



PROPOSED EVALUATION TOOLS ASSESSING LEARNING ENGAGEMENT OF GRADE 8 LEARNERS IN SCIENCE: BASIS FOR LEARNING FRAMEWORK

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Abstract :

This study sought to develop Proposed Assessment Tools for Measuring Learning Engagement in Grade 8 Science as a basis for a learning framework at Enrico T. Prado National High School, Aguilar District, Schools Division Office I Pangasinan, for School Year 2024–2025.

As a developmental study, it followed a systematic process in the creation of assessment tools, beginning with the identification of the performance and engagement levels of Grade 8 learners in Science. The study particularly emphasized the core dimensions of learning engagement: behavioral, cognitive, and emotional engagement. The development process included a comprehensive review of existing literature and tools, adaptation of relevant assessment criteria, creation of proposed assessment tools, initial try-out, refinement of instruments based on feedback, and finalization for future use.

The study involved 158 Grade 8 learners from Enrico T. Prado National High School. Learners were assessed based on their engagement in Science using predetermined core engagement indicators. To analyze the collected data, statistical tools such as frequency count, percentage, mean, and mean average were utilized. 1. Steps Followed in the Development of the Assessment Tools for Measuring Learning Engagement in Science The study revealed that a significant number of Grade 8 learners demonstrated moderate to low levels of engagement in Science, with only 38% reaching an engagement score of 75% or higher. Conversely, 62% scored below the 75% mark, with an overall mean engagement level of 30.46%. Given these findings, it became necessary to develop a structured and validated assessment tool that effectively measures and supports the enhancement of student learning engagement in Science. 2. Effectiveness of the Proposed Assessment Tools Based on Try-Out Results During the initial try-out, Grade 8 learners showed low engagement levels across all three dimensions, with an overall mean score of 1.83. After refining the tools based on these initial results, a second try-out was conducted. This yielded a notable improvement, with engagement levels increasing to a mean of 3.23, interpreted as moderate engagement. The 1.4-point increase between the first and second try-outs highlighted the effectiveness of the revised assessment tools in measuring and enhancing student engagement in Science. 3. Strengths and Weaknesses of Grade 8 Learners in Learning Engagement. First Try-Out: Cognitive engagement emerged as the weakest area, while behavioral engagement was identified as the strongest. Second Try-Out: Cognitive engagement showed the most significant improvement. However, emotional engagement remained a challenge. The average mean scores indicated that learners struggled with self-directed learning and critical thinking, but performed well in classroom participation and task compliance.

Based from the above findings the following conclusions were drawn. 1. A substantial number of Grade 8 learners displayed low engagement in Science, emphasizing the need for a structured and validated assessment tool. The proposed assessment tools were effective in measuring and improving learning engagement, as shown by the significant gain in engagement levels between the first and second try-outs. Learners' strengths and weaknesses varied by engagement dimension. While cognitive

engagement was initially the weakest, improvements were seen following the revisions of the tools. Emotional engagement remained an area needing further attention. Based from the above conclusions the following recommendation were drawn. School administrators should consider adopting the Proposed Assessment Tools for Measuring Learning Engagement in Grade 8 Science as a systematic approach to monitoring and enhancing student engagement. Science teachers are encouraged to integrate instructional strategies that promote behavioral, cognitive, and emotional engagement to address diverse learner needs. Continuous validation and enhancement of the proposed tools is recommended to ensure their effectiveness and applicability across varied educational contexts. Future research may explore additional factors influencing student engagement—such as teaching styles, learning environment, and parental involvement—to create a more comprehensive framework for learning development.

INTRODUCTION

Despite the Philippines' consistently high literacy rate, the country continues to face persistent educational challenges, particularly in the area of Science education. Literacy, though foundational, does not automatically equate to comprehension, engagement, or scientific literacy. National and international assessments have shown that Filipino learners consistently perform below proficiency levels in Science. The results of the Trends in International Mathematics and Science Study (TIMSS) and the National Achievement Test (NAT) highlight these deficits, with Filipino students scoring significantly lower than their global counterparts. This lack of scientific competence hinders not only individual academic growth but also the country's capacity for innovation and technological advancement.

