



Pedagogical Commitment of Teachers and Cognitive Mastery of Students in Public Elementary Schools

Daneth M. Alvar ^{a++} and Josephine B. Baguio ^{a#}

^a Graduate School, The Rizal Memorial Colleges, Inc., Davao City, Philippines.

Authors' contributions

This work was carried out in collaboration between both authors. Both authors have contributed equally. They have read and agreed to the published version of the manuscript. Both authors read and approved the final manuscript.

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ABSTRACT

This study aimed to determine the significant relationship between the pedagogical commitment of teachers and the cognitive mastery of students in public elementary schools in Baganga District, Division of Davao Oriental. Specifically, it sought to assess how various dimensions of pedagogical commitment, namely instructional effectiveness, student-centered approach, continuous professional development, and professional dedication—predict student cognitive mastery. A descriptive-correlational research design was employed, involving 138 public elementary school teachers selected through stratified random sampling. Data were collected using standardized questionnaires administered via face-to-face surveys. The analysis utilized mean, standard deviation (SD), Pearson product-moment correlation, and multiple linear regression techniques to

⁺⁺ Student;

[#] Faculty;

*Corresponding author: Email: josephinebbaguio@outlook.com;

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determine the relationship and predictive value of the variables. The findings revealed that both the pedagogical commitment of teachers and the cognitive mastery of students were rated as very high. A significant positive relationship was established between the two constructs. Among the dimensions of pedagogical commitment, instructional effectiveness, student-centered approach, and continuous professional development significantly influenced students' cognitive mastery, while professional dedication showed no significant impact. These results suggest the need for school administrators to prioritize instructional practices and professional growth opportunities that directly enhance students' learning outcomes. The study underscores the importance of fostering teacher development initiatives aligned with student learning goals, thus contributing to evidence-based educational planning and professional development in public elementary schools.

Keywords: *Pedagogical commitment; cognitive mastery; public elementary school; descriptive-correlational; education.*

1. INTRODUCTION

Cognitive mastery among elementary students has become a growing concern in educational systems worldwide, as it directly reflects the students' ability to process, understand, and apply knowledge (Bizimana et al., 2022). Despite efforts to enhance curriculum and instruction, many students continue to demonstrate gaps in foundational skills such as comprehension, problem-solving, and logical reasoning (Gao et al., 2022). These deficiencies hinder academic progress and long-term educational success, raising serious questions about the effectiveness of instructional practices in promoting deep learning (Pellas, 2023). Without proper cognitive development, students may struggle not only in higher levels of education but also in adapting to complex real-world challenges.

Globally, various countries have reported challenges related to students' cognitive achievement. In the United States, despite technological advancements and access to educational resources, results from the National Assessment of Educational Progress (NAEP) revealed stagnant or declining scores in reading and mathematics among elementary learners (Bai et al., 2021). In the United Kingdom, the Office for Standards in Education (Ofsted) identified that many pupils fail to reach expected levels in reasoning and analytical tasks due to insufficient focus on mastery-based instruction (Tian & Diamond, 2024). Similarly, in Indonesia, the World Bank reported that more than half of the Grade 4 students lacked minimum proficiency in literacy and numeracy, indicating a widespread issue with cognitive development at early educational stages (Yarrow et al., 2020).

In the Philippines, recent national assessments such as the Program for International Student

Assessment (PISA) and the Southeast Asia Primary Learning Metrics (SEA-PLM) have highlighted alarming gaps in students' cognitive performance (Canillo et al., 2024). Filipino learners ranked among the lowest in reading, science, and mathematics, reflecting a significant need to improve foundational skills (Bernardo et al., 2023). Localized studies also show that many students in public elementary schools perform below proficiency levels in core subjects, prompting the Department of Education (DepEd) to introduce reforms focusing on curriculum enhancement, teacher training, and learning assessments (Barrot, 2023). Despite these efforts, cognitive mastery remains a persistent issue across regions and school divisions.

