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The Enhancement Activities in Improving the Performance of the Public Senior High School Science Teachers in Tinambac District, Division of Camarines Sur

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ABSTRACT

This article examined enhancement activities as structured instructional supports for improving learner performance in senior high school science. The study was anchored on the premise that science learning improves when teachers deliberately provide opportunities for re-teaching, inquiry, experimentation, observation, and authentic project work. It focused on public senior high school science instruction in Tinambac District, Division of Camarines Sur, during School Year 2025-2026. The investigation addressed both the extent to which teachers conducted enhancement activities and the extent to which these activities were observed to improve learner performance. The study responded to the continuing need to strengthen science competencies among senior high school learners. Science education requires more than content delivery because learners must develop inquiry habits, evidence-based reasoning, communication, and responsible scientific attitudes. Enhancement activities provide additional learning routes for learners who need reinforcement and enrichment beyond routine classroom discussion. In this context, the study treated enhancement activities as purposeful practices that can make science learning more responsive, skill-oriented, and performance-based. A descriptive-evaluative-correlational research design was employed to determine the level of conduct of enhancement activities and their perceived contribution to learner performance. The respondents were thirty senior high school science teachers from Tinambac District, Division of Camarines Sur. Data were gathered using a self-made questionnaire developed around the study variables and indicators. The study used weighted mean, frequency count, percentage, rank, Kendall Coefficient of Concordance W, and the corresponding chi-square test at the 0.05 level of significance. The enhancement activities measured in the study were re-teaching, science fair project, making observation journal, science inquiry, and experimentation. All five areas were rated Very Much Conducted, indicating that teachers reported frequent and consistent implementation of these activities. Science fair project obtained the highest composite mean of 4.78, followed closely by re-teaching with 4.77. Making observation journal, experimentation, and science inquiry also registered high ratings with means of 4.61, 4.60, and 4.56, respectively. The results suggest that science teachers in Tinambac District implement enhancement activities that combine remediation, inquiry, documentation, and performance demonstration. Re-teaching appears to support learners through remedial materials, small-group sessions, and documented follow-up activities. Science fair projects provide a venue for inquiry, creativity, experimentation, and scientific presentation. Observation journals, science inquiry, and experimentation deepen learners' engagement with evidence, data, and the scientific process. The test of significant agreement showed that respondents had significant concordance in their rank orders for most enhancement activities. Kendall W values were high for science inquiry, science fair project, re-teaching, and making observation journal, with corresponding chi-square values significant at conventional levels. Experimentation was the only area where the null hypothesis was not rejected, indicating less agreement among respondent groups on its rank order. This result suggests that experimentation may be implemented with greater contextual variation across schools, classrooms, or available resources. Learner performance was assessed in terms of basic science skills, critical thinking, problem solving, communicating, and developing scientific attitudes and values. All areas were rated Very Much Evident, with communicating receiving the highest mean of 4.99. Problem solving followed with 4.93, while critical thinking, basic science skills, and developing scientific attitudes and values obtained means of 4.80, 4.77, and 4.72. These findings indicate that enhancement activities were perceived to be strongly associated with observable learner competencies in science. The performance profile reveals a strong emphasis on communicative and problem-solving outcomes. Learners were reported to express scientific ideas clearly, use evidence, present findings, and engage audiences with confidence. They were also observed to collaborate, identify problems, evaluate results, and apply learned strategies in new contexts. The relatively lower but still high rating for scientific attitudes and values suggests that values formation requires more deliberate and sustained integration in enhancement activities. The agreement test for learner performance showed significant concordance in basic science skills, critical thinking, problem solving, and communicating. Developing scientific attitudes and values did not reach significance, indicating varied respondent perceptions of this dimension. This pattern suggests that measurable science competencies are more consistently observed than values-related outcomes. The finding points to the need for explicit criteria, reflective practices, and assessment tools that make scientific values more visible in classroom and enhancement activities. The study concludes that enhancement activities are widely conducted and are perceived to improve learner performance in senior high school science. The findings support policy recommendations for curriculum integration, resource provision, professional development, values-based science assessment, and stronger home-school-community reinforcement. The study contributes practice-based evidence on how structured enhancement activities can support science performance in a district-level public school context.