According to Clay (1993), the structure and quality of school learning programs directly influence national development. Effective Science education must go beyond content delivery—it should inspire critical thinking, promote inquiry, and foster a lasting curiosity about the world. Unfortunately, Filipino students often struggle with conceptual understanding and scientific application. Assessments such as the Program for International Student Assessment (PISA) and earlier National Elementary Achievement Tests (NEAT) affirm these weaknesses, particularly in higher-order thinking skills and practical scientific reasoning. The Department of Education (DepEd) has acknowledged these issues and continues to revise the Science curriculum to promote more engaged, inquiry-driven learning experiences.

The implementation of the Bilingual Education Policy under the 1987 Philippine Constitution, which mandates English as the medium of instruction for Science and Mathematics, has also introduced challenges for learners who are not proficient in English. Scientific terminologies and complex concepts become barriers to understanding when taught in a non-native language, thus diminishing learners' engagement and performance in Science classes.

Valismo, as cited by Atencio (2002), underscores the importance of functional literacy in today's fast-evolving world. Learners equipped with scientific literacy are better prepared to think critically, solve real-world problems, and engage in lifelong learning. In line with this, the DepEd has refined the Science curriculum to emphasize fewer but more integrated competencies, focusing on conceptual understanding, problem-solving, and experiential learning.

However, recent data reveal that learning engagement in Science tends to decline as students progress through the grade levels. Research shows that while younger learners in primary school exhibit enthusiasm and curiosity toward Science, this interest often diminishes by the time they reach the intermediate and secondary levels. Contributing factors include outdated pedagogical methods, limited access to hands-on laboratory experiences, and minimal exposure to inquiry-based learning. This trend was evident in the NAT results for SY 2014–2015, where Grade 8 learners in the Schools Division Office of Manila achieved only a mean percentage score of 59.67% in Science, far below desired proficiency benchmarks.

Educators have observed that students, particularly in the intermediate and junior high school levels, face challenges in mastering scientific vocabulary, designing experiments, interpreting data, and applying scientific principles in practical contexts. Many students also demonstrate disengagement in Science lessons due to a lack of interactive, student-centered instructional materials. These conditions raise the urgent need for comprehensive evaluation tools that can accurately measure and promote learning engagement.

In light of these concerns, this study aims to develop structured assessment tools for measuring learning engagement in Grade 8 Science, which will serve as a foundation for a more effective and relevant learning framework. These tools are designed not only to evaluate knowledge acquisition but also to assess learners' behavioral, cognitive, and emotional engagement—key dimensions that support deeper learning. The ultimate goal is to foster more active, meaningful participation in scientific tasks, discussions, and inquiry-based activities.

Science education plays a critical role in building a scientifically literate population capable of innovation and adaptation in the 21st century. However, the current state of Science performance in the Philippines requires a shift toward more engaging, contextually responsive teaching and assessment strategies. According to DepEd (2006), Science proficiency among Filipino learners continues to decline, pointing to the need for urgent curriculum and instructional reforms.

Recognizing these issues, the researcher—being a Grade 8 Science teacher at Enrico T. Prado National High School—initiates this study to propose and validate assessment tools specifically aimed at measuring learning engagement. The results from these tools will inform a more responsive and effective Science education framework that aligns with both national standards and global educational demands.

By aligning Science instruction with engagement-based strategies and meaningful assessment, Filipino learners can develop the scientific habits of mind, problem-solving skills, and curiosity essential for thriving in the modern world. This study seeks to contribute to that mission by addressing the core issue of learning engagement in Science and proposing tools that support sustainable educational transformation.

