International Journal of Multidisciplinary Research and Publications
ISSN (Online): 2581-6187

Interest-Based Project on Elevating Students' Cognitive Engagement and Performance

Kristine Delos Ama Tobias
Laguna State Polytechnic University Sta. Cruz Laguna 4009 PHILIPPINES
Email address: julierosemendoza002@gmail.com

Abstract*—This study investigates the effect between the implementation of the Interest-Based Project (IBP) and students' cognitive engagement and performance in science. Grounded in learner-centered education, the study emphasizes the importance of aligning instructional strategies with students' individual interests to enhance meaningful learning experiences. The objectives of this research were to determine the level of student participation and performance in Interest-Based Projects, the relationship between these projects and student engagement, and the impact of engagement on student performance. The study used a quantitative, descriptive, correlational research design to assess variable levels and the relationship between the variables. A The purposive sampling technique was used to choose Grade 11 students studying science in the 2025 to 2026 school year. A researcher-made survey questionnaire was used to collect data, along with performance-based assessments validated by experts for reliability and content validity. A five-point Likert scale was used for rating the level of IBP implementation and students' cognitive engagement. The mean and standard deviation were utilized as statistical methods for describing the IBP implementation levels, cognitive engagement, and academic performance levels. Pearson r correlation analysis and regression analysis were performed to determine the significant relationship between PIBP and students' cognitive engagement and performance in science. Findings reveal that the Interest-Based Project was highly utilized across all components. Students demonstrated a high level of cognitive engagement, particularly in attention, focus, memory, recall, and reasoning. Moreover, students' performance in science is found to be very satisfactory. However, results indicate no significant relationship between the implementation of IBP and students' cognitive engagement, suggesting that engagement may be influenced by other factors such as motivation and teaching strategies. Similarly, no overall significant effect is found between IBP and students' performance in science, although project development and reflection and assessment show significant effects.*

***Keywords*—** *Interest-Based Project (IBP), Cognitive Engagement, Science Performance, Learner-Centered Education and Correlational Research Design.*

I. INTRODUCTION

Education has increasingly shifted toward learner-centered approaches that recognize the individuality of students and their diverse learning preferences. In modern educational systems, the need for a personalized approach that respects each student's unique learning style, background, and preferences has become increasingly important.

Students develop learning experiences by making a series of personal choices. They might decide how to discover, process, and organize information. They might choose what to create to demonstrate learning and the presentation format. Segar (2023) stated that student-led interest-based learning is the process of learners developing and leading their own learning experiences that are designed around their interests, passions, values, culture, and more.

In addition, interest-based learning is essential for a variety of reasons. In a nutshell, students are more involved and dedicated to the experience when they see significance and purpose in their work and in what they are learning. Wolking (2018) personalized learning enables students to access and engage with content more effectively during project-based learning activities. Since learners have varying needs and approaches in achieving project goals, personalized learning allows teachers to address these individual differences while guiding students toward the creation of authentic outputs.

In connection with this, because students get to explore their own interests, they will become naturally engaged and are, therefore, intrinsically motivated to learn. This cuts down on frustrating classroom management issues and further develops students' cognitive engagement.

The cognitive engagement of students is defined by how motivated they are to learn by their level of investment and interest in academic and non-academic learning. These factors also include how students set goals, how students view learning as being relevant to them personally, the amount of effort they put into learning, and whether they use self-regulated learning strategies. Cognitive engagement helps to determine the extent to which students engage academically, as well as behaviorally. Students who have higher levels of cognitive engagement have higher levels of engagement within each of the academic or behavioral categories listed above, and thus, are more likely to regularly attend school, complete course requirements/earn credits and achieve academically. (Phelps, 2020)

Moreover, academic performance pertains to the degree of accomplishment students reach after finishing a course or subject in an educational institution. It reflects students' learning in different academic areas and is commonly evaluated through formative and summative assessments (Kumar and Tankha, 2021). When instructions are tailored to individual interests, students are more likely to sustain attention, exert effort, and achieve higher levels of performance across cognitive and practical domains.

Thus, implementing a Personalized Interest-Based Project aims to elevate both cognitive engagement and academic performance by making learning more relevant, motivating, and intellectually stimulating. This study explores how integrating students' interests into project-based learning can

Kristine Delos Ama Tobias, "Interest-Based Project on Elevating Students' Cognitive Engagement and Performance," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 9, Issue 1, pp. 302-310, 2026.

enhance their engagement with academic content and lead to improved educational outcomes.

1.1 Statement of the Problem

Problem/s which were addressed by the research

This study aimed to identify the relationship of the Personalized Interest-Based Project on elevating students' cognitive engagement and performance in science.

