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Analyzing the impact of teacher strategies on student performance

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Abstract: This study examines how different classroom strategies influence learners' academic outcomes. Specifically, it investigates the extent to which teachers employ differentiated instruction, student engagement strategies, contextualized learning materials, and the integration of real-world scenarios. The study also assesses learners' academic performance in English, Mathematics, and Science, exploring significant relationships between teaching strategies and student achievement. A descriptive-correlational design was used, involving 30 teachers and 162 learners as respondents. Data were collected through validated survey questionnaires and analyzed using weighted mean, Pearson correlation, and t-tests. Findings revealed that teachers strongly agreed they frequently used all four strategies, with differentiated instruction and real-world scenarios being the most consistently applied. Learners demonstrated high performance across all subjects, with outstanding results in English and very satisfactory ratings in Mathematics and Science. Significant relationships were identified between differentiated instruction and real-world scenarios and overall academic performance, while student engagement strategies were particularly linked to improved Mathematics and Science outcomes. Contextualized learning materials, though commonly used, did not show a strong direct correlation with higher grades in this study. The results highlight the importance of personalizing lessons and connecting content to real-life contexts to enhance learning. The study recommends further training, resource provision, and professional collaboration to sustain effective practices. An enhancement plan was developed to guide continuous improvement in instructional strategies, aiming to strengthen learner engagement and achievement.

Keywords: *Academic performance, Contextualized learning, Differentiated instruction, Real-world scenarios, Student engagement, Teaching strategies.*

1. Introduction

Education is a cornerstone for cultivating critical thinking and problem-solving skills globally, preparing learners for modern challenges. In the Philippines, mathematics is a central component of the K-12 curriculum, aiming to foster holistic development and global competitiveness (Barrot, 2023). Achieving these points is hindered by persistent challenges, especially in resource-limited classrooms (Ducre, 2023). Traditional teaching approaches, which emphasize rote memorization over conceptual understanding, remain dominant, restricting students' ability to engage deeply with mathematical concepts (Ali, Kumar, & Rahman, 2024). Globally, successful education systems emphasize innovative strategies, integrating technology and critical thinking skills to enhance learning outcomes (Gonzalez-Perez, Velez, & Rojas, 2022). Adopting these global practices could help align the Philippine curriculum with international standards.

However, the Philippines has consistently performed below the global average in the Programme for International Student Assessment (PISA). In 2018, Filipino students ranked near the bottom among

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79 participating countries, highlighting significant challenges in mathematics education (Lopez, 2023). Over 50% of students scored below the minimum proficiency level, indicating severe gaps in foundational skills (Bernardo, Mendoza, & Gonzales, 2022). Several factors contribute to this underperformance, including low levels of mathematical literacy, misaligned curricula that fail to meet global standards, and insufficient teacher preparation for delivering complex competencies (Skipp & Dommett, 2021).

Effective classroom strategies significantly impact student outcomes in mathematics and science subjects. Differentiated instruction, contextualized learning materials, and the integration of real-world scenarios have proven to improve engagement and performance (Azis, Wahyuni, & Santoso, 2024). However, implementing such strategies requires teacher readiness, sufficient resources, and professional development programs (Dicdiquin, Reyes, & Ramos, 2023). Investigating teacher strategies offers insights into addressing the mathematics performance gap among Filipino learners (Luzano, 2024). Studies indicate that enhancing teachers' questioning techniques and fostering higher-order thinking skills can lead to better student outcomes (Karuru, Njoroge, & Mwangi, 2023).

Previous research evaluates the challenges in mathematics and science education through a combination of student performance analysis, teacher practices, and curriculum assessment. For instance, studies highlight the role of cognitive and linguistic factors, such as the influence of English language proficiency on mathematics competency (Peng, Lin, & Wang, 2020). Moreover, curriculum alignment studies reveal that the Philippine K-12 program lacks sufficient emphasis on critical mathematical and science competencies (Barrot, 2023).

Despite efforts to reform mathematics and science education, gaps persist in implementing effective classroom strategies. Many teachers struggle to integrate innovative methods such as differentiated instruction due to inadequate training and resource limitations (Shareefa, Hussain, & Maniku, 2021). Addressing these gaps requires a systemic approach that combines curriculum improvement, teacher development, and support mechanisms. This research offers numerous benefits, including providing actionable insights for policymakers, educators, and curriculum developers. Focusing on classroom strategies, it promotes evidence-based practices that can enhance teacher effectiveness and student engagement. Furthermore, addressing the gaps identified in previous studies can improve the Philippines' performance in international assessments like PISA, fostering global competitiveness.

