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**EXTENT OF UTILIZATION OF PROBLEM-BASED LEARNING AND  
PROBLEM-SOLVING MODELS IN THE PERFORMANCE  
OF GRADE 5 LEARNERS IN SCIENCE**

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**ABSTRACT**

This study evaluates the effective utilization of problem-based learning and problem-solving models in the performance of Grade 5 learners in science. Employing descriptive-correlational research design to evaluate the effective utilization of problem-based learning and problem-solving models in the performance of Grade 5 learners in science. The study is descriptive for it describes the extent of utilization of problem-based learning and problem-solving models in terms of implementation, lesson delivery and assessment and academic performance of grade 5 learners in science. Likewise, this study is correlational for it evaluates the relationship between the variables. Rizal Elementary School, Kananga I District, Leyte Division is the locale of the study with forty-three (43) Grade 5 learners enrolled in the said locale for School Year 2025-2026 who were involved in the study. The study utilized a survey questionnaire developed by Atika et al., (2020). Further, to measure the performance of grade 5 learners in science, the researcher gathered the result of the quarterly assessment in quarter 4. The findings of the study revealed a significant relationship between the extent of utilization

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of problem-based learning and problem-solving models and performance of grade 5 learners in science for quarter 4. The moderate extent of utilization of problem-based learning and problem-solving models in terms of implementation, lesson delivery and assessment results to a satisfactory performance of the grade 5 learners in science. This result indicates that learners were able to attain the expected competencies in science, suggesting that classroom instruction and learning support contributed positively to learner achievement. This implies that increased utilization of learner-centered, inquiry-based, and problem-solving instructional approaches tends to contribute to improved learner performance in science. The findings therefore affirm that Problem-Based Learning and Problem-Solving Models are effective instructional strategies that support learners' engagement, critical thinking, and academic achievement.

**Keywords:** *Utilization, Problem-Based Learning, Problem-Solving Models, Performance, Grade 5 Learners, Science*

## INTRODUCTION

Education in the 21st century has shifted toward instructional approaches that emphasize critical thinking, creativity, collaboration, and problem-solving skills. Modern educational reforms recognize that learners should not only acquire knowledge but also develop the ability to apply concepts in solving real-life problems. In elementary education, fostering these skills is essential because the early years of schooling form the foundation for learners' intellectual development and academic success. Consequently, educators are

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ISSN: 2704-3010

Volume VII, Issue IV

June 2026

Available online at <https://www.instabrightgazette.com>



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encouraged to adopt learner-centered teaching approaches that actively involve students in the learning process rather than relying solely on traditional lecture-based instruction.

Traditional instructional methods often emphasize memorization and teacher-directed learning, which may limit students' opportunities to develop analytical and problem-solving abilities. In many classrooms, learners become passive recipients of information rather than active participants in knowledge construction. Such approaches may result in low engagement, limited understanding of concepts, and poor academic performance. As educational systems continue to evolve, there is a growing need to implement innovative instructional strategies that promote active learning and improve learners' academic outcomes.

One instructional approach that has gained increasing attention is Problem-Based Learning (PBL). Problem-based learning is a student-centered instructional strategy in which learners acquire knowledge by working collaboratively to solve real-world problems. In this approach, learners analyze situations, identify possible solutions, and apply their knowledge to address complex issues. Through this process, learners develop critical thinking, creativity, and problem-solving skills that enhance their academic performance.

A study conducted by Salim, Purwanto, and Lestari (2024) found that the implementation of problem-based learning significantly improved elementary students' science problem-solving abilities and learning engagement. The study revealed that students who were exposed to problem-based instructional strategies demonstrated higher levels of

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understanding and problem-solving skills compared to those taught using traditional teaching methods.

Similarly, a meta-analysis conducted by Rahman et al. (2024) reported that the problem-based learning model has a positive effect on students' academic achievement across various subjects. The study concluded that problem-based learning promotes deeper understanding of concepts and enhances learners' ability to analyze and solve complex problems.