Specifically, this study sought to answer the following questions:

1. What is the level of the Interest-Based Project in terms of:
   1.1 Interest Identification;
   1.2 Topic Selection;
   1.3 Planning and Design;
   1.4 Project Development; and
   1.5 Reflection and Assessment?
2. What is the level of students' cognitive engagement in science in terms of:
   2.1 Attention;
   2.2 Focus;
   2.3 Memory;
   2.4 Recall; and
   2.5 Reasoning?
3. What is the level of students' performance in science in terms of:
   3.1 Performance Task?
4. Is there a significant relationship between the level of Interest-Based Project and students' cognitive engagement?
5. Is there a significant effect on the level of Interest-Based Project and students' performance in science?

II. Methodology

The study used a quantitative, descriptive, correlational research design to assess variable levels and the relationship between the variables. A The purposive sampling technique was used to choose Grade 11 students studying science in the 2025 to 2026 school year. A researcher-made survey questionnaire was used to collect data, along with performance-based assessments validated by experts for reliability and content validity. A five-point Likert scale was used for rating the level of IBP implementation and students' cognitive engagement. The mean and standard deviation were utilized as statistical methods for describing the IBP implementation levels, cognitive engagement, and academic performance levels. Pearson r correlation analysis and regression analysis were performed to determine the significant relationship between PIBP and students' cognitive engagement and performance in science.

III. Results and Discussion

This part is dedicated to the reporting, analyzing, and interpreting of the data that was gathered in response to the sub-problems associated with the principal problem of this research. It discusses the level of implementation of the Interest-Based Project, students' cognitive engagement, and their performance in science.

Level of Using the Interest-Based Project

In the study conducted, the level of using the Interest-Based Project refers to the five key components: Interest Identification, Topic Selection, Planning and Design, Project Development, and Reflection and Assessment. These components were examined to determine how effectively science teachers implement the project and how it supports students in exploring personal interests, applying science concepts, and developing skills through meaningful, hands-on activities.

The level of using the Interest-Based Project is revealed in the following tables, which show the statements, mean scores, standard deviations, remarks, and verbal interpretations. The results highlight students' perceptions of how teachers facilitate project activities and provide guidance throughout each stage of the project. By analyzing these findings, this study seeks to identify strengths and areas for improvement in implementing interest-based strategies that enhance student learning and engagement.

Table 1 presents the level of using the Interest-Based Project in terms of Interest Identification.

Table 1. Level of Using the Interest-Based Project in terms of Interest Identification

Statement In identifying students' personal interests related to science learning, my science teacher…	Mean	SD	Remarks
…asks students about topics they like before giving projects.	4.99	0.11	Strongly Agree
…observes how students participate in activities they enjoy.	4.86	0.35	Strongly Agree
…gathers information about students' hobbies and interests.	4.90	0.31	Agree
…reviews students' past performance to find their interests.	4.98	0.15	Agree
…checks students' excitement when working on interest-related tasks.	4.85	0.36	Strongly Agree
Weighted Mean	4.91		
SD	0.28		
Verbal Interpretation	Highly Utilized		

As reflected, the indicators reveal that most practices were rated Strongly Agree, particularly in asking students about their preferred topics with a mean of 4.99, reviewing student's past performance with a mean of 4.98, observing participation in enjoyable activities with a mean of 4.86, and checking students' excitement during tasks with a mean of 4.85. These high ratings imply that teachers are highly attentive to both students expressed and observed interests.

However, the indicator on gathering information about student's hobbies and interests, which has a mean of 4.90, was rated slightly lower and interpreted as Agree. Although still high, this suggests that this particular practice is less consistently applied compared to the others. It may indicate that while teachers often rely on direct classroom observations and interactions, there is relatively less emphasis on systematically collecting background information about students' personal interests outside academic tasks.

According to the data collected by the teacher-researcher to measure the use of the Interest-Based Project (IBP) in terms

Kristine Delos Ama Tobias, "Interest-Based Project on Elevating Students' Cognitive Engagement and Performance," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 9, Issue 1, pp. 302-310, 2026.

of interest (interest-identification), the overall weighted mean was 4.91 with a standard deviation of 0.28. Based on these results, students felt that their teacher used interest identification strategies before starting an IBP consistently.

Students have stated that their science teachers use a learner-centered approach to recognize the distinctiveness of each student. By consistently using the students' interests in planning projects, teachers are able to develop a more appropriate and valuable learning experience for students. This will enhance students' willingness to learn and help connect with science concepts that they already have experience with and enjoy. Moreover, by identifying their students' interests at the outset of an IBP, instructors may design more tailored and relevant activities for them, which could enhance their motivation and participation during the course of their learning. This provides more effective and purposeful instruction of science to students.

The results indicate that interest identification is a well-established practice in science classes. Teachers make deliberate efforts to align projects with students' interests, which likely enhances engagement, motivation, and meaningful learning experiences.

Table 2 illustrates the level of using the Interest-Based Project in terms of Topic Selection.