2. Methodology

This study employed a descriptive-correlational research design to determine the relationship between teachers' classroom strategies and learners' academic performance in English, Mathematics, and Science in selected public elementary schools in the Bohol District during the school year 2024–2025. The design was chosen to describe existing teaching practices and examine correlations between instructional strategies and student outcomes. The study involved 30 teachers and 162 learners, representing a diverse demographic profile in terms of age, gender, parents' occupation, educational attainment, and family size. Data were gathered using validated survey questionnaires and performance assessments. The teacher strategy survey measured four domains: Differentiated Instruction, Student Engagement Strategies, Contextualized Learning Materials, and Integration of Real-World Scenarios, using a 5-point Likert scale. The indicators were adapted from prior studies (Almazova, Khalyapina, & Rubtsova, 2021; Carrillo, Chiva-Bartoll, & Marín-Suelves, 2016; Faber, Smit, & Humpert, 2018; Handa, 2020; Maulana, Helms-Lorenz, & Irnidayanti, 2023; Santamaría, 2009; Seddon, Postlethwaite, & Lee, 2012; Smit & Humpert, 2012; Suprayogi, Valcke, & Godwin, 2017). Learners' academic performance was assessed through standardized test scores and report card ratings. The study followed the Input–Process–Output (IPO) framework. The Input included respondent demographics and levels of instructional strategies. The Process involved data collection, tabulation, and statistical analysis using descriptive statistics (weighted mean and standard deviation) and inferential tests (Pearson correlation and t-test). The Output was an enhancement plan aimed at improving instructional practices. The study

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was conducted in an urban public school setting that implements the K–12 curriculum, providing an appropriate environment for examining effective teaching strategies.

3. Results

Table 1.
Differentiated Instruction.

Indicators	WM	SD	VD
Use of tiered tasks tailored to student readiness and ability levels	4.56	0.48	SA
Grouping strategies based on student needs, such as ability- or interest-based groups.	4.60	0.42	SA
Flexible pacing to allow students to work at their own speed on specific tasks.	4.25	0.60	SA
Providing multiple formats for content delivery, such as visual, auditory, and kinesthetic materials.	4.32	0.55	SA
Adjustments to product assignments, allowing students to demonstrate understanding in diverse ways.	4.28	0.58	SA
Grand Weighted Mean	4.40	0.53	SA

The table shows how often teachers use differentiated instruction in their classrooms. All the scores are very high, with a grand weighted mean of 4.40, meaning teachers strongly agree they use these practices. The highest rating (4.60) was for grouping students by needs or interests, showing teachers often organize learners to help them better understand lessons. They also often use tiered tasks (4.56) and different ways to deliver lessons, like visuals or hands-on activities (4.32). Flexible pacing (4.25) and offering choices for assignments (4.28) were also common. This means teachers are committed to adjusting their lessons so all students can learn in ways that fit them best. When teachers use these strategies, students are more likely to stay engaged, understand better, and feel successful. Schools should continue supporting training and resources that help teachers plan different activities and materials for different learners. Research shows that differentiated instruction increases student motivation and learning because it respects their differences and needs. As Tomlinson (2014) explains, tailoring instruction helps bridge gaps and raise achievement, especially in diverse classrooms.

Table 2 shows how teachers use strategies to keep students interested and involved in class. All the scores are very high, with a grand weighted mean of 4.39, which means teachers strongly agree they use these methods. The highest ratings (both 4.54) were for giving regular, quick feedback and using digital tools for collaboration, showing that teachers value instant support and technology to help students stay engaged. Interactive activities like discussions (4.32), gamification (4.28), and giving students choices in activities (4.28) were also used often. This indicates that teachers are making significant efforts to make lessons active and engaging. When students receive quick feedback, work in groups, and use technology, they tend to be more motivated and better able to understand lessons.

Table 2.
Student Engagement Strategies.

Indicators	WM	SD	VD
Interactive activities that promote participation, such as group discussions and peer learning.	4.32	0.54	SA
Use of gamification or competitive elements to maintain interest.	4.28	0.56	SA
Provision of regular, immediate feedback to keep students engaged with learning goals.	4.54	0.56	SA
Opportunities for student voice and choice in classroom activities.	4.28	0.73	SA
Integration of collaborative digital tools to enhance engagement.	4.54	0.65	SA
Grand Weighted Mean	4.39	0.61	SA

Schools should continue to provide tools, training, and time for teachers to design engaging activities that encourage participation. Studies show that when teachers use engagement strategies like feedback, games, and digital collaboration, learners demonstrate higher motivation, better focus, and improved achievement (Fredricks, Filsecker, & Lawson, 2016).

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Table 3.
Contextualized Learning Materials.