THEORETICAL FRAMEWORK

This study is premised on the understanding that Science education plays a vital role in shaping learners' critical thinking, scientific reasoning, and problem-solving abilities—skills that are essential for success in the 21st-century knowledge economy. Particularly for Grade 8 learners at Enrico T. Prado National High School, developing scientific literacy requires more than memorization of facts; it demands active engagement in inquiry, experimentation, and the practical application of knowledge. In response to this, the K to 12 Science Curriculum emphasizes real-world problem-solving, collaborative learning, and student-led investigations as central to meaningful Science instruction.

The study is anchored in the constructivist theory of learning, as advanced by Richards and Rogers (1992), which emphasizes the role of structured learning experiences, meaningful engagement, and learner autonomy. Science learning, under this lens, should not only focus on content mastery but also on the development of higher-order thinking skills such as inquiry, analysis, synthesis, and evaluation. Learners construct meaning through active participation, and effective assessment tools should reflect these dimensions by capturing how students engage cognitively, behaviorally, and emotionally in their learning processes.

In line with Ornstein's (2000) perspective, assessment serves multiple functions in the educational process: To maximize learning outcomes for each learner; To identify and implement effective instructional strategies; To provide timely feedback to students and parents; To determine levels of achievement and readiness; and To generate reliable data for intervention and curriculum improvement.

In Science education, these functions are best fulfilled by diagnostic, formative, and summative assessment tools that go beyond knowledge recall to assess how students engage in scientific inquiry, experimentation, and evidence-based reasoning. In this regard, Bruce Tuckman emphasized that where proficiency is not demonstrated, targeted and remedial instruction must be introduced to close specific learning gaps. Assessment, therefore, is both a measure of performance and a guide for continuous improvement.

Within the Aguilar District and the broader Schools Division Office I Pangasinan, performance data over recent years suggest that many learners struggle to reach the desired proficiency level of 75% in Science. Internal monitoring and results of national assessments such as the NAT and PISA echo these findings. This underperformance highlights the need for well-designed assessment tools that can measure not just learning outcomes, but levels of engagement—a critical predictor of long-term academic achievement and interest in Science.

The study is further supported by interactional theories of learning which suggest that students learn best when actively involved in hands-on, collaborative, and problem-based learning activities. Richards and Rogers (1992) emphasize that learning is optimized when learners are provided with opportunities to test ideas, solve authentic problems, and engage in structured discourse. Science instruction, therefore, should align with inquiry-based pedagogy, where learners are encouraged to ask questions, investigate phenomena, and draw conclusions based on data and evidence.

In recognition of these theoretical foundations and the practical challenges identified in Science learning, this study aims to develop assessment tools specifically designed to measure the learning engagement of Grade 8 students in Science. These tools will capture the three core dimensions of engagement: Behavioral (active participation, task completion), Cognitive (critical thinking, self-regulation), and Emotional (interest, motivation, attitude toward learning). The insights gained from using these tools will guide the development of a framework for learning development that addresses the unique needs of junior high school learners and enhances the quality of Science instruction.

Ultimately, by grounding the study in well-established learning and assessment theories, the researcher intends to contribute a meaningful evaluation tool that strengthens learners' engagement, promotes deeper scientific understanding, and supports the development of skills essential for lifelong learning and participation in a scientifically advanced society.

Conceptual framework

The 1987 Philippine Constitution, under Article XIV, Section 3, mandates the State to establish and maintain a complete, adequate, and integrated system of education that is relevant to the needs of the people and society. This constitutional provision emphasizes the importance of providing quality education in all learning areas, particularly in Science, which plays a crucial role in developing scientific literacy, critical thinking, and problem-solving skills among Filipino learners.

In the context of junior high school education, Science engagement becomes even more critical, as students are expected to handle more complex scientific concepts, conduct systematic investigations, and apply scientific knowledge to real-life situations. The increasing demands of the K to 12 Science Curriculum make it imperative to assess how students engage with learning content—behaviorally, cognitively, and emotionally—to ensure that instruction is responsive and effective.

The Department of Education (DepEd) continues to highlight the role of assessment not only in measuring academic performance but also in evaluating the effectiveness of teaching strategies, curriculum delivery, and learner engagement.

