



## Predicting Academic Success in Technical Education through Student Interest: A Secondary School Case Study

AGBATA, Ikechukwu Victor N.

*Department of Industrial Technology Education,  
Delta State University, Abraka, Nigeria.*

Date of Submission: 01-04-2026

Date of Acceptance: 10-04-2026

### Abstract

Numerous environmental, psychological, and cognitive factors affect academic performance in technical education. Among these elements, student interest is a key determinant of engagement, perseverance, and technical subject performance. This study investigates the connection between secondary school students' academic achievement and their interest in technical education. The population of the study is 1000 senior secondary school students. A sample of 500 students were drawn through simple random sampling. The instrument for data were Student Interest Questionnaire (SIQ) and students result that was used to measure their academic performance. The study investigates how students' interest in technical areas affects their academic performance using a case study methodology. The results show that students are more likely to succeed academically if they show a significant interest in technical education. In order to increase academic performance and promote involvement in technical vocations, the study advises educators and educational policymakers to adopt tactics that stimulate students' interest in technical subjects.

**Keywords:** Predicting, Academic Success, Technical Education, Student Interest:

### I. Introduction

Since academic achievement affects students' future employment opportunities and advances national development, it is a major concern in educational systems around the world. Academic achievement is especially crucial in technical education because it equips students with the practical skills needed for industrial and technological growth. However, a lack of interest, poor learning attitudes, and insufficient motivation cause many students to struggle in technical topics. One psychological element that has a big impact on learning results is student interest. Students that are interested are more likely to

actively engage in class activities, study for longer periods of time, and get a deeper comprehension of the material. According to research, kids who are enthusiastic about a subject are more driven to learn and typically do better academically (Zhao & Perez-Felkner, 2022).

Predicting academic performance has also grown in importance as a field of study in education. Researchers stress that early interventions that enhance learning outcomes can be implemented by educators when factors influencing student performance are identified (Alyahyan & Düşteğör, 2020). This study employs a secondary school case study to predict academic achievement in technical education based on student interest..

Technical education is a type of education intended to give students the scientific knowledge, technological proficiencies, and practical skills needed for particular professions. It places a strong emphasis on problem-solving, experiential learning, and applying theoretical knowledge to actual circumstances. Subjects like Basic Technology, Technical Drawing, Woodworking, Metalworking, Electronics, and Computer Technology are commonly included in technical education at the secondary school level. Technical education is essential for preparing students for technological innovation and vocational careers. By creating trained labor, it also supports the growth of the national economy. However, students' engagement and enthusiasm in the subject matter play a major role in the success of technical education.

The degree to which a student meets learning objectives is referred to as academic success, and it is typically assessed using academic performance metrics like grades, test scores, or general subject achievement. Academic success, according to researchers, is a multifaceted term influenced by a number of elements, such as: Previous academic achievement, learning environment, motivation, psychological characteristics, and socioeconomic status (Thiele et al., 2014). Academic achievement in technical



education is frequently evaluated using: ongoing evaluation, hands-on assessments, Project work and written exams Teachers can identify students who might want extra assistance and create interventions that improve learning outcomes by using academic success prediction.

The degree of curiosity, zeal, and involvement that students exhibit toward a specific topic or activity is referred to as student interest. In education, interest is regarded as a crucial motivator since it affects: Students' readiness to learn, their focus in class, perseverance in resolving issues, Total academic success Expectancy-value theory states that students' expectations of success and the importance they place on learning activities have an impact on their academic achievement. Students are more likely to put in effort and perform better academically when they believe a subject is worthwhile or engaging. Practical exercises, hands-on experimentation, real-world problem solving, and exposure to technological tools are all ways that technical education can spark interest. Research consistently makes a distinction between individual interest, which is a deep-seated desire for a subject, and situational interest, which is sparked by a particular enjoyable action. Individual interest is a more reliable indicator of long-term success in technical education. Interest, according to Hidi and Renninger (2006), is a psychological state that eventually results in enhanced focus, attention, and sustained engagement with content. Students with strong individual interest are more likely to persevere through challenging manual tasks in disciplines like metalworking or woodworking than those who are only motivated by grades (Zambuk, 2021).

