



PROPOSED EVALUATION TOOLS ASSESSING LEARNING ENGAGEMENT OF GRADE 6 LEARNERS IN SCIENCE: BASIS FOR LEARNING FRAMEWORK

RAQUEL DE LEON MISLANG

Program : Master of Arts in Education
Major in School Administration

Institution : Institute of Graduate and Professional Studies
Lyceum-Northwestern University
Dagupan City

Abstract : This study sought to propose Evaluation Tools Assessing Learning Engagement of Grade 6 Learners in Science as a basis for a learning framework at Isabelo Delos Reyes Elementary School, Schools Division Office of Manila, for School Year 2023-2024.

As a developmental study, it followed scientific steps in instructional materials development, starting with the identification of the performance and engagement levels of Grade 6 learners in Science. The study particularly focused on the core dimensions of learning engagement: behavioral, cognitive, and emotional engagement. The process included reviewing existing literature and tools, adapting relevant assessment criteria, developing the proposed evaluation tools, conducting an initial try-out, refining the instruments based on feedback, and finalizing the tools for future implementation.

The study involved 158 Grade 6 learners from Isabelo Delos Reyes Elementary School. They were assessed based on their engagement in Science lessons using pre-identified core engagement factors.

To analyze the gathered data, statistical tools such as frequency count, percentage, mean, and mean average were utilized. 1.Steps Followed in the Development of the Evaluation Tools Assessing Learning Engagement in Science The study revealed that a majority of Grade 6 learners demonstrated moderate to low engagement levels in Science, with only 38% of learners achieving an engagement score of 75% or above. In contrast, 62% of learners fell below the 75% threshold, with an overall mean engagement score of 30.46%.

Given these results, it became imperative to develop a structured evaluation tool that accurately assesses and enhances students' learning engagement in Science.2. Effectiveness of the Proposed Evaluation Tools Based on Try-Out Results During the first try-out, the Grade 6 learners exhibited low engagement levels across the three engagement dimensions, with an overall mean of 1.83. After refining the tools based on the first try-out results, a second try-out was conducted, which showed a significant improvement. The learners' engagement levels increased to a mean of 3.23, with a descriptive rating of "moderate engagement".The difference of 1.4 points between the first and second try-outs signifies the effectiveness of the revised evaluation tools in assessing and improving learning engagement in Science.3. Strengths and Weaknesses of Grade 6 Learners in Learning Engagement. First Try-Out: The weakest aspect of engagement among learners was cognitive engagement, while their strength was behavioral engagement. Second Try-Out: The learners showed the most improvement in cognitive engagement, but emotional engagement remained a challenge. The average mean of engagement factors indicated that learners struggled with self-directed learning and critical thinking, while they excelled in participation in classroom activities.

Based on the findings, the following conclusions were drawn: 1. A significant number of Grade 6 learners exhibited low engagement levels in Science, necessitating a structured and validated evaluation tool.2. The proposed

evaluation tools proved effective in assessing and improving learning engagement, as demonstrated by the significant improvement in engagement scores between the first and second try-outs.³ The strengths and weaknesses of learners varied across engagement dimensions. Initially, cognitive engagement was the weakest aspect, but improvements were observed after revisions in the evaluation tools.

Based on the conclusions, the following recommendations are offered: 1. School administrators should consider adopting the Proposed Evaluation Tools Assessing Learning Engagement in Science to systematically monitor and enhance student engagement levels. 2. Teachers should integrate engagement-based activities that cater to cognitive, behavioral, and emotional engagement to address learners' weaknesses in these areas. 3. Further validation and refinement of the proposed evaluation tools should be conducted to ensure their applicability in diverse learning contexts. 4. Future researchers may explore additional factors affecting learning engagement, such as classroom environment, teaching strategies, and parental involvement, to develop a more comprehensive learning framework.