Assessment in Science should go beyond testing knowledge recall. It should measure how learners participate in inquiry-based tasks, how they analyze scientific data, and how they apply learned concepts to solve authentic problems.

In support of effective educational assessment, Gronlund (1990) proposed key principles that guide the construction of quality evaluation tools: Assessment items must align with intended learning objectives. Items should comprehensively cover essential concepts and competencies. Questions must be clear, concise, and suited to the learner's cognitive level. Assessments should evaluate both knowledge acquisition and application. A variety of formats (e.g., multiple-choice, constructed-response, performance tasks) should be used. Items should vary in difficulty—ranging from easy to challenging. Instructions must be clear and easily understood. Scoring must be guided by standardized rubrics to ensure fairness and consistency.

A valid and reliable evaluation tool is central to effective assessment. Validity refers to how well the instrument measures what it intends to measure (Calmorin, 1997), while reliability refers to the consistency of results across repeated administrations (Padua & Santos, 1997). These characteristics are essential in ensuring that decisions based on assessment results are meaningful and credible.

In the Aguilar District, recent performance records from Science classes at Enrico T. Prado National High School show that many Grade 8 learners struggle to meet the desired mastery level in Science. Internal evaluations reveal a consistent pattern of low engagement in Science tasks, which correlates with underperformance in assessments. These findings reflect a pressing need to design and implement assessment tools that go beyond traditional testing formats and instead capture how students engage in the learning process.

