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**RESEARCH ARTICLE**

## Strategies and Challenges in Implementing Differentiated Instruction Among High School Mathematics Teachers

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**ABSTRACT**

Differentiated Instruction (DI) is widely recognized as an effective approach for addressing learner diversity in Mathematics classrooms; however, its consistent implementation remains challenging for many teachers. This study examined the extent to which high school Mathematics teachers practice differentiated instruction strategies and the challenges they encounter in implementing them. Quantitative findings revealed that teachers demonstrated a high extent of practice in differentiated instruction across content, process, product, and learning environment. Despite this, challenges related to time constraints, large class sizes, limited instructional resources, diverse learner needs, and workload demands were also reported. Statistical analysis indicated no significant relationship between the extent of differentiated instruction practice and the challenges encountered. The findings suggest that while teachers actively employ differentiated instruction strategies, systemic and contextual barriers continue to influence their classroom practices. These results highlight the need for teachers to employ various strategies to address these difficulties, including flexible grouping, formative assessment, peer collaboration, contextualized activities, and continuous monitoring, sustained instructional support and professional development to strengthen the effective implementation of differentiated instruction in high school Mathematics classrooms.

**KEYWORDS**

Differentiated Instruction; Diverse Learners; Mathematics Education; Teaching Strategies

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### 1. Introduction

Globally, educators contend with profoundly diverse student groups that differ in academic achievement and readiness, learning preferences, cultural heritage, linguistic proficiency, cognitive styles, and motivation levels (Seifert et al, 2019). This diversity poses both challenges and opportunities for mathematics educators. Meeting each student's unique needs and ensuring equitable education remains a significant challenge; nonetheless, it also presents opportunities to create inclusive and dynamic learning environments that encourage collaboration and critical thinking.

Despite the positive impact of accepting diversity in the classroom, challenges and difficulties in learning persist within classroom environments. Among these challenges is a noticeable gap in learning, which often arises from various factors such as differences in prior knowledge, teaching methods, student engagement, and individual learning styles (Simonsmeier et al., 2022). For instance, some students struggle with basic arithmetic operations that serve as the foundation for more complex mathematical concepts. These students may require more time to solve mathematical problems, which affects their ability to complete tasks within given timeframes, often leading to frustration and reduced confidence. Moreover, since advanced students typically progress through the curriculum at a faster pace (Rimm et al., 2018), other learners may lag behind their peers and find it difficult to keep up with the accelerated pace of instruction. Such challenges significantly affect overall academic performance and classroom dynamics. These learning gaps are reflected in the Programme for International Student Assessment (PISA) 2022

results, where students' performance in Mathematics fell below the baseline level of proficiency (OECD, 2022). This situation underscores the urgent need for focused teaching approaches that address the varied learning needs of students within Mathematics classrooms.

Over the years, researchers have explored various teaching practices to determine instructional methods that effectively address student differences. Within this context, differentiated instruction has emerged as a significant pedagogical approach that requires teachers to adjust instruction based on students' needs and abilities. Tomlinson (2017) defined differentiated instruction as a pedagogical paradigm aimed at providing a more personalized and inclusive learning experience by accommodating learners' readiness, interests, and learning profiles. This approach involves modifying four key instructional elements: content, process, product, and learning environment.

While the importance of differentiated instruction and its positive impact on learning are widely acknowledged, a considerable number of teachers continue to experience challenges in integrating this approach into classroom instruction, which hinders its full implementation. Dicdiquin (2023) identified the top challenges faced by Mathematics teachers and school heads, including overlapping school activities, limited availability of multimedia resources, inadequate learning materials and teaching guides, excessive teaching loads and additional responsibilities, and inefficient utilization of information and communication technology. Similarly, Magayon (2020) reported that large class sizes in Philippine classrooms, often averaging around 40 students, negatively affect the effective implementation of differentiated instruction.

In schools across Isabela, Philippines, classrooms are frequently overcrowded, even in private institutions, with class sizes exceeding 40 diverse learners. As a result, some schools create separate classes for students who excel in Mathematics to provide more focused and challenging instruction. Meanwhile, other teachers continue to rely on traditional teaching methods due to time constraints, limited preparation, and heavy academic workloads. Consequently, the implementation of differentiated instruction remains limited and underutilized in many classroom settings (Magayon, 2020).

Considering the documented benefits of differentiated instruction, its implementation in daily high school Mathematics classroom practices remains understudied and underrepresented (Hu, 2024). Existing studies have largely focused on the general effects of differentiated instruction across disciplines, with limited emphasis on the extent of its practice in Mathematics classrooms, the challenges teachers encounter, and the strategies they use to address these challenges. Given the effectiveness of differentiated approaches in responding to learner diversity, it is therefore necessary to examine how differentiated instruction strategies are practiced in terms of content, process, product, and learning environment. Specifically, the study sought to answer the following questions:

1. What is the profile of the Mathematics teachers in terms of:
  - a) Age
  - b) Number of years in teaching mathematics
  - c) Grade level taught
  - d) Employment agency?
2. What is the extent to which differentiated instruction strategies are practiced by Mathematics teachers observing the following elements:
  - a) Content differentiation;
  - b) Process differentiation;
  - c) Product differentiation; and
  - d) Learning Environment?
3. To what extent do Mathematics teachers experience challenges in implementing differentiated instruction?
4. Is there a significant difference in the extent to which DI strategies are practiced by mathematics teachers when grouped according to their profile?
5. Is there a significant relationship between the mathematics teachers' extent to which DI strategies is practiced and the challenges they encountered in implementing this instruction?

Anchored on the United Nations' Sustainable Development Goal 4, which emphasizes inclusive and equitable quality education for all learners (United Nations, 2023), this study seeks to contribute empirical evidence that can support improved instructional practices for diverse learners in high school Mathematics classrooms.

## 2. Review of Related Literature

This presents a synthesized review of literature and studies related to Differentiated Instruction (DI), with emphasis on its conceptual foundations, applications in Mathematics education, Philippine classroom context, challenges in implementation, teacher-profile factors affecting DI practices, the relationship between DI usage and instructional difficulties, and existing DI models that support the development of the proposed Mathematics Toolkit. The review integrates local and international studies to establish the relevance and direction of the present research

### 2.1 Conceptual Foundations of Differentiated Instruction

Differentiated Instruction (DI) has gained global recognition as a pedagogical approach that addresses learner diversity and promotes equitable access to quality education. DI is grounded in the principle that learners vary in readiness, interest, and learning profiles, thus requiring teachers to modify instruction to meet individual needs (Gheysens et al., 2020). Numerous studies highlight that when effectively employed with careful planning and reflection, DI enhances learning outcomes and fosters inclusive environments (Lunsford, 2017; Graham et al., 2021; Letzel et al., 2020).

Educational systems worldwide have increasingly adopted DI to accommodate varied learning needs. UNESCO (2017) emphasizes the necessity of embracing learner diversity at the policy and classroom levels. Research conducted across different contexts such as Germany (Nusser et al., 2020), Iraq (Grain et al., 2022), Australia (Gibbs et al., 2021), and New Zealand (Anthony et al., 2023) shows that DI is integrated into school systems to improve instructional quality and inclusivity.

The literature also recognizes DI's positive impact on student engagement and achievement. Smale-Jacobse et al. (2019) found that DI contributes to high levels of learner involvement across various subjects. In Jordan, Magableh (2020) reported that DI significantly improved student performance and reduced the level of classroom diversity. Findings from Javed et al. (2020) further affirm DI's positive effects on student learning. Countries consistently ranking high in PISA including Japan, Hong Kong, Singapore, South Korea, Taiwan, Estonia, and Finland attribute part of their success to cooperative and innovative instructional methods (Lestari, 2019; Karolina, 2017).

Despite its recognized benefits, DI implementation presents challenges, including increased teacher workload, time constraints, and extensive preparation demands (Lang, 2017; Shareefa, 2019; Glock et al., 2019). Other barriers involve large class sizes, insufficient teacher training, limited resources, and restricted access to professional development (Ginja, 2020). These concerns highlight the need for strong teacher competencies and support systems to effectively implement DI.

### 2.3 Differentiated Instruction in Mathematics Education

Mathematics is often perceived as a difficult subject due to its abstract concepts, problem-solving demands, and reliance on formulas (Nurul et al., 2022; Meogtwigeomjeung, 2023). Students commonly struggle with conceptual understanding, application of math in real-world situations, word problems, and anxiety (Ahmad et al., 2020). DI is therefore viewed as a promising approach that supports diverse learners and enhances comprehension (Bhagat, 2016).

Research demonstrates that DI in mathematics promotes individualized learning and reduces achievement gaps. Marks et al. (2021) found that DI enables teachers to effectively address mixed-ability classrooms. Fazal (2019) reported that students taught through DI, particularly with blended learning, outperformed those taught using traditional methods. Common DI strategies in mathematics include flexible pacing, collaborative learning, progressive tasks, digital resources, variable outcomes, and ongoing assessment (Herner-Patnode, 2021; Alomran et al., 2023).

Several international studies further support DI's effectiveness in mathematics. Awofala (2020) observed that DI makes math lessons more interesting, cooperative, and less stressful for students. Online teacher surveys also affirm that DI improves engagement and reduces stress in math learning (Yessingeldinov, 2022). Action research has consistently shown improved student outcomes using DI in various math domains, including problem-solving, calculus, and geometry (Jayantika, 2023; Ahmad, 2023; Abdurrahman, 2015; Sinta et al., 2022; Shi, 2023).

Overall, DI has demonstrated effectiveness across multiple mathematics subdomains, suggesting that it cultivates improved problem-solving skills, conceptual understanding, and student engagement.