1. Introduction

Science education occupies a central place in preparing learners for a world shaped by evidence, technology, innovation, and complex social problems. At the senior high school level, science instruction is expected to cultivate not only factual knowledge but also inquiry, reasoning, problem solving, and communication. Learners are required to understand concepts, apply procedures, analyze data, and interpret phenomena in ways that connect school learning to real-life situations. These demands require teaching practices that go beyond conventional lecture and routine assessment.

The quality of science learning is strongly influenced by the activities that teachers design and sustain inside and outside the classroom. Learners may understand science more deeply when they are given repeated opportunities to observe, ask questions, test ideas, explain results, and reflect on evidence. Enhancement activities serve this purpose because they extend, reinforce, and enrich formal instruction. They provide structured opportunities for learners to revisit difficult concepts, apply scientific skills, and demonstrate learning through meaningful outputs.

Enhancement activities are especially relevant in science because the discipline requires both conceptual clarity and practical engagement. Scientific understanding develops through interaction between theory and experience, making hands-on and inquiry-based learning essential. Re-teaching, science fair projects, observation journals, inquiry tasks, and experimentation are examples of enhancement practices that can support this interaction. When implemented consistently, these activities can address learning gaps while promoting higher-order competencies.

Re-teaching is a critical enhancement activity because it responds directly to learners' misconceptions and unfinished learning. In science classes, learners often encounter abstract concepts that require alternative explanations, demonstrations, and repeated practice. Re-teaching provides a second instructional opportunity through remedial materials, targeted support, corrective feedback, and differentiated strategies. It helps ensure that learners who struggle with a concept are not left behind as instruction moves forward.

Science fair projects represent another form of enhancement because they require learners to apply the scientific method in a public and performance-based setting. Through science fair work, learners identify problems, design investigations, collect data, interpret findings, and present results. This process strengthens both scientific reasoning and communication, especially when teachers provide mentoring, rubrics, resources, and rehearsal opportunities. Science fairs also encourage creativity and originality when learners are guided to develop feasible and ethical projects.

Observation journals are valuable because they train learners to record, organize, and reflect on scientific phenomena. Journal writing supports systematic observation, data documentation, and conceptual connection. It also encourages learners to slow down, notice details, and express explanations using scientific language. When teachers provide prompts, templates, objectives, and assessment criteria, journals become more than written outputs; they become tools for inquiry and reflection.

Science inquiry develops the learner's ability to ask testable questions, formulate hypotheses, gather data, and justify conclusions. Inquiry-oriented activities shift learners from passive reception of information to active construction of understanding. In senior high school science, inquiry is particularly important because learners are expected to engage in evidence-based reasoning. Teachers who facilitate inquiry help learners develop intellectual habits needed for scientific literacy and responsible decision-making.

Experimentation remains one of the most visible and authentic expressions of science learning. Through experiments, learners test hypotheses, manipulate variables, observe outcomes, and connect results to scientific concepts. Experimentation also develops precision, safety awareness, ethical conduct, and collaboration. However, its success depends on the availability of materials, teacher preparation, clear procedures, monitoring, and feedback.

Learner performance in science cannot be reduced to test scores alone. It includes basic science skills such as observing, measuring, recording, analyzing, and applying safety protocols. It also includes critical thinking, problem solving, communication, and the development of scientific attitudes and values. These dimensions collectively show whether learners can use science meaningfully rather than merely recall isolated facts.

Basic science skills form the operational foundation of scientific work. Learners need to observe phenomena accurately, use tools properly, record data systematically, and identify patterns from evidence. These skills allow students to participate in inquiry and experimentation with greater confidence and reliability. Enhancement activities are expected to strengthen these skills because they require repeated practice in authentic learning situations.

Critical thinking is equally essential because science depends on careful analysis and evidence-based judgment. Learners must distinguish facts from assumptions, evaluate explanations, synthesize information, and recognize limitations in investigations. Enhancement activities can promote critical thinking when they ask learners to justify conclusions and reflect on errors. Without critical thinking, science tasks may become procedural activities without deep understanding.

Problem solving allows learners to apply science concepts to challenges inside and outside the classroom. In science learning, problem solving involves identifying issues, selecting strategies, testing solutions, evaluating outcomes, and revising approaches. Enhancement activities such as inquiry, experimentation, and science fair projects provide appropriate contexts for these processes. They encourage learners to view science as a tool for understanding and responding to real-world concerns.