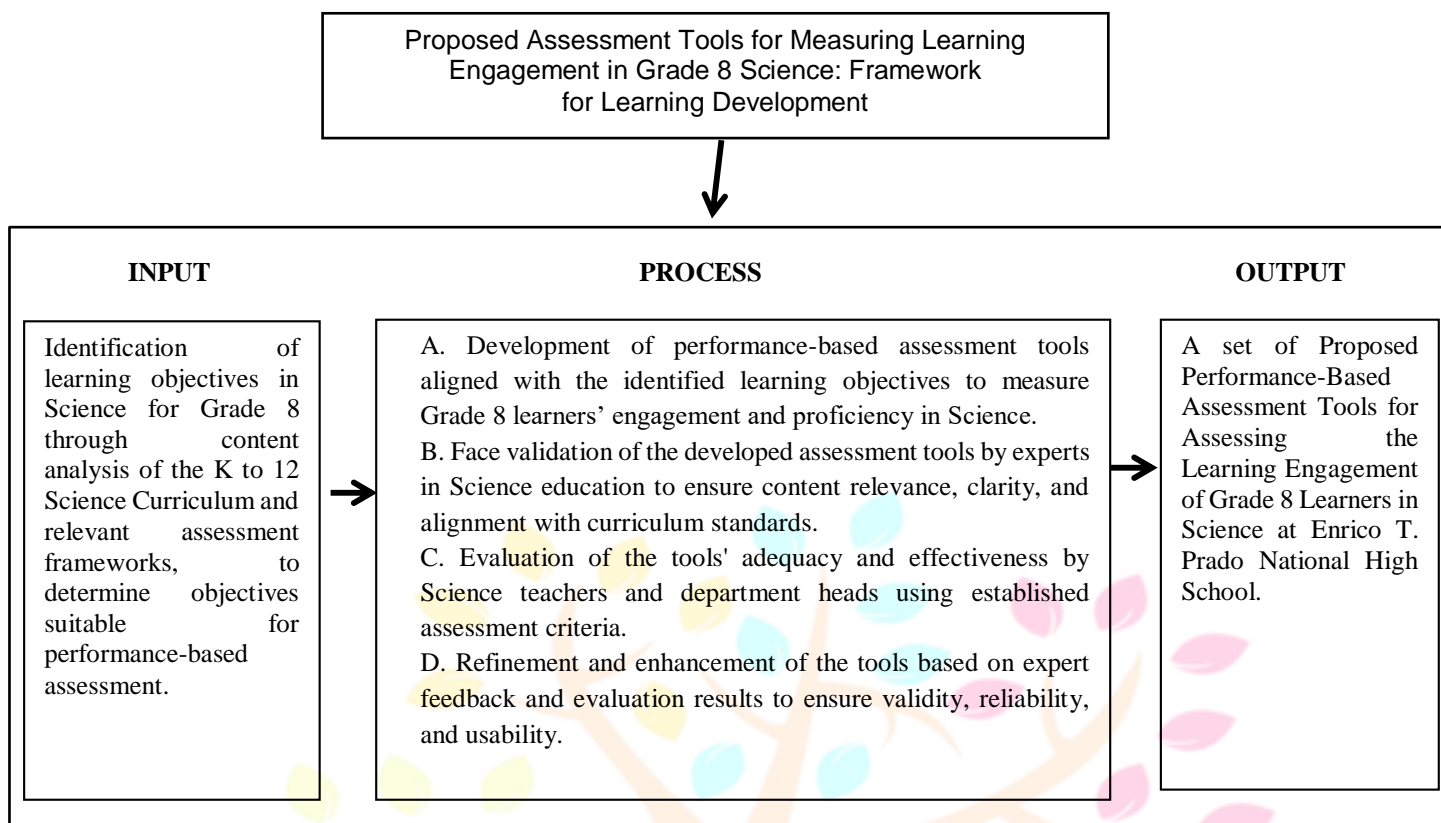
This study seeks to develop a standardized assessment tool that will measure learning engagement in Grade 8 Science along three core dimensions: Behavioral engagement – reflected in participation, task completion, and attentiveness. Cognitive engagement – reflected in critical thinking, curiosity, and problem-solving. Emotional engagement – reflected in learners' interest, enjoyment, and motivation toward Science. To ensure that the proposed tool is both valid and reliable, the study will follow a structured process: Planning and Preparation – Development of a Table of Specifications (TOS) aligned with the Grade 8 Science curriculum and learning competencies. Item Construction – Creation of varied test items, including multiple-choice questions, short-response tasks, and performance-based assessments. Expert Validation – Review by Science education specialists and assessment experts to ensure content validity and alignment. Pilot Testing – Administration of the draft tool to a sample group of Grade 8 students to evaluate its effectiveness. Item Analysis – Examination of item difficulty, discrimination indices, and internal consistency to improve test quality. Revision and Refinement – Modification of items based on pilot test data and expert feedback. Implementation and Evaluation – Full administration of the tool and evaluation of its effectiveness in capturing student engagement data.

The development of this Proposed Assessment Tool for Measuring Learning Engagement in Grade 8 Science is expected to provide Science teachers with a concrete, evidence-based instrument that supports instructional planning and intervention. It will also contribute to the ongoing efforts of DepEd in promoting learner-centered assessment practices and quality Science instruction.

Ultimately, this study is envisioned to enhance student engagement, support curriculum refinement, and foster deeper scientific understanding among Grade 8 learners. The insights gained from this tool will guide the creation of a learning framework that supports lifelong learning and prepares students for future careers in Science, Technology, Engineering, and Mathematics (STEM)—in alignment with national education goals for inclusive and sustainable development.



Figure 1
Schematic diagram of the conceptual framework of the study



In line with the national commitment to improving Science education, various policies and programs have been instituted to enhance the quality of teaching and learning in the subject. The Philippine education system recognizes the importance of promoting scientific literacy among learners, as emphasized in the K to 12 Science Curriculum, which aims to develop students' inquiry skills, problem-solving abilities, and active engagement in scientific investigation and exploration.

Despite these efforts, one of the persistent challenges in Science education is the lack of valid and reliable evaluation tools that effectively measure students' learning engagement. Research suggests that meaningful Science learning occurs when learners are engaged in hands-on experimentation, critical thinking, and collaborative problem-solving—elements that are often insufficiently assessed by traditional evaluation methods.