The pedagogical commitment of teachers—reflected in their dedication to instructional quality, student engagement, and professional development—plays a pivotal role in addressing issues related to student learning outcomes (Wahyuni, 2020). Teachers who demonstrate strong pedagogical commitment are more likely to employ effective teaching strategies, adapt to students' needs, and foster environments conducive to higher-order thinking and skill development (Muhammad et al., 2024). Numerous studies affirm that the instructional behaviors, attitudes, and professional growth of teachers directly influence student achievement, including cognitive mastery (Wahyuni, 2020; Yin, 2022). As such, understanding how the specific domains of pedagogical commitment relate to students' cognitive development is crucial in designing targeted interventions for school improvement.

However, despite the acknowledged importance of teacher commitment, limited research has specifically examined the direct influence of pedagogical commitment on the cognitive

mastery of students, especially in rural and under-resourced contexts. Existing studies often focus on general academic performance or teaching efficacy without isolating the cognitive aspect of student learning. Furthermore, there is a lack of empirical data linking various dimensions of pedagogical commitment—such as instructional effectiveness, student-centered approaches, and professional dedication—with measurable indicators of cognitive mastery in Philippine public schools. This gap highlights the need for localized, evidence-based research that can inform both policy and practice.

This study aimed to determine the significant relationship between the pedagogical commitment of teachers and the cognitive mastery of students in public elementary schools in Baganga District, Division of Davao Oriental. By examining specific domains of pedagogical commitment and their influence on students' cognitive performance, the study intends to provide actionable insights for educators and policymakers to enhance teaching practices and improve learning outcomes at the elementary level.

1.1 Statement of the Problem

This study aimed to determine the pedagogical commitment of teachers and cognitive mastery of students in public elementary schools in Baganga District, Division of Davao Oriental. Specifically, it sought to answer the following questions:

1. What is the level of pedagogical commitment of teachers in public elementary schools in terms of:

- 1.1 Professional Dedication,
- 1.2 Instructional Effectiveness,
- 1.3 Student-centered approach,
- 1.4 Continuous professional development, and
- 1.5 Work Ethics and Responsibility?

2. What is the level of cognitive mastery of students in public elementary schools in terms of:

- 2.1 Understanding of knowledge, and
- 2.2 Application of knowledge?