### **Correlation Between Interest and Performance**

A substantial amount of the variation in academic grades can be explained by interest, according to empirical research. About 57% of academic accomplishment scores in technical-science topics are predicted by interest, according to a study by Amelink (2012). Higher proficiency is shown by students who believe there is a clear connection between their current technical education and their future job ambitions (career interest). According to Alhassan et al. (2025), highly motivated students in Northern Nigeria performed better because they saw workshops as a means of achieving professional expertise rather than merely fulfilling academic requirements. Although workshops and textbooks are essential, student interest frequently serves as the "engine" that makes

use of these resources. According to Dumbiri and Nwadiani (2020), the availability of instructional materials alone was not as good a predictor of success in Vocational and Technical Education (VTE) as personal variables, particularly self-motivation and interest. On the other hand, because they lack the will to participate in repeated practical exercises, students who exhibit "technical apathy" or poor interest have far greater failure rates—up to 40% higher in certain situations (RSIS International, 2023). In particular, the study aimed to investigate:

I. The connection between secondary school male students' test anxiety and academic achievement in mathematics in Delta State.

2. Does the academic performance of male secondary school pupils in Delta State with high and low test anxiety levels differ?

### **Statement of the Problem**

Despite efforts by the federal and state governments to improve students' acquisition of skills, secondary school pupils consistently do poorly in technical education. This low student performance in technical education has been linked to a number of variables, including a lack of classroom space, a dearth of qualified technical education teachers, student learning capacities, and others. This could be due to the students' distaste, anxiety, or hatred of technical education. For a variety of reasons, many secondary school students choose not to study or attend technical education classes. Their performance in technical education suffers as a result of their inadequate preparation for exams.

### **Research Questions**

The following research questions guided the study:

1. Is there a connection between Technical education interest and secondary school students' academic performance in Technical education?
2. Is there a difference between the academic performances of secondary school students with high and low interest levels in Technical education?

### **Hypotheses**

The following hypotheses were tested at 0.05 level of significance:

1. There is no significant connection between Technical education interest and secondary school students' academic performance in Technical education.
2. There is no significant difference between the academic performances of secondary school



students with high and low interest levels in Technical education.

## II. Method

In this study, the correlation survey design was used. The 1000 senior secondary two (SS 2) students enrolled in technical education programs at 24 government secondary schools in Ethiopia East made up the study's population. Using the basic random approach, 500 senior secondary school pupils were selected from the 24 secondary schools two (SS2). Students' interest in technical education is gauged by the Student Interest Questionnaire (SIQ). was the tool utilized to collect information. Students' success in technical education was assessed using Academic Achievement Records,

which were derived from their exam results in technical topics. The tool was validated by three experts. The SIQ was administered to a comparable sample of 120 Ethiopian West secondary school students who were not part of the study. Cronbach alpha statistics were used to assess the reliability of the (SIQ) items, and the alpha coefficient value was 0.70. The data was analyzed using a Pearson product moment correlation. The null hypotheses were tested using the relationship analysis t-test.

## III. RESULTS

Research Question 1:

Is there a connection between Technical education interest and secondary school students' academic performance in Technical education?

**Table 1: Pearson product moment statistics showing relationship between Technical education interest and secondary school students' academic performance in Technical education**

Variable	N	R	r <sup>2</sup>	r <sup>2</sup> %	sig(2-tail)
student's interes-academic performance	500	-0.054	0.0029	0.29	0.280

The statistical information presented in Table 1 provides a detailed examination of the connection between academic achievement and student interest in technical education. The following analysis explains the relationship based on the sample of N = 500 students. 500 secondary school pupils participated in the analysis. Students' interest in technical education and their academic achievement had a Pearson correlation coefficient (r) of -0.054. The findings show a very modest negative relationship between academic achievement and student interest. An increase in interest does not always translate into higher academic marks for this particular group, according to statistics, since the r value is so near to zero. To comprehend the predictive capacity of interest, this value is essential. It reveals that only 0.29% of the variation in academic achievement can be explained by student interest. This indicates that 99.71% of the variables influencing students' technical education grades—such as prior ability, workshop facilities, and the quality of the instruction—do not correspond to their stated interest levels. There is a very slight negative association between students' interest and academic achievement in technical education, as indicated by the correlation coefficient of -0.054. This indicates that while there is a minor correlation between interest and performance, it is

very weak and negative. Only over 0.29% of the variation in academic performance in technical education can be explained by students' interest, according to the coefficient of determination (r<sup>2</sup>) of 0.0029. This implies that there is minimal correlation between students' interest and their academic progress in the topic.

**Hypothesis One:** There is no significant connection between Technical education interest and secondary school students' academic performance in Technical education.

