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Predictors of Science Performance of Grade Six Pupils in Sablayan North District

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Abstract

Predictors of science performance are either examined alone or focus only on psychosocial factors of the pupils without considering the association of the other core subjects. This study examined the relationship of the learner-centered factors, attitude toward science, pupil engagement in science, and interest toward science, combined with the two core academic subjects, English and Mathematics performance, with Science performance of Grade 6 pupils to identify which among these five factors predicts Science performance. A descriptive-correlational research design was used in this study. The 211 Grade 6 pupils of Sablayan North District enrolled in the School Year 2025-2026 were the respondents of the study selected through proportional stratified random sampling from a population of 432 pupils across five selected schools in the district. The data used in learner-centered factors were gathered and analyzed using survey questionnaires with a 5-point Likert scale, while academic performances were obtained from the advisers' class records and analyzed using the prescribed grading scale of the Department of Education's policy for classroom assessment. Generally, the study revealed that pupils have a positive attitude, a high level of engagement and interest in science, driven by positive perceptions, active participation, and classroom experiences in science class. Although attitude, engagement, and interest toward science are significantly related to science performance, the relationships are weak. The factors that remain remarkably and consistently significant across written works, performance tasks, and quarterly assessments are cognitive attitude, emotional engagement, situational interest, and scientific curiosity, which play an important role in achieving higher performance in science, whereas other factors do not show consistent correlation. On the other hand, Mathematics and English performance have a strong and consistent association with Science performance. The study identified the English performance along with the Mathematics performance as the strongest predictors of Science performance. The findings of the study revealed that acquired numeracy and literacy skills incarnated with the learner are stable long-term skills that can be transferred into a science context and help the students perform at their best.

Keywords: Predictors Of Science Performance, Attitude Toward Science, Pupil Engagement In Science, Interest Toward Science, Mathematics Performance, English Performance

1. Introduction

In today's world, where technology is the main driver of education, science remains a very important subject that helps students prepare for the challenges of the 21st century. Understanding science concepts, the quality of teaching, the learning atmosphere, and the methods used in teaching affects student performance (Discipulo, 2024). Despite its critical role, Filipino learners continue to perform low in science as reflected in the report of international assessments such as the 2019 Trends in International Mathematics and Science Study (TIMSS), and the 2022 Programme for International Student Assessment (TIMSS & PIRLS, 2020; OECD, 2023). These results mark concerning gaps in learners' science competencies and factors that influence science performance in the Philippines basic education system.

Most existing local studies focus on senior high school students or single variables, leaving the grade six band and the combined predictor model unaddressed. For example, a local study indicated that SHS students exposed to augmented reality interventions had a moderate-to-high attitude toward science, however, engagement and interest as mediators were not really investigated (Berame et al., 2022). Similarly, the situation in the case of junior high modular distance learning was found to have a significant correlation between situational interest and engagement (Mallari & Tayag, 2022). There have been no local studies that have focused on the combined learner-centered and academic factors as predictors of science performance at the grade six level.

The study addresses this gap by examining two main factors: learner-centered factors, such as attitude toward science, pupil engagement in science, and interest toward science, and academic factors, such as Mathematics and English performance, as predictors of Science performance. It is necessary to fill this gap through research, therefore, specific interventions can be developed that would improve the scientific literacy and academic success of the learners.

The main purpose of this study is to provide empirical evidence by determining the strongest predictor of science performance by simultaneously considering the learner-centered and academic factors that influence science performance.

The findings of this study contribute to data-driven interventions and policies that may guide teachers, school administrators, and policymakers in providing improved learning opportunities for facilitating science instruction, enhancing foundational literacy and numeracy skills, and designing learner-centered strategies that increase engagement and interest in science.

The main objective of this study was to examine how the five key variables, attitude toward science, pupil engagement in science, interest toward science, Mathematics performance, and English performance, predict Grade VI pupils' overall achievement in the Science subject. The study aims to produce compelling evidence to support data-driven insights and inform the improvement of classroom instructional strategies and specialized and targeted interventions in numeracy and literacy to enhance science performance.

2. Material and methods

2.1 Research Design

The study used a descriptive correlational research design to test the correlation of the attitude toward science, pupil engagement, interest toward science, Mathematics, and English performance with the science performance of grade six learners in the Sablayan North District. This also aimed to uncover the predictors of scientific performance, thus giving a firm ground for the creation of evidence-based strategies to enhance science learning outcomes in Sablayan North District.

2.2 Locale of the Study

This study was conducted in the Sablayan North District, which is one of the area's administrative districts that falls under the Schools Division of Occidental Mindoro. Sablayan, the biggest town of Occidental Mindoro, is in the MIMAROPA Region and is known for its diverse population and the educational sector that keeps growing in terms of population every year. The Sablayan North District is made up of twenty-one (21) public elementary schools that serve urban and rural residents. There are significant disparities in the number of students per class, the quality of facilities, and the availability of learning aids in science across these schools, and this gives rise to the suitability of the district for investigating the determinants of pupils' science performance.

2.3 Respondents of the Study

This study focuses on the 211 Grade VI pupils enrolled during the S.Y. 2025-2026 at the public primary schools of the Sablayan North District, Schools Division of Occidental Mindoro. The individual pupil focus allowed the analysis of the science attitudes, pupil engagement, interest toward science, and their academic achievement in mathematics and English, and how these factors predict their performance in science.

2.4 Sample and Sampling Procedure

In this study, a proportional stratified random sampling method was used to provide a fair representation of pupils from Grade VI in schools located in the district. The complete population was extracted from the enrollment records. The researcher then calculated the proper sample size using Slovin's formula with a 5% margin of error to get a statistically representative sample.

The sample consisted of students who have enrolled in the school year 2025-2026, have finished at least two grading periods in science, and have handed in signed parental consent forms. Students who are present but do not complete the questionnaire or do not answer all parts were not counted in the final sample. This guarantees that the information collected is both of high quality and typical of the population, thus enabling the researcher to make sound conjecture about what predicts science performance in pupils of the Sablayan North District.

2.5 Research Instrument

In this study, three research instruments were used as measurement tools that correspond to the three predictor variables, Attitude toward Science, Pupil Engagement in Science, and Interest toward Science, each of which is derived from ratified and peer-reviewed studies. The psychometric characteristics of these tools, their link to the concepts being measured, and their appropriateness to the grade six-level science in the Philippine educational context are strong points upon which the tools were chosen.