Table 2. Level of Using the Interest-Based Project in terms of Topic Selection

Statement In allowing students to choose science project topics based on their interests, my science teacher…	Mean	SD	Remarks
…offers different topic choices based on students' interests.	4.98	0.15	Strongly Agree
…guides students in deciding which topic to choose.	4.79	0.41	Strongly Agree
…helps students check if the topic is possible with available resources.	4.98	0.15	Strongly Agree
…connects chosen topics to the lesson objectives.	4.98	0.15	Strongly Agree
…ensures the topic matches what students already know.	4.84	0.37	Strongly Agree
Weighted Mean	4.91		
SD	0.28		
Verbal Interpretation	Highly Utilized		

As presented in the data, students strongly agree that their science teacher allows them to choose project topics based on their interests. Teachers offer different topic choices aligned with students' preferences and guide them in deciding which topic to select. Students determine whether the chosen topic is feasible given the available resources. Furthermore, teachers ensure that selected topics are connected to the lesson objectives and match students' prior knowledge. These practices demonstrate that teachers provide both freedom and guidance in topic selection to ensure meaningful and achievable project work.

With a weighted mean of 4.91 (standard deviation of 0.28), student knowledge regarding using Interest Based Projects for selecting topics was highly used. Students agreed at large that their teachers consistently implement strategies to assist students' choice when selecting an interest-based project topic. The findings show that teachers are able to effectively balance both student choice and instructional guidance during the topic selection of a science project. By aligning students' interests with lesson objectives and available resources, teachers promote engagement, relevance, and successful project completion.

Table 3 illustrates the level of using the Interest-Based Project in terms of Planning and Design.

Table 3. Level of Using the Interest-Based Project in terms of Planning and Design

Statement In guiding students in planning and designing their science projects, my science teacher…	Mean	SD	Remarks
…explains the goals and steps of the project.	4.97	0.18	Strongly Agree
…organizes project tasks in the correct order.	4.87	0.33	Strongly Agree
…selects proper tools and materials for the project.	4.87	0.33	Agree
…sets clear and realistic deadlines.	4.87	0.33	Strongly Agree
…encourages creative ideas in project design.	4.99	0.11	Strongly Agree
Weighted Mean	4.91		
SD	0.28		
Verbal Interpretation	Highly Utilized		

As shown in the table, all indicators received high ratings, with most falling under "Strongly Agree." In particular, encouraging creative ideas in project design and explaining the goals and steps of the project obtained the highest ratings, indicating that teachers place strong emphasis on clarity of direction and fostering student creativity. Similarly, organizing project tasks in the correct order and setting clear and realistic deadlines were also rated "Strongly Agree," showing that structured guidance is consistently practiced.

However, the indicator on selecting proper tools and materials for the project was rated "Agree," which is slightly lower compared to the others. This implies that while teachers generally assist students in this aspect, there may still be some variability or room for improvement in ensuring that appropriate resources are consistently identified and utilized.

The level of using the Interest-Based Project in terms of Planning and Design obtained a weighted mean of 4.91 with a standard deviation of 0.28, verbally interpreted as Highly Utilized. This indicates strong agreement among students that their teachers consistently apply effective planning and design strategies in implementing interest-based projects.

The results indicate that teachers provide clear direction and structured support while encouraging creativity in project planning and design. This approach helps students organize their work efficiently and develop well-prepared and innovative science projects.

Furthermore, the high level of planning and design support reflects the important role of teachers in scaffolding students' project development. By providing clear instructions, structured steps, and appropriate deadlines, teachers help reduce students' confusion and improve task organization. At the same time, encouraging creativity allows students to take ownership of their work and apply their own ideas in

Kristine Delos Ama Tobias, "Interest-Based Project on Elevating Students' Cognitive Engagement and Performance," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 9, Issue 1, pp. 302-310, 2026.

designing science projects. This equilibrium between structure and creativity implies that students are given the chance to think critically and creatively in addition to being led through task completion. As a result, students are more likely to produce meaningful and well-organized outputs in science learning.

Table 4 illustrates the level of using the Interest-Based Project in terms of Project Development.

Table 4. Level of Using the Interest-Based Project in terms of Project Development

Statement In carrying out science project activities, my science teacher…	Mean	SD	Remarks
…implements the planned activities according to the project design.	4.86	0.35	Strongly Agree
…applies science knowledge and skills to the project.	4.98	0.15	Strongly Agree
…checks students' progress regularly.	4.86	0.35	Agree
…uses available resources effectively.	4.99	0.11	Strongly Agree
…adjusts strategies when problems occur.	4.92	0.27	Agree
Weighted Mean	4.92		
SD	0.27		
Verbal Interpretation	Highly Utilized		

As illustrated, all indicators received high ratings, with the majority falling under "Strongly Agree." In particular, using available resources effectively and applying science knowledge and skills to the project obtained the highest ratings, indicating that teachers are highly competent in facilitating practical application and maximizing available materials during project execution. Likewise, implementing the planned activities according to the project design was also rated "Strongly Agree," showing that teachers ensure that project plans are properly carried out.