INTRODUCTION

The Philippines continues to struggle with educational challenges despite its high literacy rate. While literacy is a foundation of learning, studies have shown that mere literacy does not equate to a high level of comprehension, engagement, or scientific literacy. The country's performance in Science education remains below international standards, as evidenced by national and international assessments. The Trends in International Mathematics and Science Study (TIMSS) and the National Achievement Test (NAT) reveal that Filipino students have consistently performed below proficiency levels in Science. This underperformance in scientific literacy directly impacts national development, innovation, and technological advancement.

According to Clay (1993), school learning programs significantly influence national progress. Effective Science education should not only impart knowledge but also cultivate scientific inquiry, critical thinking, and a lifelong interest in discovery. However, research has indicated that Filipino learners struggle with conceptual understanding and application in Science. Several national educational assessments, such as the National Elementary Achievement Test (NEAT) and Program for International Student Assessment (PISA), reveal that Filipino students often fail to demonstrate mastery of fundamental scientific principles. The Department of Education (DepEd) has acknowledged this issue and has sought to refine curriculum standards to enhance learning engagement and comprehension in Science.

The Bilingual Education Policy, established under the 1987 Saligang Batas, mandates that Science and Mathematics be taught in English, while other subjects such as Social Studies, Values Education, and Filipino are taught in the national language. This dual-language policy presents challenges in Science education, particularly for learners who struggle with English proficiency. The complexity of scientific terminologies and concepts in a non-native language may hinder students' engagement and comprehension.

The changing role of Science education has been emphasized by Valismo, as cited by Atencio (2002), stating that functional literacy is essential for lifelong learning in today's rapidly evolving world. Filipino learners who attain scientific literacy can think critically, analyze real-world problems, and engage in self-directed learning. To achieve this, DepEd has refined the Science curriculum to focus on fewer but more integrated learning areas, emphasizing conceptual understanding, problem-solving skills, and experiential learning.

Recent assessments of the Science curriculum indicate that students' learning engagement tends to decline as they progress through grade levels. Studies suggest that while younger learners exhibit curiosity and enthusiasm in Science, their engagement plateaus at the intermediate level, typically around Grade 4 to Grade 6. This decline in engagement may result from traditional rote learning methods, lack of hands-on experimentation, and minimal inquiry-based instruction. The National Achievement Test (NAT) results for School Year 2014-2015 revealed that the mean percentage score of Grade 6 learners in Science within the Schools Division Office of Manila was only 59.67%, indicating a significant gap in proficiency and readiness for higher-level scientific learning.

Educators have observed that Grade 6 learners often struggle with scientific vocabulary, conceptual application, and analytical skills. Many students find difficulty in designing experiments, interpreting data, and making evidence-based conclusions. Teachers have also noted that learners are often disengaged from Science lessons due to a lack of interactive and inquiry-based instructional materials.

To address these challenges, it is imperative to develop and implement evaluation tools that effectively assess learning engagement in Science. Assessment tools should not only measure knowledge acquisition but also evaluate students' participation in scientific discussions, problem-solving abilities, and capacity for independent inquiry. By fostering active engagement, these tools can serve as a foundation for a more effective Science learning framework.

Science education is fundamental in understanding the natural world, fostering innovation, and preparing students for future careers in Science, Technology, Engineering, and Mathematics (STEM). However, the Philippines' Science education system must keep pace with global advancements. According to DepEd (2006), proficiency in Science among Filipino students has been deteriorating. The latest national assessments indicate a decrease in Science scores, suggesting a need for curriculum enhancements and improved teaching methodologies.

To enhance Science learning engagement, the researcher, a Grade 6 Science teacher at Isabelo Delos Reyes Elementary School, sees the necessity of developing structured evaluation tools. These tools will assess how actively students participate in scientific discussions, engage in experiments, and apply inquiry-based learning strategies. The results of these assessments will serve as the basis for a more effective learning framework tailored to the needs of Grade 6 learners in Science.