Said et al.'s (2018) Science Affect Factor was adapted and used to measure the attitude toward science. The Classroom Engagement Instrument (CEI), based on Berhanu et al.'s (2025) study, was adapted to measure student engagement in science classes. To gauge students' interest in science, the study used the Science Interest Survey (SIS) by Lamb et al. (2011). The modifications of language and context needed for the validation of the tools were realized to make it compatible with the experiences and cultural context of Filipino learners.

Before the actual data collection, a pilot test was conducted with a small group of students from a non-participating school in the same district to check the clarity, reliability, and cultural appropriateness of the adapted instruments. The final version of the instrument was administered to the selected respondents in person with the help of the class advisers and science teachers during the regular school hours.

The pupils' scores in written works, performance tasks, quarterly assessments, and their quarterly grades in mathematics, English, and science were obtained from the adviser's class record.

2.6 Data Gathering Procedure

The data collection process commenced after securing the approval from the Schools Division Office of Occidental Mindoro, as well as from the school principals and advisers of the participating schools. To ensure compliance with the Department of Education's research ethics policies, the study also obtained ethical approval. A formal request letter to conduct the study was sent to the relevant authorities, followed by a parental consent form for the participation of children under their supervision. Only those who are willing to participate were included in the study.

Once the necessary permissions were obtained, the researcher proceeded with the application of the coherent survey questionnaire with clear instructions and a five-point Likert scale to allow for the consistency of the answers. The researcher personally distributed and retrieved the questionnaires to ensure uniform administration and reduce the possible biases to a minimum. The pupils were given enough time to complete the instrument. In addition, the researcher also collected the academic records in Science, Mathematics, and English, and encoded and treated confidentially as part of the analysis of academic associations, providing deeper insight into possible cross-disciplinary learning influences.

All the performance of the Grade 6 pupils in Mathematics, English, and Science were sourced directly from official class records of the teachers, each was conformed to the components' weights shown in Table 1 as prescribed in DepEd Order No. 8 s. 2015.

Tabe 1. *Component weights of the subjects.*

Components	English	Mathematics	Science
Written Works	30%	40%	40%
Performance Task	50%	40%	40%
Quarterly Assessment	20%	20%	20%

Table 2 showed how the quarterly percentage scores in written works, performance tasks, and quarterly assessment of Mathematics, English, and Science performance were computed under the DepEd grading system. The researcher did not compute raw scores, but only the per-pupil quarterly average of the components' percentage scores. These computed averages were used to obtain the overall mean of each component of academic performance.

Table 2. *Computation of components' percentage score.*

Component	Item	Learner's Raw Score	Highest Possible Score
	W W1	15	20
Written Works	WW2	18	25
	WW3	20	20
TOTAL		53	65
PS of Written Work	**81.54**		
	PT1	15	15
Performance Tasks	PT2	13	15
	PT3	23	25
TOTAL		51	55
PS of Performance Tasks	**92.73**		
Quarterly Assessment	QA	30	40
PS of Quarterly Assessment	**75.00**		

$$\textbf{Components' Percentage Score (PS)} = \frac{\textbf{Leaner' Raw Score}}{\textbf{Highest Possible Score}} \textbf{X 100}$$

Table 3 reflected how Science performance was computed as stipulated in the DepEd Order No. 8 s. 2015. The same process was applied to get the quarterly final grade in English and Mathematics.

Table 3. *Sample computation of Science performance and its components' weighted score*

Component	Weight	Percentage Score	Computation	Weighted Score (WS)
Written Work	40%	79.72	79.72 x 0.4	**31.89**
Performance Task	40%	85.52	85.52 x 0.4	**34.21**
Quarterly Assessment	20%	72.66	72.66 x 0.2	**14.53**
TOTAL				**80.63**
Initial Grade				**80.63**
Final Grade				**87**

The total weighted score, the initial grade, was transmuted using Table 4 to produce quarter 1 and 2 final grade. The overall mean scores of each academic subject were computed from averaging each pupils' grade in quarters 1 and 2 sourced from official class record. These computed averages of pupils were used to obtain the overall mean of Science, Mathematics, and English performance.

Table 4. *Department of Education's Transmutation Table*

Initial Grade	Transmuted Grade	Initial Grade	Transmuted Grade
100	100		
98.40 – 99.99	99	66.40 – 67.99	79
96.80 – 98.39	98	64.80 – 66.39	78
95.20 – 96.79	97	63.20 – 64.79	77
93.60 – 95.19	96	61.60 – 63.19	76
92.00 – 93.59	95	60.00 – 61.59	75
90.40 – 91.99	94	56.00 – 59.99	74
88.80 – 90.39	93	52.00 – 55.99	73
87.20 – 88.79	92	48.00 – 51.99	72
85.60 – 87.19	91	44.00 – 47.99	71
84.00 – 85.59	90	40.00 – 43.99	70
82.40 – 83.99	89	36.00 – 39.99	69
80.80 – 82.39	88	32.00 – 35.99	68
79.20 – 80.79	87	28.00 – 31.99	67
77.60 – 79.19	86	24.00 – 27.99	66
76.00 – 77.59	85	20.00 – 23.99	65
74.40 – 75.99	84	16.00 – 19.99	64
72.80 – 74.39	83	12.00 – 15.99	63
71.20 – 72.79	82	8.00 – 11.99	62
69.60 – 71.19	81	4.00 – 7.99	61
68.00 – 69.59	80	0 – 3.99	60

2.7 Data Analysis Techniques

For each instrument, descriptive statistics were used to provide a summary of the responses. The independent variables, such as attitude towards science, pupil engagement, interest in science, and the Mathematics and English performance, were described by weighted means and standard deviations. To interpret these mean scores, an appropriate verbal interpretation scale was used to classify responses from each independent variables, Attitude used the categories of very negative, negative, neutral, positive, or very positive, engagement and interest used very low, low, moderate, high or very high, and the DepEd performance descriptors failed to outstanding, were applied. This procedure aided in identifying the general tendencies and fluctuations among the respondents in respect of each predictor variable.

In determining the relationships between the independent variables and the science performance, the Pearson Product-Moment Correlation (r) was applied at the significance level of 0.05. In cases where the computed p-value is below 0.05, the null hypothesis was rejected, which means that there is a statistically significant relationship between the variables. In identifying which of the five (5) factors best predict performance in science, the Multiple Linear Regression was used.

Standardized beta coefficients (β), the coefficient of determination (R^2), and p-values were examined to evaluate the relative predictive strength of attitude, engagement, and interest in science, Mathematics and English performance.