In addition, Yunitasari et al. (2025) found that problem-based learning improves both academic performance and character development among elementary school learners. The researchers noted that when learners are actively involved in solving authentic problems, they become more engaged in the learning process and develop stronger analytical and collaborative skills.

Another related study by Lee (2024) revealed that students who participated in problem-based learning activities demonstrated improved learning outcomes and enhanced critical thinking skills compared to those who experienced traditional lecture-based instruction. The findings suggest that the effectiveness of PBL lies in its ability to encourage active learning and student participation in knowledge construction.

Despite the benefits of these learner-centered approaches, many elementary classrooms still rely heavily on conventional teaching strategies that focus primarily on memorization and teacher-directed instruction. These practices may limit students'

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opportunities to develop critical thinking and problem-solving skills. Consequently, there is a growing need to examine the effectiveness of instructional models that promote inquiry, collaboration, and problem-solving among learners.

The use of problem-solving instructional models complements problem-based learning by guiding students through structured steps in analyzing problems, generating possible solutions, and evaluating outcomes. Research indicates that structured problem-solving approaches can significantly improve learners' analytical thinking and creativity. For example, studies on the Selective Problem-Solving Model have shown that such approaches enhance students' problem analysis skills and creativity in learning tasks.

Given the increasing emphasis on developing higher-order thinking skills among learners, it is important to investigate how instructional strategies such as problem-based learning and problem-solving models can contribute to improving students' academic performance. These approaches allow learners to become active participants in the learning process, encouraging them to explore ideas, collaborate with peers, and apply knowledge in solving meaningful problems.

Therefore, this study aims to determine the effectiveness of problem-based learning and problem-solving instructional models in improving the performance of elementary learners. The findings of the study are expected to provide valuable insights for educators in selecting effective teaching strategies that promote critical thinking, problem-solving abilities, and improved academic performance among elementary learners.

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This study evaluates the effective utilization of problem-based learning and problem-solving models in the performance of Grade 5 learners in Science in Rizal Elementary School, Kananga I District, Leyte Division. The findings of the study were basis for the proposed improvement plan.

Further, it sought to answer the following sub-problems:

1. What is the extent of utilization of problem-based learning and problem-solving models?
2. What is the performance of grade 5 learners in science for quarter 4?
3. Is there a significant relationship between the extent of utilization of problem-based learning and problem-solving models and performance of grade 5 learners in science for quarter 4?
4. What improvement plan can be proposed based on the findings of this study?

## METHODOLOGY

**Design.** This study employs the descriptive-correlational research design evaluates the effective utilization of problem-based learning and problem-solving models in the performance of Grade 5 learners in science. The study is descriptive for it describes the extent of utilization of problem-based learning and problem-solving models in terms of implementation, lesson delivery and assessment and academic performance of grade 5 learners in science. Likewise, this study is correlational for it evaluates the relationship between the variables. Rizal Elementary School, Kananga I District, Leyte Division is the locale of the study with forty-three

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(43) Grade 5 learners enrolled in the said locale for School Year 2025-2026 who were involved in the study. The study utilized a survey questionnaire developed by Atika et al., (2020). This is a 30-item survey which were answered by the learners based on their experiences in the implementation of the intervention. This can be answered using a Four-Point Likert Scale where 4 means Always, 3 means Often, 2 means Sometimes and 1 means Never. Further, to measure the performance of grade 5 learners in science, the researcher gathered the result of the quarterly assessment in quarter 4.

**Sampling.** The forty-three (43) Grade 5 learners enrolled in the said locale for School Year 2025-2026 were involved in the study. Complete enumeration was employed in choosing the respondents of the study.