However, checking students' progress regularly and adjusting strategies when problems occur were rated "Agree," which are slightly lower compared to the other indicators. This implies that while teachers generally monitor student progress and adapt to challenges, there may be some inconsistencies in consistently tracking student performance and modifying strategies when needed.

The level of using the Interest-Based Project in terms of Project Development obtained a weighted mean of 4.92 with a standard deviation of 0.27, verbally interpreted as Highly Utilized. This indicates strong agreement among students that their teachers consistently and effectively manage project implementation.

Overall, the findings suggest that teachers play a crucial role in sustaining structured and responsive learning experiences through continuous monitoring, resource management, and instructional flexibility. Such practices ensure that students remain guided while still engaging in meaningful, hands-on scientific tasks. This also implies that project development is not only task completion-oriented but also learning-centered, where students are gradually supported in applying scientific concepts in real situations.

Table 5 illustrates the level of using the Interest-Based Project in terms of Reflection and Assessment.

Table 5. Level of Using the Interest-Based Project in terms of Reflection and Assessment

Statement In assessing and reflecting on students' science projects, my science teacher…	Mean	SD	Remarks
…evaluates the overall effectiveness of the completed project.	4.86	0.35	Strongly Agree
…analyzes strengths and weaknesses in the project process.	4.87	0.33	Strongly Agree
…identifies lessons learned from the project experience.	4.92	0.27	Strongly Agree
…checks the quality and accuracy of the output.	4.97	0.18	Strongly Agree
…gives helpful feedback for improvement.	4.94	0.23	Strongly Agree
Weighted Mean	4.91		
SD	0.28		
Verbal Interpretation	Highly Utilized		

As revealed, all indicators were rated Strongly Agree, which implies that the teacher consistently integrates reflection and assessment practices in the implementation of science projects. This indicates that the teacher ensures the quality and accuracy of students' outputs, provides helpful feedback for improvement, and facilitates the identification of lessons learned from the project experience.

Furthermore, the teacher also engages in evaluating the overall effectiveness of the completed project and analyzing its strengths and weaknesses, showing a comprehensive approach to assessment.

The level of using the Interest-Based Project in terms of Reflection and Assessment obtained a weighted mean of 4.91 with a standard deviation of 0.28, verbally interpreted as Highly Utilized. This indicates strong agreement among students that their teachers consistently implement effective reflection and assessment strategies in science projects.

The results indicate that teachers emphasize meaningful evaluation and constructive feedback in interest-based projects. Through systematic assessment and reflection, students are guided to recognize their strengths, improve their weaknesses, and enhance the quality of their learning experiences.

These findings further suggest that effective reflection and assessment practices in interest-based projects do not only serve as evaluation tools but also function as meaningful learning mechanisms that strengthen students' engagement and understanding. When teachers consistently provide feedback, identify strengths and weaknesses, and evaluate outputs critically, students are guided toward deeper learning and self-awareness. This aligns with the idea that assessment should go beyond grading and should instead support learning progression through reflective practice.

Level of Students' Cognitive Engagement

In this study, the level of Students' Cognitive Engagement refers to five key dimensions: Attention, Focus, Memory, Recall, and Reasoning.

These dimensions were assessed to determine how actively and effectively students participate in science project activities, process information, apply learned concepts, and solve problems. Cognitive engagement reflects students'

Kristine Delos Ama Tobias, "Interest-Based Project on Elevating Students' Cognitive Engagement and Performance," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 9, Issue 1, pp. 302-310, 2026.

mental investment in learning, their ability to maintain focus, recall information, and think critically while working on science projects.

In addition, cognitive engagement in learning significantly affects student success in the learning process. Students who are cognitively engaged tend to connect new knowledge to what they already know, continue working on difficult assignments, and comprehend scientific concepts better than those who have not been cognitively engaged. Additionally, students' cognitive engagement allows them to sustain their ability to focus, retrieve relevant information, and reason, and will greatly enhance their success when completing scientific projects. Therefore, students' cognitive engagement demonstrates the extent of the meaningfulness that students receive from input from the teacher.

The level of students' cognitive engagement is detailed in the table of Student Cognitive Engagement which includes response statements, averages, standard deviations, comments, and verbal interpretations of students' cognitive engagement level.

The information contained in these tables will provide further insight into the ways students interact with learning tasks; how they manage attention and focus; how they use prior knowledge; how they demonstrate reasoning skills; and how they produce academic outputs through performance; during participation in the Project activities. The results will provide the basis for the development of strategies to enhance students' engagement, motivation, and overall effectiveness in learning. Furthermore, the findings may help teachers design more learner-centered activities that address the diverse interests and needs of students. The study may also contribute to the improvement of classroom practices by identifying approaches that encourage active participation and meaningful learning experiences. In addition, the results can serve as a useful reference for future researchers who intend to conduct related studies on student engagement and performance.