2.8 Ethical Considerations

This research has made a commitment to observe the ethical standards in all research activities that involve human participants. Before the data collection, the researcher obtained the required permission and support from the Division Office of Occidental Mindoro and the respective principals of the cooperating schools in the Sablayan North District. An informed consent form was used to communicate the study's purpose, objectives, and procedures clearly to the participants and their guardians.

The respondents' rights to privacy, confidentiality, and anonymity were respected. Questionnaires were coded to protect any of their identifiable information. The data collected are securely and confidentially kept, and only the researcher has access to them for research purposes relating to the current study. After the completion of the analysis, all data were disposed of to eliminate the possibility of unauthorized access. In addition, the researcher ensured that their participation was voluntary and they did not suffer any harm or discomfort or face any risks during their involvement in the study. The data collection took three weeks, which guaranteed not only the accuracy and completeness of the answers but also the ethical and procedural integrity.

3. Results and Discussion

3.1 Attitude toward Science

Attitude toward Science is examined as a multidimensional construct and is measured across three interrelated components, namely: affective attitude, behavioral intention, and cognitive attitude. Assessing these components provides a comprehensive understanding of how pupils relate to science and offers an empirical basis for strengthening instructional practices and learning experiences in the subject.

Generally, the pupil's attitude toward science is positive (grand mean=4.08). This is attributed to the high mean scores obtained for all components that likewise described positive (Table 5). Among the three, cognitive attitude registered the highest overall mean of 4.23, suggesting that pupils hold strong and favorable beliefs about the value, usefulness, and importance of science in solving problems in daily lives, hence develop interest in the subject (Syam et al., 2024). This was followed by an affective attitude, with an overall mean of 4.07, indicating positive feelings of pupils toward the subject. Meanwhile, behavioral intention registered an overall mean of 3.95, which also reflects a positive willingness of pupils to engage in science-related activities.

Table 5. *Summary table for the attitude toward science among grade six pupils.*

Factors	Overall Mean	Interpretation
Affective Attitude	4.07	Positive
Behavioral Intention	3.95	Positive
Cognitive Attitude	4.23	Positive
Grand Mean	**4.08**	**Positive**

Scale:1.00-1.49 Very Negative; 1.50-2.49 Negative; 2.50-3.49 Neutral; 3.50-4.49 Positive; 4.50-5.00 Very Positive

Grade VI pupils generally demonstrate a positive attitude toward science (grand mean=4.08). Cognitive attitude emerged as the strongest, showing that pupils possess favorable beliefs about the value, usefulness, and importance of science in their daily lives and future learning. They clearly recognize the relevance of science and view it as a meaningful and worthwhile subject. Affective attitude also showed a positive level, reflecting that pupils experience interest, enjoyment, and positive emotions during science classes. This implies that Science lessons are able to stimulate learners' curiosity and maintain their enthusiasm for learning. Likewise, behavioral intention was rated positively, indicating that pupils are generally willing to participate in science activities and are inclined to engage in tasks related to the subject.

The above findings confirm that pupils' attitudes toward science are favorable in terms of what they think about the subject, how they feel about it, and how willing they are to take part in learning activities. Pupils are evidently showing a love of science subjects. These imply that teachers and school leaders can build on pupils' positive beliefs and emotions by providing more learner-centered, inquiry-based, and activity-oriented instructional strategies that further strengthen participation. Moreover, since cognitive attitude was found to be the strongest dimension, integrating real-life applications, contextualized examples, and problem-based learning activities may further reinforce pupils' appreciation of the relevance of science. Sustaining positive affective experiences and encouraging active participation in classroom activities are also essential to ensure that pupils' favorable attitudes are translated into consistent learning behaviors and improved academic performance.

The positive attitude towards science stimulates the Grade VI pupils' response to be more motivated, curious, and have a stronger feeling of learning relatedness, which produces positive learning outcomes (Lestari et al., 2023). They are greatly

involved in classroom discussion and eager to carry out assigned tasks in science activities. These direct pupils in their challenges and ways of problem-solving through the experience of learning (Ernawati et al., 2021).

3.2 Pupil Engagement in Science

Pupil engagement in science is measured across three dimensions: behavioral engagement, cognitive engagement, and emotional engagement. Behavioral engagement reflects the students' participation and effort in learning activities. Cognitive engagement pertains to the mental investment and use of strategies to understand and master scientific concepts. Emotional engagement captures students' feelings, interests, and attitudes toward science learning.

The level of engagement of Grade Six pupils in science across three dimensions: behavioral, cognitive, and emotional is sum up in Table 6. The results show that three dimensions were all interpreted highly. Highest overall mean of 4.10 is received by behavioral engagement, indicating that pupil's active participation and strong effort into science activities is consistent. Emotional engagement followed closely, with a recorded overall mean of 4.00, suggesting positive feelings and motivation during science lessons generally felt by pupils. Cognitive engagement obtained an overall mean of 3.77, indicating that processing activities and making sense of science concepts is done by pupils. Overall, the grand mean of 3.96 confirms that, Grade Six pupils manifest a high level of engagement in science, reflecting their involvement in learning through active participation and positive feelings.

Table 6. *Summary of the level of pupil engagement in science among grade six pupils.*

Factors	Overall Mean	Interpretation
Behavioral Engagement	4.10	High
Cognitive Engagement	3.77	High
Emotional Engagement	4.00	High
Grand Mean	**3.96**	**High**

Scale: 1.00-1.49 Very Low; 1.50-2.49 Low; 2.50-3.49 Moderate; 3.50-4.49 High; 4.50-5.00 Very High

The Grade Six pupils are generally well engaged (grand mean=3.96) during science learning activities. With behavioral engagement that emerged as the most evident, pupils consistently participate in classroom tasks, follow instructions, and exert effort during science lessons. The learners are visibly involved in learning activities and demonstrate a willingness to take part in classroom requirements. Emotional engagement was also rated high, implying that pupils tend to feel interested and motivated to learn something during science classes. Such serves a beneficial effect toward favorable engagement in learning science, which sustains pupils' attentiveness and enthusiasm during lessons. Cognitive engagement was slightly lower than the other two dimensions, but still rated high, indicating that pupils think about, process, and made mental effort to understand scientific ideas rather than for compliance of finishing the work. Overall, the findings prove that pupils display a high level of engagement in science as portrayed by their active participation, positive emotions, and strong mental involvement in learning.