**Research Procedure.** Upon securing a research permit, data gathering was initiated. Application letters for study permits were personally submitted to concerned offices. A request letter was first submitted to the Schools Division Superintendent for approval to gather data from targeted respondents. After securing the approval of SDS, letters of permission were also submitted to the Public Schools District Supervisor and School Principals of the identified schools in the district. After getting the approvals, the researcher conducted data-gathering activities. An orientation was also held for the respondents, and their agreement through permits was to participate in the research. Then, the researcher distributed the survey to the respondents. Further explanations were done to enable learners to understand the content of the survey. The respondents were given ample time to accomplish the survey. After which,

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the answered survey were collected including the grades of the identified learners in science for quarter 4. Data were checked, tabulated and submitted for statistical treatment.

**Ethical Issues.** The researcher obtained the necessary written permission from the authorities to conduct the study. While conducting the survey, the researcher made sure that the use of offending, discriminatory, or other undesirable terminology was eschewed. The names of the respondents and other personal information were not included in this study to ensure confidentiality. The respondents were also voluntarily participating. Orientation was done for the respondents. During orientation, concerns and issues were clarified, and consent to be part of the study was signed. The researcher-maintained objectivity in discussing and analyzing the results. All authors whose works were cited in this study were correctly quoted and were acknowledged in the reference. Keeping of responses from the respondents were given to the researcher and kept under her care.

**Treatment of Data.** The quantitative responses underwent tallying and tabulation. Statistical treatment involved using specific tools: Simple Percentage and Weighted Mean were employed to evaluate the effective utilization of problem-based learning and problem-solving models in terms of implementation, lesson delivery and assessment and performance of grade 5 learners in science for quarter 4. Pearson r was used to determine the significant relationship between the independent (problem-based learning and problem-solving models) and dependent (performance of grade 5 learners in science for quarter 4) variables of the study.

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## RESULTS AND DISCUSSION

**Table 1**

**Extent of Utilization of Problem-Based Learning and Problem-Solving Models**

Domain	Indicator	Weighted Mean	Interpretation
<b>Implementation of Problem-Based Learning and Problem-Solving Models</b>	1. Our teacher gives us problems based on real-life situations	3.49	High
	2. The problems are easy to understand	3.47	High
	3. We are encouraged to ask questions about the problem	3.35	High
	4. We share our ideas when solving problems	2.95	Moderate
	5. We work with classmates in solving problems	2.91	Moderate
	6. Everyone in the group helps solve the problem	3.26	High
	7. The teacher guides us while we work on the problem	3.51	High
	8. We try to find answers by ourselves	3.21	Moderate

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ISSN: 2704-3010

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Domain	Indicator	Weighted Mean	Interpretation
	9. The activities make me think deeply	3.07	Moderate
	10. We are given enough time to solve problems	3.05	Moderate
<b>Lesson Delivery</b>	11. The teacher explains the problem clearly	2.98	Moderate
	12. The instructions are easy to follow	3.16	Moderate
	13. The teacher gives examples to help us understand	3.07	Moderate
	14. We are allowed to try different ways to solve the problem	3.28	High
	15. We discuss ideas with our classmates	3.30	High
	16. The teacher asks questions that make us think	3.26	High
	17. The lesson is interesting and fun	3.16	Moderate
	18. The teacher uses materials like charts or pictures	3.26	High
	19. We are asked to explain our answers	3.14	Moderate
	20. The teacher helps us when we do not understand	3.16	Moderate

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Domain	Indicator	Weighted Mean	Interpretation
Assessment	21. The teacher checks our understanding during the activity	3.09	Moderate
	22. We explain how we solved the problem	2.79	Moderate
	23. The teacher gives feedback on our work	2.72	Moderate
	24. We are allowed to correct our mistakes	2.81	Moderate
	25. The teacher uses different ways to check learning	3.23	Moderate
	26. We think about what we learned after the activity	2.95	Moderate
	27. The teacher checks both our answer and our solution	3.47	High
	28. We are given more activities to practice	3.53	High
	29. I improve in solving problems after the lesson	2.79	Moderate
	30. I feel more confident in solving problems	2.58	Moderate
<b>Overall Weighted Mean</b>		<b>3.16</b>	<b>Moderate</b>

