

Teachers Practices on Differentiated Instructional Strategies and Learners' Academic Performance in Mathematics

Sarah Mae O. Ranas¹, Enerio E. Ebisa, PhD²

¹ Teacher, Department of Education

² Professor, Cagayan de Oro College

Abstract

Education shapes an individual's future, especially during elementary years, which play a critical role in developing academic skills. A major challenge in math assessment is meeting the diverse learning needs of students, which often causes differences in academic performance. This study was conducted to determine the teachers practices on differentiated instructional strategies and learners' academic performance in Mathematics. Specifically, it described the respondent's profile, it assessed the level of practices on differentiated instructional strategies, examined the relationship between the differentiated instructional strategies to learners' academic performance, and determined significant difference in respondents' practices when grouped according to their profile.

This study focused on 152 Key Stage 2 math teachers employing universal sampling from the three educational districts of Balingasag. Using a correlational research design, data were collected through a modified survey questionnaire. Descriptive statistics analyzed the respondents' profile and learners' performance, while weighted mean and standard deviation assessed instructional strategies. Pearson's correlation measured the relationship between instructional strategies and academic performance, and ANOVA tested differences based on respondent's profile. The findings showed that most respondents held Teacher I positions with limited experience and training. Their education mostly consisted of with master's degree units, with training received only at the division level. Despite challenges, "Varied Instructional Materials" being the most practiced strategy, helping many learners achieve a "Very Satisfactory" performance in Mathematics. On the other hand, "Flexible Grouping" was less effectively used and showed the lowest correlation due to implementation challenges. Teachers with higher educational attainment practiced more diverse strategies. The study concluded that using varied instructional materials significantly improves math assessment outcomes. It recommends on continuing professional development, emphasizing division-level training, and enhancing flexible grouping strategies to better meet the needs of diverse learners.

Keywords: Practices, Differentiated Instructional Strategies, Performance in Mathematics

1. Introduction

Education serves as the foundation for shaping an individual's future, particularly during the elementary years when essential academic and social-emotional skills are developed. With increasingly diverse classrooms, differentiated instruction becomes vital as it adapts teaching content, methods, and

assessments to meet students' varied needs, abilities, and interests, promoting inclusivity and engagement. In Mathematics, differentiated instruction enhances student motivation and confidence, especially when lessons progress from basic to advanced skills and connect to real-life situations. However, challenges remain as many learners continue to struggle with basic operations, which are crucial for mastering higher mathematical concepts. In Balingasag Districts, where students have diverse backgrounds and learning levels, low proficiency rates in Mathematics prompted an investigation into how differentiated instructional strategies influence academic performance. This study aims to identify effective teaching approaches that improve student achievement, foster deeper understanding, and encourage a more positive attitude toward Mathematics.

Research Questions

This study aimed to determine the level of practices on differentiated instructional strategies and learners' academic performance in Mathematics in the Districts of Balingasag, Misamis Oriental, during the School Year 2024-2025.

Specifically, it sought to answer the following questions:

1. What is the respondent's profile in terms of position, teaching experience, highest educational attainment, and trainings/seminars attended on mathematics?
2. What is the respondent's level of practices on differentiated instructional strategies based on assessment methods, flexible grouping, individualized support, and varied Instructional Materials?
3. What is the learners' level of academic performance in Mathematics during the School Year 2024-2025?
4. Is there a significant relationship between the respondents' practices on differentiated instructional strategies and the learners' academic performance in Mathematics?
5. Is there a significant difference in the respondents' practices on differentiated instructional strategies when grouped according to their profile?

Significance

The findings of this study are valuable to various stakeholders in education. For school heads and administrators, the results can guide the creation of targeted professional development programs and the provision of training and resources that align teaching practices with diverse student needs. Teachers can benefit from evidence-based insights on differentiated strategies such as flexible grouping, individualized support, and varied materials, helping them refine their methods to boost engagement and achievement in Mathematics. Learners, as the primary beneficiaries, gain from more inclusive and meaningful learning experiences that address their unique abilities and preferences, making Mathematics more engaging and accessible. Additionally, the study encourages future researchers to further investigate factors influencing students' mathematical proficiency.

Scope and Limitations

This study focused on teachers' practices on differentiated instructional strategies and learners' academic performance in Mathematics in the Districts of Balingasag, Misamis Oriental, during the School Year 2024-2025. The respondents were the one hundred fifty-two (152) teachers handling Mathematics in the districts mentioned above. The variable 2 was limited only to the teachers' practices on differentiated

instructional strategies based on assessment method, flexible grouping, individualized support and varied instructional materials. Furthermore, the variable 3 was limited to learners' academic performance in Mathematics in the First to Fourth Quarters of the School Year 2024-2025. Moreover, the respondents' profiles in terms of position, teaching experience, highest educational attainment and trainings/seminars attended on Mathematics were also considered.