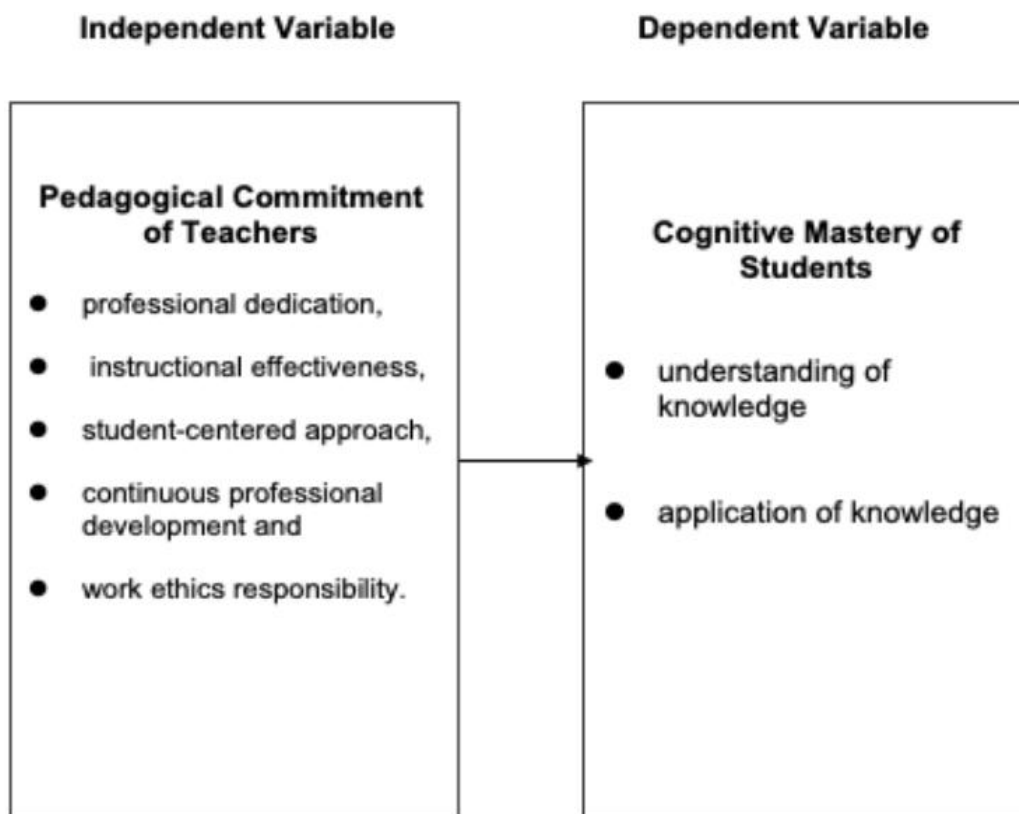


Fig. 1. Conceptual framework of the study
(Source: Zhu et al., 2023; Shu, 2022)

3. Is there a significant relationship between the pedagogical commitment of teachers and cognitive mastery of students in public elementary schools?

4. What domains of pedagogical commitment of teachers significantly influence the cognitive mastery of students in public elementary schools?

1.2 Hypotheses

The null hypotheses were tested at 0.05 level of significance:

Ho1. There is no significant difference between the pedagogical commitment of teachers and the cognitive mastery of students in public elementary schools.

Ho2. The domains of pedagogical commitment of teachers do not significantly influence the cognitive mastery of students in public elementary schools.

2. METHODOLOGY

2.1 Research Design

This study employed a non-experimental quantitative research design utilizing the correlational method. This approach was considered appropriate for examining the degree of association between the pedagogical commitment of teachers and the cognitive mastery of students in public elementary schools. As Pregoner (2024) emphasized, variables may be related either through shared patterns of variation or as a result of a common influencing factor. In this context, the correlational method enabled the researcher to determine whether levels of pedagogical commitment among teachers are linked to the cognitive mastery of their students. By exploring the relationship between these two dimensions, the study aimed to uncover meaningful patterns that can inform instructional policies, teacher development initiatives, and academic interventions within the Baganga District, Division of Davao Oriental.

2.2 Research Respondents

The respondents of this study were 138 public elementary school teachers from the Baganga District, Division of Davao Oriental. All participating teachers were currently serving in various public elementary schools and represented a diverse range of teaching

experiences and classroom responsibilities. The researcher employed universal sampling in selecting the respondents, meaning the entire population of qualified teachers from the identified schools was included in the study. The participants were informed about the purpose of the research, and all responses were collected with their full knowledge and consent. The study was conducted during the academic year 2024–2025.

2.3 Research Instrument

The instruments used in this study were self-constructed survey questionnaires designed to assess the pedagogical commitment of teachers and the cognitive mastery of students in public elementary schools in the Baganga District, Division of Davao Oriental. These instruments were developed by the researcher based on existing literature and previous studies on teacher effectiveness, pedagogical practices, and student cognitive performance. Before deployment, the draft questionnaires underwent face and content validation by a panel of experts in Educational Management, Curriculum Studies, and Educational Psychology. Revisions were made according to the panel's suggestions to ensure accuracy, clarity, and alignment with the study's objectives.

To establish the reliability of the instruments, a pilot test was conducted with 30 public elementary school teachers from a neighboring district who were not part of the main study. The results yielded a high level of internal consistency, with a Cronbach's Alpha of 0.918 for the Pedagogical Commitment subscale and 0.927 for the Cognitive Mastery subscale.

2.4 Data Gathering Procedure

The data for this study were gathered through a structured and ethically approved process. The researcher first sought an endorsement from the Dean of the Graduate School of Rizal Memorial Colleges and obtained ethical clearance from the institution's Ethics Review Committee to ensure the protection of the participants' rights and the integrity of the research process. Following this, a formal request letter was submitted to the Office of the Schools Division Superintendent of Davao Oriental. Upon approval, the Division Office issued an endorsement letter to the School Heads of public elementary schools in the Baganga District, authorizing the conduct of the study.