Communication is a crucial science performance area because scientific knowledge must be explained, defended, and shared. Learners need to present findings clearly, use evidence in arguments, prepare written reports, and respond to questions. Enhancement activities provide many opportunities for oral, written, and visual communication. Science fair presentations, journals, discussions, and reports can make communication a routine part of learning science.

Scientific attitudes and values complete the broader purpose of science education. Learners must develop curiosity, honesty, respect for evidence, patience, perseverance, accountability, and ethical awareness. These values influence how learners conduct investigations and how they interpret and report findings. Although values may be less immediately measurable than skills, they are essential for responsible scientific practice.

In the public school setting, enhancement activities also carry administrative and policy implications. Teachers need time, training, materials, and institutional support to implement these activities consistently. School heads, curriculum writers, education leaders, parents, and community partners all contribute to sustaining a science learning environment that values inquiry and performance. A study of enhancement activities therefore provides evidence not only for classroom improvement but also for instructional planning and policy development.

Tinambac District provides a relevant context for examining science enhancement activities because district-level results can reveal patterns of practice within public senior high school science instruction. The study focuses on the perceptions of thirty senior high school science teachers who implement enhancement activities in actual classroom settings. Their responses provide practical evidence regarding the extent of implementation and the perceived improvement of learner performance. The results can guide school-based and district-based decisions on science instruction.

This study is organized around five major enhancement activities and five learner performance dimensions. It examines the extent to which teachers conduct re-teaching, science fair projects, observation journals, science inquiry, and experimentation. It also determines the extent to which these activities improve basic science skills, critical thinking, problem solving, communicating, and scientific attitudes and values. Through weighted means and agreement testing, the study identifies both strong implementation areas and dimensions requiring further policy attention.

The present article transforms the thesis findings into a journal-ready IMRAD manuscript. It presents the background, methodology, results, discussion, conclusions, and implications in a coherent format suitable for academic dissemination. The article emphasizes how empirical findings can inform science teaching practice, curriculum improvement, professional development, assessment, and policy. It also highlights that enhancement activities must be sustained, monitored, and values-oriented to produce stronger science learning outcomes.

2. Methodology

The study employed a descriptive-evaluative-correlational research design. The descriptive component was used to determine the extent to which enhancement activities were conducted by science teachers and the extent to which these activities improved learner performance. The evaluative component allowed the study to interpret the level of implementation and effectiveness using the rating scale embedded in the questionnaire. The correlational and agreement-oriented component was reflected in the use of Kendall Coefficient of Concordance W and the chi-square test to examine agreement in rank orders.

The study was conducted in Tinambac District, Division of Camarines Sur, during School Year 2025-2026. The locale was selected because it provided a public senior high school science context where enhancement activities could be examined across teacher respondents. The district context made the results useful for school heads, science coordinators, curriculum planners, and education leaders who support science instruction. The setting also allowed the study to generate policy recommendations grounded in local instructional realities.

The respondents were thirty senior high school science teachers in Tinambac District. These respondents were considered appropriate because they were directly involved in implementing enhancement activities and observing learner performance in science. Their experiences positioned them to assess activities such as re-teaching, science fair projects, observation journals, science inquiry, and experimentation. The use of teacher respondents also made it possible to gather practitioner-based evidence from those responsible for classroom implementation.

The main data-gathering instrument was a self-made questionnaire. The instrument was organized around the study's major variables: enhancement activities and learner performance. The first part covered the extent of enhancement activities conducted by teachers along re-teaching, science fair project, making observation journal, science inquiry, and experimentation. The second part covered the extent to which these enhancement activities improved learner performance in basic science skills, critical thinking, problem solving, communicating, and developing scientific attitudes and values.

The questionnaire used a rating scale that allowed the computation of weighted means and corresponding verbal interpretations. For enhancement activities, the interpretation focused on the degree to which the activities were conducted. For learner performance, the interpretation focused on the degree to which improvement was evident. The data structure supported ranking of indicators and dimensions, which became the basis for identifying the strongest and relatively weaker areas.

The data-gathering procedure followed the standard sequence for survey-based graduate research. Permission to conduct the study was secured, respondents were identified, and the questionnaire was administered to the senior high school science teachers. The retrieved questionnaires were checked for completeness before tabulation. Responses were then encoded, summarized, and analyzed according to the statistical treatment specified in the study.