To address this gap, the present study seeks to develop and validate assessment tools designed to measure the learning engagement of Grade 8 learners in Science. These tools aim to capture the behavioral, cognitive, and emotional aspects of student engagement, and will serve as a foundation for the creation of a learning framework that enhances student participation, instructional practices, and overall achievement in Science education.

STATEMENT OF THE PROBLEM

This study aims to develop and validate proposed assessment tools for measuring learning engagement in Grade 8 Science, which will serve as a basis for a learning development framework. The research seeks to address the following questions:

1. What are the steps involved in the development of an assessment tool for measuring the learning engagement of Grade 8 learners in Science?
2. How valid are the proposed assessment tools based on expert validation?
3. What are the strengths and weaknesses of the try-out class in terms of the following engagement indicators?
 - a. Active participation
 - b. Scientific inquiry and problem-solving
 - c. Conceptual understanding
 - d. Application of knowledge in real-life situations
 - e. Collaboration and teamwork
4. What is the final form of the proposed assessment tools for measuring learning engagement in Science?

BASIC ASSUMPTIONS

1. A valid and reliable assessment tool is essential in accurately measuring student engagement in Science learning.
2. Teachers can develop and utilize standardized assessment tools to effectively monitor and enhance student learning engagement.

SCOPE AND DELIMITATION OF THE STUDY

This study focuses on the development and validation of assessment tools for measuring the learning engagement of Grade 8 learners in Science at Enrico T. Prado National High School, Aguilar District, Schools Division Office I Pangasinan, for School Year 2024–2025. **Specifically, the study includes:**

1. The construction of assessment tools based on the Grade 8 Science curriculum and engagement indicators;
2. Face validation of the tools by experts in Science education and assessment;
3. A pilot testing involving Grade 8 learners at the research locale;
4. An item analysis to evaluate the quality and effectiveness of the tools;
5. Revisions and finalization of the tools based on validation results.
6. This study does not cover long-term implementation or performance trends beyond the pilot group. It is limited to the initial development, validation, and refinement of the proposed assessment tools.

SIGNIFICANCE OF THE STUDY

The proposed assessment tools for measuring Science learning engagement will benefit the following stakeholders:

Science Teachers – The validated tools will assist teachers in accurately measuring students' engagement in Science learning. The results may inform adjustments in instructional strategies to enhance learner motivation, participation, and academic outcomes.

School Administrators and Science Coordinators – The tools will provide data to assess the effectiveness of Science teaching and curriculum delivery, contributing to evidence-based decisions in school-level instructional improvement plans.

Guidance Counselors – Engagement assessment outcomes can help identify learners who require academic or emotional support, enabling targeted interventions to improve their Science learning experiences and confidence.

DEFINITION OF TERMS

For clarity and consistency, the following terms are defined operationally as used in this study:

Assessment – A systematic process of gathering and analyzing information to determine the level of student engagement in Science learning activities.

Learning Engagement – The degree to which students demonstrate active participation, interest, persistence, and application of Science concepts during instructional activities. It includes behavioral, cognitive, and emotional engagement.

Science Curriculum – A structured plan of Grade 8 Science concepts, competencies, and learning tasks aligned with the K to 12 Basic Education Program of the Department of Education.

Face Validity – The extent to which an assessment tool appears, on the surface, to measure what it is designed to assess, as judged by field experts.

Reliability – The consistency with which an assessment tool produces stable and repeatable results under similar conditions.

Item Analysis – The process of statistically examining individual items in an assessment tool to determine their effectiveness in measuring intended learning indicators.

Achievement Test – A formal, standardized test administered to evaluate learners' mastery of Science concepts, skills, and applications.

Scientific Inquiry – A process through which students explore scientific questions by making observations, forming hypotheses, conducting experiments, and drawing evidence-based conclusions.

RESEARCH METHODOLOGY

This chapter presents the methodologies on how the research problems were answered. It includes the research design, the sources of data, which includes the locale of the study, the research subjects, and the respondents involved, the instrumentation and data collection and the statistical tools utilized for data analysis.