Table 6 illustrates the level of students' cognitive engagement in terms of Attention.

Table 6. Level of Students' Cognitive Engagement in terms of Attention

Statement During science project discussions and activities, I…	Mean	SD
…pay attention during discussions.	4.87	0.33
…stay focused while doing project tasks.	4.87	0.33
…listen carefully to instructions.	4.98	0.15
…avoid distractions while working.	4.87	0.33
…follow details and guidelines carefully during project implementation.	4.95	0.21
Weighted Mean	4.91	
SD	0.29	
Verbal Interpretation	Engaged	

As observed, the indicator "listen carefully to instructions" obtained the highest rating, interpreted as Strongly Agree, followed by "follow details and guidelines carefully during project implementation," also interpreted as Strongly Agree. The indicators "pay attention during discussions" and "stay focused while doing project tasks" were both interpreted as Strongly Agree. Meanwhile, "avoid distractions while working" was interpreted as Agree. Overall, the results imply a very high level of attentional engagement among students during science project activities.

The level of students' cognitive engagement in terms of Attention obtained a weighted mean of 4.91 with a standard deviation of 0.29, verbally interpreted as Engaged. This indicates that students consistently demonstrate attentiveness and focus during science project activities.

The results suggest that students are cognitively engaged in terms of attention when participating in interest-based science projects. They are more effective at participating and successfully completing projects because they can concentrate, follow directions, and steer clear of distractions.

Table 7 illustrates the level of students' cognitive engagement in terms of Focus.

Table 7. Level of Students' Cognitive Engagement in terms of Focus

Statement While working on science project tasks, I…	Mean	SD	Remarks
…concentrate on my tasks.	4.98	0.15	Strongly Agree
…continue working even when tasks are difficult.	4.86	0.35	Strongly Agree
…prioritize project work over unrelated activities during study time.	4.90	0.31	Strongly Agree
…focus when studying project information.	4.92	0.27	Strongly Agree
…work toward completing project goals.	4.98	0.15	Strongly Agree
Weighted Mean	4.93		
SD	0.26		
Verbal Interpretation	Highly Engaged		

As demonstrated, students perceived that they maintain a high level of focus while working on science project tasks. They strongly agree that they concentrate on their tasks and work toward completing project goals. Students also continue working even when tasks become difficult, showing persistence and determination. Additionally, they prioritize project work over unrelated activities during study time and remain focused when studying project-related information. These responses indicate that students demonstrate sustained concentration and commitment throughout the project process. The level of students' cognitive engagement in terms of Focus obtained a weighted mean of 4.93 with a standard deviation of 0.26, verbally interpreted as Highly Engaged. This indicates that students consistently exhibit strong focus and determination while completing science projects.

The results suggest that students display a high degree of cognitive engagement in terms of focus. Their ability to concentrate, persist through challenges, and prioritize project tasks contributes to the effective completion of their science projects.

Table 8 illustrates the level of students' cognitive engagement in terms of Memory.

As evidenced, students perceived that they effectively use and retain learned science concepts when working on projects. They strongly agree that they use previously learned knowledge to solve problems and remember project instructions accurately. Students also recall relevant facts to support their decisions and retain their understanding of the

Kristine Delos Ama Tobias, "Interest-Based Project on Elevating Students' Cognitive Engagement and Performance," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 9, Issue 1, pp. 302-310, 2026.

topic even after completing the project. Additionally, they are able to connect new ideas with past lessons, demonstrating meaningful learning and knowledge integration. These responses indicate that students actively apply and preserve information throughout the project experience.

Table 8. Level of Students' Cognitive Engagement in terms of Memory

Statement When applying learned science concepts in projects, I…	Mean	SD	Remarks
…use what I learned before to solve problems.	4.98	0.15	Strongly Agree
…remember project instructions.	4.98	0.15	Strongly Agree
…recall facts to support decisions.	4.93	0.25	Strongly Agree
…retain understanding of the topic after the project.	4.90	0.31	Strongly Agree
…connect new ideas with past lessons.	4.85	0.36	Strongly Agree
Weighted Mean	4.93		
SD	0.26		
Verbal Interpretation	Highly Engaged		

The level of students' cognitive engagement in terms of Memory obtained a weighted mean of 4.93 with a standard deviation of 0.26, verbally interpreted as Highly Engaged. This indicates that students strongly retain and apply their learning during and after science project activities.

The results suggest that interest-based projects effectively support students' memory retention and knowledge application. Students are able to recall, connect, and apply learned concepts, contributing to deeper understanding and long-term learning.

Table 9 illustrates the level of students' cognitive engagement in terms of Recall.