The statistical tools used were frequency count, percentage, weighted mean, rank, Kendall Coefficient of Concordance W, and chi-square test. Frequency count and percentage described the distribution of responses when needed. Weighted mean determined the level of conduct of enhancement activities and the level of evident improvement in learner performance. Rank ordering was used to arrange indicators and dimensions according to their computed means.

Kendall Coefficient of Concordance W was used to test the significance of agreement on the rank orders of respondents. The corresponding chi-square test determined whether the observed agreement was statistically significant. The level of significance was set at 0.05. The null hypotheses were rejected when the computed result indicated significant agreement and accepted when the result did not reach the required level of significance.

The study was limited to the variables and respondents specified in the research design. It did not directly measure learner scores through standardized testing but relied on teacher ratings of observable learner performance. The interpretation of results therefore focused on perceived implementation and perceived improvement based on the respondents' professional judgment. Despite this limitation, the data provide useful district-level evidence for strengthening enhancement activities in senior high school science.

3. Results and Discussions

This section presents the empirical results of the study in tabular form and discusses their instructional, analytical, and policy meanings. The discussion follows the sequence of the study objectives: the extent of enhancement activities, the agreement on their rank orders, the improvement of learner performance, the agreement on learner performance rankings, and the policy recommendations derived from the findings. The tables synthesize the numerical results from the thesis while the discussions translate the findings into journal-ready interpretation. The analysis emphasizes coherence between classroom practice, learner performance, and institutional support for science education.

Table 1. Key Indicator Profile of Enhancement Activities Conducted by Science Teachers

Enhancement Activity	Key Indicator Evidence	Composite Mean	Verbal Interpretation
Re-Teaching	Remedial materials, small-group/one-on-one sessions, and documented re-teaching activities were highest at 4.82; application-oriented reinforcement was lowest at 4.62.	4.77	Very Much Conducted
Science Fair Project	Rubric-based project evaluation was highest at 4.87; learner training in data collection and analysis was lowest at 4.62.	4.78	Very Much Conducted
Making Observation Journal	Guiding prompts for journal entries were highest at 4.69; explanation of journal purpose and criteria for entries were lowest at 4.56.	4.61	Very Much Conducted
Science Inquiry	Guiding learners in formulating scientific questions was highest at 4.73; evidence evaluation and reflection activities were lowest at 4.50.	4.56	Very Much Conducted
Experimentation	Constructive feedback on experimental processes was highest at 4.63; providing materials and guiding hypotheses were lowest at 4.58.	4.60	Very Much Conducted

Table 1 shows that all enhancement activities were rated Very Much Conducted. The highest composite mean was recorded for science fair project, while the lowest was recorded for science inquiry. The range of means from 4.56 to 4.78 indicates consistently high implementation across the five activity domains. This suggests that science teachers in Tinambac District regularly provide enhancement activities that support remediation, inquiry, documentation, project development, and experimentation.

The dominance of science fair project and re-teaching is analytically important. Science fair projects require public performance, scientific procedures, researchable problems, mentoring, and presentation preparation, while re-teaching directly addresses learning gaps. These two activities represent complementary forms of enhancement: one is enrichment-oriented and performance-based, while the other is corrective and support-oriented. Their close means suggest that teachers balance remediation and enrichment in their science practice.

The relatively lower mean for science inquiry does not indicate weak implementation because it remains within the Very Much Conducted range. However, it suggests that inquiry practices may require more intentional strengthening, particularly in evidence evaluation and reflective connections to scientific concepts. Inquiry is complex because it requires learners to generate questions, interpret data, evaluate evidence, and draw valid conclusions. Teachers may need additional professional support to make inquiry less procedural and more reflective.

The indicator profile also points to practical implementation needs. Experimentation requires materials, safety routines, equipment, monitoring, and clear procedures, while observation journals require prompts, templates, objectives, and assessment criteria. If schools want to sustain high levels of enhancement activity, they must provide resources, time, and instructional coaching. The findings support a view of enhancement activities as system-supported practices rather than isolated teacher initiatives.

Table 2. Summary of the Extent of Enhancement Activities Conducted by Science Teachers

Enhancement Activity	Weighted Mean	Rank	Verbal Interpretation
Science Fair Project	4.78	1	Very Much Conducted
Re-Teaching	4.77	2	Very Much Conducted
Making Observation Journal	4.61	3	Very Much Conducted
Experimentation	4.60	4	Very Much Conducted
Science Inquiry	4.56	5	Very Much Conducted

Table 2 summarizes the overall ranking of enhancement activities. Science fair project ranked first with a mean of 4.78, followed by re-teaching with 4.77. Making observation journal, experimentation, and science inquiry followed, all still interpreted as Very Much Conducted. This distribution indicates that teachers use a broad set of enhancement practices rather than relying on only one dominant strategy.