Unmistakably, good classroom practices and supportive learning environments generally encourage pupils to participate, enjoy, and think deeply about science lessons. Teachers may improve learning outcomes by placing greater emphasis on activities such as inquiry-based tasks, problem-solving activities, and guided discussions that strengthen skills in analyzation, reasoning, and reflection at the same time promote active participation and positive classroom experiences. Strengthening cognitive engagement may help pupils dive deeper into conceptual understanding and improve long-term learning in science. More engaged pupils have significant amount of interest in science despite challenge in limited resources, therefore they are less likely to lose their interest in science, they succeed because they are persistent (Torrefranca et al., 2025). The three dimensions of pupil engagement make the students more tolerant when facing issues and promote questioning and giving explanations, which lead to better understanding and memory of the facts in science learning that commands better performance (Nguyen et al., 2024).

3.3 Interest toward Science

Interest in science is measured in three dimensions namely, situational interest, individual interest, and scientific curiosity. Situational interest refers to the temporary engagement or attention in a span of time triggered by specific activities or learning contexts in the classroom. Individual interest reflects a more enduring personal preference or liking for science. Scientific curiosity captures the pupils' desire to explore, ask questions, and understand scientific phenomena. The findings in this section provide insights into how pupils' interest manifests across different dimensions, which can inform strategies to foster deeper and more sustained engagement in science learning.

Generally, the overall level of interest toward science among Grade Six pupils is high (grand mean=3.94). Among the three factors, Situational Interest received the highest rating (overall mean=4.19), suggesting that pupils are highly motivated by well-prepared science activities and stimulating learning experiences in the classroom. Scientific Curiosity closely followed, (overall mean=4.05), indicating that pupils are eager to explore and discover scientific concepts. Individual Interest also showed a high level (overall mean=3.57), exhibiting individuals' inclination toward science. The findings

disclose that a high level of interest toward science is driven by both curiosity and interest in classroom experiences (Table 7).

Table 7. *Summary of the level of interest toward science among grade six pupils.*

Factors	Overall Mean	Interpretation
Situational Interest	4.19	High
Individual Interest	3.57	High
Scientific Curiosity	4.05	High
Grand Mean	**3.94**	**High**

Scale: 1.00-1.49 Very Low; 1.50-2.49 Low; 2.50-3.49 Moderate; 3.50-4.49 High; 4.50-5.00 Very High

Grade Six pupils generally hold a high level of interest toward science, showing enthusiasm, curiosity, and motivation in their learning experience. Among the three factors, situational interest led as the most prominent, suggesting that structured classrooms combined with engaging activities, teaching strategies, and conducive environments effectively influenced pupils. This implies that pupils' motivation and attention are crucially sustained in the effectiveness of the approaches and preparation of learning environment for science lessons. Scientific curiosity also emerged as highly rated factor, reflecting pupils' innate desire to explore and learn scientific ideas through inquiry-based and hands-on learning. In addition, pupils demonstrated a high level of individual interest, indicating that they personally like science.

These findings suggest that Grade Six pupils' high level of interest toward science is largely shaped by meaningful classroom experiences and opportunities for exploration, hence actual workshops and practical sessions support meaningful learning as interaction exists for application of knowledge and problem-solving (Andrews, 2023).An important implication of this result is that teachers should continue to provide interactive, inquiry-based, and activity-oriented lessons to further strengthen pupils' interest and curiosity. School administrators and curriculum planners may also enhance science instruction by ensuring appropriate instructional materials, science equipment, and professional development are provided to the teachers, which help realize experiential learning and differentiated instruction. These simple yet significant matters can help establish a supportive and stimulating learning environment in schools which sustain pupils' strong disposition and deeper engagement in science learning, which may lead to eventual improvement in academic performance.

3.4 Science Performance

Generally, after all the components and transmutation were considered in accordance with DepEd Order No. 8, s. 2015, Grade Six pupils demonstrate a commendable level of achievement in Science (Table 8) supported by the overall mean of 87.57 with standard deviation of 5.324, which is very satisfactory. Across various assessment measures, pupils performed best in performance tasks, with a mean of 85.52, which interpreted as very satisfactory, indicating strong applied skills. Their written works had a mean of 79.72, interpreted as fairly satisfactory, suggesting moderate proficiency in written exercises. The quarterly assessment showed the lowest mean of 72.66, which is failed, highlighting areas where additional support in formal evaluations may be needed by the pupils. These results indicate the need to address imbalance in grade six pupils' quarterly assessment with performance task and written works to boost performance in science.

Table 8. *Science performance of the grade six pupils.*

Performance Indicators	Mean	SD	Interpretation
Written Works	79.72	9.932	Fairly Satisfactory
Performance Tasks	85.52	9.917	Very Satisfactory
Quarterly Assessment	72.66	12.826	Failed
Overall	**87.57**	**5.324**	**Very Satisfactory**

Only the overall is transmuted (DepEd Order No. 8, s. 2015).
Scale: Below 75 Failed; 75-79 Fairly Satisfactory; 80-84 Satisfactory; 85-89 Very Satisfactory; 90-100 Outstanding

The results reveal that Grade Six pupils generally exhibit a strong performance in science, with notable strength in tasks that require practical application and hands-on activities. Pupils functioned best in performance tasks, indicating their ability to apply their knowledge and skills successfully in meaningful contexts. Their written works though satisfactory, suggest a room for improvement in written exercises. Meanwhile, the lower performance in the quarterly assessment indicates challenges in written evaluations, perhaps due to test-taking skills, time management, or the complexity of the assessed concepts.

When all learning activities and assessments are considered together, pupils achieve a very satisfactory level in science. This suggests that, while certain formal assessments may reflect areas for improvement, the pupils can demonstrate their learning and understanding effectively through a variety of tasks. The findings imply that teachers should continue to provide diverse and engaging learning experiences, balancing practical, written, and evaluative tasks to support pupils' holistic development and ensure consistent achievement across all types of assessments.

These findings of the present study validate the work of Villacrusis (2021), who indicates that performance tasks are important to develop the ability of students in concept presentation, problem-solving, and critical thinking, maximizing their ability to learn science. The low performance in quarterly assessments can be situated in the study of Sana & Yan (2022), who found that spaced and interleaved quizzes significantly improved the students' results in standardized assessments. This indicates that a pupil's lower score could be linked to the lack of retrieval-based and spaced practice activities that strengthen long-term retention of understanding science concepts.

3.5 Mathematics Performance

Overall, the pupils achieved a mean of 86.59 and standard deviation of 5.529 (Table 9), which is interpreted as Very Satisfactory based on DepEd Order No. 8, s. 2015 transmutation guidelines. Pupils performed very satisfactorily in performance tasks, with a mean of 87.79, exhibiting a respectable practical application skill. Written works with a mean of 75.35 showed a fairly satisfactory level, suggesting modest ability in written exercises and class works. In contrast, they performed low in quarterly assessment with a mean of 70.49, falling into the Failed category, which highlights gap in formal testing. These findings suggest that while pupils excel in performance-based activities, intervention is needed to improve their written and assessment-based mathematics skills.