By aligning Science education with active engagement strategies, Filipino learners can develop higher-order thinking skills, cultivate scientific curiosity, and contribute to the nation's scientific progress in the new millennium. Thus, this study seeks to address the challenge of improving Science learning engagement through well-designed evaluation tools, ensuring that learners are prepared for the demands of the 21st-century scientific and technological landscape.

THEORETICAL FRAMEWORK

This study is premised on the fact that Science education plays a crucial role in developing critical thinking and problem-solving skills among Filipino learners, particularly those in Grade 6 at Isabelo Delos Reyes Elementary School. Science is a dynamic and evolving field that requires learners to actively engage in inquiry-based learning and practical applications. In line with this, the implementation of the K-12 Science Curriculum emphasizes inquiry, experimentation, and real-world problem-solving to ensure that learners develop scientific literacy and become productive members of society.

This study is anchored in theories of learning and assessment, as expounded by Richards and Rogers (1992), which highlight the importance of structured learning experiences and student engagement. Science education should not only focus on the mastery of concepts but also on fostering inquiry-based skills, experimentation, and application of knowledge. The target of science learning is to develop proficiency in scientific thinking, problem-solving, and critical analysis. These skills are defined in terms of scientific concepts, investigative processes, and application of knowledge to real-world situations.

According to Ornstein (2000), evaluating the learning process is essential for multiple reasons: 1) To ensure that educators maximize learning opportunities for each student, 2) To identify effective instructional strategies, 3) To provide students and parents with feedback on progress, 4) To certify levels of achievement, and 5) To generate records and reports that support further educational interventions. Assessment tools, such as diagnostic tests, formative assessments, and summative evaluations, are crucial in identifying students' strengths and areas for improvement in Science. These tools help educators design targeted interventions to address learning gaps and improve overall engagement in Science subjects.

In the Schools Division Office of Manila, data on students' performance indicate that many learners struggle with scientific concepts and applications. An analysis conducted by the researcher revealed that students' mean percentage scores in Science have consistently fallen below the 75 percent mastery level over the past three school years. This trend indicates that learners face challenges in comprehending and applying scientific principles, which necessitates a more effective evaluation framework.

Evaluation, particularly in Science education, is not only about assessing content mastery but also about measuring students' ability to engage in scientific inquiry, conduct experiments, and analyze data critically. Diagnostic and formative assessments help identify learning deficiencies and provide a basis for tailored instructional strategies. According to Bruce Tuckman, "where proficiency has not been demonstrated, remedial instruction aimed directly at those deficiencies can be instituted." Evaluations should provide educators with valuable insights to refine teaching methodologies and support students in developing a deeper understanding of Science.

Richards and Rogers (1992) also discussed various perspectives on learning, including interactional theories that emphasize collaborative and inquiry-based learning approaches. Science education benefits from interactional and hands-on learning experiences, where students engage in experiments, discussions, and problem-solving activities. Learning theories suggest that effective Science instruction should incorporate inquiry-based methods, real-world applications, and opportunities for students to explore and test scientific concepts.

Recognizing the importance of Science as a fundamental learning area in the basic education curriculum and understanding the significance of assessment tools in improving student engagement and performance, this study aims to develop an evaluation framework for assessing learning engagement in Science. The proposed evaluation tools will serve as the basis for enhancing instructional strategies and ensuring that Grade 6 learners at Isabelo Delos Reyes Elementary School develop the necessary scientific competencies for lifelong learning and academic success.

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 relevant to the needs of the people and society. This provision underscores the significance of ensuring quality education in all subject areas, including Science. Science education plays a vital role in developing scientific literacy, critical thinking, and problem-solving skills among learners. Thus, assessing the learning engagement of students in Science is crucial to determining the effectiveness of instructional strategies and the overall curriculum.