2. Literature Review

Respondents Profile

Teachers' position, teaching experience, educational attainment, and participation in trainings play a vital role in shaping their ability to implement differentiated instruction effectively. Teachers in higher positions often demonstrate leadership and mentoring skills that support innovative teaching, while experience enhances confidence and classroom management abilities. However, experience alone is not enough; ongoing professional development remains crucial. (Insorio, 2024) stated that higher educational attainment exposes teachers to advanced pedagogical frameworks, equipping them with strategies to address diverse learning needs. Participation in targeted trainings and seminars further strengthens their capacity to adapt lessons and close learning gaps, particularly in mathematics. Overall, these factors collectively influence teachers' readiness and proficiency in differentiated instruction, which fosters engagement, motivation, and improved student understanding (Vacalares and Elbanbuena, 2023).

Practices on Differentiated Instructional Strategies

Differentiated assessment tailors' evaluation methods to meet diverse student needs, as highlighted by Hajdeu (2023), promoting fairness and inclusivity while encouraging autonomy and mastery learning. Flexible grouping, as discussed by Prast et al. (2019), enhances engagement and allows teachers to modify instruction based on learners' abilities, leading to improved outcomes when implemented effectively. Individualized support, according to Xhomara (2020) strengthens academic performance by aligning instruction with students' unique needs through diagnostic assessments and technology-driven strategies. Meanwhile, varied instructional materials, as emphasized by Funa and Ricafort (2019) significantly enhance achievement and engagement when they are engaging, appropriately challenging, and easy for teachers to adapt and implement.

Academic Performance in Mathematics

Mathematics, as a core subject in the basic education curriculum, plays a vital role in developing students' analytical and problem-solving skills and serves as a benchmark for assessing intellectual ability, teaching effectiveness, and learning conditions. Guided by Bloom's Taxonomy (1956), mathematics learning emphasizes the cognitive domain, particularly higher-order thinking skills such as analysis, evaluation, and creation, which are essential for problem-solving and academic success. Bandura's Self-Efficacy Theory (1986) further highlights that students' confidence in their ability to perform mathematical tasks enhances motivation, persistence, and achievement.

3. Methodology

Research Design

This study utilized a correlational research design to examine the relationship between teachers' use of differentiated instructional strategies and students' academic performance in Mathematics in the

Balingasag Districts during the School Year 2024–2025. The design was chosen to determine the extent of the relationship between these variables without manipulation. It specifically sought to assess whether practices such as differentiated assessment methods, flexible grouping, individualized support, and varied instructional materials significantly relate to students' Mathematics achievement, as reflected in their quarterly grades. A quantitative approach was employed, using a structured survey to collect numerical data on teachers' instructional practices and existing school records to obtain objective measures of learners' performance.

Participants

The respondents of this study were the one hundred fifty-two (152) teachers handling Mathematics in Key Stage 2 levels within the Balingasag Districts, Misamis Oriental, during the School Year 2024-2025. Specifically, the respondents were chosen from the following schools of Balingasag North District: Quezon IS, Kibanban IS, Calawag IS, San Isidro ES, Mandangoa ES, Napaliran ES and Mambayaan IS and for Balingasag South District are Samay IS, Sulo ES, San Juan ES, Linabu IS, Bagaay ES, Blanco ES, Baliwagan CS, Binitinan ES and Hermano ES, and for Balingasag Central District are Lapu-Lapu ES, Camuayan ES, Rosario ES, Dumarait ES, San Francisco ES, Talusan ES, Cala-Cala ES, Cogon ES, Waterfall ES and Balingasag CS who are actively implementing and practiced these differentiated instructional strategies: assessment methods, flexible grouping, individualized support and varied instructional materials in their Mathematics classes. In addition to the teachers, the study included learners enrolled in Mathematics from Grades 4 to 6 in the selected schools. These students were chosen as subject to measure their academic performance in Mathematics, which was assessed using their grades from the First to Fourth Quarters.