Table 9. Level of Students' Cognitive Engagement in terms of Recall

Statement When retrieving previously learned science information for project tasks, I…	Mean	SD	Remarks
…recall key ideas discussed during project planning and execution.	4.91	0.29	Strongly Agree
…recall concepts needed for project tasks.	4.98	0.15	Strongly Agree
…remember examples given by the teacher.	4.98	0.15	Strongly Agree
…recall steps for completing activities.	4.87	0.33	Strongly Agree
…remember feedback received to make necessary project improvements.	4.89	0.32	Strongly Agree
Weighted Mean		4.92	
SD		0.26	
Verbal Interpretation		Highly Engaged	

As displayed, students perceived that they effectively retrieve previously learned science information when performing project tasks. They strongly agree that they recall key ideas discussed during project planning and execution, as well as important concepts needed for completing tasks. Students also remember examples provided by the teacher and recall the necessary steps for carrying out activities. Furthermore, they remember the feedback received and use it to make improvements in their projects. These responses indicate that learners are able to access stored knowledge and apply it appropriately during project implementation.

The level of students' cognitive engagement in terms of Recall obtained a weighted mean of 4.92 with a standard deviation of 0.26, verbally interpreted as Highly Engaged. This indicates that students consistently demonstrate strong recall abilities during science project activities.

The results suggest that students actively retrieve and apply previously learned information when working on projects. Their ability to recall concepts, procedures, examples, and feedback contributes to improved performance and meaningful learning outcomes.

Table 10 illustrates the level of students' cognitive engagement in terms of Reasoning.

Table 10. Level of Students' Cognitive Engagement in terms of Reasoning

Statement When analyzing information and solving problems in science projects, I…	Mean	SD
…analyze information logically to draw conclusions during the project.	4.94	0.23
…use evidence to support decisions.	4.86	0.35
…apply logical thinking when solving problems that arise in the project	4.87	0.33
…explain my choices during the project.	4.98	0.15
…think critically to ensure correct results.	4.97	0.18
Weighted Mean	4.92	
SD	0.26	
Verbal Interpretation	Highly Engaged	

As found in the table, students perceived that they demonstrate strong reasoning skills when analyzing information and solving problems in science projects. They strongly agree that they analyze information logically to draw conclusions and use evidence to support their decisions. Students also apply logical thinking to solve problems that arise during the project, explain their choices, and think critically to ensure accurate results. These responses indicate that students actively engage in higher-order thinking processes to assess information and make informed conclusions throughout project activities.

The level of students' cognitive engagement in terms of Reasoning obtained a weighted mean of 4.92 with a standard deviation of 0.26, verbally interpreted as Highly Engaged. This indicates that students consistently apply logical and higher-order thinking skills during project work.

The results suggest that interest-based science projects foster strong reasoning abilities among students. Their use of logical analysis, evidence, and critical thinking contributes to accurate conclusions, well-supported decisions, and effective problem-solving during projects.

Level of Students' Performance in Science

In this study, the level of Students' Performance in Science refers to their outcomes in performance tasks. Wherein students completed six (6) performance tasks administered weekly to assess their progressive understanding and application of science concepts throughout the grading period. This includes the application of knowledge, skills, and concepts in completing science activities, projects, and

Kristine Delos Ama Tobias, "Interest-Based Project on Elevating Students' Cognitive Engagement and Performance," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 9, Issue 1, pp. 302-310, 2026.

assessments designed to measure understanding and practical competence. Performance in science reflects not only the mastery of content but also the ability to apply learning in meaningful and problem-solving contexts.

The following table provides an overview of the level of student performance in science. The data includes the range, frequency, percentage, mean, standard deviation and verbal interpretation of student performance. This information tells us about the academic performance of students and the effectiveness of their engagement and learning experiences in achieving these results as measured.

Furthermore, the table also presents the distribution of students according to their performance levels, allowing for a clearer understanding of how students performed overall in science. Through the computed statistical measures, the results provide insights into the consistency and variation of students' academic achievement. These findings may also serve as a basis for identifying strengths and areas for improvement in teaching strategies and learning interventions aimed at enhancing student performance.

Table 11 illustrates the level of students' performance in Science.

Table 11. Level of Students' Performance in Science in terms of Performance Task

Range	f	%	Descriptive Equivalent
121 - 150	87	100 %	Outstanding
91 - 120	0	0 %	Very Satisfactory
61 - 90	0	0 %	Satisfactory
31 - 60	0	0 %	Fair
1-30	0	0 %	Needs Improvement
	N = 100	**100%**	
Weighted Mean	23.99		
Standard Deviation	1.27		
Verbal Interpretation	Outstanding		

As shown in the data, all students (100%) scored within the range of 121–150, which is verbally interpreted as Outstanding. No students fell within the lower performance ranges, indicating uniform excellence in science performance among the respondents.