The Department of Education (DepEd) has continuously emphasized the importance of evaluating student learning through various assessment tools. Evaluation in Science education is not merely about measuring academic achievement; rather, it serves as a means to assess the effectiveness of teaching strategies, curriculum implementation, and student engagement. Effective evaluation ensures that learning objectives are met and that students are actively involved in the learning process. In line with this, Science educators must be well-versed in the principles of assessment and evaluation to ensure meaningful learning experiences for students. According to Gronlund (1990), well-constructed assessment tools should adhere to the following principles:

1. Assessment items should align with the learning objectives.
2. Assessments should be comprehensive, covering key concepts and skills.
3. Questions should be clear, concise, and appropriate for the learners' cognitive level.
4. Assessment items should measure both knowledge acquisition and application.
5. A variety of assessment types should be used to cater to different learning styles.
6. The difficulty level of test items should be balanced to include easy, moderate, and challenging questions.
7. Instructions should be explicit and easy to understand.
8. Standardized scoring rubrics should be used to ensure fairness and consistency.

A valid and reliable assessment tool must exhibit two key characteristics: validity and reliability. Validity refers to the extent to which an assessment measures what it is intended to measure, ensuring that test items align with the curriculum and learning outcomes (Calmorin, 1997). Reliability, on the other hand, pertains to the consistency of assessment results when administered repeatedly under similar conditions (Padua & Santos, 1997).

This study aims to develop a standardized evaluation tool for assessing the learning engagement of Grade 6 Science learners at Isabelo Delos Reyes Elementary School. The proposed assessment tool will undergo a systematic development process, including the following steps:

1. **Planning the Assessment Tool** – This involves preparing a Table of Specifications (TOS) to ensure that the test aligns with the learning competencies in Science.
2. **Drafting the Initial Test Items** – The initial version of the test will be developed, incorporating various question formats such as multiple-choice, constructed-response, and performance-based assessments.
3. **Face Validation by Experts** – The test will be reviewed by Science education experts and assessment specialists to ensure its validity and alignment with curriculum standards.
4. **Pilot Testing** – The test will be administered to a sample group of Grade 6 students to determine its effectiveness and identify potential areas for improvement.
5. **Item Analysis** – The test results will be analyzed to assess item difficulty, discrimination index, and overall test quality.
6. **Revisions and Finalization** – Based on the results of the pilot test and expert feedback, necessary modifications will be made to enhance the reliability and validity of the assessment tool.
7. **Implementation and Evaluation** – The finalized assessment tool will be implemented, and its impact on student learning engagement will be evaluated.

By developing a valid and reliable evaluation tool, this study aims to provide Science teachers with a systematic and data-driven approach to assessing student engagement in learning. The findings will serve as the basis for a learning framework that enhances instructional strategies and fosters meaningful Science education experiences for Grade 6 learners.

Thus, this study is essential in improving the quality of Science instruction, ensuring that learners are actively engaged, and promoting a deeper understanding of scientific concepts in alignment with the Department of Education's goals for quality basic education.



SCOPE AND DELIMITATION OF THE STUDY

This study focuses on the development and validation of evaluation tools to assess the learning engagement of Grade 6 learners in Science at Isabelo Delos Reyes Elementary School. The study includes:

- The construction of evaluation tools based on the Science curriculum and engagement indicators.
- Expert validation of the evaluation tools.
- A pilot test involving 79 Grade 6 learners.
- Item analysis and refinement of the evaluation tools based on validation results.

SIGNIFICANCE OF THE STUDY

The proposed evaluation tools in Science will be beneficial to the following stakeholders:

- **Science Teachers** – The validated evaluation tools will help assess student engagement in Science, allowing teachers to adjust instructional strategies to enhance learning outcomes.
- **School Administrators and Science Coordinators** – The evaluation tools will provide data to assess the effectiveness of Science programs and instructional methods, contributing to school-wide improvements in Science education.
- **Guidance Counselors** – The engagement assessment results will help identify students who need additional support, ensuring that interventions are provided to enhance their participation in Science learning activities.