Data Collection

The research instrument consisted of three main parts designed to gather comprehensive data. Part I focused on the respondents' profiles, including position, teaching experience, educational attainment, and trainings or seminars attended in Mathematics. Part II examined teachers' practices on differentiated instructional strategies across four categories, assessment methods, flexible grouping, individualized support, and varied instructional materials adapted from a previous study and aligned with modern, student-centered learning frameworks. Each category contained ten items rated on a four-point Likert scale (4–At All Times, 3–Most of the Time, 2–Sometimes, 1–Never) to determine the frequency of strategy implementation while encouraging clear responses. Part III gathered learners' academic performance in Mathematics based on their general average from the first to fourth quarters of the School Year 2024–2025, using data from the Teachers' Curriculum Management Support System.

Data Analysis

To analyze the quantitative data, several statistical methods were employed. Descriptive statistics, including percentages and frequency, were used to interpret data on respondents' profiles and students' academic performance in Mathematics. The weighted mean and standard deviation were applied to determine and describe the extent of teachers differentiated instructional practices. To examine the relationship between differentiated instructional strategies and learners' academic performance, the Pearson Product-Moment Correlation Coefficient was utilized. Finally, Analysis of Variance (ANOVA) was conducted to identify significant differences among the variables examined in the study.

4. Results and Discussions

Problem 1. What is the respondent's profile in terms of position, teaching experience, highest educational attainment, and trainings/seminars attended on Mathematics?

Table 1

Distribution of Respondents' Profile in terms of Position

Category	Frequency	Percentage
Master Teacher II	11	7.24
Master Teacher I	15	9.87
Teacher III	28	18.42
Teacher II	31	20.39
Teacher I	67	44.08
Total	152	100.00

Table 1 presents the respondents' profiles based on their positions, revealing that Teacher I had the highest frequency, indicating that most teachers in public elementary schools were relatively new or early in their careers. This trend reflects the typical workforce composition in many schools, where promotion requires years of experience, training, and merit-based evaluation. Consequently, many Mathematics classes in Grades 4 to 6 were taught by less experienced teachers who may need additional support in implementing differentiated instruction effectively. The findings highlight the importance of professional development and mentorship programs to enhance instructional capacity and encourage career progression. In contrast, Master Teacher II had the lowest frequency, suggesting that few teachers reach this rank due to stringent requirements involving experience, leadership, and significant contributions to education. The limited number of highly experienced teachers may have constrained mentorship opportunities and the consistent application of advanced teaching strategies, underscoring the need to strengthen leadership pathways and instructional guidance within schools.

Table 2

Distribution of Respondents' Profile in terms of Teaching Experience

Category	Frequency	Percentage
31 years above	20	13.16
26-30 years	30	19.74
21-25 years	18	11.84
16-20 years	17	11.18
11-15 years	19	12.50
6-10 years	12	7.89
5 years and below	36	23.68
Total	152	100.00

Table 2 presents the respondents' profiles based on teaching experience, showing that the largest group had 5 years or less of teaching experience. This indicates a significant presence of newly hired or early-career teachers who bring enthusiasm and fresh ideas but may still be developing the practical skills needed

for effective differentiated instruction. Their limited experience can influence their ability to manage diverse learning needs and apply varied strategies confidently, highlighting the importance of mentoring and professional development to strengthen instructional competence and improve learner outcomes. Conversely, the fewest respondents had 6–10 years of experience, suggesting that many teachers in this range had either been promoted, reassigned, or transferred, leading to a gap in mid-career representation. This pattern shows that turnover or career progression may disrupt instructional continuity and consistency in Mathematics classrooms. Retaining mid-career teachers could help sustain quality teaching, as their balanced experience equips them with a strong understanding of classroom dynamics and student diversity which is a key factor in implementing effective differentiated instruction.

Table 3**Distribution of Respondents' Profile in terms of Highest Educational Attainment**

Category	Frequency	Percentage
Doctorate Degree	17	11.18
with Doctorate Degree Units	19	12.50
Master's Degree	40	26.32
with Master's Degree Units	43	28.29
Bachelor's Degree	33	21.71
Total	152	100.00

Table 3 presents the respondents' profiles according to their highest educational attainment, showing that the majority held Master's Degree Units, indicating that many teachers were pursuing further studies while continuing their teaching careers. This trend reflects the strong encouragement for teachers to pursue higher education as a means of enhancing professional growth and improving instructional effectiveness. Teachers enrolled in graduate programs were likely gaining updated pedagogical knowledge and innovative strategies, which could positively influence their implementation of differentiated instruction in Mathematics. Their pursuit of advanced studies demonstrates a commitment to continuous learning that benefits both teaching quality and student outcomes. In contrast, only a few teachers held Doctorate Degrees, as completing such programs demands significant time, financial resources, and effort, which may not be feasible for most educators balancing multiple responsibilities. The limited number of doctorate holders suggests fewer educators with specialized expertise and research backgrounds, highlighting the need to support teachers in their professional advancement at all levels to strengthen instructional capacity and educational leadership.