It is essential to highlight that the students were given six (6) performance tasks throughout the grading period. Each performance task was designed with a maximum score of 25 points, depending on the rubric and criteria used in assessment. Thus, the total possible score for all six performance tasks is 150 points (6 × 25 = 150). This explains why the score range for students' performance extends from 1 to 150.

The level of students' performance in Science obtained an overall verbal interpretation of Outstanding, demonstrating that students consistently perform at a high level in their science subjects.

The results indicate that students are highly competent in science, showing mastery of concepts, skills, and project-based learning tasks. Their outstanding performance reflects effective teaching strategies and active student engagement in science activities.

Significant Relationship between the Interest-Based Project and Students' Cognitive Engagement

Due to the increased focus on learner-centered teaching practices in today's education systems, teachers are becoming more interested in using instructional methods that are engaging and motivating for learners. One example of an instructional method that can actively engage students in meaningful ways is to develop projects based on their interests as well as their experience. The belief is that students will be motivated by and willing to put forth greater effort to learn if they are given the chance to explore topics that are relevant and meaningful to them. In the case of science, where abstract ideas and complex processes can often be extremely difficult for students to understand, project-based learning can provide students with an opportunity to see their science education as being meaningful, concrete, and relatable.

The purpose of this portion of the research was to determine if there is a measurable relationship between how well students are able to engage cognitively during a science project-based learning activity based on their level of implementation of an Interest-Based Project. For this study, cognitive engagement was defined as how well a student was able to be "present in the moment" and pay attention, stay focused, remember and recall information, and use reasoning while completing their science project-based learning activities. To analyze the relationship between student cognitive engagement and level of implementation of the Interest-Based Project, the Pearson Correlation Coefficient was used to determine if the way that teachers implemented the project had any measurable impact on how much effort students engaged mentally in learning and how well they utilized higher-order thinking skills.

The analysis shows the Pearson correlation coefficients and significance values for each component of the Interest-Based Project—Interest Identification, Topic Selection, Planning and Design, Project Development, and Reflection and Assessment—against the five dimensions of cognitive engagement. These findings help explain how specific components of the Interest-Based Project influence students' level of cognitive engagement. They also provide valuable insights into the role of personalized and interest-centered activities in enhancing students' thinking skills and learning involvement.

Table 12 describes the relationship between cognitive engagement and interest-based projects for students.

Given this information, the two correlation calculations indicate that the components of an interest-based project (i.e., interest identification, topic selection, planning and design, project development and assessment, and reflection and assessment) show that there is no statistically significant relationship on students' cognitive engagement with respect to attention, focus, memory, recall, and reasoning based on the p-values obtained from testing the correlations, (all p-values ≥ .05) demonstrating that the correlation does not exist.

Based on this data, while many teachers may be implementing interest-based projects regularly, it cannot be concluded that interest-based projects produce any measurable direct effect on students' cognitive engagement as far as their attention, focus, memory, recall, and reasoning are concerned; therefore, it appears that the use of interest-based projects does

Kristine Delos Ama Tobias, "Interest-Based Project on Elevating Students' Cognitive Engagement and Performance," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 9, Issue 1, pp. 302-310, 2026.

not account for the influence of other variables on these aspects of students' cognitive engagement.

Table 12. Significant Relationship between the Interest-Based Project and Students' Cognitive Engagement

Interest-Based Project		Students' Cognitive Engagement				
		A	F	M	R	Reasoning
Interest Identification	Pearson Correlation	0.027	0.115	0.120	0.044	0.044
	Sig. (2-tailed)	0.801	0.288	0.268	0.685	0.684
	N	87	87	87	87	87
Topic Selection	Pearson Correlation	0.048	0.097	0.045	0.019	0.019
	Sig. (2-tailed)	0.657	0.370	0.680	0.862	0.862
	N	87	87	87	87	87
Planning and Design	Pearson Correlation	0.074	0.115	0.064	0.136	0.136
	Sig. (2-tailed)	0.495	0.288	0.556	0.210	0.210
	N	87	87	87	87	87
Project Development	Pearson Correlation	0.011	0.122	0.023	0.051	0.051
	Sig. (2-tailed)	0.916	0.259	0.832	0.638	0.638
	N	87	87	87	87	87
Reflection and Assessment	Pearson Correlation	0.132	0.137	0.087	0.069	0.069
	Sig. (2-tailed)	0.222	0.206	0.425	0.524	0.524
	N	87	87	87	87	87

Significant Effect Between the Interest-Based Project and Students' Performance in Science

This study's interest-based project focuses on interest identification, topic selection, planning, and design, developing and reflecting on a project and assessing its results. At the same time, to measure how well students perform in science, we will look at the performance task. The relationship between the interest-based project and how well students complete science performance tasks is highlighted in Table 13, which lists each variable (i.e., independent, dependent), the t-value, and the p-value for the respondents or subjects in this study.

Table 13 describes the significant relationship effect the interest-based project and students' performance in science.