### 2.4 Philippine Studies on DI in Mathematics Education

In the Philippines, DI has been integrated into classroom practices to address learner diversity and strengthen mathematics instruction. Studies in Davao City show that teachers use DI strategies such as flashcards, Think-Pair-Share, and scaffolding to enhance engagement and comprehension (Tampus et al., 2023). The effective use of DI also depends on teacher professional development, collaborative structures, and supportive learning environments (Placencia et al., 2022; Aguhayon et al., 2023). Mathematics teachers frequently employ differentiated classroom strategies to respond to the challenges of the 21st century. However, take-home assignments—commonly used to reinforce learning—were found to have no direct impact on student

performance (Cordova et al., 2018). Studies also show that student attitudes toward mathematics influence their motivation and performance. Negative attitudes, low interest, and weak foundational knowledge hinder their engagement even when DI is used (Aguilar, 2021; Capuno, 2019; Obut et al., 2023; Laranang, 2020).

Furthermore, teachers struggle with remote and modular teaching, especially during the pandemic, due to limited resources, challenges in assessing understanding, and difficulties in using technology (Ramizo et al., 2023; Joan, 2023). Despite these obstacles, teachers continue to adopt various strategies such as Jigsaw, Rally Table, and interactive approaches to support learning (Cardino & Cruz, 2020; Parreño et al., 2023; Nabayra et al., 2022; Martínez-Carrascal et al., 2023; Madrigal et al., 2023). Philippine research underscores that teachers modify content, process, and product based on student readiness, interests, and preferences—consistent with DI principles (Magayon, 2020; Bueno et al., 2023; Dicdiquin, 2023; Dailo et al., 2022; Leonardo et al., 2015).

### **2.5 Challenges in Implementing Differentiated Instruction**

Despite its potential benefits, several studies reveal persistent challenges affecting DI implementation, both globally and locally. Filipino teachers commonly struggle with overlapping school activities, limited multimedia resources, insufficient teaching guides, and excessive workload (Dicdiquin, 2023; Dizon, 2024). Additional challenges include poor questioning techniques, lack of higher-order thinking strategies, misalignment of materials, and external demands such as assisting parents or guardians (Hernandez et al., 2023). Other recurring barriers include: Class size and class diversity (Magayon, 2020; Cervantes et al., 2022), Preparation time and study habits (Guinocor et al., 2020), Lack of resources and teacher training (Dicdiquin et al., 2024), Student-related factors such as lack of motivation, familiarity with traditional teaching, and negative perceptions (Aldossari, 2018). Global studies echo similar concerns, emphasizing instructional complexity, time demands, and insufficient systemic support (Ampang, 2023; Clarin & Baluyos, 2022; Ismajli & Imami-Morina, 2018; Pozas, Letzel & Schneider, 2020).

### **2.6 Teacher Profile Factors Influencing DI Implementation**

The extent to which teachers successfully implement Differentiated Instruction has been shown to vary according to several teacher-related factors. Age, for example, may influence instructional performance since older adults can experience slower reaction times and reduced accuracy in certain cognitive tasks (Clark, 2015), and some studies suggest that age-related physical or cognitive changes may affect teachers' instructional delivery (Dicdiquin et al., 2023). However, other research indicates that age alone does not necessarily hinder teachers' use of instructional technologies or their ability to apply DI strategies, as shown in Trani's (2018) findings.

Teaching experience likewise contributes to differences in DI practice. Some scholars report that beginning teachers—those with zero to three years of experience—do not demonstrate lower instructional quality compared to more experienced colleagues, although a decline in teaching performance has been documented among teachers with four to five years of service, particularly due to the increasing responsibilities, emotional demands, and diminishing support structures associated with prime working age teaching (Graham et al., 2020; Pranoto et al., 2021).

The school setting in which teachers are employed also shapes their capacity to implement DI. Public and private schools differ in terms of available resources, workloads, and teacher stability. Private institutions typically have greater access to digital technologies and instructional materials, whereas public schools often rely on more traditional, cost-efficient resources (Magayon, 2020). At the same time, private school teachers frequently use these institutions as stepping-stones before transferring to public schools for higher compensation, resulting in public school teachers generally having more years of experience in handling diverse learners (Bergas, 2022). These differences inevitably influence how DI strategies are selected and applied in each setting.

Another factor affecting DI implementation is the grade level taught. Senior High School mathematics requires deeper conceptual engagement and the use of inquiry-based, contextualized, and student-centered approaches—such as project-based learning and real-world applications—reflecting the advanced nature of SHS content (Jaudinez, 2019). In contrast, Junior High School instruction focuses more on building foundational mathematical concepts through structured methods such as direct instruction, practice exercises, and teacher-led demonstrations (Canque, 2021; Hodgen, 2018). These pedagogical distinctions indicate that teachers must adapt DI strategies according to the developmental level, readiness, and curricular demands of the students they teach.

### **2.7 Relationship Between DI Practice and Challenges Encountered**

Several studies establish the interconnectedness between DI practices and the challenges faced by teachers. Magayon (2020) highlights how factors such as class size, preparation time, and resource limitations affect teacher efforts to implement DI.

Similarly, Aldossari (2018) attributes DI difficulties to inadequate teacher preparation, limited educational equipment, and students' preference for traditional instruction.

International and Philippine studies (Ampang, 2023; Clarin & Baluyos, 2022; Ismajli & Imami-Morina, 2018; Pozas et al., 2020) similarly emphasize that contextual barriers can influence DI implementation. However, they also underscore the need for systemic interventions, collaboration, and professional development to support teachers in providing individualized learning opportunities.

### **2.8 Theoretical Framework of the Study**

The study is anchored on the "Zone of Proximal Development" (ZPD) proposed by Lev Vygotsky (1978). This theory emphasizes that learners have different levels of readiness or ability to learn. The ZPD is the gap between what the learner can do independently and what they can achieve with guidance or assistance from a more knowledgeable individual, such as a teacher or peer. Vygotsky claimed that students possess inherent learning potential, which can only be fully realized under the guidance of an individual employing efficient strategies tailored to their specific learning need (Lunsford, K.J., 2017). It emphasizes the significance of adjusting teaching to align with the individual learner's present stage of development in order to promote optimal learning and development. Lev Vygotsky believes that engaging with peers is a highly effective method for acquiring abilities and strategies. He suggests that teachers use cooperative learning exercises where less competent students develop with help from more skillful peers.

This study is also linked to the work of Carol Ann Tomlinson (2001), a leading expert in the field of education. Her approach to differentiation is comprehensive and emphasizes meeting the diverse needs of students in the classroom. This approach involves adjusting contents, process, and product to accommodate variations in students' readiness levels, interests, and learning profiles.

### **2.9 Hypotheses of the Study**

1. There was no significant difference in the extent to which Differentiated Instruction (DI) strategies were practiced by Mathematics teachers when grouped according to their demographic profile (age, years of teaching experience, grade level taught, and employment agency).
2. There was no significant relationship between the extent to which DI strategies were practiced and the challenges encountered by Mathematics teachers in implementing Differentiated Instruction.

## **3. Methodology**

This section describes the research design, participants and sampling technique, research instruments, data gathering procedures, data analysis methods, and ethical considerations employed in the study.

### **3.1 Research Design**

This study employed a quantitative research design, integrating quantitative approaches to comprehensively address the study objectives. The design was selected to determine the extent of differentiated instruction (DI) practice, examine the challenges encountered by teachers, analyze the relationship between DI practice and challenges, and the strategies teachers use to overcome these challenges.

Specifically, the component utilized descriptive, causal-comparative, and correlational designs. Descriptive analysis addressed the extent to which differentiated instruction strategies were practiced in terms of content, process, product, and learning environment, as well as the extent of challenges encountered. The causal-comparative design examined differences in DI practice when teachers were grouped according to selected demographic variables, while the correlational design analyzed the relationship between the extent of DI practice and the challenges encountered.

### **3.2 Participants and Sampling Technique**

The respondents of the study consisted of 80 high school Mathematics teachers from both public and private secondary schools in Alicia and Angadanan, Isabela. This sample size was considered sufficient to address the study objectives related to the extent of DI practice, challenges encountered, and their relationship.

A cluster sampling technique was applied based on municipality, after which all qualified Mathematics teachers within the selected clusters were included. Inclusion criteria required that participants be graduates of a four-year degree with Mathematics as their field of specialization, currently teaching Mathematics at the Junior or Senior High School level, and employed in schools within the identified municipalities. Teachers who did not meet these criteria were excluded. This sampling approach ensured that participants were appropriate for examining all the statement of the problem of the study.

### **3.3 Research Instrument**

A researcher-made questionnaire was used as the primary data-gathering instrument and was developed based on a review of related literature on differentiated instruction in Mathematics education. The instrument consisted of three parts aligned with the SOPs.

The first part gathered demographic data to support grouping variables used in the analysis of differences in DI practice. The second part employed a Likert-scale format to measure the extent of DI implementation in terms of content, process, product, and learning environment, as well as the extent of challenges encountered in implementing. The third part included open-ended questions designed to elicit qualitative data regarding the specific challenges teachers encountered and the strategies they employed to overcome these challenges. Content validity was established through expert evaluation, and a pilot test was conducted to refine the instrument. Reliability testing using Cronbach's alpha indicated high internal consistency of the items measuring DI practices and challenges.