Table 9. *Mathematics performance of the grade six pupils.*

Performance Indicators	Mean	SD	Interpretation
Written Works	75.35	10.698	Fairly Satisfactory
Performance Tasks	87.79	9.573	Very Satisfactory
Quarterly Assessment	70.49	13.612	Failed
Overall	**86.59**	**5.529**	**Very Satisfactory**

Only the overall is transmuted (DepEd Order No. 8, s. 2015).
Scale: Below 75 Failed; 75-79 Fairly Satisfactory; 80-84 Satisfactory; 85-89 Very Satisfactory; 90-100 Outstanding

The mathematics performance of Grade Six pupils reveals a pattern of strengths and areas for improvement. Overall, pupils performed at a very satisfactory level, indicating a generally strong understanding of the subject. They particularly excelled in performance tasks, demonstrating competence in applying mathematical concepts in practical situations. Written works, however, were rated only fairly satisfactory, suggesting that pupils have moderate proficiency in completing routine exercises and class outputs.

The lowest performance was recorded in the quarterly assessment, indicating gaps when application of concepts is done through formal examinations. This underscores challenges in the mastery of concepts and test-taking ability that may not be fully realized in regular classroom set up.

These results indicate that while pupils possess strong capability of applying learned concepts in Mathematics through performance-based assessments, specialized intervention in strengthening long-term memory skills such as spaced practice, interleave quizzes, and familiarization of test-taking strategies are needed to improve written-based components, establishing more balanced mathematics learning.

This aligns with the work of Moren et al. (2025), who specifically highlights the use of isolated materials in spaced practice activities as a means to improve mathematics learning.

3.5 English Performance

The results show that pupils scored 80.02 in Written Works and 81.18 in Performance Tasks, both interpreted as Satisfactory. In the Quarterly Assessment, pupils obtained a slightly lower score of 77.24, which is interpreted as Fairly Satisfactory. When these scores were transmuted following DepEd Order No. 8, s. 2015, the overall performance of pupils reached 86.95 with standard deviation of 5.676, earning a Very Satisfactory rating. This indicates that, despite some variability across assessment types, the pupils generally demonstrate strong competence in English (Table 10).

Table 10. *English performance of the grade six pupils*.

Performance Indicators	Mean	SD	Interpretation
Written Works	80.02	9.057	Satisfactory
Performance Tasks	81.18	10.049	Satisfactory
Quarterly Assessment	77.24	12.046	Fairly Satisfactory
Overall	**86.95**	**5.676**	**Very Satisfactory**

Only the overall is transmuted (DepEd Order No. 8, s. 2015).
Scale: Below 75 Failed; 75-79 Fairly Satisfactory; 80-84 Satisfactory; 85-89 Very Satisfactory; 90-100 Outstanding

Overall, the results show that Grade Six pupils achieve competence in English across assessment measures. Their performance in written works and performance tasks was both satisfactory, while score in quarterly assessment was comparatively lower but still acceptable. When results were interpreted as a whole, the general English performance was rated very satisfactory, demonstrating adequate English language skills.

These findings collectively suggests that pupils have strong foundation in English, which can help also facilitate their learning across other subjects that depend on reading, writing, and comprehension of texts (PISA 2022). This highlights the need for teachers to continue employing consistent practice through authentic language tasks to sustain the enhancement of pupils' language proficiency.

3.6 Relationship between Attitude toward Science and the Science Performance of Grade Six Pupils

Table 11 presents the relationship between pupils' attitude toward Science and their Science performance. The results show that affective attitude has a highly significant relationship with written works (r=0.235, p=0.001), indicating that pupils who display more positive feelings toward science tend to perform better in written activities. However, its relationship with performance tasks (r=0.091, p=0.190) and quarterly assessment (r=0.029, p=0.673) was found to be not significant.

In terms of behavioral intention, a significant relationship was observed with written works (r=0.163, p=0.018), suggesting that pupils' willingness to participate and engage in science learning is associated with better written performance. On the other hand, no significant relationship was established between behavioral intention and performance tasks (r=0.115, p=0.095) as well as quarterly assessment (r=0.082, p=0.236).

Meanwhile, cognitive attitude showed the strongest associations with science performance. It was found to have a highly significant relationship with written works (r=0.331, $p < 0.001$) and significant relationships with both performance tasks (r=0.152, p=0.027) and quarterly assessment (r=0.153, p=0.026). This implies that pupils' beliefs and perceptions about the value and importance of science are positively related to their performance across different assessment components.

The results indicate a significant relationship between pupils' attitude toward Science and their Science performance (r=0.218), confirming that a more positive attitude toward the subject is generally associated with better academic outcomes.

Table 11. *Relationship between attitude toward science and the science performance of grade six pupils.*

Attitude Toward Science	**Science Performance**	**r**	**p-value**	**Description**
Affective Attitude	Written Works	.235**	0.001	Highly significant
	Performance Tasks	.091	0.19	Not significant
	Quarterly Assessment	.029	0.673	Not significant
Behavioral Intention	Written Works	.163*	0.018	Significant
	Performance Tasks	.115	0.095	Not significant
	Quarterly Assessment	.082	0.236	Not significant
Cognitive Attitude	Written Works	.331**	<0.001	Highly significant
	Performance Tasks	.152*	0.027	Significant
	Quarterly Assessment	.153*	0.026	Significant
Overall		**211**	**0.218****	**Significant**

****. Correlation at 0.001(2-tailed)*
**. Correlation is significant at the 0.05 level (2-tailed).*
***. Correlation is significant at the 0.01 level (2-tailed).*
p<0.01 highly significant, p<0.05 significant, p>0.05 not significant

Pupils' attitude toward science is generally related to their performance in the subject, although the strength varies across the different dimensions of attitude and types of assessment. Affective attitude, which reflects pupils' feelings and interest in science, appears to be positively associated with their performance in written activities, suggesting that pupils who enjoy and feel motivated by science tend to do better in tasks that require expressing knowledge in writing. However, affective attitude does not seem to have a notable impact on performance tasks or formal assessments, indicating that positive emotions alone may not be sufficient to influence all types of learning outcomes.