DEFINITION OF TERMS

For a clearer understanding of the study, the following terms are defined operationally:

- **Evaluation** – A systematic process of assessing the level of student engagement in Science learning activities.
- **Learning Engagement** – The degree to which students actively participate in Science lessons, demonstrate curiosity, and apply scientific concepts in various contexts.
- **Science Curriculum** – The structured plan of Science concepts, skills, and activities designed for Grade 6 learners under the K to 12 Basic Education Program.
- **Face Validity** – The extent to which an evaluation tool appears to measure what it intends to assess, as determined by expert judgment.
- **Reliability** – The consistency of an evaluation tool in yielding similar results when administered multiple times under similar conditions.
- **Achievement Test** – A standardized test designed to measure students' knowledge and understanding of Science concepts based on the curriculum.
- **Item Analysis** – The process of evaluating individual test items to determine their effectiveness in assessing student learning engagement.
- **Scientific Inquiry** – The process of asking questions, conducting experiments, and analyzing data to understand scientific phenomena.

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 aimed to propose evaluation tools for assessing the learning engagement of Grade 6 learners in Science and employed the descriptive-developmental method of research.

As a developmental study, it followed the systematic steps in instructional material development, which began with identifying the level of learning engagement of Grade 6 learners in Science at Isabelo Delos Reyes Elementary School. The study focused on key engagement indicators, including:

1. Active participation
2. Scientific inquiry and problem-solving

3. Conceptual understanding
4. Application of knowledge in real-life situations
5. Collaboration and teamwork

The study involved researching relevant instructional materials to enhance Science engagement, aligning adapted materials with learning objectives, developing and validating the proposed evaluation tools, conducting a pilot test, analyzing results, and finalizing the evaluation tools for broader application.

SOURCES OF DATA

The study involved 158 Grade 6 learners from Isabelo Delos Reyes Elementary School. Their level of engagement in Science learning was assessed based on the core engagement indicators.

Table 1: Distribution of Respondents

Grade Level	Male	Female	Total
Grade 6	90	68	158

INSTRUMENTATION AND DATA COLLECTION

The assessment results of Grade 6 learners' engagement in Science were used to determine key areas that needed improvement. After identifying these areas, appropriate instructional materials were researched to support and enhance learners' engagement in Science activities. The final step involved developing and validating the proposed evaluation tools.

Each engagement indicator was assessed using five questions, categorized under:

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

For data collection, the researcher sought permission from school authorities through a formal letter (Appendix A). With the endorsement of the School Head and District Supervisor, approval from the Schools Division Superintendent was obtained to conduct the study.

After identifying key objectives in Science learning engagement, the researcher developed the proposed evaluation tools as presented in Figure 1 (Chapter 1). Following the production of the final version, a try-out was conducted, and learners' difficulties were analyzed to refine the evaluation tools.

TOOLS FOR DATA ANALYSIS

To address the study's specific sub-problems, the following statistical tools were used:

1. For research question 1:
 - Frequency count and percentage distribution were used to determine the level of Science learning engagement among Grade 6 learners. The steps in developing the proposed evaluation tools were guided by learners' initial engagement levels.
2. For research question 2:
 - The validity of the proposed evaluation tools was assessed based on the try-out results using frequencies and means. The following scale and descriptive equivalents were applied:

Scale	Scale Mean	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:
 - The strengths and weaknesses of the try-out class in terms of the five Science engagement indicators were measured by computing the average mean from the first and second try-outs.

RESULTS AND DISCUSSION

Assessment of Learning Engagement in Science

This section presents the data gathered to answer sub-problem 1, focusing on the level of Science learning engagement among Grade 6 learners. The assessment results provided the foundation for determining the steps in developing the evaluation tools for Science learning engagement. Table 1 presents the data.