### **3.4 Data Gathering Procedure**

After identifying the research participants, the researcher sought permission from the schools for ethical compliance. The researcher initially communicated with school administrators and educational authorities in each participating school in Alicia and Angadanan, Isabela through formal letters and in-person visits to secure approval and support for conducting the study. In accordance with ethical research guidelines, informed consent was obtained from all participants before they took part in the study. Once permission was granted, the survey questionnaire designed to gather demographic information, determine the extent of differentiated instruction (DI) practices, and identify the challenges encountered by teachers was distributed to Junior High School and Senior High School Mathematics teachers. The researcher assured all participants that the information they provided would be treated with strict confidentiality and used solely for academic purposes. To ensure accessibility and convenience, the questionnaire was administered through flexible formats, including both printed paper-and-pen copies and digital versions distributed via Google Forms. Participants were given a specific time frame to complete the instrument, and follow-up reminders were issued when necessary to encourage full participation and timely submission of responses.

### **3.5 Data Analysis**

To address the research questions and analyze the data collected from high school Mathematics teachers, the study utilized the Statistical Package for the Social Sciences (SPSS). The statistical treatments employed were aligned with the nature of the variables and the objectives of the study. Frequency counts and percentages were used to describe the demographic profile of the respondents, including age, years of teaching experience, grade level taught, and employment agency. To determine the extent to which differentiated instruction (DI) strategies were practiced and the degree of challenges encountered, the study computed the mean and standard deviation of the Likert-scale responses. The means provided a measure of central tendency, while the standard deviations indicated the variations in teachers' responses. To determine whether significant differences existed in the extent of DI practice when teachers were grouped according to their demographic profile, the study applied independent samples t-test for variables with two groups (employment agency: public vs. private) and one-way ANOVA (F-test) for variables with more than two categories (age group, years of teaching experience, and grade level taught). Significant ANOVA results were further examined using appropriate post-hoc interpretation based on mean differences. Lastly, to examine the relationship between the extent of DI practice and the challenges encountered by teachers, Pearson's correlation coefficient ( $r$ ) was used.

### **3.6 Ethical Considerations**

Ethical standards were strictly observed throughout the study. Participation was voluntary, and informed consent was obtained prior to data collection. Participants' identities were kept confidential, and all data were anonymized and used solely for academic purposes.

## **4. Presentation, Analysis, and Interpretation of Data**

This chapter presents the results of the study using a mixed-methods approach. The quantitative findings are first organized according to the statements of the problem, beginning with the profile of the mathematics teachers, followed by the extent to which they practice differentiated instruction, the challenges they encounter, and the tests of difference and relationship.

### **4.1 Demographic Profile of the Mathematics Teachers**

**Table 1.** Profile of the Mathematics Teachers in Terms of Age, Years of Teaching Mathematics, Grade Level Taught, and Employment Agency

	Frequency (n = 80)	Percent(100.0)
<b>Age</b>		
15-24 years old (Early Working Age)	11	13.8
25-54 years old (Prime Working Age)	59	73.8
55-64 years old (Mature Working Age)	10	12.5
<b>Number of Years in Teaching Mathematics</b>		
5 years and below (Novice)	20	25.0
6 years to 15 years (Experienced)	33	41.3
16 years to 30 years (Highly Experienced)	27	33.8
<b>Grade Level Taught</b>		
Junior High School	60	75.0
Senior High School	20	25.0
<b>Employment Agency</b>		
Private School	22	27.5
Public School	58	72.5

As shown in Table 1, most respondents are in their prime working age, which suggests readiness to implement DI strategies, consistent with Dass and Parker (2017). Although older teachers may face physical or cognitive limitations (Dicdiquin et al., 2023; Clark, 2015), the majority being in their productive years supports active instructional engagement. In relation to age, the distribution of teaching experience also reinforces this trend. Most teachers have 6–15 years of experience, supporting Trani's (2018) view that experience influences classroom strategies. However, literature also notes mixed effects of experience on teaching performance (Graham et al., 2020; Pranoto et al., 2021), which may also be reflected in the varying experience levels of the respondents.

Furthermore, the larger proportion of teachers assigned to Junior High School aligns with literature describing differences in instructional focus between JHS and SHS, where JHS emphasizes foundational skills while SHS requires more advanced, inquiry-based approaches (Jaudinez, 2019; Canque, 2021). Finally, the dominance of teachers from public schools supports the findings that public institutions tend to employ more experienced teachers (Magayon, 2020; Bergas, 2022). This may affect the implementation of differentiated instruction, as teachers with broader exposure to diverse learners are more likely to adapt and modify instructional content to meet varied student needs.

Overall, the demographic profile indicates that Mathematics teachers are well-prepared in terms of experience and professional exposure, which may support the implementation of differentiated instruction. A substantial proportion of the respondents are within the prime working age and have several years of experience in teaching Mathematics. These professional characteristics suggest a strong foundation for understanding learner differences and adjusting instructional strategies. Most of the teachers handle Junior High School classes where learner diversity is more evident. This exposure provides regular opportunities to address varied learning needs. In addition, experience in both public and private schools allow teachers to work in different classroom contexts and respond to varied instructional demands. While teaching experience and exposure may support readiness for differentiated instruction, these factors alone do not guarantee effective implementation. Therefore, formal training and continuous professional support remain necessary to ensure that teachers' readiness is translated into consistent and high-quality differentiated instruction, particularly across Junior High School and Senior High School levels.

**4.2 Extent of Practice of Differentiated Instruction**

**Table 2.** Extent of Practice of Differentiated Instruction in Terms of Content Differentiation

<b>Content Differentiation</b>	<b>Mean</b>	<b>DE</b>
1. I use solved problems targeting different learning objectives.	4.30	Highly Practiced
2. I provide multiple solved problems at varying difficulty levels to help students learn at their own pace.	4.32	Highly Practiced
3. I design more challenging tasks for students who have already mastered the material.	4.30	Highly Practiced
4. I provide simplified versions of lesson content for students who struggle with the material.	4.40	Highly Practiced
5. I modify instructional content by providing key terms in student’s native language to support those with limited English proficiency.	4.27	Highly Practiced
6. I adapt lesson content using visual and graphic organizers to support understanding.	4.36	Highly Practiced

*Legend: 3.50-4.49 = Highly Practiced*

Table 2 shows that teachers highly practice content differentiation, as reflected in mean scores from 4.27 to 4.40. This indicates that they consistently adjust lesson content—such as simplifying materials, varying difficulty levels, and using visual organizers—to address diverse learner needs. This finding supports Tampus et al. (2023), who noted that differentiated strategies like scaffolding and targeted tasks enhance instruction and student engagement. The high rating for providing simplified content aligns with Magayon (2020), who emphasized the need to modify instructional content to accommodate differences in students’ readiness and foundational skills. Likewise, the frequent use of visual and graphic organizers reflects the role of differentiated content in helping students connect concepts and build mastery, as highlighted by Bueno et al. (2023).

Teachers routinely provide instruction in different ways for different students in order to accommodate individual learning readiness and language needs within classrooms. Emphasis on providing simplified content and providing visuals would appear to demonstrate a focus on providing clarification/accessibility to content versus providing only advanced task opportunities to challenge proficient students. However, it is important to continue supporting additional resources (such as multilingual glossaries and tiered materials/tasks) and examples of best practices for implementation with a goal of supporting the continued improvement of outcomes across multiple types of learners.

**Table 3.** Extent of Practice of Differentiated Instruction in Terms of Process Differentiation

<b>Process Differentiation</b>	<b>Mean</b>	<b>DE</b>
1. I assign group activities where each group works on a different math problem. ( <i>Providing different problems in each group</i> )	4.31	Highly Practiced
2. I pair students using the Think-Pair-Share to help them discuss and explain concepts together.	4.40	Highly Practiced
3. I provide guided practice activities and offer step by step support.	4.55	Extremely Practiced
4. I provide tiered activities or assignments (Basic, Intermediate, Advance) according to students’ mastery.	4.26	Highly Practiced
5. I demonstrate effective problem-solving strategies and provide illustrative examples to clarify concepts and procedures.	4.23	Highly Practiced
6. I use manipulatives by providing entry points and representations of mathematical concepts.	4.02	Highly Practiced
7. Scaffolded problems are provided to support struggling students. ( <i>e.g., Let students’ fill out the blanks to arrive at the correct solution.</i> )	4.18	Highly Practiced
8. I provide independent practice featuring solved examples alongside new problems. ( <i>e.g., presenting complete solutions in one column for reference while students apply the steps to new problems in the adjacent column.</i> )	4.32	Highly Practiced

*Legend: 3.50-4.49 = Highly Practiced; 4.50-5.00 = Extremely Practiced*

The results show that teachers highly practice process differentiation, with all indicators scoring between 4.02 and 4.55. The highest mean (4.55) reflects strong teacher emphasis on guided practice and step-by-step support, while Think-Pair-Share (4.40) and independent practice with solved examples (4.32) also demonstrate frequent use of scaffolded and collaborative strategies. These findings support Tampus et al. (2023), who reported that Filipino teachers use strategies like Think-Pair-Share and scaffolding to enhance engagement and understanding. The consistent use of guided practice and group activities also aligns with Cardino & Cruz (2020), who emphasized collaborative strategies such as Rally Table and Jigsaw in mathematics instruction. The results reflect Philippine literature noting that process-based DI techniques enhance student participation and support diverse learning needs.

Teachers appear to consistently utilize a variety of instructional approaches to help students learn mathematics. Through utilizing a combination of guided instruction, peer discussions and graduated practice opportunities, teachers are able to provide differentiated instruction to their students based on their instructional level. The strong emphasis on providing step-by-step guidance demonstrates the practical use of confidence building and developing accuracy within each student's mathematics experience. Moreover, the use of methods such as Think-Pair-Share and tiered assignments provide both struggling learners and advanced learners with a continuous challenge to their development. Schools can continue to build on this momentum by developing and sharing concrete task (i.e., tiered task sets, scaffolded items, manipulative-based activities) with their staff members, as well as providing refresher professional development to ensure that these practices remain consistently implemented within classrooms.