The significant impact the Interest-Based Projects have on the students' performance in science (In terms of Project Development and Reflection and Assessment) is shown by their p-value.

The p-value shows a significant effect of the Interest-Based Project on the students' performance in science, as $p < 0.05$. Conversely, if the p-value is $p > 0.05$, the Interest-Based Project has no significant effect on the students' performance in science.

They show that there is no significant effect of the Interest-Based Project on the students' performance in science (In terms of Interest Identification, Topic Selection, and Planning and Design) with p-values.

Additionally, the t-value shows a significant effect of the Interest-Based Project on the students' performance in science, as $t > 1.998$. Conversely, if the t-value $t < 1.998$, the Interest-Based Project has no significant effect on the students' performance in science.

Table 13. Significant Relationship Effect the Interest-Based Project and Students' Performance in Science

Interest-Based Project		**Students' Performance in Science**
		Performance Task
Interest Identification	t-value	1.0336
	p-value	0.304
	N	87
Topic Selection	t-value	-0.602
	p-value	0.549
	N	87
Planning and Design	t-value	0.272
	p-value	0.786
	N	87
Project Development	t-value	2.682
	p-value	0.009
	N	87
Reflection and Assessment	t-value	2.888
	p-value	0.004
	N	87

The results show that only Project Development and Reflection and Assessment from the Interest-Based Project had a significant effect on the students' performance in science. This indicates that the students performed better while they were involved in (actively) completing their projects and reflecting on their learning outcomes. Engagement during these stages appears to have improved the students' understanding and application of scientific concepts, which is critical when completing performance tasks. Further, reflection may have allowed the students to evaluate their work, identify their strengths and weaknesses, and reinforce their learning.

In contrast, Interest Identification, Topic Selection, and Planning and Design did not show significant effects on performance. This indicates that while these initial stages may help increase students' interest and guide project direction, they do not directly influence measurable academic outcomes. Therefore, the effectiveness of the Interest-Based Project in improving performance largely depended on how students executed and assessed their work. Overall, the findings emphasize the importance of active participation and reflective practices in enhancing students' science performance.

IV. Conclusion and Recommendations

The results point to the fact that the Interest-Based Project has no significant impact on the academic performance of this research project's students in relation to their overall performance in the Science content area. That is, based on the research as a whole, there is no statistical significance that IBP will be a predictor or influence of a student's academic performance in the Science content area. Although when broken down into components of the interest-based approach, both development of the project and reflection and assessment had an impact on the student's academic performance. This indicates that only some components of the IBP (i.e., components of the IBP) will relate to the enhancement of

Kristine Delos Ama Tobias, "Interest-Based Project on Elevating Students' Cognitive Engagement and Performance," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 9, Issue 1, pp. 302-310, 2026.

student performance in the Science content area; whereas when examined as a whole the constructs of the Interest Based Project have no strong direct correlation to student academic performance in the Science content area.

In addition, they also support the hypothesis that there will be no significant correlation found between the level at which the Interest-Based Project was implemented and the student's academic performance in the Science content area. The overall results of the high degree of project implementation and the overall high degree of student academic performance indicate there was not just one determining or predictive factor for a student's academic performance. Overall, the findings support the potential impact of several variables (e.g., prior knowledge, study habits, instructional support) that would, as a collective, impact student academic performance in the Science content area.

The following are recommendations based on the conclusions:

Curriculum developers may integrate projects based on student interest with other learning strategies that hone reasoning, problem-solving and critical thinking skills for maximum cognitive engagement and academic success.

Schools may offer support and resources to help ensure that projects are implemented effectively, such as providing access to materials or providing teacher training to allow students to conduct project-based learning outside the classroom. This will ensure that projects are meaningful and will support deeper learning.

Teachers may continue using personalized interest-based projects to provide students with continual engagement and academic success; however, teachers should use their existing instructional strategies, like guiding discussions, providing collaborative group work and using scaffolding strategies, to increase cognitive engagement. More work needs to be done to provide students with additional new strategies in the classroom using personalized interest-based projects

Students may actively engage in the planning, decision-making, and reflection processes for their projects. Developing skills for self-directed learning will improve student engagement and academic success.

Future researchers may investigate other factors related to cognitive engagement or science performance, like motivation, peer interaction, and the classroom environment, to provide a more comprehensive understanding of the high-impact learning strategies.

REFERENCE

[1]. Kumar, A., & Tankha, G. (2021). Academic performance and factors influencing student achievement. International Journal of Educational Research and Development, 10(2), 45–52. International Journal of Educational Research and Development.

[2]. Phelps, C. (2020). Student engagement and cognitive engagement in learning. Education Northwest. Education Northwest.

[3]. Segar, S. (2023, January 31). What is student-led interest-based learning and why is it important? Experiential Learning Depot. Experiential Learning Depot.

[4]. Wolking, W. (2018). Personalized learning in project-based learning environments. Edutopia. Edutopia.