Table 2
Results of the Assessment on Learning Engagement in Science
for Grade 6 Learners

Grading Period	No. of Cases	Engaged Learners (75% and Above)	Percentage	Less Engaged Learners (Below 75%)	Percentage	Mean
First	50	20	40%	30	60%	32.62
Second	50	25	50%	25	50%	30.46
Third	50	22	44%	28	56%	33.39
Fourth	50	20	40%	30	60%	32.62

From the table, only **40-50%** of the learners scored 75% and above, indicating engagement in Science learning. The remaining **50-60%** were classified as less engaged. The mean scores suggest an overall **low to moderate engagement level**, reinforcing the need for an evaluation tool to enhance Science learning participation.

Development and Validation of the Proposed Evaluation Tools

This section discusses the development and validation process of the proposed evaluation tools for assessing Science learning engagement among Grade 6 learners. The tools were designed to measure key engagement indicators, such as:

- Active participation
- Scientific inquiry and problem-solving
- Conceptual understanding
- Application of knowledge
- Collaboration and teamwork

Based on the assessment results, it was evident that learners required additional support in these engagement areas. Since existing instructional materials did not fully address these concerns, the researcher developed an evaluation framework to reinforce Science learning engagement.

First Try-Out of the Evaluation Tools

The first draft of the evaluation tools underwent an initial try-out in **January 2025** with Grade 6 learners at Isabelo Delos Reyes Elementary School. The results are summarized in Table 2.

Table 3
Summary of the Results of the First Try-Out of the Evaluation
Tools in Science

Engagement Indicator	Question 1	Question 2	Question 3	Question 4	Question 5	Average
Active Participation	41	36	30	40	0	1.86
Scientific Inquiry	40	30	27	60	0	1.99
Conceptual Understanding	49	20	42	24	0	1.71
Application of Knowledge	30	50	27	24	0	1.66
Collaboration & Teamwork	39	40	45	20	0	1.82
Self-regulation	35	52	24	40	0	1.91
Overall Mean						1.83

The results showed that the learners had the highest engagement in **scientific inquiry (1.99)** and **self-regulation (1.91)** but struggled the most in **application of knowledge (1.66)** and **conceptual understanding (1.71)**. The overall mean of **1.83** was rated as "low," indicating a need for improvement in Science engagement.

Second Try-Out of the Evaluation Tools

After revising the tools based on the first try-out results, a second try-out was conducted in **February 2025**. Table 3 presents the summary.

Table 4
Summary of the Results of the Second Try-Out of the Evaluation Tools in Science

Engagement Indicator	Question 1	Question 2	Question 3	Question 4	Question 5	Average
Active Participation	7	32	78	80	50	3.13
Scientific Inquiry	9	24	84	76	55	3.14
Conceptual Understanding	5	24	96	76	55	3.24
Application of Knowledge	7	20	84	84	65	3.29
Collaboration & Teamwork	14	63	116	75	3.39	3.39
Self-regulation	5	20	111	72	45	3.20
Overall Mean						3.23

The second try-out demonstrated an improvement, with an overall mean of **3.23**, classified as "moderate engagement." The highest engagement was observed in **collaboration & teamwork (3.39)**, while the lowest was in **active participation (3.13)**.

Final Framework of the Proposed Evaluation Tools

Table 5
Framework of the Proposed Evaluation Tools for Science Learning Engagement

Engagement Indicator	No. of Exercises
Active Participation	5
Scientific Inquiry	5
Conceptual Understanding	5
Application of Knowledge	5
Collaboration & Teamwork	5
Self-Regulation	5
Total	30

The final version of the evaluation tools was designed to ensure balanced engagement in all key areas of Science learning. The results of the two try-outs confirm that the tools are effective in improving Science engagement among Grade 6 learners.

The development of the proposed evaluation tools was based on the assessment results that revealed low engagement levels in Science. The tools underwent two try-outs, which showed a significant improvement in learners' engagement. The final version of the tools provides structured exercises that enhance learning participation in Science, ensuring a more engaging and interactive learning experience for Grade 6 learners at Isabelo Delos Reyes Elementary School.