**Table 4.** Extent of Practice of Differentiated Instruction in Terms of Product Differentiation

Product Differentiation	Mean	DE
1. I provide students with options for demonstrating their understanding of the same math concept. (e.g. <i>create presentations and models, conduct experiments, give a lecture, etc.</i> )	4.22	Highly Practiced
2. I employ rubrics to evaluate outcomes in a clear and structured manner.	4.36	Highly Practiced
3. I provide integrated performance task across subjects.	4.20	Highly Practiced
4. I assign more straightforward tasks or problems for struggling students, while providing advanced students with challenging tasks.	4.21	Highly Practiced
5. I assign individualized projects that allow students to explore mathematical concepts at their own pace and level.	4.00	Highly Practiced

*Legend: 3.50-4.49 = Highly Practiced*

Table 4 shows that teachers also highly practice product differentiation, with mean scores ranging from 4.00 to 4.36. The highest-rated practice (4.36) is the use of rubrics, indicating that teachers prioritize clear expectations and structured evaluation. Teachers also provide varied outputs, performance tasks, and individualized projects, showing flexibility in how learners demonstrate understanding.

These practices match Magayon (2020) and Leonardo et al. (2015), who found that mathematics teachers design performance tasks based on student readiness, interests, and preferences. Offering different output options also reflects Bueno et al. (2023), who emphasized the role of differentiated products in enhancing mastery and creativity. Such strategies are widely used in Philippine classrooms to help students connect concepts and demonstrate understanding in multiple ways.

In general, teachers have different ways for students to show their understanding of what they learn and pair this assessment method with a number of different types of products and levels of difficulty. This combination lays out expectations and provides multiple ways in which students can demonstrate their understanding to encourage both mastery and creativity. Schools will continue to curate examples of rubrics and product options to support this versatility of teaching and stimulate innovative cross-subject tasks designed to make this differentiation of products a meaningful experience for students at all levels that remains relevant to their learning objectives.

**Table 5.** Extent of Practice of Differentiated Instruction in Terms of Learning Environment Differentiation

<b>Learning Environment Differentiation</b>	<b>Mean</b>	<b>DE</b>
1. I allow students to engage in a structured independent study.	4.35	Highly Practiced
2. I offer flexible seating options that best support learning preferences.	4.15	Highly Practiced
3. I implement interest-based learning centers/groups. (e.g. For instance, students can choose between a hands-on station building 3D models of polygons or a research station investigating how polygons are used in engineering.)	3.93	Highly Practiced
4. I set up structured learning stations that allow students to rotate through targeted tasks aligned with specific objectives. (e.g. one center may focus on classifying polygons, another on solving angle problems, and a third on drawing regular and irregular shapes.)	4.02	Highly Practiced
5. I have clear procedures for students to seek help effectively when working independently or collaboratively with peers.	4.47	Highly Practiced

Legend: 3.50-4.49 = Highly Practiced

The results show that all indicators under learning environment differentiation are highly practiced, with means from 3.93 to 4.47. Teachers commonly allow structured independent study (4.35), flexible seating (4.15), and interest-based learning centers (3.93), showing efforts to adapt the learning environment to diverse preferences. The highest mean score (4.47) for clear help-seeking procedures reflects an emphasis on creating supportive and accessible learning conditions.

These findings align with Placencia et al. (2022) and Aguhayon et al. (2023), who emphasized the need for supportive classroom environments and collaborative structures for successful DI implementation. Interest-based centers and flexible learning spaces also reflect practices observed in Philippine Math classrooms, where teachers modify activities and settings to match students’ learning needs (Parreño et al., 2023; Magayon, 2020).

Teachers are continuously developing their classrooms to give students comfortable and effective ways to learn (e.g., procedures to receive help, independent work time, a variety of seating options, and goal-oriented stations). This blend of instruction eliminates barriers for struggling learners and supports motivated learners to work independently in productive ways. In order to enhance the impact of these strategies, schools should supply teachers with readily available templates for station design, interest assessments, and quick-reference protocols to help teachers manage these strategies and to provide students with continued support throughout their academic careers.

**4.3 Differences in the Extent of Practice of Differentiated Instruction when grouped according to age**

**Table 7.** In Terms of Content Differentiation When Grouped According to Age

<b>Content Differentiation</b>	<b>15-24 years old (Early Working Age)</b>		<b>25-54 years old (Prime Working Age)</b>		<b>55-64 years old (Mature Working Age)</b>		<b>F-value</b>	<b>p-value</b>
	<b>Mean</b>	<b>DE</b>	<b>Mean</b>	<b>DE</b>	<b>Mean</b>	<b>DE</b>		
1. I use solved problems targeting different learning objectives.	4.00	HP	4.38	HP	4.10	HP	1.755 <sub>ns</sub>	.180
2. I provide multiple solved problems at varying difficulty levels to help students learn at their own pace.	4.27	HP	4.40	HP	3.90	HP	2.079 <sub>ns</sub>	.132
3. I design more challenging tasks for students who have already mastered the material.	4.18	HP	4.37	HP	4.00	HP	1.270 <sub>ns</sub>	.287

4. I provide simplified versions of lesson content for students who struggle with the material.	4.45	HP	4.42	HP	4.20	HP	.463 <sup>ns</sup>	.631
5. I modify instructional content by providing key terms in student's native language to support those with limited English proficiency.	4.36	HP	4.28	HP	4.10	HP	.392 <sup>ns</sup>	.677
6. I adapt lesson content using visual and graphic organizers to support understanding.	4.18	HP	4.42	HP	4.20	HP	.966 <sup>ns</sup>	.385

Legend: 3.50-4.49 = Highly Practiced (HP); ns = not significant at 0.05 level

The results show no significant difference in content differentiation across age groups, indicating that early, prime, and mature working teachers implement similar content-related DI strategies. This aligns with Trani (2018), who found that teaching practices do not significantly differ by age, and with Dass & Parker (2017) who noted that DI effectiveness varies more by context than age alone. Although older teachers may experience physical or cognitive limitations (Clark, 2015; Diddiquin et al., 2023), the findings suggest these do not substantially affect their ability to differentiate content.

Age does not seem to influence how teachers differentiate their content. Teachers at all stages of their careers apply the same strategies for differentiating at the same high level as they do now, indicating that the context of the school and available support are likely more important to sustaining content differentiation than a teacher's age. Therefore, by investing in common resources and establishing school-wide routines to promote equity, schools may be able to create more significant gains for teachers regardless of age than through initiatives focused solely on age. However, they can ensure that teachers continue to have access to resources that support them, should they wish to utilize these supports.

**Table 8.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Process Differentiation when Grouped According to Age

Process Differentiation	15-24 years old (Early Working Age) (a)		25-54 years old (Prime Working Age) (b)		55-64 years old (Mature Working Age) (c)		F-value	P-value
	Mean	DE	Mean	DE	Mean	DE		
1. I assign group activities where each group works on a different math problem. ( <i>Providing different problems in each group</i> )	4.09	HP	4.40	HP	4.00	HP	1.910 <sup>ns</sup>	.155
2. I pair students using the Think-Pair-Share to help them discuss and explain concepts together.	4.63	EP	4.37	HP	4.30	HP	.847 <sup>ns</sup>	.433
3. I provide guided practice activities and offer step by step support.	4.90 <sup>c</sup>	HP	4.55	EP	4.10 <sup>a</sup>	HP	4.683*	.012
4. I provide tiered activities or assignments (Basic, Intermediate, Advance) according to students' mastery.	4.27	HP	4.30	HP	4.00	HP	.687 <sup>ns</sup>	.506
5. I demonstrate effective problem-solving strategies and provide illustrative examples to clarify concepts and procedures.	4.36	HP	4.22	HP	4.20	HP	.158 <sup>ns</sup>	.854
6. I use manipulatives by providing entry points and representations of mathematical concepts.	3.54 <sup>b</sup>	HP	4.15 <sup>a</sup>	HP	3.80	HP	3.500*	.035
7. Scaffolded problems are provided to support struggling students. ( <i>e.g., Let</i>	4.09	HP	4.27	HP	3.80	HP	1.842 <sup>ns</sup>	.165

students' fill out the blanks to arrive at the correct solution).

8. I provide independent practice featuring solved examples alongside new problems. (e.g., <i>presenting complete solutions in one column for reference while students apply the steps to new problems in the adjacent column.</i> )	4.45	HP	4.38	HP	3.80	HP	2.768 <sup>ns</sup>	.069
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Legend: 3.50-4.49 = Highly Practiced (HP); 4.50-5.00 = Extremely Practiced (EP); ns = not significant; \* = significant at 0.05 level

Note: Letter/s in superscript indicate which group/s have a significant difference

A significant difference was found in guided practice and use of manipulatives, with early and prime working teachers performing these practices more frequently. This partially supports Clark (2015) and Diddiquin et al. (2023), who noted that aging may affect instructional performance through slower response time and reduced adaptability. However, the absence of differences in most indicators reflects Trani (2018), suggesting that teacher age does not strongly determine the implementation of DI processes.