The highest rank of science fair project reflects the importance of project-based scientific performance in senior high school. Science fair activities naturally combine research, experimentation, documentation, communication, and creativity. They also allow learners to demonstrate science learning through an authentic product or presentation. This makes science fair projects highly visible and institutionally valued in science instruction.

Re-teaching ranking second is equally significant because it reflects teachers' attention to learner remediation. In science, learners may need repeated exposure to concepts before mastery is achieved. The high rating for re-teaching suggests that teachers recognize the need for alternative explanations, corrective feedback, and follow-up support. Such practices can prevent cumulative learning gaps in science.

The lower relative position of science inquiry should be interpreted as a priority for improvement rather than a deficiency. Inquiry is foundational to scientific literacy, but it can be difficult to sustain when classes face time, resource, or readiness constraints. The finding suggests that science coordinators and school heads may strengthen lesson planning around inquiry cycles. Doing so may help connect journals, experiments, and science fair projects into a more coherent inquiry-based system.

Table 3. Test of Significant Agreement on the Rank Orders of Enhancement Activities

Enhancement Activity	Kendall W	Chi-Square	p-value	Decision on Ho	Interpretation
Re-Teaching	0.86	23.22	$p < 0.01$	Rejected	Significant agreement
Science Fair Project	0.90	24.30	$p < 0.005$	Rejected	Significant agreement
Making Observation Journal	0.85	22.95	$p < 0.01$	Rejected	Significant agreement
Science Inquiry	0.92	24.84	$p < 0.005$	Rejected	Significant agreement
Experimentation	0.54	14.58	$p > 0.05$	Accepted	No significant agreement

Table 3 presents the agreement test on the rank orders of the enhancement activities. Significant agreement was found for re-teaching, science fair project, making observation journal, and science inquiry. Experimentation was the only domain where the null hypothesis was accepted. This means that respondents did not show statistically significant agreement in ranking the extent of experimentation.

The significant agreement in four domains strengthens confidence in the consistency of teacher perceptions. It suggests that respondents shared similar views regarding how re-teaching, science fair projects, observation journals, and science inquiry were conducted. Such agreement may indicate common instructional expectations across the district. It also implies that these enhancement activities are recognizable and established practices in senior high school science teaching.

The non-significant agreement for experimentation is noteworthy because experimentation is resource-sensitive. Differences in laboratory materials, class size, safety arrangements, teacher confidence, and school facilities can affect how experiments are implemented. Some teachers may conduct experiments more frequently or more systematically than others. This variation likely explains why respondent rankings did not converge significantly.

From a policy perspective, experimentation requires targeted support. Schools may need science kits, shared laboratory materials, safety protocols, and teacher training on low-cost experimentation. District-level technical assistance may also standardize minimum expectations for experimental tasks across schools. Addressing these factors can reduce implementation differences and improve agreement on experimentation practices in future assessments.

Table 4. Key Indicator Profile of Learner Performance Improved Through Enhancement Activities

Performance Dimension	Key Indicator Evidence	Composite Mean	Verbal Interpretation
Basic Science Skills	Accurate systematic observation was highest at 4.95; peer collaboration in investigations was lowest at 4.50.	4.77	Very Much Evident
Critical Thinking	Formulating logical scientific questions was highest at 4.89; evidence justification and real-life transfer were lowest at 4.72.	4.80	Very Much Evident
Problem Solving	Transfer, collaboration, evaluation, strategy selection, and problem identification each reached 5.00; communicating solutions was lowest at 4.79.	4.93	Very Much Evident

Communicating	Audience adaptation, evidence integration, clear expression, logical organization, visual aids, and confident presentations each reached 5.00; reflection on feedback was lowest at 4.97.	4.99	Very Much Evident
Scientific Attitudes and Values	Relevance of science and ethical standards were highest at 4.76; respect for evidence was lowest at 4.67.	4.72	Very Much Evident

Table 4 shows that all learner performance dimensions were rated Very Much Evident. Communicating received the highest composite mean, while developing scientific attitudes and values received the lowest, although still high. The profile indicates that enhancement activities are strongly associated with observable skills such as presentation, explanation, problem solving, and systematic observation. It also shows that affective and values-related science outcomes require more deliberate reinforcement.