A pilot test was first conducted to assess the instrument's validity and reliability. Participants in the pilot test were provided with clear instructions and debriefed on the study's purpose. After finalizing the instrument based on their feedback, the researcher distributed the questionnaires to the 138 teachers selected through universal sampling. Once the forms were completed, the researcher personally retrieved the questionnaires. The collected data were organized and forwarded to a licensed statistician for encoding, analysis, and interpretation based on the study's objectives.

2.5 Data Analysis

To analyze the data collected and effectively address the research questions of this study, the following statistical tools were utilized:

Mean. This was used to determine the levels of pedagogical commitment among teachers and the cognitive mastery of students. It provided an overall summary of participants' responses to individual indicators and domains within each variable.

Pearson Product-Moment Correlation Coefficient (Pearson r). This was applied to assess the degree of relationship between pedagogical commitment and cognitive mastery. It helped identify whether a statistically significant linear correlation existed between the two variables.

Multiple Regression Analysis. This analysis was utilized to determine which specific dimensions of pedagogical commitment significantly predicted the cognitive mastery of students. It identified the components of teacher commitment that most strongly contributed to students' learning outcomes and higher-order thinking development in the classroom context.

3. RESULTS AND DISCUSSION

3.1 Level of Pedagogical Commitment of Public Elementary School Teachers

Presented in Table 1 is the summary of the domains in the level of pedagogical commitment

of public elementary school teachers, which includes professional dedication, instructional effectiveness, student-centered approach, continuous professional development, and work ethics responsibility, based on the computed mean scores and standard deviations. The domain work ethics responsibility registered the highest mean of 4.86, described as "very high," followed by student-centered approach at 4.85. Continuous professional development obtained a mean score of 4.83, while instructional effectiveness and professional dedication posted mean values of 4.82 and 4.81 respectively, all categorized as "very high." The overall mean of 4.83 is likewise interpreted as "very high," suggesting that teachers in public elementary schools demonstrate a consistently strong level of pedagogical commitment across all identified domains.

The overall standard deviation of 0.34 indicates minimal variability in responses, implying that teachers' levels of pedagogical commitment are relatively uniform across the sample. This finding suggests that teachers maintain a high standard of professional and instructional practice, are dedicated to student-centered learning, and actively pursue professional growth. These behaviors reflect a strong ethical responsibility and dedication to their roles as facilitators of student learning.

This result aligns with the findings of Ye et al. (2022), who reported that high levels of pedagogical commitment are associated with improved classroom dynamics and student performance. In addition, Lu (2021) emphasized that teachers who uphold ethical work practices and embrace continuous development are more likely to innovate instruction and adapt to the needs of diverse learners. Moreover, the study of San-Martín et al. (2020) revealed that instructional effectiveness and a student-centered mindset serve as key predictors of positive academic outcomes, underscoring the importance of these dimensions in fostering meaningful learning environments.

Table 1. Level of pedagogical commitment of public elementary school teachers

| Domains | SD | Mean | Descriptive Level |
|-------------------------------------|-------------|-------------|-------------------|
| Professional Dedication | 0.36 | 4.81 | Very High |
| Instructional Effectiveness | 0.36 | 4.82 | Very High |
| Student-Centered Approach | 0.37 | 4.85 | Very High |
| Continuous Professional Development | 0.34 | 4.83 | Very High |
| Work Ethics Responsibility | 0.30 | 4.86 | Very High |
| Overall | 0.34 | 4.83 | Very High |

Table 2. Level of cognitive mastery among public elementary school students

| Domains | SD | Mean | Descriptive Level |
|----------------------------|-------------|-------------|-------------------|
| Understanding of Knowledge | 0.37 | 4.81 | Very High |
| Application of Knowledge | 0.39 | 4.79 | Very High |
| Overall | 0.38 | 4.80 | Very High |

3.2 Level of Cognitive Mastery among Public Elementary School Students

Presented in Table 2 is the summary of the domains in the level of cognitive mastery among public elementary school students, covering understanding of knowledge and application of knowledge. The domain understanding of knowledge obtained the highest mean of 4.81, described as “very high,” followed closely by application of knowledge with a mean of 4.79, also interpreted as “very high.” The overall mean of 4.80 signifies a “very high” level of cognitive mastery among students, indicating that learners demonstrate strong comprehension and effective application of acquired knowledge across various subject areas.