Behavioral intention, representing pupils' willingness to engage in science activities, shows a modest connection to written work performance but does not significantly affect performance tasks or quarterly assessments. This implies that although willingness to actively participate may be beneficial to certain aspects of learning, it may not always necessarily improve performance across all assessments.

Cognitive attitude demonstrates the strongest and most consistent association with the pupils' performance, highlighting the role of pupils' beliefs about the value and importance of the subject. Pupils who perceive science as relevant tend to perform higher across written works, performance tasks, and quarterly assessments.

To sum up, a positive attitude toward science, particularly one that is cognitive in nature, correlates with better academic outcomes. This kind of attitude manifestation of strong belief in the value and importance of science to daily lives relates to learning (Wu et., 2024), makes them persevere when faced with challenges (Torkoglue et al., 2021), and strengthen their willingness to engage in learn tasks (Mao et al., 2021). This finding suggests that educators should reinforce the real-world value and usefulness of the subject. Doing so can help strengthen pupils' understanding, motivation, and overall performance in science.

3.7 Relationship between Pupil Engagement in Science and the Science Performance of Grade Six Pupils

Correlation analysis reveals that pupil engagement in general is positively related to science performance (Table 12). As indicated by the Pearson's r of 0.268, pupils' performance in science tends to improve as they become more active in the learning process, persist in doing tasks, and exert physical efforts. Although the extent of the relationship is weak, it is highly significant ($p<0.01$).

Positive correlations are similarly found when engagement and performance are dissected into different components. However, only written works in science are significantly related to behavioral ($r=0.262$) and cognitive engagement ($r=0.197$), but the extent is still weak. In contrast, emotional engagement is moderately correlated ($r=0.363$) with the written work performance, and it is highly significant ($p<0.01$). This suggests that students' feelings, such as enjoyment, frustration, and enthusiasm, may lead to greater motivation and perseverance in science writing. This also holds for the performance tasks ($r=0.223$) and quarterly assessment ($r=0.197$), but the extent is weak.

Table 12. *Relationship between pupil engagement in science and the science performance of grade six pupils.*

Pupil Engagement in Science	Science Performance	r	p-value	Description
Behavioral Engagement	Written Works	0.262**	0.00	Highly significant
	Performance Tasks	0.131	0.06	Not significant
	Quarterly Assessment	0.130	0.06	Not significant
Cognitive Engagement	Written Works	0.197**	0.00	Highly significant
	Performance Tasks	0.069	0.32	Not significant
	Quarterly Assessment	0.062	0.37	Not significant
Emotional Engagement	Written Works	0.363**	0.00	Highly significant
	Performance Tasks	0.223**	0.00	Highly significant
	Quarterly Assessment	0.197**	0.00	Highly significant
Overall		**0.268****	**0.00**	**Highly significant**

$p<0.01$ highly significant, $p<0.05$ significant, $p>0.05$ not significant
$r=0.00$ to 0.30 weak correlation; $r=0.31$ to 0.70 moderate correlation; $r=0.71$ to 0.99 strong correlation

The results indicate that different dimensions of pupil engagement in science are associated with varying levels of science performance among Grade Six pupils. Behavioral engagement seems to influence written works, indicating that pupils who exert effort and actively participate in classroom activities are more likely to perform better in written tasks, but its influence fails to establish connection to performance tasks and quarterly assessments. Likewise cognitive engagement, which reflects the pupils' mental involvement during lessons, is positively linked to written works but has little impact on other assessment types of performance.

On the contrary, emotional engagement establishes its consistent association across all components of science performance, hence influence science performance. Pupils who feel motivated, interested, and emotionally positive about science tend to perform higher in written works, performance tasks and formal assessments.

The results imply that emotional involvement in science lessons is a key determinant of success in science. Whereas, participation and cognitive effort remain as important, the affective dimension, particularly pupils' enthusiasm and motivation, plays a significant role in improving science performance. Consequently, teachers should therefore integrate strategies that promote enjoyment, relevance, and positive emotional involvement in science lessons.

Consistent with the findings of Pelikan et al., (2021), the present study reinforces that when learning environment nourishes pupils with support and empowerment, their positive emotions become high, leading to a greater motivation and perseverance, ultimately delivering better science performance.

3.8 Relationship between Interest toward Science and the Science Performance of Grade Six Pupils

Table 13 presents the relationship between pupils' interest in science and their science performance. The results show that situational interest is significantly associated with all three measures of science performance. Specifically, situational interest has a moderate positive relationship with written works ($r=0.310$, $p < 0.001$), and significant positive relationships with performance tasks ($r=0.173$, $p=0.012$) and quarterly assessment ($r=0.195$, $p=0.004$). These findings indicate that pupils who display higher situational interest in science tend to perform better in different science assessment components.

In contrast, individual interest shows no significant relationship with any of the science performance indicators. The correlations with written works ($r=0.012$, $p=0.863$), performance tasks ($r=-0.001$, $p=0.983$), and quarterly assessment

(r=−0.014, p=0.841) are all negligible and statistically not significant, suggesting that pupils' personal or long-term interest in science alone does not directly relate to their academic performance in the subject.

On the other hand, scientific curiosity is found to be significantly related to pupils' science performance across all indicators. The results reveal positive and highly significant relationships with written works (r=0.285, p < 0.001), performance tasks (r=0.206, p=0.003), and quarterly assessment (r=0.226, p=0.001). This implies that pupils who are more curious and eager to explore scientific ideas tend to achieve higher scores in science.

Overall, interest toward science is significantly related to science performance (r=0.219, p=0.001), indicating that higher levels of interest are associated with better academic outcomes in science, particularly when such interest is manifested through situational interest and scientific curiosity.

Table 13. *Relationship between interest toward science and the science performance of grade six pupils.*

Interest Toward Science	Science Performance	r	p-value	Description
Situational Interest	Written Works	.310**	<0.001	Highly significant
	Performance Tasks	.173*	0.012	Significant
	Quarterly Assessment	.195**	0.004	Highly significant
Individual Interest	Written Works	0.012	0.863	Not significant
	Performance Tasks	-0.001	0.983	Not significant
	Quarterly Assessment	-0.014	0.841	Not significant
Scientific Curiosity	Written Works	.285**	<0.001	Highly significant
	Performance Tasks	.206**	0.003	Highly significant
	Quarterly Assessment	.226**	0.001	Highly significant
Overall		.219**	0.001	**Highly significant**

***. *Correlation at 0.001(2-tailed)*
*. *Correlation is significant at the 0.05 level (2-tailed).*
**. *Correlation is significant at the 0.01 level (2-tailed).*
p<0.01 highly significant, p<0.05 significant, p>0.05 not significant

The results reveal that pupils' interest in science is closely associated to their performance in the subject. Pupils with situational interest driven by engaging classroom activities and meaningful learning experiences tend to demonstrate better performance across various science assessments. This underscores the role of providing stimulating and interactive lessons in capturing pupils' attention and participation can improve learning outcomes. In the same way, scientific curiosity shows positive association with higher science performance, highlighting that pupils who are inquisitive when exploring, discovering, and understanding scientific concepts are more likely to achieve success in science.