Table 4**Distribution of Respondents' Profile in terms of Trainings/Seminars
Attended on Mathematics**

Category	Frequency	Percentage
International	1	0.66
National	8	5.26
Regional	18	11.84
Division	63	41.45

District	61	40.13
School	1	0.66
Total	152	100.00

Table 4 presents the respondents' profiles based on the trainings and seminars they attended in Mathematics, showing that the highest frequency was at the Division level. This indicates that most teachers participated in Division-level trainings because these were more accessible, regularly conducted, and supported by local education offices. Such seminars were aligned with district goals and designed to reach a larger number of teachers, making them convenient and beneficial for professional development. This suggests that teachers were able to enhance their instructional skills more effectively through localized and readily available programs, highlighting the importance of continuous and accessible professional learning opportunities. In contrast, both International-level and School-level seminars had the lowest frequency, showing that very few teachers attended these due to limited availability, lack of promotion, or financial and logistical constraints. The scarcity of these opportunities meant that teachers had fewer chances to gain exposure to global or school-specific innovations in teaching. This emphasizes the need to provide more balanced access to trainings at all levels to ensure teachers can broaden their perspectives, strengthen differentiated instructional practices, and better meet diverse learner needs.

Problem 2. What is the respondent's level of practices on differentiated instructional strategies based on assessment methods, flexible grouping, individualized support, and varied instructional materials?

Table 5

Summary Distribution of the Respondents' Level of Practices on Differentiated Instructional Strategies

Variable	Mean	SD	Interpretation
Assessment Methods	3.57	0.55	Highly Practiced
Flexible Grouping	3.55	0.58	Highly Practiced
Individualized Support	3.56	0.56	Highly Practiced
Varied Instructional Materials	3.60	0.53	Highly Practiced
Overall	3.57	0.55	Highly Practiced

Table 5 presents the level of practice of differentiated instructional strategies among Grades 4 to 6 Mathematics teachers, which was found to be highly practiced with an overall mean of 3.57. This result implies that teachers frequently apply various strategies to meet the diverse learning needs of their students, fostering inclusivity and deeper understanding of mathematical concepts. The use of varied instructional materials emerged as the most practiced strategy, reflecting teachers' efforts to make lessons more engaging and accessible through visual aids, manipulatives, and digital tools. Although flexible grouping obtained the lowest mean, it was still highly practiced, supporting collaboration and individualized learning. Overall, the data indicate that teachers are committed to differentiated instruction and continue to enhance their teaching approaches to improve learning outcomes.

Problem 3. What is the learners' level of academic performance in Mathematics during the School Year 2024-2025?

Table 6

Distribution of the Respondents' Level of Academic Performance in Mathematics During the First to Fourth Quarter of School Year 2024 – 2025

Level of Performance (Average Grade Per Class)	Frequency	Percentage
Outstanding	0	0.0
Very Satisfactory	130	85.53
Satisfactory	12	7.89
Fairly Satisfactory	10	6.58
Did Not Meet Expectation	0	0.0
Total	152	100.00
Mean 86		
SD 2.73		

Table 6 presents the overall mean of learners' academic performance in Mathematics for School Year 2024–2025, showing that most students, or 85.53%, achieved a Very Satisfactory rating. This indicates that differentiated instructional strategies greatly contributed to improving students' understanding and performance, as teachers tailored lessons according to learners' readiness, interests, and learning profiles. Such varied approaches made mathematics more engaging and accessible, allowing students to develop confidence and achieve higher outcomes. However, a small percentage, or 6.58%, received a Fairly Satisfactory rating, which may be due to a mismatch between teaching methods and individual learning needs. This suggests that while differentiated instruction is effective overall, further refinement and continuous adaptation are necessary to address every learner's unique challenges. The results highlight the importance of responsive teaching strategies in promoting equitable and meaningful learning experiences in Mathematics.

Problem 4. Is there a significant relationship between the respondents' practices on differentiated instructional strategies and the learners' academic performance in Mathematics during the School Year 2024-2025?