Indicators	WM	SD	VD
Use of locally relevant examples to connect concepts to students' experiences.	4.34	0.60	SA
Inclusion of case studies or real-life problems to foster application skills.	4.24	0.58	SA
Development of culturally responsive instructional materials.	4.18	0.81	A
Creation of interdisciplinary projects combining mathematics with other subjects.	4.24	0.58	SA
Use of manipulatives and tangible tools to represent abstract ideas.	4.20	0.63	A
Grand Weighted Mean	4.24	0.64	SA

Table 3 shows how often teachers use contextualized learning materials in class. The scores are all high, with a grand weighted mean of 4.24, which means teachers strongly agree they do these practices. The highest rating (4.34) was for using local examples to make lessons more connected to students' real lives. Teachers also often included case studies and real-life problems (4.24) and created projects that mix subjects like math and science (4.24). Using culturally responsive materials (4.18) and hands-on tools (4.20) were rated slightly lower but still high, showing teachers value making learning meaningful and relevant. This means teachers are working to link lessons to students' everyday experiences and cultures. When lessons feel relevant, students understand concepts better and are more interested in learning. Research has shown that contextualized and culturally relevant materials improve students' engagement, understanding, and achievement, especially when lessons reflect their own backgrounds and communities (Gay, 2010).

The table shows how often teachers use real-world examples and situations in their lessons. The scores are all very high, with a grand weighted mean of 4.30, which indicates that teachers strongly agree they include these practices. The highest score (4.34) was for guiding students in real-world projects done together in groups. Teachers also frequently connect subjects like math, science, and English to demonstrate their real-life applications (4.32) and create tasks that resemble real-world situations (4.32). Using real-life examples in lessons (4.28) and assessing how students apply concepts in real-life situations (4.24) were also rated highly.

Table 4.
Integration of Real-World Scenarios.

Indicators	WM	SD	VD
Teachers use real-life examples in teaching English, mathematics, and science subjects.	4.28	0.56	SA
Teachers develop tasks that mirror real-world situations.	4.32	0.72	SA
Teachers connect mathematics to other fields such as science, English, or technology, demonstrating its relevance across disciplines.	4.32	0.60	SA
Teachers guide students in collaborative and real-world projects.	4.34	0.58	SA
Teachers evaluate students' ability to apply mathematical concepts in real-world scenarios as part of classroom assessments.	4.24	0.64	SA
Grand Weighted Mean	4.30	0.62	SA

This means teachers are making learning practical and showing students why lessons matter outside the classroom. When students see how subjects connect to everyday life, they are more motivated, think critically, and better remember what they learn. Schools should keep supporting teachers with materials and training to design lessons that relate to the real world. Studies show that using real-world examples and projects helps students develop a deeper understanding, problem-solving skills, and readiness to use knowledge in daily life (Barron & Darling-Hammond, 2008).

Table 5.
Academic Performance

Subjects	Grade	Verbal Description
English	90	Outstanding
Mathematics	88	Very Satisfactory
Science	89	Very Satisfactory

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Table 5 shows how often teachers use real-world examples and situations in their lessons. The scores are all very high, with a grand weighted mean of 4.30, which indicates that teachers strongly agree they include these practices. The highest score (4.34) was for guiding students in real-world projects done together in groups.

Teachers also frequently connect subjects like math, science, and English to demonstrate how they work in real life (4.32) and create tasks that resemble real-world situations (4.32). Using real-life examples in lessons (4.28) and assessing how students apply concepts in real-life situations (4.24) were also rated highly.

The table shows whether each classroom strategy has a meaningful link to learners' academic performance. Differentiated instruction has a significant relationship with performance (p=0.022), which means that when teachers adjust lessons to fit students' needs, it often leads to better grades.

Integration of real-world scenarios is also significant (p=0.051), suggesting that connecting lessons to real-life situations helps improve learning. On the other hand, student engagement strategies (p=0.073) and contextualized learning materials (p=0.092) did not show a statistically significant relationship in this study.

Table 6.
Significant Relationship Between the Classroom Strategies and Learners' Academic Performance.