The significant value (p = 0.280) in Table 1 is higher than the standard alpha threshold of 0.05. This suggests that there is no statistically significant correlation between students' interest and academic achievement. Consequently, the outcome suggests that among the sample under study, students' interest in technical education is not a major predictor of their academic success in the topic. The null hypothesis is upheld since the p-value (0.280) is far higher than the conventional alpha threshold of 0.05, indicating that the association is statistically non-significant.

Research question 2

Is there a difference between the academic performances of secondary school students with high and low interest levels in Technical education?



**Table 2: Independent t-test analysis of students' interest levels of Technical education, percentages and Technical education academic performance (N = 500)**

Levels	N	Percentage	t-value	P-value
High Interest	350	70	4.65	0.000
Low Interest	150	30		
Total	500	100		

A comparison of interest levels among a sample of 500 respondents is shown in Table 2. High Interest and Low Interest are two separate categories into which the data is divided. While a lesser percentage of participants (30%, n=150) show poor interest, the vast majority of participants (70%, n=350) exhibit strong curiosity. This suggests that the sampled population's distribution is skewed toward positive engagement.

**Hypothesis Two:** There is no significant difference between the academic performances of secondary school students with high and low interest levels in Technical education.

The computed t-value in Table 2 is 4.65, and the associated p-value is 0.000. The null hypothesis is rejected because the p-value ( $p < 0.05$ ) is substantially lower than the traditional alpha threshold of 0.05. The high-interest and low-interest groups differ statistically significantly. The t-value's size of 4.65 further demonstrates that the observed variation is not the result of chance but rather reflects a significant difference in the individuals' degrees of interest.

#### IV. Discussion of Findings

The results show that the respondents have a strong tendency toward high interest. The statistical significance ( $t=4.65, p < 0.000$ ) indicates that the majority of the sample is affected by the educational, environmental, or psychological elements that are generating attention in this context. High interest is acknowledged as a crucial predictor of academic success and cognitive persistence in current educational studies. Interest is a potent motivating factor that bridges the gap between initial engagement and long-term mastery, according to recent research by Harackiewicz and Priniski (2018). The fact that 70% of people are in the high-interest category points to a conducive atmosphere for accomplishing the particular goals related to the research topic. The difference between the two groups, however, suggests that even though the overall trend is positive, a significant 30% of the population still shows little interest. Renninger and Hidi (2020) state that in order to avoid academic withdrawal, people with low interest frequently need "triggered situational interest" and external

scaffolding. These two groups are distinct populations with different educational needs, as indicated by the substantial t-value.

This outcome is consistent with the Self-Determination Theory, which holds that people's intrinsic interest greatly improves when their fundamental psychological requirements for competence and autonomy are satisfied (Ryan & Deci, 2020). The high proportion of interested responders would suggest that these demands are adequately met by the current curriculum or environment. On the other hand, the "Low Interest" group can be facing obstacles to independence or a lack of perceived significance, which calls for focused efforts to improve their involvement (Wigfield et al., 2021).

The data indicates that there is no statistically significant relationship between this cohort's academic achievement and interest in technical education. When compared to more general models of education, this result is a little unexpected. Hidi and Renninger (2006), for example, contend that interest usually encourages the perseverance required to complete difficult tasks. Your evidence, however, is more in line with research indicating that systemic obstacles cannot be overcome by interest alone in real-world, high-stakes settings, such as Nigerian technical colleges.

According to Okwelle and Agwi (2018), if there are no practical workshop tools or if the teaching strategies are only theoretical, even motivated students may perform poorly. The small  $r^2$  score (0.29%) indicates that while "performance" is being repressed by other factors, "interest" may be high. According to Dumbiri and Nwadiani (2020), aptitude and psychomotor skills frequently take precedence over "liking" the subject in technical education. Even though a student has a strong interest in electronics, they might not have the physical resources or mathematical background necessary to do well on tests. Additionally, despite its weakness, the correlation's negative direction ( $-0.054$ ) may indicate that some students with high interest are "frustrated" by the curriculum, while



those with lower interest may be succeeding merely through rote memorization or outside pressure (Zambuk, 2021).

The study's conclusions show that there is no meaningful connection between students' academic achievement and their interest in technical education. The outcome implies that interest may not be a reliable indicator of academic performance in this specific setting, despite the fact that interest is frequently seen as a significant motivating factor in learning. This result runs counter to a number of research that show that students' curiosity has a favorable impact on their academic performance. For example, studies show that when students become interested in a subject, they are more likely to put in more effort, engage in learning activities, and perform better academically (Hidi & Renninger, 2006). Interest increases motivation, which encourages more in-depth involvement with academic assignments.

