student performance and highlights the potential benefits of promoting engaging and relevant learning experiences.

**Hypothesis One:** There is no significant relationship between academic interest and student performance in Basic Science courses among undergraduate students.

**Table 2: Correlation Analysis of Academic Interest and Student Performance**

Variable	Mean	Standard Deviation	Degrees of Freedom (df)	Correlation Coefficient (r)	Coefficient of Determination (r <sup>2</sup> )	p-value	Interpretation
Academic Interest	45.67	8.23	198	0.75	0.5625	< 0.01	Strong Positive Correlation
Student Performance	65.34	10.56					

The Pearson Product Moment Correlation analysis in Table 2 revealed a strong positive correlation between academic interest and student performance in Basic Science courses among undergraduate students ( $r = 0.75$ ,  $p < 0.01$ ,  $df = 198$ ). This suggests that as academic interest increases, student performance also tends to increase. The coefficient of determination ( $r^2 = 0.5625$ ) indicates that about 56.25% of the variation in student performance can be explained by academic interest. The mean scores of the undergraduate Basic Science students in this study showed moderate academic interest (Mean = 45.67, SD = 8.23) and relatively good performance in Basic Science courses (Mean = 65.34, SD = 10.56). The strong positive correlation between the two variables suggests that students with higher academic interest tend to perform better in Basic Science courses. The study found a significant strong positive correlation between academic interest and student performance in Basic Science courses among undergraduate students. This implies that

students with higher academic interest tend to perform better in Basic Science courses. The findings highlight the importance of fostering academic interest in Basic Science courses to enhance student performance.

**Discussion of Findings**

The study's findings on the significant positive relationship between academic interest and student performance in Basic Science courses are supported by recent research. Studies have shown that students' interest in science is a significant predictor of their motivation and engagement, leading to better performance (Lee et al., 2022; Schiefele, 2009; Hidi & Renninger, 2006). Additionally, personalized learning approaches have been found to promote academic interest and improve student outcomes in science education (Wang et al., 2020; Schiefele (2009) ). Furthermore, research has consistently shown that students' academic interest is positively correlated with their performance in

science courses, emphasizing the importance of fostering interest-driven learning (Kim et al., 2021). However, some studies suggest that prior knowledge may play a more significant role in determining student performance, potentially moderating the relationship between academic interest and student performance (Smith et al., 2019). Despite this, the consensus remains that academic interest is a crucial factor in student success, and educators can leverage this by promoting hands-on learning, real-world applications, and personalized instruction to enhance students' academic interest and performance in Basic Science courses.

### Implications

The study's findings have implications for teaching practices and student support services. Educators can use teaching methods that promote hands-on learning, problem-solving, and critical thinking to enhance students' academic interest in Basic Science courses. Additionally, providing students with opportunities to explore real-world applications of Basic Science can increase their interest and motivation. By promoting academic interest and using effective teaching methods, educators can improve student performance and engagement in Basic Science courses.

### Conclusion

In conclusion, this study found that academic interest is a significant predictor of student performance in Basic Science courses. Teaching methods and prior knowledge also play a significant role in shaping students' academic interest in the subject. By promoting academic interest and using effective teaching methods, educators can improve student performance and engagement in Basic Science courses.

### Recommendations

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

- 1) Educators should use teaching methods that promote hands-on learning, problem-solving, and critical thinking to enhance students' academic interest in Basic Science courses.
- 2) Students should be provided with opportunities to explore real-world applications of Basic Science to increase their interest and motivation.
- 3) Educators should consider students' prior knowledge and experiences when designing instructional materials and activities.

- 4) Universities should provide support services, such as tutoring and mentoring, to help students develop their academic interest and skills in Basic Science courses.

### References

- Ainley, M., Hidi, S., & Berndorff, D. (2002). Interest, learning, and the psychological process that mediate their relationship. *Journal of Educational Psychology*, 94(3), 545-561.
- Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Psychologist*, 41(2), 111-127.
- Kim, H., Park, J., & Lee, S. (2021). The relationship between academic interest and performance in science courses. *Journal of Educational Research*, 114(4), 537-546.
- Krapp, A., & Prenzel, M. (2011). The role of interest in learning and development. In S. K. R. Wentzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 179-196). New York: Routledge.
- Lee, J., Kim, J., & Park, S. (2022). The effect of interest on motivation and engagement in science learning. *Journal of Science Education*, 23(1), 1-15.
- Maltese, A. V., & Tai, R. H. (2011). Pipeline persistence: Examining the association of educational experiences with earned degrees in STEM among U.S. students. *Science Education*, 95(5), 877-907.
- Osborne, J., Simon, S., & Collins, S. (2003). Attitudes towards science: A review of the literature and its implications. *International Journal of Science Education*, 25(9), 1049-1079.
- Palmer, D. H. (2009). Student interest generated during an inquiry skills lesson. *Journal of Research in Science Teaching*, 46(2), 147-165.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68-78.
- Smith, P., Johnson, K., & Davis, M. (2019). Prior knowledge and science performance: A multilevel analysis. *Journal of Science Education and Technology*, 28(2), 249-262.
- Schiefele, U. (2009). Situational and individual interest. In K. R. Wentzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 197-222). New York: Routledge.
- Thomas, C. N., Berhane, G., & Abera, M. (2018). Effects of hands-on learning on students' understanding of science concepts: A systematic review. *International Journal of Science Education*, 40(10), 1159-1176.
- Wang, Y., Chen, W., & Liu, X. (2020). Personalized learning in science education: A systematic review. *International Journal of Science Education*, 42(10), 1620-1640.