Although the process of differentiation is generally uniform among all ages, there are some notable differences based on teacher experience and training. For instance, the greatest use of manipulatives is seen in the prime working age (35 to 50) among teachers while the greatest use of guidance during practice is by early working age and prime working age teachers. Teachers at all levels typically have similar levels of resource and stress when differentiating; however, prime working teachers appearing to have a more steady ability with physical tools and a familiar comfort with scaffolding methodology appear to have a gradual change in comfort as they age. In addition to providing opportunities to share effective teaching practices between individuals of different ages based on teacher experience, at all ages (including early working age to mature working age), schools may further enhance differentiation by providing reasonable access to materials and physical setups for classroom functional aspects to allow these supports to be available and reasonable for all teachers.

**Table 9.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Product Differentiation when Grouped According to Age

Product Differentiation	15-24 years old (Early Working Age) (a)		25-54 years old (Prime Working Age) (b)		55-64 years old (Mature Working Age) (c)		F-value	p-value
	Mean	DE	Mean	DE	Mean	DE		
	1. I provide students with options for demonstrating their understanding of the same math concept. (e.g. <i>create presentations and models, conduct experiments, give a lecture, etc.</i> )	3.81	HP	4.33	HP	4.00		
2. I employ rubrics to evaluate outcomes in a clear and structured manner.	4.09	HP	4.44	HP	4.20	HP	1.492 <sup>ns</sup>	.231
3. I provide integrated performance task across subjects.	4.36	HP	4.20	HP	4.00	HP	.607 <sup>ns</sup>	.548
4. I assign more straightforward tasks or problems for struggling students, while providing advanced students with challenging tasks.	3.72 <sup>b</sup>	HP	4.38 <sup>ac</sup>	HP	3.70 <sup>b</sup>	HP	5.635*	.005
5. I assign individualized projects that allow students to explore	3.54	HP	4.15	HP	3.60	HP	3.119 <sup>ns</sup>	.050

mathematical concepts at their own pace and level.

*Legend: 3.50-4.49 = Highly Practiced (HP); ns = not significant; \* = significant at 0.05 level*

*Note: Letter/s in superscript indicate which group/s have a significant difference*

Product differentiation shows only one significant difference, with prime working age teachers more frequently assigning leveled tasks. This aligns with Graham et al. (2020) and Pranoto et al. (2021), who emphasized that teaching quality can fluctuate with experience because of workload, stress, and shifting responsibilities—factors that prime working teachers may manage differently than very early working age or older working age teachers. Overall, age shows minimal influence on how teachers vary performance tasks and outputs.

Age does not determine how much variation teachers create for students in their classrooms other than prime working teachers tend to be more likely to alter the difficulty of a task to match the student's readiness. This indicates that prime working or veteran teacher experiences allow for greater refinement in making leveling decisions, while generally speaking, product differentiation practices remain consistent throughout the career path of a teacher. Schools should utilize the opportunity to have prime working age teachers share best practices regarding tiered tasks and rubrics among each other as well as provide collaborative resources and continued development of common planning opportunities so all teachers can create product selections that have meaning for their students without increasing workload.

**Table 10.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Learning Environment Differentiation when Grouped According to Age

Learning Environment Differentiation	15-24 years old (Early Working Age) (a)		25-54 years old (Prime Working Age) (b)		55-64 years old (Mature Working Age) (c)		F-value	p-value
	Mean	DE	Mean	DE	Mean	DE		
	1. I allow students to engage in a structured independent study.	3.90 <sup>b</sup>	HP	4.49 <sup>a</sup>	HP	4.00		
2. I offer flexible seating options that best support learning preferences.	3.72	HP	4.25	HP	4.00	HP	1.969 <sup>ns</sup>	.147
3. I implement interest-based learning centers/groups. (e.g. For instance, students can choose between a hands-on station building 3D models of polygons or a research station investigating how polygons are used in engineering.)	3.63	HP	4.00	HP	3.90	HP	.804 <sup>ns</sup>	.451
4. I set up structured learning stations that allow students to rotate through targeted tasks aligned with specific objectives. (e.g. one center may focus on classifying polygons, another on solving angle problems, and a third on drawing regular and irregular shapes.)	3.45	MP	4.15	HP	3.90	HP	3.051 <sup>ns</sup>	.053
5. I have clear procedures for students to seek help effectively when working independently or collaboratively with peers.	4.27	HP	4.54	EP	4.30	HP	1.013 <sup>ns</sup>	.368

*Legend: 2.50-3.49 = Moderately Practiced (MP); 3.50-4.49 = Highly Practiced (HP); 4.50-5.00 = Extremely Practiced (EP);*

*ns = not significant; \* = significant at 0.05 level*

*Note: Letter/s in superscript indicate which group/s have a significant difference*

Results indicate one significant difference in structured independent study, favoring prime working age teachers. This supports Pranoto et al. (2021), who noted that prime working age teachers often have more stable routines and instructional systems, allowing them to structure learning environments more effectively. However, the largely non-significant results support Dass & Parker (2017) and Trani (2018), suggesting that DI practices are shaped more by context and experience than age. Although age has little effect on teacher's ability to create a supportive learning environment, teachers who are under prime working age will tend to create a structured independent study course more often than other teachers because it is more established in their workflow. Therefore, the existence of shared systems and resources within schools may play an important role in maintaining these types of practices than simply the teacher's age. Schools may develop independent study practices for all teachers by looking at the prime working age teacher's examples of independent study protocols. Additionally, schools can create standard resources for independent study practices, such as station template and guidelines for how to seek help or where to sit in the class, without increasing the teachers' workload.

**Table 11.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Content Differentiation when Grouped According to Number of Years in Teaching Mathematics

Content Differentiation	5 years and Below (Novice) (a)		5 < x ≤ 15 years (Experienced) (b)		15 < x ≤ 30 years (Highly Experienced) (c)		F-value	p-value
	Mean	DE	Mean	DE	Mean	DE		
1. I use solved problems targeting different learning objectives.	4.10	HP	4.48	HP	4.22	HP	1.977 <sup>ns</sup>	.145
2. I provide multiple solved problems at varying difficulty levels to help students learn at their own pace.	4.25	HP	4.54	EP	4.11	HP	2.799 <sup>ns</sup>	.067
3. I design more challenging tasks for students who have already mastered the material.	4.30	HP	4.33	HP	4.25	HP	.073 <sup>ns</sup>	.929
4. I provide simplified versions of lesson content for students who struggle with the material.	4.40	HP	4.51	EP	4.25	HP	.979 <sup>ns</sup>	.380
5. I modify instructional content by providing key terms in student's native language to support those with limited English proficiency.	4.30	HP	4.33	HP	4.18	HP	.333 <sup>ns</sup>	.718
6. I adapt lesson content using visual and graphic organizers to support understanding.	4.05 <sup>b</sup>	HP	4.57 <sup>a</sup>	EP	4.33	HP	4.317*	.017

Legend: 3.50-4.49 = Highly Practiced (HP); 4.50-5.00 = Extremely Practiced (EP); ns = not significant; \* = significant at 0.05 level

All experience groups rated content differentiation as Highly Practiced, with means ranging from 4.05 to 4.57. Only Item 6 (adapting lesson content using visual/graphic organizers) showed a significant difference (p = 0.017), indicating that teachers with 5–15 years of experience practice this strategy more often than novice or highly experienced teachers. All other indicators show no significant variation across experience groups.

These results support Trani (2018), who emphasized that teaching practices tend to differ more by experience than by age, which is reflected in the significant difference found in visual organizer use. The slight variations are also consistent with Graham et al. (2020) and Pranoto et al. (2021), who noted that teaching performance may fluctuate as responsibilities increase, especially among prime working age teachers. Overall, the mostly non-significant results echo Dass & Parker (2017), suggesting DI practices remain consistent across contexts despite differences in experience.

Overall, all levels of educators are frequently differentiating content to meet the varying needs of students. The use of graphic/visual organizers is an exception in that they are predominantly used by prime working age teachers, who likely have

confidence in creating and utilizing those tools after experimenting with them over time in their teaching practice. Conversely, instead of providing support through differentiated years of experience (new teachers vs. experienced), schools should provide common resources and facilitate cross-sharing opportunities between prime working age/novice and prime working age/veteran teachers. Prime working age teachers can serve as examples of good graphic visual support usage, and both novice and veteran teachers can share ideas about keeping the materials organized, accessible, and easy to prepare for student use.

**Table 12.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Process Differentiation when Grouped According to Number of Years in Teaching Mathematics

Process Differentiation	5 years and Below (Novice) (a)		5 < x ≤ 15 years (Experienced) (b)		15 < x ≤ 30 years (Highly Experienced) (c)		F-value	p-value
	Mean	DE	Mean	DE	Mean	DE		
1. I assign group activities where each group works on a different math problem. ( <i>Providing different problems in each group</i> )	4.10	HP	4.51	EP	4.22	HP	2.344 <sup>ns</sup>	.103
2. I pair students using the Think-Pair-Share to help them discuss and explain concepts together.	4.45	HP	4.45	HP	4.29	HP	.486 <sup>ns</sup>	.617
3. I provide guided practice activities and offer step by step support.	4.70	EP	4.60	EP	4.37	HP	1.806 <sup>ns</sup>	.171
4. I provide tiered activities or assignments (Basic, Intermediate, Advance) according to students' mastery.	4.10	HP	4.45	HP	4.14	HP	1.862 <sup>ns</sup>	.162
5. I demonstrate effective problem-solving strategies and provide illustrative examples to clarify concepts and procedures.	4.30	HP	4.24	HP	4.18	HP	.117 <sup>ns</sup>	.890
6. I use manipulatives by providing entry points and representations of mathematical concepts.	3.70 <sup>b</sup>	HP	4.27 <sup>a</sup>	HP	3.96	HP	3.736 <sup>*</sup>	.028
7. Scaffolded problems are provided to support struggling students. ( <i>e.g., Let students' fill out the blanks to arrive at the correct solution.</i> )	4.25	HP	4.33	HP	3.96	HP	1.961 <sup>ns</sup>	.148
8. I provide independent practice featuring solved examples alongside new problems. ( <i>e.g., presenting complete solutions in one column for reference while students apply the steps to new problems in the adjacent column.</i> )	4.35	HP	4.51	EP	4.07	HP	2.506 <sup>ns</sup>	.088

Legend: 3.50-4.49 = Highly Practiced (HP); 4.50-5.00 = Extremely Practiced (EP); ns = not significant; \* = significant at 0.05 level

Process differentiation is Highly Practiced across all groups, with means from 3.70 to 4.51. Only Item 6 (use of manipulatives) shows a significant difference ( $p = 0.028$ ), with teachers having 5–15 years of experience using manipulatives more frequently than novice or highly experienced teachers. All other indicators show no significant difference, indicating stable DI practices regardless of experience level.