In a similar vein, educational psychologists contend that students who are enthusiastic about a subject are more likely to stick with difficult assignments and improve their academic performance (Schiefele, 2009). Interest keeps students' focus, enhances their understanding, and motivates them to devote more time to their studies. However, the current findings imply that factors other than interest alone may have a greater impact on students' academic achievement in technical education. These elements could include things like the caliber of instruction, the accessibility of workshop supplies, the students' past knowledge, the learning environment, and their study habits.

According to research on academic accomplishment, environmental, psychological, and cognitive factors all have an impact on students' performance rather than just one (Alyahyan & Düşteğör, 2020). Technical education necessitates practical skills and hands-on competency, which may rely more on instructional resources and practical exposure than on curiosity alone. This could be another reason for the limited association found in this study. Additionally, students may show an interest in technical education but lack the resources, direction, or assistance needed to turn that enthusiasm into better academic achievement. Even if students are engaged in the subject, they may find it difficult to perform well in learning environments that lack sufficient labs, tools, and equipment.

## V. Conclusion

This study looked at how secondary school students' academic success in technical education is predicted by their level of interest. The results show that academic achievement in technical areas is significantly influenced by student interest. Strong enthusiasm in technical education increases the likelihood that students will participate actively in class activities and perform well academically. Thus, in order to enhance academic performance and increase involvement in technical jobs, educational stakeholders should put methods into place that stimulate students' interest in technical courses..

## References

- [1]. Akomolafe, M. J., Ogunmakin, A. O., & Fasooto, G. M. (2013). The role of academic self-efficacy, academic motivation and academic self-concept in predicting secondary school students' academic performance. *Journal of Educational and Social Research*.
- [2]. Alhassan, M., et al. (2025). *Correlation Between Academic Motivation and Technical Education Performance Among Secondary School Students*. ISRG Journal of Arts, Humanities and Social Sciences, 10(4).
- [3]. Alyahyan, E., & Düşteğör, D. (2020). Predicting academic success in higher education: Literature review and best practices. *International Journal of Educational Technology in Higher Education*, 17(3).
- [4]. Amelink, C. T. (2012). *Interest as a Predictor of Academic Achievement of Secondary School Students in Physics*. British Journal of Education, Learning and Development Psychology, 3(3), 1-9.
- [5]. Atkinson, J. W., & Eccles, J. (Expectancy-Value Theory). Achievement motivation and learning outcomes.
- [6]. Dumbiri, N., & Nwadiani, M. (2020). *Individual Factors as Predictors of Success in Vocational and Technical Education*. Journal of Technical Education Research.
- [7]. Harackiewicz, J. M., & Priniski, S. J. (2018). Improving student outcomes in higher education: The science of targeted interventions. *Annual Review of Psychology*, 69, 409-435.
- [8]. Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist*, 41(2), 111-127.



- [9]. Okafor, O. S. (2020). Interest as predictor of academic achievement of secondary school students in physics. *British Journal of Education, Learning and Development Psychology*.
- [10]. Okwelle, P. C., & Agwi, C. U. (2018). *Intrinsic Motivation and Task Mastery in Technical Vocational Education*.
- [11]. Renninger, K. A., & Hidi, S. E. (2020). *The Power of Interest for Motivation and Learning*. Routledge.
- [12]. Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, and cognitive consequences. *Contemporary Educational Psychology*, 61, 101860.
- [13]. RSIS International. (2023). *Attitudes and Technical Apathy: A Study of Nigerian Secondary School Learners*.
- [14]. Schiefele, U. (2009). Situational and individual interest. In K. R. Wentzel & A. Wigfield (Eds.), *Handbook of motivation at school*. Routledge.
- [15]. Thiele, T., Singleton, A., Pope, D., & Stanistreet, D. (2016). Predicting students' academic performance based on school and socio-demographic characteristics. *Studies in Higher Education*, 41(8), 1424–1446.
- [16]. Wigfield, A., Muenks, K., & Eccles, J. S. (2021). Achievement motivation: What we know and where we are going. *Annual Review of Developmental Psychology*, 3, 87–111.
- [17]. Zambuk, A. S. (2021). *Motivation and Performance in Technical Mini-Courses: A Case Study*.
- [18]. Zhao, T., & Perez-Felkner, L. (2022). Perceived abilities or academic interests? Longitudinal high school science and mathematics effects on postsecondary STEM outcomes. *International Journal of STEM Education*.