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## Legend

<b>RANGES</b>	<b>DESCRIPTION</b>	<b>INTERPRETATION</b>
<b>4.21 – 5.00</b>	<i>Strongly Agree</i>	<i>Very High/Highly Observed</i>
<b>3.26 – 4.20</b>	<i>Agree</i>	<i>High /Moderately Observed</i>
<b>2.51 – 3.25</b>	<i>Neutral</i>	<i>Moderate/Fairly Observed</i>
<b>1.76 – 2.50</b>	<i>Disagree</i>	<i>Low/ Less Observed</i>
<b>1.00 – 1.75</b>	<i>Strongly Disagree</i>	<i>Very Low/ Not Observed at All</i>

Table 1 presents the extent of utilization of problem-based learning and problem-solving models in terms of implementation, lesson delivery and assessment. It was revealed on the table that the extent of utilization of problem-based learning and problem-solving models in terms of implementation, lesson delivery and assessment received an overall weighted mean of 3.16 which is interpreted as "Moderate". This means that the implementation, lesson delivery and assessment utilizing problem-based learning and problem-solving models is fairly observed by the learners during science lessons. Based on the table, the science teacher appears effective in presenting real-life problems, facilitating guided activities, and providing practice opportunities. However, aspects related to collaborative learning, learner autonomy, feedback provision, and learner confidence require further enhancement. The study implies that strengthening teacher training on learner-

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centered and inquiry-based pedagogies may help improve the consistency and effectiveness of PBL implementation in schools.

**Table 2**

**Distribution of Grade 5 Learners' Academic Performance in Science (Quarter 4)**

Grade Range	Frequency	Percentage	Interpretation
90 – 100	10	23.26%	Outstanding
85 – 89	9	20.93%	Very Satisfactory
80 – 84	16	37.21%	Satisfactory
75 – 79	8	18.60%	Fairly Satisfactory
Below 75	0	0.00%	Did Not Meet Expectations
<b>Total</b>	<b>43</b>	<b>100%</b>	
<b>Average Grade</b>		<b>84.88</b>	<b>Satisfactory</b>

Table 2 presents the academic performance of grade 5 learners in science for quarter 4. It was shown on the table that among the 43 grade 5 learners, 10 (23.26%) received a grade of 90-100 (Outstanding), 9 (20.93%) got a grade of 85-89 (Very Satisfactory), while 16 (37.21%) got a grade of 80-84 (Satisfactory) and 8 (18.60%) received a grade of 75-79 (Fairly Satisfactory). It was also shown that the performance of the grade 5 learners in science for quarter 4 has an average grade of 84.88 which is interpreted as Satisfactory. This data indicates that the grade 5 learners were able to achieve the required grade to pass the subject. This means that the learners possess foundational scientific knowledge and skills but may still require additional enrichment and instructional support to attain higher achievement levels.

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Science learning at the elementary level often requires active engagement, inquiry, experimentation, and problem-solving skills; therefore, learners' performance may be influenced by the extent to which these strategies are effectively integrated into instruction. Research suggests that learners perform better in science when they are actively involved in inquiry-based and problem-centered learning experiences that encourage exploration and critical thinking (Darmawati & Mustadi, 2023).

**Table 3**  
**Test of Relationship Between the Variables**

<b>Variables Correlated</b>	<b>r (Pearson)</b>	<b>Computed t</b>	<b>Table Value @ 0.05</b>	<b>Decision on Ho</b>	<b>Interpretation</b>
Utilization of Problem-Based Learning and Problem-Solving Models (Table 1) and Academic Performance of Grade 5 Learners (Table 2)	0.41	2.85	1.96	Reject Ho	Significant Relationship (Moderate Positive)

Table 3 presents the test of relationship between the extent of utilization of problem-based learning and problem-solving models in terms of implementation, lesson delivery and assessment and performance of grade 5 learners in science for quarter 4. It was revealed on the table that the extent of utilization of problem-based learning and problem-solving models in terms of implementation, lesson delivery and assessment and performance of grade 5