Table 7

Test Result on Relationship between the Respondents' Practices on Differentiated Instructional Strategies and the Learners' Academic Performance in Mathematics during the School Year 2024-2025

Practices on Differentiated Instructional Strategies	Academic Performance First to Fourth Quarter	
Assessment Methods	r- value	0.239
	p-value	0.003
	S	
Flexible Grouping	r- value	0.167

	p-value	0.040
	S	
	r- value	0.190
Individualized Support	p-value	0.019
	S	
	r- value	0.138
Varied Instructional Materials	p-value	0.090
	NS	

Table 7 presents the correlation results between teachers differentiated instructional practices and learners' academic performance in Mathematics for School Year 2024–2025, showing a significant relationship between most strategies and student achievement, as indicated by p-values less than 0.05. The use of varied assessment methods, flexible grouping, and individualized support all showed positive and significant correlations with academic performance, implying that adapting teaching and assessment to learners' needs helped students perform better and gain confidence in Mathematics. These strategies allowed teachers to cater to diverse learning styles, promote collaboration, and provide targeted assistance, resulting in improved understanding and engagement. However, the use of varied instructional materials did not show a significant relationship, suggesting that while such materials can enhance lessons, they do not necessarily improve learning outcomes unless carefully aligned with objectives and student needs. Overall, the findings highlight that differentiated instruction, when thoughtfully implemented, can meaningfully enhance learners' mathematical performance.

Problem 5. Is there a significant difference in the respondents' practices on differentiated instructional strategies when grouped according to their profile?

Table 8

Test Result on the Difference in the Respondents' Practices on Differentiated Instructional Strategies When Grouped According to their Profile

Difference		Practice on Differentiated Instructional Strategies			
Respondents Profile	Computed Values	Differentiated Assessment Methods	Flexible Grouping	Individualized Support	Varied Instructional Materials
Position	F	1.472	2.005	1.948	1.193
	p-value	0.214 NS	0.097 NS	0.106 NS	0.316 NS
Number of Teaching Experience	F	1.552	1.963	1.962	1.371
	p-value	0.166 NS	0.075 NS	0.075 NS	0.230 NS
Highest Educational Attainment	F	3.979	4.253	4.759	4.043
	p-value	0.004 S	0.003 S	0.001 S	0.004 S
Trainings/Seminars Attended	F	0.947	0.882	0.931	0.87
	p-value	0.453 NS	0.495 NS	0.463 NS	0.503 NS
Overall	F	1.987	2.276	2.4	1.87

p-value	0.209 NS	0.167 NS	0.161 NS	0.263 NS
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Table 8 presents the results on the differences in teachers' practices of differentiated instructional strategies when grouped according to their profiles, revealing that there were no significant differences across most variables. Only educational attainment showed a significant variation, indicating that teachers with higher academic qualifications tended to implement more advanced and varied instructional strategies, likely due to their exposure to deeper theoretical and practical training. In contrast, no significant differences were found when teachers were grouped by position, teaching experience, or training attended, suggesting that despite differences in rank, tenure, or professional development exposure, teachers maintained similar practices in differentiated instruction. This uniformity may be attributed to shared curricular frameworks, standardized training, and common instructional goals within schools. Overall, the results imply that while higher education enhances the ability to apply differentiated strategies, other factors such as position, experience, and general training do not substantially alter teaching practices, highlighting the need for more specialized and focused professional development on differentiation.

5. Conclusion and Recommendations

Conclusion

In conclusion, the study achieved its goal of examining the use of differentiated instructional strategies and their relationship to learners' academic performance in Mathematics in the Balingasag Districts of Misamis Oriental. The findings reveal that teachers with master's degree units and division-level training, even with fewer years of experience, effectively implemented differentiated strategies that enhanced student learning. The frequent use of varied instructional materials demonstrated teachers' efforts to address diverse learning needs, contributing to the learners' very satisfactory Mathematics performance. Moreover, a significant relationship was found between the use of assessment methods, flexible grouping, and individualized support, and improved academic outcomes in Mathematics. No significant differences were observed when teachers were grouped by profile, indicating that these practices were consistently applied across categories. Overall, the study underscores that teachers' dedication, preparedness, and innovative instructional approaches play a vital role in enhancing students' mathematical achievement.

Recommendations

Based on the study's findings, several recommendations are proposed to further enhance teaching effectiveness and student achievement in Mathematics. Teachers are encouraged to pursue advanced studies and participate in national-level professional development programs to strengthen their pedagogical expertise. They should also apply flexible grouping during programs like ARAL Mathematics and remediation sessions to address learners' diverse needs more effectively. Conducting remediation, enrichment, and intervention activities such as peer tutoring or modular work is recommended to support struggling students and boost their confidence in Mathematics. Teachers are further encouraged to sustain their use of differentiated instructional strategies to continuously improve learners' academic performance. Lastly, school administrators are advised to support and motivate teachers' professional growth, recognizing that higher educational attainment contributes to more effective and adaptive instructional practices for diverse learners.

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