The findings align with Graham et al. (2020) and Pranoto et al. (2021), who noted that experience levels can influence specific teaching practices due to changes in workload, confidence, and support systems. The stronger use of manipulatives among prime working age teachers may reflect higher confidence and skill development compared to novices. Yet, the overall

consistency supports Dass & Parker (2017), showing that DI process strategies remain relatively constant across teaching experience.

In general, there is consistency in the process-DI routines of all levels of experience, with one exception. Prime working age teachers are more inclined to utilize manipulative materials, likely due to their increased confidence and fluency developed through the years. Instead of developing programs for different levels of experience, schools can support all teachers by providing manipulatives and ready-to-use manipulative kits, scaffolded tasks, and worked example templates. In addition, prime working age teachers should model manipulative-based lessons for novice and veteran teachers, allowing them to use manipulatives and incorporate them into their classroom instruction more efficiently.

**Table 13.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Product Differentiation when Grouped According to Number of Years in Teaching Mathematics

Product Differentiation	5 years and Below (Novice) (a)		5 < x ≤ 15 years (Experienced) (b)		15 < x ≤ 30 years (Highly Experienced) (c)		F-value	p-value
	Mean	DE	Mean	DE	Mean	DE		
1. I provide students with options for demonstrating their understanding of the same math concept. (e.g. <i>create presentations and models, conduct experiments, give a lecture, etc.</i> )	4.05	HP	4.36	HP	4.18	HP	1.112 <sup>ns</sup>	.334
2. I employ rubrics to evaluate outcomes in a clear and structured manner.	4.20	HP	4.36	HP	4.48	HP	.933 <sup>ns</sup>	.393
3. I provide integrated performance task across subjects.	4.35	HP	4.12	HP	4.18	HP	.576 <sup>ns</sup>	.564
4. I assign more straightforward tasks or problems for struggling students, while providing advanced students with challenging tasks.	3.95	HP	4.42	HP	4.14	HP	2.181 <sup>ns</sup>	.120
5. I assign individualized projects that allow students to explore mathematical concepts at their own pace and level.	3.90	HP	4.33 <sup>c</sup>	HP	3.66 <sup>b</sup>	HP	4.187*	.019

Legend: 3.50-4.49 = Highly Practiced (HP); ns = not significant; \* = significant at 0.05 level

All groups rated product differentiation as Highly Practiced, with means ranging from 3.66 to 4.48. Only Item 5 (individualized projects) shows a significant difference (p = 0.019), with teachers having 5–15 years of experience practicing this strategy more frequently than both novice and highly experienced teachers. Other items have no significant differences, indicating generally similar implementation of product differentiation across experience categories.

These results mirror Trani (2018), who found that differences in instructional strategy use are more prominent when teachers are grouped by experience rather than age. The stronger use of individualized projects among prime working age teachers may be related to the instructional maturity and familiarity gained during their most productive years. However, the overall similarities align with Dass & Parker (2017), suggesting that DI effectiveness remains relatively consistent despite experience differences.

The findings indicate that all teachers utilize a significant amount of the differentiated product. The fact that prime working age teachers utilize the customized project more than the rest of their teaching career may reflect the increased experience of prime working age teachers, giving them the ability to balance structure and flexibility and allowing them to feel more confident in designing tasks that fit multiple levels of student learning. There is no doubt that as educators mature in their careers, they have a steady amount of consistent differentiated instruction occurring within their respective professional careers

and have gained a thorough understanding of effective teaching methods are not only limited to those teachers who have developed a wealth of experience.

**Table 14.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Learning Environment Differentiation when Grouped According to Number of Years in Teaching Mathematics

Learning Environment Differentiation	5 years and Below (Novice) (a)		5 < x ≤ 15 years (Experienced) (b)		15 < x ≤ 30 years (Highly Experienced) (c)		F-value	P-value
	Mean	DE	Mean	DE	Mean	DE		
1. I allow students to engage in a structured independent study.	4.15	HP	4.54	EP	4.25	HP	2.318 <sup>ns</sup>	.105
2. I offer flexible seating options that best support learning preferences.	3.90	HP	4.24	HP	4.22	HP	1.139 <sup>ns</sup>	.325
3. I implement interest-based learning centers/groups. (e.g. For instance, students can choose between a hands-on station building 3D models of polygons or a research station investigating how polygons are used in engineering.)	3.75	HP	4.03	HP	3.96	HP	.648 <sup>ns</sup>	.526
4. I set up structured learning stations that allow students to rotate through targeted tasks aligned with specific objectives. (e.g. one center may focus on classifying polygons, another on solving angle problems, and a third on drawing regular and irregular shapes.)	3.75	HP	4.18	HP	4.03	HP	1.454 <sup>ns</sup>	.240
5. I have clear procedures for students to seek help effectively when working independently or collaboratively with peers.	4.30	HP	4.72 <sup>c</sup>	EP	4.29 <sup>b</sup>	HP	3.784 <sup>*</sup>	.027

Legend: 3.50-4.49 = Highly Practiced (HP); 4.50-5.00 = Extremely Practiced (EP); ns = not significant; \* = significant at 0.05 level

Learning environment differentiation is consistently Highly Practiced, with means ranging from 3.75 to 4.72. Only Item 5 (clear procedures for seeking help) shows a significant difference ( $p = 0.027$ ), with prime working age teachers scoring higher than novice and highly experienced teachers. All other indicators show no significant difference across experience groups. The significance in help-seeking procedures aligns with Graham et al. (2020) and Pranoto et al. (2021), who noted that prime working age teachers often develop stronger classroom systems before experiencing performance declines brought on by workload and stress. The overall similarity across groups supports Magayon (2020) and Bergas (2022), who noted that DI challenges—such as resource limitations and student diversity—are experienced across experience levels, leading to relatively uniform DI practices. This also reflects Dass & Parker (2017), emphasizing that DI implementation varies more by context than experience.

The findings indicate that mathematics teachers have embraced the concept of creating a conducive and flexible learning space for students, regardless of experience level. Still, prime working age teachers received the highest mean scores (or the most points) when it came to their capacity for managing student-initiated requests for assistance; this indicates that these

teachers possess greater expertise and have developed greater confidence than newly qualified educators regarding balancing independence and direction to support diverse students effectively and are therefore likely more capable of managing diverse learning needs. Because of the comparability of practices between all groups, these results suggest that other elements including school settings and access to various support resources could influence how teachers create differentiated learning environments more than the teachers' level of expertise.

**Table 15.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Content Differentiation when Grouped According to Grade Level Taught

Content Differentiation	Junior High School		Senior High School		F-value	p-value
	Mean	DE	Mean	DE		
1. I use solved problems targeting different learning objectives.	4.30	HP	4.30	HP	.000 <sup>ns</sup>	1.000
2. I provide multiple solved problems at varying difficulty levels to help students learn at their own pace.	4.33	HP	4.30	HP	.173 <sup>ns</sup>	.863
3. I design more challenging tasks for students who have already mastered the material.	4.35	HP	4.15	HP	1.053 <sup>ns</sup>	.296
4. I provide simplified versions of lesson content for students who struggle with the material.	4.43	HP	4.30	HP	.731 <sup>ns</sup>	.467
5. I modify instructional content by providing key terms in student's native language to support those with limited English proficiency.	4.30	HP	4.20	HP	.542 <sup>ns</sup>	.589
6. I adapt lesson content using visual and graphic organizers to support understanding.	4.33	HP	4.45	HP	-.682 <sup>ns</sup>	.498

Legend: 3.50-4.49 = Highly Practiced (HP); ns = not significant at 0.05 level

The results show no significant differences (all p-values > 0.05) in content differentiation between Junior High School (JHS) and Senior High School (SHS) teachers. Both groups rated all indicators as Highly Practiced, with very minimal variation in mean scores. This suggests that teachers across grade levels implement similar strategies in adjusting lesson content. Although SHS requires more advanced, contextualized instruction and JHS emphasizes foundational skills (Jaudinez, 2019; Canque, 2021), the absence of significant differences suggests that teachers consistently apply DI content strategies regardless of grade level. This supports Dass & Parker (2017), who noted that DI practices often remain stable across different contexts when teachers aim to meet diverse learner needs. The findings imply that both JHS and SHS teachers modify content in comparable ways to support student understanding.

The data suggests that regardless of whether they are teaching Junior or Senior High School, mathematics teachers execute differentiation of both instructional and content in a fairly consistent manner. The main difference between JHS and SHS lies in that JHS focuses on developing core skills (basic math) while SHS emphasises more advanced applications (applied mathematics); however, both groups of teachers demonstrate concern about differentiating the curriculum to ensure all students have access to the appropriate level of mathematics, which is consistent with previous research that has demonstrated the effective use of differentiated instruction across grades does not rely on the grade level, but rather on an educator's intention to provide all students equal access to learning opportunities.