On the other hand, pupils' individual interest does not show significant relationship on their academic performance. This finding implies that long-term interest alone may not translate into improved learning outcomes without setting curiosity and stimulating environment for learning. The findings highlight not only the importance of providing science lessons with the intention to awaken curiosity but also the quality of hands-on and practical activities that provide meaningful experiences to motivate pupils, as these methods tend to keep science enjoyable and relevant, hence achieve better results in science performance.

Shared activities through collaborative way of teaching and learning essentially nurture situational interest that eventually enrich interaction and cognitive engagement of the students that contribute to better result in their performance in science (Alzubi et al, 2024). The current study finding of high scientific curiosity supports the work of Samani et al. (2022), who indicates curiosity as an engine that drives both motivation and cognition which serves as the major factor in good performance in science.

3.9 Relationship between Mathematics Performance and the Science Performance of Grade Six Pupils

Table 14 shows that Mathematics performance is strongly and consistently associated with science performance of Grade Six pupils. All computed correlation coefficients were found to be highly significant (p < 0.001), indicating that pupils who perform well in Mathematics also tend to perform well in science across all types of assessments.

In particular, pupils' Mathematics written works demonstrated substantial positive relationships with science written works (r=0.651), performance tasks (r=0.663), and quarterly assessment (r=0.449). Likewise, Mathematics performance tasks were strongly related to science written works (r=0.674), performance tasks (r=0.596), and quarterly assessment (r=0.642). In the same manner, Mathematics quarterly assessment scores were also highly correlated with science written works (r=0.423), performance tasks (r=0.716), and quarterly assessment (r=0.710).

The very high positive relationship between pupils' Mathematics and Science performance (r=0.878, p < 0.001) indicates that achievement in the two subjects is closely linked, suggesting that competencies developed in Mathematics may substantially support pupils' learning and performance in Science.

Table 14. *Relationship between mathematics performance and the science performance of grade six pupils.*

Mathematics Performance	Science Performance	r	p-value	Description
	Written Works	.651**	<0.001	Highly significant
Written Works	Performance Tasks	.663**	<0.001	Highly significant
	Quarterly Assessment	.449**	<0.001	Highly significant
	Written Works	.674**	<0.001	Highly significant
Performance Tasks	Performance Tasks	.596**	<0.001	Highly significant
	Quarterly Assessment	.642**	<0.001	Highly significant
	Written Works	.423**	<0.001	Highly significant
Quarterly Assessment	Performance Tasks	.716**	<0.001	Highly significant
	Quarterly Assessment	.710**	<0.001	Highly significant
Overall		**.878****	**<0.001**	**Highly significant**

****. Correlation at 0.001(2-tailed)*
**. Correlation is significant at the 0.05 level (2-tailed).*
***. Correlation is significant at the 0.01 level (2-tailed).*
p<0.01 highly significant, p<0.05 significant, p>0.05 not significant

The results indicate a strong and consistent relationship between pupils' performance in Mathematics and their performance in science. Pupils who perform well in Mathematics tend to also achieve high scores in science across written works, performance tasks, and formal assessments. This suggests that the skills and competencies developed in Mathematics, such as problem-solving, logical reasoning, and analytical thinking, may directly support pupils' understanding and application of scientific concepts.

The findings imply the importance of strengthening Mathematics skills to enhance science learning. This underscores the need for educators to implement cross-disciplinary strategies, where enhancing numerical and analytical skills may lead to improve pupils' performance in science.

Overall, the results affirm the interrelatedness of promoting learning in the two subjects, which suggest that pupils' achievement in Mathematics supports success in science performance, specifically in lessons that rely heavily on arithmetic, reasoning, and analytical skills when put to use (Awang et al., 2021).

4.0 Relationship between English Performance and the Science Performance of Grade Six Pupils

Table 15 presents the relationship between English performance and Science performance of Grade Six pupils. The findings reveal that all correlations between the two subjects across written works, performance tasks, and quarterly assessments are highly significant ($p < 0.001$), indicating a strong and consistent association between pupils' achievement in English and their performance in science.

Specifically, pupils' English written works show strong positive relationships with science written works (r=0.733), performance tasks (r=0.762), and quarterly assessment (r=0.635). In the same manner, English performance tasks are highly correlated with science written works (r=0.798), performance tasks (r=0.651), and quarterly assessment (r=0.494). Likewise, pupils' English quarterly assessment scores demonstrate highly significant relationships with science written works (r=0.492), performance tasks (r=0.665), and quarterly assessment (r=0.791).

The very strong positive relationship between English and Science performance ($r=0.884$, $p < 0.001$) suggests that pupils who perform well in English also tend to achieve better results in science, highlighting the important role of language proficiency in understanding scientific concepts, instructions, and assessments.

Table 15. *Relationship between the English performance and the Science performance of the grade six pupils.*

English Performance	Science Performance	r	p-value	Description
	Written Works	.733**	<0.001	Highly significant
Written Works	Performance Tasks	.762**	<0.001	Highly significant
	Quarterly Assessment	.635**	<0.001	Highly significant
	Written Works	.798**	<0.001	Highly significant
Performance Tasks	Performance Tasks	.651**	<0.001	Highly significant
	Quarterly Assessment	.494**	<0.001	Highly significant
	Written Works	.492**	<0.001	Highly significant
Quarterly Assessment	Performance Tasks	.665**	<0.001	Highly significant
	Quarterly Assessment	.791**	<0.001	Highly significant
Overall		**.884****	**<0.001**	**Highly significant**

****. Correlation at 0.001(2-tailed)*
**. Correlation is significant at the 0.05 level (2-tailed).*
***. Correlation is significant at the 0.01 level (2-tailed).*

p<0.01 highly significant, p<0.05 significant, p>0.05 not significant

The results reveal a consistent and strong relationship between English performance and Science performance among Grade Six pupils. Pupils who demonstrate strong performance in English tend to achieve a higher score in science across all types of assessments, written works, performance tasks, and quarterly examinations.