The strongest result in communicating suggests that enhancement activities create repeated opportunities for learners to explain science. Science fair presentations, journal entries, group discussions, experiment reports, and inquiry outputs all require learners to use scientific language. The high ratings imply that learners were able to present findings, integrate evidence, use visual aids, and adjust communication to different audiences. This is a strong indicator of performance-based science learning.

Problem solving was also highly evident, with several indicators reaching the maximum mean. Learners were perceived to identify problems, select strategies, collaborate, evaluate outcomes, and transfer solutions to new contexts. These behaviors align with the goals of science learning as an applied and inquiry-driven discipline. Enhancement activities appear to provide authentic situations where learners can practice solution-oriented thinking.

Developing scientific attitudes and values remained Very Much Evident but ranked lowest among the performance dimensions. This implies that learners demonstrate curiosity, honesty, ethical awareness, perseverance, and respect for evidence, but these outcomes may be less consistently observed than skills-based outcomes. Values are often embedded implicitly in activities and may not always be assessed with clear rubrics. The result supports the recommendation to make scientific attitudes and values explicit in activity design, feedback, and assessment.

Table 5. Summary of the Extent of Learner Performance Improvement

Performance Dimension	Weighted Mean	Rank	Verbal Interpretation
Communicating	4.99	1	Very Much Evident
Problem Solving	4.93	2	Very Much Evident
Critical Thinking	4.80	3	Very Much Evident
Basic Science Skills	4.77	4	Very Much Evident
Developing Scientific Attitudes and Values	4.72	5	Very Much Evident

Table 5 ranks the learner performance dimensions improved through enhancement activities. Communicating emerged as the strongest area with a mean of 4.99. Problem solving followed with a mean of 4.93, while critical thinking, basic science skills, and scientific attitudes and values also received Very Much Evident interpretations. The results show that enhancement activities are perceived to support both cognitive and performance-based dimensions of science learning.

The ranking pattern suggests that learners benefit most visibly in tasks requiring output, explanation, and collaboration. Communication and problem solving are often publicly observable through presentations, reports, group work, and demonstrations. Because enhancement activities produce concrete outputs, teachers can easily observe these skills in action. This may partly explain why these two dimensions received the highest means.

Critical thinking and basic science skills were slightly lower but still strong. These dimensions are embedded in tasks such as questioning, observation, measurement, data analysis, and evidence evaluation. Their high ratings indicate that enhancement activities help learners practice core scientific processes. However, these processes may require more structured scaffolding to become consistently deep rather than merely procedural.

The rank of scientific attitudes and values highlights an important instructional challenge. Learners may perform science tasks successfully but still need sustained guidance in honesty, respect for evidence, patience, perseverance, and ethical practice. Values-related outcomes should therefore be designed as visible learning targets rather than assumed by-products. Integrating reflection, ethical criteria, and values rubrics can help address this area.

Table 6. Test of Significant Agreement on the Rank Orders of Learner Performance Improvement

Performance Dimension	Kendall W	Chi-Square	p-value	Decision on Ho	Interpretation
Basic Science Skills	0.96	25.92	$p < 0.005$	Rejected	Significant agreement
Critical Thinking	0.92	24.84	$p < 0.005$	Rejected	Significant agreement
Problem Solving	0.70	18.90	$p < 0.05$	Rejected	Significant agreement
Communicating	0.76	20.52	$p < 0.01$	Rejected	Significant agreement
Developing Scientific Attitudes and Values	0.46	12.42	$p > 0.05$	Accepted	No significant agreement

Table 6 shows significant agreement in the rank orders of basic science skills, critical thinking, problem solving, and communicating. The null hypothesis was rejected in these four areas. Developing scientific attitudes and values was the only dimension where the null hypothesis was accepted. This indicates that respondent groups did not significantly agree on the ranking of values-related performance.

The high Kendall W values for basic science skills and critical thinking indicate strong consistency in respondent judgments. Teachers appeared to share similar perceptions about observable improvements in scientific processes and reasoning. Such agreement is important because these skills are central to science learning and can be evaluated through tasks, reports, and demonstrations. It suggests that enhancement activities are producing recognizable skill outcomes across respondents.