The overall standard deviation of 0.38 suggests that student responses were moderately consistent, reflecting a shared experience of strong cognitive abilities among the learners. This finding implies that students are generally proficient not only in grasping theoretical concepts but also in applying what they have learned in practical contexts, a key outcome in contemporary education.

This finding supports the study of Pellas (2023), who emphasized that cognitive mastery is a crucial indicator of quality education and is influenced by both classroom practices and teacher effectiveness. In the same vein, Gao et al., (2022) affirmed that when students are equipped with a solid foundation of knowledge and the ability to apply it, they are more likely to excel in academic tasks and standardized assessments. Additionally, the research of Bizimana et al. (2022) revealed that student performance improves significantly when

learning environments promote higher-order thinking, inquiry-based learning, and conceptual understanding.

Presented in Table 3 is the correlation analysis between pedagogical commitment of teachers and cognitive mastery of students in public elementary schools. The relationship between these two variables yielded a correlation coefficient (R) of 0.68 with a p-value of 0.000, which is less than the 0.05 significance level. This indicates a high and statistically significant positive relationship between pedagogical commitment and cognitive mastery. The R² value of 0.46 signifies that approximately 46% of the variance in students' cognitive mastery can be explained by the level of pedagogical commitment demonstrated by their teachers. Since the p-value is less than 0.05, the null hypothesis (H₀₁) is rejected, affirming that pedagogical commitment is significantly related to students' cognitive mastery.

3.3 Significant Relationship between Pedagogical Commitment of Teachers and Cognitive Mastery of Students in Public Elementary Schools

This finding suggests that teachers who show a high level of pedagogical commitment—through dedication, effective instruction, student-centered approaches, professional development, and ethical practice—contribute significantly to the cognitive growth of their students. The consistent and intentional implementation of these practices enhances students' understanding and application of knowledge. This highlights the crucial role of committed teachers in shaping intellectually competent learners in the elementary education system.

Table 3. Significant relationship between pedagogical commitment of teachers and cognitive mastery of students in public elementary schools

| Variables | Mean | SD | R | R ² | Degree of Relationship | p-value | Decision |
|------------------------|------|------|------|----------------|------------------------|---------|------------------------|
| Pedagogical Commitment | 4.83 | 0.34 | 0.68 | 0.46 | High | 0.000 | Reject H ₀₁ |
| Cognitive Mastery | 4.80 | 0.38 | | | | | |

This result corroborates the findings of Yin et al. (2022), who emphasized that students demonstrate higher levels of cognitive engagement and mastery when guided by pedagogically committed teachers. Likewise, Wahyuni (2020) noted that a student-centered approach and consistent professional development among teachers are strong predictors of improved student performance. Furthermore, the study by Muhammad (2024) reinforced that work ethics and instructional effectiveness directly correlate with students' academic success, underscoring the value of reinforcing pedagogical commitment to enhance educational outcomes.

3.4 Domains of Pedagogical Commitment that Significantly Influence Cognitive Mastery of Students in Public Elementary Schools

Presented in Table 4 is the regression analysis examining how different domains of pedagogical commitment—professional dedication, instructional effectiveness, student-centered approach, continuous professional development, and work ethics responsibility—significantly influence cognitive mastery among students in public elementary schools. The regression model, which predicts student cognitive mastery based on these domains of pedagogical commitment, is represented by the equation: Cognitive Mastery = 3.15 + 0.76 (Professional Dedication) + 0.81 (Instructional Effectiveness) + 0.84 (Student-Centered Approach) + 0.73 (Continuous Professional Development) + 0.85 (Work Ethics Responsibility). This model accounts for approximately 47.6% of the

variance in students' cognitive mastery, as shown by the R^2 value of 0.476. The model's overall statistical significance is confirmed by an F-value of 75.12 and a p-value of 0.000, indicating a strong relationship between the domains of pedagogical commitment and cognitive mastery.