**Table 16.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Process Differentiation when Grouped According to Grade Level Taught

Process Differentiation	Junior High School		Senior High School		F-value	p-value
	Mean	DE	Mean	DE		
1. I assign group activities where each group works on a different math problem. <i>(Providing different problems in each group)</i>	4.33	HP	4.25	HP	.434 ns	.665
2. I pair students using the Think-Pair-Share to help them discuss and explain concepts together.	4.40	HP	4.40	HP	.000 ns	1.000
3. I provide guided practice activities and offer step by step support.	4.58	EP	4.45	HP	.812 ns	.419
4. I provide tiered activities or assignments (Basic, Intermediate, Advance) according to students' mastery.	4.28	HP	4.20	HP	.423 ns	.673
5. I demonstrate effective problem-solving strategies and provide illustrative examples to clarify concepts and procedures.	4.23	HP	4.25	HP	-.080 ns	.936
6. I use manipulatives by providing entry points and representations of mathematical concepts.	4.03	HP	4.00	HP	.165 ns	.870
7. Scaffolded problems are provided to support struggling students. <i>(e.g., Let students' fill out the blanks to arrive at the correct solution).</i>	4.21	HP	4.10	HP	.602 ns	.549
8. I provide independent practice featuring solved examples alongside new problems. <i>(e.g., presenting complete solutions in one column for reference while students apply the steps to new problems in the adjacent column.)</i>	4.28	HP	4.45	HP	-.830 ns	.409

Legend: 3.50-4.49 = Highly Practiced (HP); 4.50-5.00 = Extremely Practiced (EP); ns = not significant at 0.05 level

Process differentiation also shows no significant differences between JHS and SHS teachers ( $p > 0.05$  for all items). Both groups highly practice strategies such as guided practice, Think-Pair-Share, tiered activities, and scaffolding. Mean scores are consistently high, indicating uniformity in how teachers modify learning processes across grade levels. The uniform implementation aligns with Dass & Parker (2017), who emphasized that DI strategies are adaptable across various teaching contexts. Even though SHS instruction typically incorporates more inquiry-based and student-centered approaches (Hodgen, 2018; Jaudinez, 2019), the results show that both JHS and SHS teachers rely on similar process-based DI techniques. This suggests that Philippine mathematics teachers prioritize learner support and engagement across grade levels. According to these findings, mathematics educators working with students in Junior High and Senior High Schools use similar techniques to adapt the learning experience for all students, demonstrating a commitment to meeting the needs of all learners. Although there are distinctions between the content being taught at different grade levels and the focus of instruction (e.g., greater emphasis on inquiry and problem solving in the Senior High School), both groups of teachers utilize a consistently interactive and supportive approach that facilitates student comprehension and involvement. This similarity aligns with Dass and Parker's (2017) assertion that differentiated instruction can be utilized in any educational setting, indicating that educators at all levels prioritize and employ flexible teaching methods.

**Table 17.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Product Differentiation when Grouped According to Grade Level Taught

Product Differentiation	Junior High School		Senior High School		F-value	p-value
	Mean	DE	Mean	DE		
1. I provide students with options for demonstrating their understanding of the same math concept. (e.g. <i>create presentations and models, conduct experiments, give a lecture, etc.</i> )	4.23	HP	4.20	HP	.151 <sup>ns</sup>	.881
2. I employ rubrics to evaluate outcomes in a clear and structured manner.	4.38	HP	4.30	HP	.523 <sup>ns</sup>	.604
3. I provide integrated performance task across subjects.	4.21	HP	4.15	HP	.341 <sup>ns</sup>	.734
4. I assign more straightforward tasks or problems for struggling students, while providing advanced students with challenging tasks.	4.26	HP	4.05	HP	1.002 <sup>ns</sup>	.319
5. I assign individualized projects that allow students to explore mathematical concepts at their own pace and level.	4.01	HP	3.95	HP	.254 <sup>ns</sup>	.801

Legend: 3.50-4.49 = Highly Practiced (HP); ns = not significant at 0.05 level

Product differentiation likewise reveals no significant differences between JHS and SHS teachers. All items are rated “Highly Practiced,” with mean scores showing only slight variations. Teachers from both grade levels provide varied outputs, rubrics, leveled tasks, and individualized projects at similar levels. Despite SHS students being expected to handle more complex and performance-based tasks (Jaudinez, 2019), the absence of significant differences suggests that JHS teachers also design diverse performance outputs to meet learner needs. This pattern aligns with Dass & Parker (2017), indicating that DI strategies related to assessment tend to remain consistent regardless of grade level. It also reflects the push for performance tasks at all K–12 stages in the Philippines.

**Table 18.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Learning Environment Differentiation when Grouped According to Grade Level Taught

Learning Environment Differentiation	Junior High School		Senior High School		F-value	p-value
	Mean	DE	Mean	DE		
1. I allow students to engage in a structured independent study.	4.43	HP	4.10	HP	1.521 <sup>ns</sup>	.141
2. I offer flexible seating options that best support learning preferences.	4.18	HP	4.05	HP	.599 <sup>ns</sup>	.551
3. I implement interest-based learning centers/groups. (e.g. <i>For instance, students can choose between a hands-on station building 3D models of polygons or a research station investigating how polygons are used in engineering.</i> )	3.95	HP	3.90	HP	.220 <sup>ns</sup>	.827
4. I set up structured learning stations that allow students to rotate through targeted tasks aligned with specific objectives. (e.g. <i>one center may focus on classifying polygons, another on solving angle problems, and a third on drawing regular and irregular shapes.</i> )	4.05	HP	3.95	HP	.428 <sup>ns</sup>	.670
5. I have clear procedures for students to seek help effectively when working	4.50	EP	4.40	HP	.542 <sup>ns</sup>	.589

independently or collaboratively with peers.

Legend: 3.50-4.49 = Highly Practiced (HP); 4.50-5.00 = Extremely Practiced (EP); ns = not significant at 0.05 level

All indicators under learning environment differentiation show no significant differences, with both JHS and SHS teachers rating the practices as Highly or Extremely Practiced. Mean scores between the two groups are very close, indicating similar approaches to providing flexible seating, independent study, learning centers, and structured learning stations. Although SHS promotes more student-centered, contextualized environments (Jaudinez, 2019), and JHS focuses on foundational skills (Canque, 2021), the results show comparable DI environmental strategies. This supports Dass & Parker (2017), who suggested that DI's effectiveness depends more on teacher intent and classroom context than on grade level. Teachers across the system appear to create supportive learning environments regardless of grade assignment.

**Table 19.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Content Differentiation when Grouped According to Employment Agency

Content Differentiation	Private School		Public School		F-value	p-value
	Mean	DE	Mean	DE		
1. I use solved problems targeting different learning objectives.	4.09	HP	4.37	HP	-1.580 <sub>ns</sub>	.118
2. I provide multiple solved problems at varying difficulty levels to help students learn at their own pace.	4.22	HP	4.36	HP	-.723 <sub>ns</sub>	.472
3. I design more challenging tasks for students who have already mastered the material.	4.04	HP	4.39	HP	-1.938 <sub>ns</sub>	.056
4. I provide simplified versions of lesson content for students who struggle with the material.	4.27	HP	4.44	HP	-.995 <sub>ns</sub>	.323
5. I modify instructional content by providing key terms in student's native language to support those with limited English proficiency.	4.18	HP	4.31	HP	-.720 <sub>ns</sub>	.474
6. I adapt lesson content using visual and graphic organizers to support understanding.	4.09	HP	4.46	HP	-2.327*	.032

Legend: 3.50-4.49 = Highly Practiced (HP); ns = not significant; \* = significant at 0.05 level

Across all six indicators, both public and private school teachers rated content differentiation as Highly Practiced, with only one item showing a significant difference: the use of visual and graphic organizers ( $p = .032$ ), where public school teachers scored slightly higher. This suggests overall similarity, but public school teachers may rely more on visual supports. This aligns with Bergas (2022), who noted that public school teachers tend to be more experienced due to higher retention rates, which may explain their stronger use of visual scaffolds. Although private schools generally have better resources (Magayon, 2020; Cervantes et al., 2022), the higher experience level of public teachers may contribute to more consistent application of content differentiation strategies.

**Table 20.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Process Differentiation when Grouped According to Employment Agency

Process Differentiation	Private School		Public School		F-value	p-value
	Mean	DE	Mean	DE		
1. I assign group activities where each group works on a different math problem. (Providing different problems in each group)	4.00	HP	4.43	HP	-2.017 <sub>ns</sub>	.053
2. I pair students using the Think-Pair-Share to help them discuss and explain concepts together.	4.36	HP	4.41	HP	-.298 <sub>ns</sub>	.766
3. I provide guided practice activities and offer step by step support.	4.59	EP	4.53	EP	.353 <sub>ns</sub>	.725

4.	I provide tiered activities or assignments (Basic, Intermediate, Advance) according to students' mastery.	4.00	HP	4.36	HP	-1.939 ns	.056
5.	I demonstrate effective problem-solving strategies and provide illustrative examples to clarify concepts and procedures.	4.00	HP	4.32	HP	-1.654 ns	.102
6.	I use manipulatives by providing entry points and representations of mathematical concepts.	3.72	HP	4.13	HP	-2.153*	.034
7.	Scaffolded problems are provided to support struggling students. (e.g., <i>Let students' fill out the blanks to arrive at the correct solution.</i> )	4.04	HP	4.24	HP	-1.047 ns	.298
8.	I provide independent practice featuring solved examples alongside new problems. (e.g., <i>presenting complete solutions in one column for reference while students apply the steps to new problems in the adjacent column.</i> )	4.13	HP	4.39	HP	-1.346 ns	.182

Legend: 3.50-4.49 = Highly Practiced (HP); 4.50-5.00 = Extremely Practiced (EP); ns = not significant; \* = significant at 0.05 level

Most indicators show no significant difference, with both groups consistently rating DI process strategies as Highly Practiced. However, one item—use of manipulatives and representations—shows a significant difference ( $p = .034$ ), favoring public school teachers. This indicates that public school teachers may provide more concrete supports during instruction. The stronger use of manipulatives among public school teachers supports Bergas (2022), which noted that public school educators tend to have longer teaching experience. Although private schools usually have more instructional materials (Magayon, 2020), public teachers' greater experience working with diverse learners may make them more skilled in adapting teaching processes to student needs.