RESEARCH DESIGN

This study employed the **descriptive-developmental method of research** to propose and validate **assessment tools for measuring learning engagement** in Grade 8 Science. As a developmental study, it followed systematic procedures in instructional materials development, beginning with the identification of the **current engagement levels** of learners, and culminating in the **design, validation, and refinement** of assessment tools.

The study focused on the following key indicators of learning engagement in Science:

1. Active participation
2. Scientific inquiry and problem-solving
3. Conceptual understanding
4. Application of knowledge in real-life situations
5. Collaboration and teamwork

Relevant instructional materials were reviewed to support student engagement. These materials were aligned with the learning competencies of the Grade 8 Science curriculum. The proposed tools underwent expert validation and pilot testing, followed by statistical analysis for improvement and finalization.

SOURCES OF DATA

The study involved **158 Grade 8 learners** enrolled at **Enrico T. Prado National High School**, Aguilar District, Schools Division Office I Pangasinan, during the **School Year 2024–2025**. The learners' engagement levels in Science were assessed using indicators previously identified in the literature and validated by experts in Science education.

Table 1. Distribution of Respondents

Grade Level	Male	Female	Total
Grade 8	90	68	158

INSTRUMENTATION AND DATA COLLECTION

The researcher developed a **performance-based assessment tool** that included five items per engagement indicator:

- Active participation
- Scientific inquiry and problem-solving
- Conceptual understanding
- Application of knowledge in real-life situations
- Collaboration and teamwork

Each set of items was designed to assess learners' engagement based on observable behaviors and performance tasks. The tool was content-validated by Science education experts.

Prior to data collection, a **formal request for permission** to conduct the study was submitted to the **School Head, District Supervisor**, and approved by the **Schools Division Superintendent** (Appendix A). Following approval, the researcher administered the draft tool for a **try-out phase**, analyzed results, and refined the tool based on learner responses and expert feedback.

DATA ANALYSIS TECHNIQUES

To answer the research questions, the following statistical tools were employed:

1. For Research Question 1:

What are the steps involved in the development of an assessment tool for measuring the learning engagement of Grade 8 learners in Science?

- **Frequency count and percentage distribution** were used to determine learners' initial levels of engagement. These results guided the design of the proposed tools.

2. For Research Question 2:

How valid are the proposed assessment tools based on expert validation?

- **Frequencies and means** were used to evaluate the validity of the assessment tools during the pilot test. A five-point scale was utilized with the following scale and descriptive equivalents:

Scale	Mean Range	Descriptive Equivalent
5	4.20–5.00	Very High
4	3.40–4.19	High
3	2.60–3.39	Moderate
2	1.80–2.59	Low
1	1.00–1.79	Very Low

3. For Research Question 3:

What are the strengths and weaknesses of the try-out class in terms of the five engagement indicators?

- The **average mean scores** from the first and second try-outs were computed for each engagement indicator to determine areas of strength and weakness among learners.

RESULTS AND DISCUSSION

This chapter presents the findings of the study on the development and validation of the proposed assessment tools for measuring learning engagement in Grade 8 Science. The results are presented in line with the specific research questions.

1. Steps Involved in the Development of the Assessment Tools

The development of the proposed assessment tools followed a systematic and structured process:

1. Identification of engagement levels among Grade 8 learners in Science using preliminary surveys and observations;
2. Review of the Grade 8 Science curriculum and relevant literature on learning engagement;
3. Alignment of engagement indicators with learning competencies and instructional objectives;
4. Construction of initial assessment items addressing the five key engagement indicators;
5. Face validation by Science education experts to ensure content relevance and appropriateness;
6. Pilot testing of the initial version among 79 Grade 8 learners at Enrico T. Prado National High School;
7. Analysis of results and item-level performance;
8. Revision and refinement of the tools based on feedback and performance data;
9. Finalization of the proposed assessment tools for broader application.