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learners in science for quarter 4 received a computed t of 2.85 which is greater than the table value of 1.96 at 0.05 level of significance, so null hypothesis is rejected. This means that there is a significant relationship between the extent of utilization of problem-based learning and problem-solving models and performance of grade 5 learners in science for quarter 4. The r value of 0.41 indicates a moderate positive correlation between the variables. This implies that as the utilization of Problem-Based Learning and Problem-Solving Models increases, learners' academic performance in science also tends to improve. This suggests that instructional strategies that encourage inquiry, critical thinking, collaboration, and real-world problem-solving may positively influence learners' understanding and mastery of science concepts. The result further indicates that learner-centered and inquiry-based approaches contribute meaningfully to academic achievement because students become more actively engaged in constructing knowledge and solving authentic problems. Research by Husna, Sudiyanto, and Rintayati (2024) further supports the present findings by emphasizing that learners taught using problem-based and project-based learning models demonstrated better science learning abilities, particularly when learners possessed high interest and motivation toward learning. Their findings suggest that engaging instructional models contribute positively to learners' academic achievement and scientific understanding.

## Conclusion

The findings of the study revealed a significant relationship between the extent of utilization of problem-based learning and problem-solving models and performance of grade

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5 learners in science for quarter 4. The moderate extent of utilization of problem-based learning and problem-solving models in terms of implementation, lesson delivery and assessment results to a satisfactory performance of the grade 5 learners in science. This result indicates that learners were able to attain the expected competencies in science, suggesting that classroom instruction and learning support contributed positively to learner achievement. This implies that increased utilization of learner-centered, inquiry-based, and problem-solving instructional approaches tends to contribute to improved learner performance in science. The findings therefore affirm that Problem-Based Learning and Problem-Solving Models are effective instructional strategies that support learners' engagement, critical thinking, and academic achievement.

### Recommendations

1. Teachers should implement the proposed improvement plan of the study to help achieved the desired performance of learners utilizing the problem-based learning and problem-solving models.
2. Teachers must strengthen the implementation of Problem-Based Learning and Problem-Solving Models by incorporating more collaborative, inquiry-based, and learner-centered activities that encourage learners to share ideas, work cooperatively, and solve authentic real-life problems independently.
3. Science teachers must enhance lesson delivery strategies by providing clearer instructions, varied learning materials, reflective questioning techniques, and engaging

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classroom activities that stimulate critical thinking and active participation among learners.

4. Teachers must improve assessment practices by providing timely and constructive feedback, encouraging learner reflection, and implementing formative assessment activities that strengthen learners' confidence and problem-solving abilities.
5. School heads and instructional leaders must conduct professional development programs and training workshops focused on the effective implementation of Problem-Based Learning, inquiry-based teaching, and learner-centered pedagogies to further enhance teachers' instructional competencies.
6. Schools must provide adequate instructional resources and learning materials such as visual aids, science manipulatives, technology-based resources, and activity materials that support meaningful and interactive Science learning experiences.
7. Future researchers should conduct similar studies using larger populations, different grade levels, or other subject areas to further validate the findings of the study. They may also explore other variables related to learner achievement such as motivation, learning styles, teacher competence, and classroom environment.

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## ACKNOWLEDGMENT

I would like to express my heartfelt gratitude to all those who have supported and guided me throughout the journey of completing this thesis. First and foremost, Praises and Thanks to our Lord and Savior Jesus Christ, for His presence, provision, protection, and preservation. To Dr. Jasmine B. Misa, my thesis adviser, I extend my profound gratitude to your unwavering support, invaluable insights, and mentorship were instrumental in shaping this research.