These findings emphasize that when teachers demonstrate high levels of pedagogical commitment—particularly in the domains of work ethics responsibility and student-centered teaching—they significantly enhance students' understanding and application of knowledge. Notably, work ethics responsibility emerged as the strongest predictor, highlighting the impact of teacher reliability, punctuality, and professional behavior on students' academic success. Likewise, student-centered approaches and instructional effectiveness contribute significantly to better cognitive outcomes, underscoring the importance of personalized teaching and competent delivery of content.

This analysis underscores the need to integrate and strengthen these commitment domains in teacher training and evaluation systems. As supported by the findings of Thien et al. (2024), teachers with high pedagogical commitment create environments conducive to cognitive development. Similarly, Chen et al. (2021) found that professional development efforts focused on instructional competence and student engagement lead to improved learning outcomes. Ghani et al. (2020) also emphasized that when teachers consistently demonstrate ethical teaching behavior and lifelong learning orientation, students perform better cognitively and are more academically prepared.

Table 4. Domains of pedagogical commitment that significantly influence cognitive mastery of students in public elementary schools

| Domains | B | BE | Beta | t-stat | p-value | Decision |
|--|------|------|------|--------|---------|-------------|
| Constant | 3.15 | 0.76 | | 7.85 | 0.000 | Significant |
| Professional Dedication | 0.76 | 0.64 | 0.53 | 6.20 | 0.000 | Significant |
| Instructional Effectiveness | 0.81 | 0.69 | 0.57 | 6.45 | 0.000 | Significant |
| Student-Centered Approach | 0.84 | 0.71 | 0.59 | 6.70 | 0.000 | Significant |
| Continuous Professional Development | 0.73 | 0.60 | 0.51 | 6.10 | 0.000 | Significant |
| Work Ethics Responsibility | 0.85 | 0.72 | 0.61 | 6.80 | 0.000 | Significant |
| Regression Model | | | | | | |
| Cognitive Mastery = 3.15 + 0.76 (Professional Dedication) + 0.81 (Instructional Effectiveness) + 0.84 (Student-Centered Approach) + 0.73 (Continuous Professional Development) + 0.85 (Work Ethics Responsibility) | | | | | | |
| R = 0.69; R^2 = 0.476; F = 75.12; p-value = 0.000 | | | | | | |

4. CONCLUSION

Based on the findings of the study, the following conclusions were formulated:

Firstly, the level of pedagogical commitment among public elementary school teachers is always observed, with teachers demonstrating a strong sense of professional dedication, instructional effectiveness, student-centered approach, continuous professional development, and work ethics responsibility. This indicates that teachers are highly committed to their profession, consistently delivering quality instruction, engaging students meaningfully, and upholding ethical standards. A strong foundation in pedagogical commitment enables teachers to foster productive learning environments, maintain high standards of teaching, and continually improve their instructional practices. When teachers are professionally dedicated and ethically responsible, they contribute significantly to students' learning and holistic development.

Secondly, the level of cognitive mastery among students is always observed, particularly in the areas of understanding and application of knowledge. This finding suggests that students are not only able to grasp essential concepts but are also capable of applying what they have learned in practical and meaningful ways. High levels of cognitive mastery among students reflect the effectiveness of teaching strategies and the support provided by committed educators. When students develop a strong understanding and can apply their knowledge, they are better prepared for academic progression and real-world challenges.

Thirdly, a significant relationship between pedagogical commitment of teachers and cognitive mastery of students was observed. This indicates that students tend to achieve higher levels of cognitive mastery when guided by teachers who exhibit strong pedagogical commitment. The ability of teachers to plan effective instruction, maintain ethical standards, and continuously develop themselves professionally plays a crucial role in promoting students' intellectual growth. When teachers demonstrate commitment in their educational practices, students are more likely to be motivated, engaged, and successful in their learning journey.