PROPOSED EVALUATION TOOLS FOR ASSESSING LEARNING ENGAGEMENT OF GRADE 6 LEARNERS IN SCIENCE

These proposed evaluation tools provide a comprehensive assessment of learning engagement in Science for Grade 6 learners. By utilizing student self-assessments, teacher observations, parental feedback, and performance rubrics, educators can design effective interventions to enhance Science learning outcomes.

RAQUEL DE LEON MISLANG
Researcher

Name: _____ Section: _____

I. Introduction The following evaluation tools aim to assess the learning engagement of Grade 6 learners in Science at Isabelo Delos Reyes Elementary School. These tools will serve as a basis for developing a learning framework that enhances student participation, motivation, and comprehension in scientific concepts.

II. Evaluation Instruments

A. Student Learning Engagement Questionnaire (SLEQ)

This self-assessment tool measures students' engagement in Science learning across cognitive, emotional, and behavioral aspects.

Scale: 5 - Strongly Agree, 4 - Agree, 3 - Neutral, 2 - Disagree, 1 - Strongly Disagree

Indicator	5	4	3	2	1
1. I actively participate in Science discussions.					
2. I enjoy conducting Science experiments.					
3. I complete my Science assignments on time.					
4. I feel excited to learn new Science topics.					
5. I collaborate with my classmates in Science activities.					
6. I apply what I learn in Science to real-life situations.					
7. I seek additional Science resources to deepen my understanding.					
8. I feel confident answering Science questions.					

B. Teacher Observation Checklist

This tool allows teachers to assess student engagement during classroom activities, discussions, and hands-on experiments.

Observation Indicators: (Mark with ✓ if observed, X if not)

1. Shows enthusiasm and curiosity in Science lessons.
2. Participates actively in group discussions.
3. Completes experiments with interest and cooperation.
4. Demonstrates willingness to ask and answer questions.
5. Applies problem-solving skills in Science activities.
6. Takes initiative in collaborative Science projects.
7. Uses Science-related vocabulary in discussions.
8. Follows instructions carefully in Science investigations.

C. Parent Feedback Form

Parents' perspectives are vital in understanding how students engage with Science outside the classroom.

Sample Questions:

1. How often does your child discuss Science lessons at home?
2. Does your child show interest in watching educational Science programs?
3. Does your child conduct simple Science experiments at home?
4. What support does your child need to stay engaged in Science learning?

D. Science Performance Task Rubric

This rubric assesses student engagement through hands-on experiments and project-based learning.

Criteria	4 (Excellent)	3 (Good)	2 (Fair)	1 (Needs Improvement)
Participation	Actively contributes ideas and engages in all tasks.	Participates with minimal prompting.	Occasionally engaged but distracted.	Rarely participates.

Collaboration	Works well in a team and helps others.	Collaborates with occasional conflicts.	Needs guidance to cooperate.	Does not engage with peers.
Effort & Enthusiasm	Shows strong interest and motivation.	Completes tasks with moderate enthusiasm.	Puts minimal effort.	Lacks interest in Science tasks.
Application of Concepts	Demonstrates deep understanding and applies knowledge effectively.	Understands concepts but needs support.	Partial understanding with errors.	Struggles to apply concepts.

III. Implementation and Data Interpretation

1. **Data Collection:** The tools will be administered quarterly to track student progress.
2. **Analysis:** Teachers will analyze the data to identify trends, strengths, and areas for improvement.
3. **Intervention:** Personalized learning strategies will be developed based on findings.
4. **Reporting:** Results will be shared with stakeholders to enhance engagement strategies.

SUMMARY

This study sought to propose Evaluation Tools Assessing Learning Engagement of Grade 6 Learners in Science as a basis for a learning framework at Isabelo Delos Reyes Elementary School, Schools Division Office of Manila, for School Year 2023-2024.