Constructs	r-value	t-value	P value	Remarks	Decision
Differentiated Instruction	0.142755	0.42525	0.022731	Significant	Reject
Student Engagement Strategies	0.232924	0.742593	0.072901	Not Significant	Do not Reject
Contextualized Learning Materials	0.073825	0.362221	0.092438	Not Significant	Do not Reject
Integration Of Real-World Scenarios	0.162264	0.474290	0.051421	Significant	Reject

This means that, although teachers use these methods, they do not clearly relate to higher grades here. These findings suggest that personalizing lessons (differentiation) and making learning practical and real-world can strongly support academic success. Schools should encourage teachers to keep using these two strategies regularly. Even though engagement activities and contextual materials were not statistically significant in this study, they may still help in other ways, like improving motivation and participation. Training programs can focus more on how to blend these methods effectively to get the best results for learners. Research supports that differentiated instruction and real-world learning improve student outcomes because they address individual needs and make learning relevant (Barron & Darling-Hammond, 2008; Tomlinson, 2014). In addition, studies have shown that engaging strategies such as gamified activities and collaborative tasks further enhance motivation, confidence, and academic performance (Fredricks et al., 2016; Yeh, Lin, & Chuang, 2021).

Table 7.
Significant Relationship Between the Classroom Strategies and Learners' Mathematics Performance.

Constructs	r-value	t-value	P value	Remarks	Decision
Differentiated Instruction	0.125096	0.667186	0.010115	Significant	Reject
Student Engagement Strategies	0.09534	0.145068	0.016263	Significant	Reject
Contextualized Learning Materials	0.030702	0.162535	0.072052	Not Significant	Do not Reject
Integration Of Real-World Scenarios	0.185830	0.542625	0.021038	Significant	Reject

The table indicates whether classroom strategies are associated with students' performance in Mathematics. Differentiated instruction shows a significant relationship with math achievement (p=0.010), indicating that when teachers modify lessons to meet diverse student needs, there is often an improvement in math scores. Student engagement strategies (p=0.016) also demonstrate a significant connection, suggesting that activities designed to maintain student interest can enhance math outcomes. The integration of real-world scenarios (p=0.021) is similarly significant, implying that linking math concepts to real-life contexts aids student understanding. Conversely, the use of contextualized learning materials (p=0.072) did not show a statistically significant relationship with math scores in this study.

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These findings suggest that teachers who adapt lessons, foster student engagement, and incorporate real-world applications can positively influence learners' performance in mathematics. Schools should promote training on designing differentiated activities and real-world tasks for math instruction. Although contextualized materials were not statistically significant here, they may still contribute to making lessons more relevant and increasing student interest over time. Combining these strategies can enhance students' comprehension and confidence in math. Research indicates that differentiated instruction and real-life applications are effective in helping learners grasp mathematical concepts and develop positive attitudes toward learning math (Cheung & Slavin, 2021; Tomlinson, 2014).

Table 7.
Significant Relationship Between the Classroom Strategies and Learners' Science Performance.

Constructs	r-value	t-value	P value	Remarks	Decision
Differentiated Instruction	0.236487	1.215862	0.043347	Significant	Reject
Student Engagement Strategies	0.129251	1.069251	0.018031	Significant	Reject
Contextualized Learning Materials	0.145869	0.602092	0.059255	Not Significant	Do not Reject
Integration Of Real-World Scenarios	0.136628	1.024264	0.042143	Significant	Reject

The table shows whether classroom strategies have a connection with how well learners perform in science. Differentiated instruction has a significant relationship with science performance (p=0.043), indicating that when teachers adjust lessons to match students' needs, students tend to achieve better science results. Student engagement strategies are also significant (p=0.018), suggesting that activities that keep learners active and interested help improve their understanding of science. The integration of real-world scenarios (p=0.042) is significant as well, demonstrating that connecting lessons to real-life situations supports learning.

However, contextualized learning materials (p=0.059) were not statistically significant in this study, even though teachers still frequently use them. These findings imply that adapting lessons, employing engaging activities, and demonstrating real-life examples are all beneficial for enhancing science performance.

Schools should continue supporting teachers in planning differentiated and engaging science lessons that make concepts more practical and meaningful. Although contextual materials did not show a strong link here, they may still contribute to building interest and understanding over the long term. Training programs can assist teachers in combining these strategies to achieve even better results.

Research supports that differentiated instruction, active learning, and real-world applications improve students' science achievement by making lessons more accessible and relevant (Barron & Darling-Hammond, 2008; Papadakis, Kalogiannakis, & Zaranis, 2022; Tomlinson, 2014).

4. Conclusion

The study found that teachers widely use varied classroom strategies, including differentiated instruction, student engagement techniques, contextualized materials, and real-world scenarios, to support learning. Learners achieved high grades across English, Mathematics, and Science, showing that these practices positively impact performance. Differentiated instruction and integration of real-life examples were strongly linked to higher achievement in all subjects, while student engagement strategies significantly improved Mathematics and Science results.

Although contextualized materials did not show a clear relationship with grades, they still contribute to making lessons meaningful. Overall, the findings highlight the need for continued training, resources, and support for teachers to sustain effective teaching methods that cater to diverse learner needs and enhance educational outcomes.

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Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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