Finally, the domains of pedagogical commitment significantly influence cognitive mastery. Among

these, work ethics responsibility emerged as the strongest factor, followed by student-centered approach, instructional effectiveness, professional dedication, and continuous professional development. This highlights the importance of nurturing teachers' ethical behavior, focus on students' needs, and professional competence, as these elements directly impact students' understanding and application of knowledge. Schools that prioritize these domains of pedagogical commitment create an environment where both teachers and students thrive. By strengthening teacher commitment in these areas, educational institutions can ensure that learners develop strong cognitive abilities essential for lifelong academic and personal success.

5. RECOMMENDATIONS

Based on the findings and conclusions of this study, the following recommendations were proposed:

For DepEd officials, it is recommended to provide sustained support for strengthening pedagogical commitment through policy-driven teacher development programs, aligning performance appraisal systems with ethical responsibility, instructional effectiveness, and student-centered practices. Emphasizing standards that prioritize professional dedication, ongoing training, and ethical conduct will help reinforce high-quality teaching. Policies that promote continuous professional development and recognize excellence in pedagogical practices can ensure lasting improvements in student learning outcomes.

School administrators are advised to enhance existing instructional programs and develop structured initiatives that promote pedagogical commitment, such as peer mentoring, ethics-based workshops, and research-based teaching enhancement sessions. They are encouraged to implement systems that strengthen work ethics responsibility and student-centered teaching, including classroom observation with feedback, collaborative lesson planning, and teacher-led innovation projects. Moreover, administrators should institutionalize development plans that integrate ethical teaching, learner-centered practices, and reflective pedagogy to support student cognitive mastery. Fostering a school culture rooted in professionalism and accountability will help sustain teacher effectiveness and student success.

For teachers, the study recommends actively participating in targeted capacity-building activities focused on professional dedication, ethical teaching, and effective instruction. Teachers are encouraged to engage in reflective practices, lesson co-planning, and continuous improvement activities aligned with their instructional roles. Using self-evaluation tools, setting instructional goals, and prioritizing student engagement strategies will help align personal teaching commitment with student achievement. Teachers who model responsibility, commitment, and care in their teaching practices contribute meaningfully to the development of students' understanding and application of knowledge.

Lastly, for future researchers, it is recommended to explore the longitudinal effects of pedagogical commitment on diverse student outcomes, such as critical thinking, retention, and academic resilience. Further research may also assess which domains of pedagogical commitment most significantly impact student achievement in different subject areas. Expanding studies across educational contexts and integrating variables such as school leadership, teacher motivation, and classroom climate can offer more comprehensive insights into optimizing pedagogical commitment to promote high levels of student cognitive mastery.

CONSENT AND ETHICAL APPROVAL

The implementation of this study closely followed recognized ethical guidelines to protect the rights, dignity, and welfare of all participants. Before data collection began, the researcher obtained the required approvals from institutional authorities, including endorsement from the Dean of the Graduate School and ethical clearance from the designated Ethics Review Committee. The study procedures were guided by the ethical framework proposed by Pregoner et al. (2025), ensuring compliance with current standards for conducting research involving human subjects in educational contexts. Participation was fully voluntary, with participants clearly informed about the study's goals, procedures, and their right to refuse or withdraw at any point without penalty. Informed consent was secured to confirm participants' understanding and willingness to join the study. To maintain confidentiality and anonymity, no personally identifying information was collected, and all data were handled with strict privacy. The information gathered was solely used for academic purposes. These steps upheld the ethical

integrity, transparency, and professional conduct of the research process.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

The author(s) hereby declare that generative AI technologies have been used during the writing and editing of this manuscript. The details of the AI usage are as follows:

1. Grammarly: Used for grammar and spellchecking, as well as suggestions for improving sentence structure and overall clarity.
2. Quillbot: Employed for paraphrasing and refining sentence flow to enhance readability and coherence.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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