**Table 21.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Product Differentiation when Grouped According to Employment Agency

Product Differentiation	Private School		Public School		F-value	p-value
	Mean	DE	Mean	DE		
1. I provide students with options for demonstrating their understanding of the same math concept. (e.g. <i>create presentations and models, conduct experiments, give a lecture, etc.</i> )	3.90	HP	4.34	HP	-1.882 ns	.071
2. I employ rubrics to evaluate outcomes in a clear and structured manner.	4.18	HP	4.43	HP	-1.250 ns	.221
3. I provide integrated performance task across subjects.	4.04	HP	4.25	HP	-1.133 ns	.261
4. I assign more straightforward tasks or problems for struggling students, while providing advanced students with challenging tasks.	3.81	HP	4.36	HP	-2.320*	.027
5. I assign individualized projects that allow students to explore mathematical concepts at their own pace and level.	3.81	HP	4.06	HP	-1.065 ns	.290

Legend: 3.50-4.49 = Highly Practiced (HP); ns = not significant; \* = significant at 0.05 level

Product differentiation is highly practiced by both groups, with only one significant difference: assigning tasks aligned with student readiness, where public school teachers scored higher ( $p = .027$ ). This reflects stronger readiness-based differentiation in public schools. This aligns with findings that public school teachers handle more diverse and heterogeneous classes (Magayon, 2020; Cervantes et al., 2022), which may require more frequent adjustment of task difficulty. Bergas (2022) also

reported that public teachers tend to be more experienced, supporting their capacity to design differentiated performance tasks suited to a wide range of abilities.

**Table 22.** Difference in the Extent of Practice of Differentiated Instruction in Terms of Learning Environment Differentiation when Grouped According to Employment Agency

Learning Environment Differentiation	Private School		Public School		F-value	p-value
	Mean	DE	Mean	DE		
1. I allow students to engage in a structured independent study.	4.04	HP	4.46	HP	-2.423*	.018
2. I offer flexible seating options that best support learning preferences.	3.95	HP	4.22	HP	-1.259 <sub>ns</sub>	.212
3. I implement interest-based learning centers/groups. (e.g. For instance, students can choose between a hands-on station building 3D models of polygons or a research station investigating how polygons are used in engineering.)	3.68	HP	4.03	HP	-1.624 <sub>ns</sub>	.109
4. I set up structured learning stations that allow students to rotate through targeted tasks aligned with specific objectives. (e.g. one center may focus on classifying polygons, another on solving angle problems, and a third on drawing regular and irregular shapes.)	3.59	HP	4.18	HP	-2.424*	.022
5. I have clear procedures for students to seek help effectively when working independently or collaboratively with peers.	4.31	HP	4.53	EP	-1.218 <sub>ns</sub>	.227

Legend: 3.50-4.49 = Highly Practiced (HP); 4.50-5.00 = Extremely Practiced (EP); ns = not significant; \* = significant at 0.05 level

Both groups rated learning environment practices as Highly Practiced, but two items show significant differences in favor of public school teachers: providing structured independent study ( $p = .018$ ) and organizing rotating learning stations ( $p = .022$ ). This suggests that public school teachers implement more structured environmental strategies than private school teachers. These outcomes reflect Magayon (2020) and Bergas (2022), who emphasized that public school teachers typically manage larger, more diverse classes and therefore rely on structured learning setups to maintain engagement. Despite limited resources in public schools, the greater teaching experience of public teachers enables them to optimize classroom organization and adapt learning environments effectively.

**Table 23.** Relationship Between the Mathematics Teachers' Extent of Practice of Differentiated Instruction and the Challenges They Encountered in Implementing this Instruction

Challenges Encountered	Content Differentiation		Process Differentiation		Product Differentiation		Learning Environment Differentiation	
	r-value	p-value	r-value	p-value	r-value	p-value	r-value	p-value
1. Large class size.	-.084 <sub>ns</sub>	.458	-.060 <sub>ns</sub>	.600	.001 <sub>ns</sub>	.999	.138 <sub>ns</sub>	.223
2. Lack of awareness among teachers regarding differentiated instructional approaches.	.074 <sub>ns</sub>	.517	.097 <sub>ns</sub>	.390	.114 <sub>ns</sub>	.312	.118 <sub>ns</sub>	.296

3. Insufficient training provided to teachers regarding differentiated instruction.	.062 <sub>ns</sub>	.585	.057 <sub>ns</sub>	.614	.028 <sub>ns</sub>	.807	.217 <sub>ns</sub>	.053
4. Lack of interest in learning among students.	-.014 <sub>ns</sub>	.902	-.099 <sub>ns</sub>	.382	-.073 <sub>ns</sub>	.521	-.022 <sub>ns</sub>	.843
5. Lacking of instructional resources/materials.	.045 <sub>ns</sub>	.693	-.020 <sub>ns</sub>	.861	.001 <sub>ns</sub>	.999	.049 <sub>ns</sub>	.666
6. Not conducive classroom environment for learning.	.062 <sub>ns</sub>	.583	.065 <sub>ns</sub>	.570	.098 <sub>ns</sub>	.389	.150 <sub>ns</sub>	.183
7. Heavy teaching loads	.020 <sub>ns</sub>	.859	-.030 <sub>ns</sub>	.794	.036 <sub>ns</sub>	.749	-.002 <sub>ns</sub>	.985
8. Misbehavior among students in the classroom.	-.004 <sub>ns</sub>	.975	.035 <sub>ns</sub>	.760	.150 <sub>ns</sub>	.184	.049 <sub>ns</sub>	.668
9. Lack of motivation among teachers towards teaching.	-.031 <sub>ns</sub>	.782	.014 <sub>ns</sub>	.899	.053 <sub>ns</sub>	.640	.047 <sub>ns</sub>	.680
10. Poor textbook content organization.	-.060 <sub>ns</sub>	.596	-.080 <sub>ns</sub>	.480	.069 <sub>ns</sub>	.544	.013 <sub>ns</sub>	.910
11. Difficulties in assessing the readiness level of students.	-.054 <sub>ns</sub>	.632	-.086 <sub>ns</sub>	.449	.012 <sub>ns</sub>	.916	.010 <sub>ns</sub>	.927
12. Shortage of instructional time.	-.208 <sub>ns</sub>	.064	-.217 <sub>ns</sub>	.053	-.076 <sub>ns</sub>	.504	-.109 <sub>ns</sub>	.336

The table shows that all p-values are greater than .05, indicating that none of the challenges encountered by teachers are significantly related to their extent of practice in content, process, product, or learning environment differentiation. The correlation coefficients (r-values) are mostly very small—both positive and negative—showing weak and negligible relationships. The absence of significant relationships supports Magayon (2020) and Didiquin et al. (2024), who reported that large class sizes, limited resources, heavy teaching loads, and overlapping school activities are common barriers—yet teachers still attempt to adjust their instruction despite these constraints. Similarly, Aldossari (2018) found that challenges such as inadequate preparation and lack of instructional tools do not necessarily prevent teachers from trying to implement DI; instead, they influence how easily teachers can apply the strategies.

The findings also reflect the view of Pozas, Letzel, & Schneider (2020) that successful implementation of DI depends not only on the presence of challenges but also on systemic support and teachers' willingness to adapt. Even though challenges exist, mathematics teachers in this study continue to employ DI practices, demonstrating resilience and commitment similar to global patterns described in international literature

#### 4. Conclusion

Based on the findings, the study concludes that Mathematics teachers consistently practice differentiated instruction at a high level, showing strong dedication to supporting diverse learners. The challenges they encounter although frequent do not significantly reduce their extent of practice, indicating a resilient and adaptive teaching force. The minimal differences across teacher profile variables further imply that DI has become a widely accepted instructional approach, transcending differences in age, experience, grade level, and employment setting. The results of this study highlight the need for accessible and sustainable DI support materials, especially in Mathematics, where learner diversity is particularly evident. This need provided the basis for the development of the proposed output, the Mathematics Differentiated Instruction Toolkit.

## 5. Recommendations

In light of the conclusions, several recommendations are presented. School administrators are encouraged to strengthen professional development programs focused on differentiated instruction, lessen non-teaching tasks, and provide teachers with adequate instructional materials and tools. Mathematics teachers are encouraged to sustain the use of flexible grouping, formative assessments, and contextualized activities, while also engaging in collaboration with colleagues to enhance classroom practices. The Department of Education is advised to develop policies that support DI implementation, including manageable class sizes, funding for Mathematics materials, and DI-focused professional development. Future researchers are recommended to conduct observation-based studies to validate self-reported practices and explore differentiated instruction in a specific subject.

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