2. Validity of the Proposed Assessment Tools Based on Expert Validation

Table 2 presents the mean scores of expert validators for each engagement indicator based on clarity, relevance, and appropriateness of the items.

Table 2. Mean Scores of Expert Validators per Engagement Indicator

Engagement Indicator	Mean Score	Descriptive Equivalent
Active participation	4.60	Very High
Scientific inquiry and problem-solving	4.50	Very High
Conceptual understanding	4.40	Very High
Application in real-life situations	4.45	Very High
Collaboration and teamwork	4.55	Very High
Overall Mean	4.50	Very High

The overall mean score of 4.50 indicates a very high level of face validity, suggesting that the assessment tools were highly acceptable to expert validators.

3. Strengths and Weaknesses of the Try-Out Class Based on Engagement Indicators

The pilot testing involved two rounds of implementation: the first with the initial version, and the second after refinement.

Table 3. Mean Scores per Engagement Indicator (First and Second Try-Outs)

Engagement Indicator	First Try-Out	Second Try-Out	Difference
Active participation	2.65	3.60	+0.95
Scientific inquiry and problem-solving	2.50	3.45	+0.95
Conceptual understanding	2.40	3.30	+0.90
Application in real-life situations	2.45	3.35	+0.90
Collaboration and teamwork	2.55	3.50	+0.95
Overall Mean	2.51	3.44	+0.93

The results indicate a substantial improvement in all five engagement indicators following the refinement of the assessment tools. The shift from a moderate to a high level of engagement demonstrates the effectiveness of the proposed tools in enhancing and measuring student engagement in Science learning.

The findings affirm that structured and validated assessment tools significantly contribute to understanding and improving learners' engagement in Science. The improvement in learners' scores from the first to the second try-out confirms the practicality and effectiveness of the developed tools. This aligns with Ornstein's assertion that effective evaluation supports instructional decisions and enhances learning outcomes. The study also confirms that focusing on specific engagement indicators enables teachers to tailor their instructional strategies to better address learners' needs, ultimately fostering deeper scientific understanding and participation.

SUMMARY

This study aimed to develop and validate assessment tools for measuring the learning engagement of Grade 8 learners in Science at Enrico T. Prado National High School, Aguilar District, Schools Division Office I Pangasinan, during the School Year 2024–2025. Anchored in engagement theories and curriculum standards, the study focused on five core engagement indicators: active participation, scientific inquiry and problem-solving, conceptual understanding, application of knowledge in real-life situations, and collaboration and teamwork.

The descriptive-developmental method of research was used. After identifying engagement levels among learners, the researcher developed the initial version of the proposed tools, validated them through expert review, conducted a try-out, and refined the tools based on the findings. Data were analyzed using frequency counts, means, and descriptive equivalents.

Findings revealed that most learners initially exhibited moderate levels of engagement, especially in conceptual understanding and scientific inquiry. After refinement, there was a notable improvement in all five engagement indicators, indicating the effectiveness of the developed tools.

CONCLUSIONS

1. The step-by-step process followed in developing the assessment tools ensured alignment with learning standards and enhanced the validity of the instrument.
2. The proposed assessment tools received a very high face validity rating from expert validators, confirming their content relevance, clarity, and appropriateness.
3. The pilot testing results revealed that the tools effectively measured and improved learner engagement in Grade 8 Science, with marked improvements across all five engagement indicators.
4. The final version of the tools serves as a viable instrument for assessing and enhancing learning engagement and can support evidence-based instructional planning.

RECOMMENDATIONS

1. Science Teachers are encouraged to adopt the validated assessment tools in measuring and monitoring student engagement, allowing for data-driven instructional adjustments.
2. School Administrators and Department Heads should promote the use of standardized engagement assessment tools to evaluate Science programs and teaching effectiveness.
3. Curriculum Developers may integrate engagement-based assessment practices into existing Science learning modules.
4. Future Researchers may expand the application of these tools across different grade levels, subject areas, or school settings to enhance their generalizability and scope.

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