The non-significant agreement for scientific attitudes and values reinforces the earlier finding that values formation is a complex area. Unlike communication or problem solving, values such as respect for evidence, honesty, perseverance, and ethical responsibility may not always appear in easily measurable forms. Respondents may differ in how they observe, define, or rate these behaviors. This points to the need for clearer performance indicators and assessment practices for scientific attitudes.

The implication is not that values are absent, but that they need to be made more explicit and consistently assessed. Science teachers can integrate reflective journaling, ethical discussion, peer evaluation, and evidence-respect criteria into enhancement activities. School heads and curriculum writers can support this by adding values-based descriptors to rubrics. Doing so may strengthen both the visibility and consistency of scientific values in future instruction.

Table 7. Policy Recommendations Derived from the Findings

Stakeholder	Recommended Policy or Practice Direction
School Heads	Integrate enhancement activities into the curriculum, provide resources, monitor implementation, redesign science fairs with values-based criteria, and encourage parents to support evidence-based thinking at home.
DepEd Key Officials	Formulate guidelines, allocate funding, provide technical assistance, and implement monitoring systems that track evidence-based reasoning and enhancement activity implementation.
Curriculum Writers and Science Coordinators	Design enhancement activities that balance measurable competencies with scientific attitudes and values, embed real-world application outcomes, and ensure consistent integration of problem-solving tasks.
Teachers	Implement enhancement activities directly, provide actionable feedback, facilitate peer feedback, encourage reflection after experiments, and adapt activities to learner needs.
Parents, Guardians, and Community Partners	Reinforce scientific attitudes outside the classroom by modeling patience, resilience, reflective communication, feedback appreciation, and evidence-based reasoning in daily life.
Policy Makers and Education Leaders	Support professional development in cooperative learning, allocate resources for team-based science kits, and develop assessments for evidence-based conclusions and real-life critical thinking.

Table 7 translates the empirical findings into stakeholder-specific policy directions. The recommendations emphasize curriculum integration, resource provision, professional development, assessment, home reinforcement, and values formation. They show that enhancement activities cannot be sustained by classroom teachers alone. Effective implementation requires coordinated support from school heads, DepEd officials, curriculum writers, science coordinators, parents, community partners, and policy makers.

The central recommendation is to institutionalize enhancement activities as part of the science curriculum. When activities are systematically integrated, they become planned components of instruction rather than occasional enrichment tasks. School heads play a key role in ensuring that resources, schedules, monitoring, and feedback mechanisms are available. This institutionalization is necessary for equity because learners across schools should have consistent access to meaningful science enhancement opportunities.

The policy recommendations also respond to the weaker areas found in the agreement tests. Experimentation requires resource support and standard procedures, while scientific attitudes and values require clearer criteria and deliberate reinforcement. Recommendations on science kits, shared laboratory materials, ethical criteria, reflection sessions, and evidence-based reasoning directly address these concerns. These actions can help align teacher practice, learner performance, and values formation.

The inclusion of parents and community partners broadens the reach of science enhancement. Scientific attitudes such as perseverance, honesty, respect for evidence, and reflective learning can be reinforced beyond the classroom. Home and community support can help learners see science as a way of thinking rather than only a school subject. This connection strengthens the sustainability of learner performance improvement in science.

4. Conclusions and Implications

4.1 Conclusions

The study concludes that enhancement activities are extensively conducted by senior high school science teachers in Tinambac District. Re-teaching, science fair projects, observation journals, science inquiry, and experimentation all received Very Much Conducted interpretations. This indicates that teachers provide a range of reinforcement and enrichment activities that extend the ordinary science lesson. The overall pattern reflects an instructional culture that recognizes the importance of performance-based science learning.

Science fair project emerged as the highest-rated enhancement activity, followed closely by re-teaching. This suggests that teachers give strong attention to both authentic science performance and remediation. Science fair projects allow learners to demonstrate inquiry, creativity, experimentation, and communication, while re-teaching allows teachers to address misconceptions and learning gaps. Together, these activities create a balanced enhancement environment for senior high school science learners.

The significant agreement found in most enhancement activities confirms that respondents shared common perceptions regarding their implementation. Re-teaching, science fair project, making observation journal, and science inquiry showed significant concordance in rank orders. This strengthens the reliability of the finding that these activities are consistently recognized across respondents. Experimentation, however, did not show significant agreement, suggesting contextual variation in how experimental activities are conducted.