This suggests that English proficiency plays an important role in science lessons such as understanding concepts, following instructions, and doing task correctly. The findings indicate that effective language skills can contribute largely to enhance comprehension, critical thinking, and interaction in learning science. Consequently, efforts to improve pupils' English abilities may also contribute to better Science achievement, emphasizing the interconnectedness of language proficiency and content learning in promoting overall academic success.

These findings of the present study align with what has been documented by Daluma and Naval (2025), who show that the demand for scientific inquiry relies heavily on English skills such as reading complex expository texts, understanding discipline-specific vocabulary, and composing evidence-based explanations, resulting in better performance in science.

4.1 Predictors of Science Performance of the Grade Six Pupils

The multiple regression results in Table 16 presents the significant predictors of science performance of Grade Six pupils. Overall, the regression model is highly significant ($F=181.012$, $p < 0.01$) and accounts for a significant proportion of the variance in science performance, with a multiple R-squared value of 0.815 and an adjusted R-squared of 0.811. This shows that roughly 81.1% of the variation in pupils' science performance is attributed to the combined set of predictors.

Among the variables, attitude toward science ($\beta=-0.031$, $p=0.54$), pupil engagement in science ($\beta=0.033$, $p=0.54$), and interest toward science ($\beta=0.011$, $p=0.81$) were found to be not significant predictors of science performance. This suggests that, when considered simultaneously with other variables in the model, these learner characteristics do not independently contribute to predicting pupils' science achievement.

In contrast, mathematics performance emerged as a significant predictor of science performance ($\beta=0.433$, $t=6.048$, $p<0.001$). Likewise, English performance was also identified as a significant predictor ($\beta=0.488$, $t=6.717$, $p< 0.01$). The positive standardized beta coefficients indicate that higher performance in mathematics and English is associated with higher science performance. Overall, the results highlight that pupils' academic competencies in mathematics and English play a stronger and more direct role in predicting science achievement than their attitudes, engagement, and interest toward science.

Table 16. Predictors of science performance of the grade six pupils.

Predictors	Std. Error	β	t-value	p-value	Interpretation
Attitude Toward Science	0.594	-0.031	-0.612	0.54	Not significant
Pupil Engagement in Science	0.591	0.033	0.615	0.54	Not significant
Interest Toward Science	0.485	0.011	0.247	0.81	Not significant
Mathematics Performance	0.069	0.433	6.048	<0.01	Highly Significant
English Performance	0.068	0.488	6.717	<0.01	Highly Significant

Multiple R-squared=0.815, Adjusted R-squared=0.811, F 181.012, p <0 .01

Results revealed that the academic competencies in Mathematics and English are significant predictors of the science performance of Grade Six pupils. While pupils generally show positive attitudes, high engagement, and interest in science, and these factors are significantly related, they do not predict their achievement when considered alongside their performance in other subjects. This reveals that, although they support science learning, strong foundational skills in mathematics and English carry greater strength in the direction of pupils' performance in science.

In contrast, pupils who perform well in mathematics and English tend to achieve higher scores in science, indicating that strong foundational skills in these core subjects are critical for success in science learning. Mastery of the skills and competencies in these subjects is essential to interpreting scientific phenomena and solving complex problems, influencing science achievement (Holenstein et al., 2020; Neri & Retelsdorf, 2022). Admittedly, pupils with strong foundation skills in mathematics demonstrate better problem-solving skills toward understanding physical phenomena, while those with poor mathematical skills are prone to stop at certain point of learning because of facing difficulty in solving scientific problems (Tong et al., 2025). On the other side, pupils' good English skills like understanding complex expository texts, discipline-specific vocabulary, and composing evidence-based explanations, tend to perform better in Science (Daluma & Naval, 2025). Oppositely, poor skills deliver bad effect in science that negatively impact performance (Morales, 2023).

The above findings indicate the propositions that are important for teaching and learning. Strong fundamental skills in mathematics and English may directly support science performance, as proficiency in these two subjects mutually support understanding scientific concepts in a deeper sense aside from interpreting information and solving problems. Moreover, while attitude, interest and engagement in science are important for motivating learners, these learner-centered factors

alone were not sufficient to ensure high academic performance in science, emphasizing the crucial role of both strong foundational skills in English and Mathematics, and high psychosocial factors.

4. Conclusion & Recommendations

The key findings of the study indicated that, while pupils generally show positive attitudes, high engagement, and interest in science, and these are significantly related, they do not predict science performance when considered alongside their performance in Mathematics and English. However, the study notably revealed that among the factors, cognitive attitude, emotional engagement, situational interest, and curiosity appear to consistently contribute the most in written works, performance tasks, and quarterly assessment, thereby increasing science performance. The study discovered a noticeable pattern of poor results in quarterly assessments among Mathematics, English, and Science, which indicates gaps in test-taking and retention skills of the learners. The study revealed that all components of English and Mathematics performance are consistently significant and highly correlated across written work, performance task, and quarterly assessment of Science performance. Ultimately, the study found that English performance is the strongest predictor of science, together with Mathematics. The fundamental skills in these two core subjects explain much of the variation in science scores and serve as the most powerful factors.

In this regard, teachers may use spaced activities, interleaved quizzes, and isolated worksheets in tackling low scores in quarterly assessments. School leaders and teachers' intervention programs should prioritize numeracy and literacy skills as they strengthen foundational skills in Mathematics and English and serve a dominant role in directing science performance while sustaining supportive learning environments for learners.

The data used in the study was captured at one point in time. A longitudinal study should have done to observe the how attitudes, interests, and academic performance change over time. Additionally, although the measure of academic performance, written works, performance task, and quarterly assessment were described, the study did not fully explore the assessment-related factors behind the low quarterly assessment.

Compliance with ethical standards

This research has made a commitment to observe the ethical standards in all research activities that involve human participants. Before the data collection, the researcher obtained the required permission and support from the Division Office of Occidental Mindoro and the respective principals of the cooperating schools in the Sablayan North District. An informed consent form was used to communicate the study's purpose, objectives, and procedures clearly to the participants and their guardians.

The respondents' rights to privacy, confidentiality, and anonymity were respected. Questionnaires were coded to protect any of their identifiable information. The data collected are securely and confidentially kept, and only the researcher has access to them for research purposes relating to the current study. After the completion of the analysis, all data were disposed of to eliminate the possibility of unauthorized access. In addition, the researcher ensured that their participation was voluntary and they did not suffer any harm or discomfort or face any risks during their involvement in the study. The data collection took three weeks, which guaranteed not only the accuracy and completeness of the answers but also the ethical and procedural integrity.

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