Your guidance and support have been instrumental in my professional development, and I deeply appreciate the time and effort you have dedicated to helping me grow. I extend my appreciation to the faculty members of the Graduate Department of Western Leyte College for their wisdom, encouragement, and commitment to fostering an environment of academic growth. I am grateful to the members of my Thesis Committee and Panel Examiners headed by Dr. Bryant C. Acar, Chairman and Scribe of the Pre and Oral Examination panel, together with Dr. Annabelle A. Wenceslao and Dr. Elvin H. Wenceslao for their constructive feedback and valuable suggestions. To my DepEd Leyte Division Family headed by Dr. Mariza Sabino-Magan Ed. D. CESO V for allowing me to conduct this study in my school. To my Rizal Elementary School family, headed by eloquent and warm-hearted School Head, Dr. Ma. Cleofe D. Nicolas, our School Principal whose active participation in every school activity greatly assisted my progress in this journey. I want to acknowledge the contributions of my Rizal Elementary School family, your insightful discussions, hands-on assistance, and endless moral support weren't just helpful; they were the secret sauce that made this whole journey not just

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ISSN: 2704-3010

Volume VII, Issue IV

June 2026



Available online at <https://www.instabrightgazette.com>

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educational, but genuinely fun. Indeed, the very act of crafting this research became through your companionship. Truly, your spirit of companionship didn't just make this research educational—it made the entire experience an absolute blast. To Dr. John Kent V. Juanero, the Kananga I District Supervisor for his encouragement, pieces of advice and for giving the opportunity to administer the study and to grow professionally. To my family, my parents, Leonardo, and Carina, my sisters Rachel, Deborah and brother James Bryan thank you for everything. In every step I've taken, every challenge I've faced, has been made possible because you believed in me even when I struggled to believe in myself. That unwavering faith, that constant wellspring of motivation you've given me, is a gift beyond measure. Thank you, from the deepest part of my soul, for being my strength, my light, and my everything." Lastly, I dedicate this work to my partner Jerome.

My heart overflows with gratitude as I think of everything you've done. This thesis, this entire journey, truly rests on the bedrock of your unwavering patience, your boundless love, and your steadfast support. There were moments I doubted, moments I felt overwhelmed, but your belief in me never wavered it was the constant flame that kept me going. Your belief in me and your sacrifices to ensure I had the time and space to focus on my research are deeply appreciated and my daughter Maria Leca for being my inspiration all the time. This thesis would not have been possible without the collective support and guidance of all these wonderful individuals. I am truly grateful for the opportunities and resources provided to me throughout this academic endeavor. Thank you for being a part of this journey and for helping me reach this milestone.

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## AUTHOR'S PROFILE



### MS. DESIREE GRACE A. CODILLA

Desiree Grace A. Codilla, born on February 10, 1995, in Ormoc City, Leyte, is a dedicated educator known for her commitment to nurturing continuous learning and empowerment among her students. Her journey in education began at Rizal Elementary School, followed by her secondary education at National Heroes Institute Inc., where she was deployed after she graduated in college.

Throughout her early years, her academic pursuits, and community events enriched her experience, fostering her growth and resilience.

Desiree continued her academic journey at Visayas State University (VSU), where she earned her Bachelor of Elementary Education, in 2015. Desiree Grace was focusing on her study, which helped her secure a scholarship for college where there is a maintaining grade of 2.0. This scholarship was instrumental in her ability to pursue higher education, providing significant support in finishing her degree and molding her character. That same year, she passed the Licensure Examination for Teachers (LET), marking the official start of her teaching career.

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# INSTABRIGHT e-GAZETTE

ISSN: 2704-3010

Volume VII, Issue IV

June 2026

Available online at <https://www.instabrightgazette.com>



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Despite the demands of being a full-time mom to her daughter, Maria Leca, Desiree has consistently pursued professional growth. Her commitment to lifelong learning led her to enroll in a Master of Arts in Education (MAEd) program, majoring in Elementary Education. She successfully completed the academic requirements for her MAEd in December 2022, driven by her diverse experiences and the support of different groups she encountered through her sports and academic journey.

Currently, Desiree Grace is an esteemed Grade 5 teacher at Rizal Elementary School. Her dedication to education, combined with her rich background in music, arts and community involvement, continues to inspire her students and peers, highlighting her unwavering commitment to making a meaningful impact in the educational landscape.

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