The lack of significant agreement for experimentation points to a practical implementation concern. Experimentation depends heavily on equipment, materials, safety procedures, time, and teacher confidence. Differences in these conditions can produce variation in classroom practice. The study therefore concludes that experimentation needs targeted support to make its implementation more consistent across school contexts.

Learner performance improvement was rated Very Much Evident across all measured dimensions. Communicating, problem solving, critical thinking, basic science skills, and scientific attitudes and values all received high means. This indicates that enhancement activities are perceived to support science competencies that go beyond memorization. Learners are seen as developing the ability to explain, solve, reason, observe, measure, reflect, and act responsibly in science tasks.

Communicating and problem solving were the strongest learner performance areas. These results suggest that enhancement activities give learners meaningful opportunities to present findings, use evidence, collaborate, evaluate outcomes, and transfer solutions to new situations. Such outcomes are particularly important for senior high school science because learners are expected to communicate scientific understanding clearly and apply it in authentic contexts. The findings affirm the relevance of enhancement activities in developing visible performance competencies.

Scientific attitudes and values received a high mean but showed no significant agreement in rank orders. This means that values-related outcomes are present but may not be consistently observed or assessed across respondents. The study concludes that curiosity, honesty, perseverance, ethical awareness, and respect for evidence need more explicit instructional and assessment treatment. Values formation should be intentionally built into science activities rather than treated as an assumed outcome.

The policy recommendations derived from the findings are therefore justified and necessary. School heads must integrate enhancement activities into the curriculum, DepEd officials must provide guidelines and funding, curriculum writers must balance skills and values, and teachers must implement reflective and evidence-based activities. Parents and community partners must also reinforce scientific attitudes outside school. The study concludes that science performance improves best when classroom practice and institutional support work together.

4.2 Implications

The findings imply that enhancement activities should be treated as essential components of senior high school science instruction. Schools should not view re-teaching, science fairs, journals, inquiry, and experimentation as optional add-ons. These activities directly support performance dimensions that matter in science learning. Institutionalizing them can improve the coherence and continuity of science instruction.

For school heads, the results imply the need for stronger instructional leadership in science. School leaders should ensure that enhancement activities are reflected in lesson plans, class programs, learning action cells, monitoring tools, and resource allocation. They should also create mechanisms for teachers to share successful practices and address implementation challenges. Such leadership can help sustain high levels of activity conduct across schools.

For DepEd key officials and policy makers, the results imply that science enhancement requires policy, funding, and technical assistance. Districts and divisions should provide clear guidelines on how enhancement activities can be implemented and assessed. Funding should prioritize laboratory materials, science kits, digital resources, and teacher training. Policy support is especially needed for experimentation because it showed no significant agreement in rank order.

For curriculum writers and science coordinators, the findings imply the need for activity designs that integrate competencies and values. Enhancement tasks should not only develop measurable skills such as communication and problem solving but also cultivate honesty, curiosity, perseverance, and respect for evidence. Rubrics should include values-related criteria so that teachers and learners know what scientific attitudes look like in practice. This can make values formation more observable and assessable.

For science teachers, the results imply a continuing need to refine classroom implementation. Teachers should sustain highly rated practices while strengthening inquiry depth, experimentation consistency, and reflective learning. They should provide specific feedback, facilitate peer feedback, and guide learners in connecting science concepts to real-life decisions. These practices can help enhancement activities become more than tasks; they become learning experiences that build scientific literacy.

For learners, the findings imply that performance improves when they are actively involved in scientific processes. Enhancement activities give learners opportunities to ask questions, record observations, test ideas, solve problems, and present conclusions. These experiences can build confidence and competence in science. They also help learners understand that science involves communication, evidence, responsibility, and persistence.

For parents, guardians, and community partners, the study implies that science learning can be reinforced outside the classroom. Families can support scientific attitudes by encouraging evidence-based explanations, valuing feedback, celebrating improvement, and modeling patience during problem solving. Community partners can support science projects, resource generation, and real-world applications. Such reinforcement can strengthen the link between school science and everyday life.

For future research and quality assurance, the findings imply the need for longitudinal and comparative investigations. Future studies may examine how enhancement activities affect actual learner achievement over time and how implementation differs across school sizes and resource contexts. Researchers may also develop tools for measuring scientific attitudes and values more consistently. These directions can strengthen the evidence base for science enhancement policies in public senior high schools.

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