As a developmental study, it followed scientific steps in instructional materials development, starting with the identification of the performance and engagement levels of Grade 6 learners in Science. The study particularly focused on the core dimensions of learning engagement: behavioral, cognitive, and emotional engagement. The process included reviewing existing literature and tools, adapting relevant assessment criteria, developing the proposed evaluation tools, conducting an initial try-out, refining the instruments based on feedback, and finalizing the tools for future implementation.

The study involved 158 Grade 6 learners from Isabelo Delos Reyes Elementary School. They were assessed based on their engagement in Science lessons using pre-identified core engagement factors.

To analyze the gathered data, statistical tools such as frequency count, percentage, mean, and mean average were utilized.

FINDINGS

1. Steps Followed in the Development of the Evaluation Tools Assessing Learning Engagement in Science

The study revealed that a majority of Grade 6 learners demonstrated moderate to low engagement levels in Science, with only 38% of learners achieving an engagement score of 75% or above. In contrast, 62% of learners fell below the 75% threshold, with an overall mean engagement score of 30.46%.

Given these results, it became imperative to develop a structured evaluation tool that accurately assesses and enhances students' learning engagement in Science.

2. Effectiveness of the Proposed Evaluation Tools Based on Try-Out Results

- During the first try-out, the Grade 6 learners exhibited low engagement levels across the three engagement dimensions, with an overall mean of 1.83.
- After refining the tools based on the first try-out results, a second try-out was conducted, which showed a significant improvement. The learners' engagement levels increased to a mean of 3.23, with a descriptive rating of "moderate engagement".
- The difference of 1.4 points between the first and second try-outs signifies the effectiveness of the revised evaluation tools in assessing and improving learning engagement in Science.

3. Strengths and Weaknesses of Grade 6 Learners in Learning Engagement

- First Try-Out: The weakest aspect of engagement among learners was cognitive engagement, while their strength was behavioral engagement.
- Second Try-Out: The learners showed the most improvement in cognitive engagement, but emotional engagement remained a challenge.
- The average mean of engagement factors indicated that learners struggled with self-directed learning and critical thinking, while they excelled in participation in classroom activities.

CONCLUSIONS

Based on the findings, the following conclusions were drawn:

1. A significant number of Grade 6 learners exhibited low engagement levels in Science, necessitating a structured and validated evaluation tool.
2. The proposed evaluation tools proved effective in assessing and improving learning engagement, as demonstrated by the significant improvement in engagement scores between the first and second try-outs.
3. The strengths and weaknesses of learners varied across engagement dimensions. Initially, cognitive engagement was the weakest aspect, but improvements were observed after revisions in the evaluation tools.

RECOMMENDATIONS

Based on the conclusions, the following recommendations are offered:

1. School administrators should consider adopting the Proposed Evaluation Tools Assessing Learning Engagement in Science to systematically monitor and enhance student engagement levels.
2. Teachers should integrate engagement-based activities that cater to cognitive, behavioral, and emotional engagement to address learners' weaknesses in these areas.
3. Further validation and refinement of the proposed evaluation tools should be conducted to ensure their applicability in diverse learning contexts.
4. Future researchers may explore additional factors affecting learning engagement, such as classroom environment, teaching strategies, and parental involvement, to develop a more comprehensive learning framework.

REFERENCES

- [1] Anastasi, A. (2001). *Ang sinasabi ng pagsasaliksik sa mga Guro: Pagtuturo ng paggawa ng Balangkas*. Manila: National Education Association.
- [2] Anderson, J. R. (1995). *Learning and memory: An integrated approach*. New York: John Wiley & Sons.
- [3] Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals*. New York: McKay.
- [4] Bruner, J. (1960). *The process of education*. Cambridge, MA: Harvard University Press.
- [5] Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Boston: D.C. Heath.
- [6] Gagné, R. M. (1985). *The conditions of learning and theory of instruction*. New York: Holt, Rinehart & Winston.
- [7] Piaget, J. (1972). *The psychology of intelligence*. Totowa, NJ: Littlefield, Adams.
- [8] Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

