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Differentiated Instruction and the Academic Achievement of Grade 7 Students in Mathematics in St. Paul University Surigao

Reubenjoy P. Budejas

St. Paul University Surigao, Surigao City, Philippines, 8400, Philippines

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***Corresponding Author:** Reubenjoy P. Budejas

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Abstract **Original Research Article**

Differentiated Instruction plays a positive role in the pedagogy of Math teaching. This study aims to determine the level of its effectiveness among the 89 Grade VII students in learning Math, particularly at St. Paul University Surigao. A Quasi-Experimental research design was utilized to test the significant difference in the academic achievement of students, through the use of questionnaire, after the utilization of Differentiated Instruction as an intervention in the experimental group. Mean, frequency count and percentage distribution and t-test were the statistical tools used to analyze the gathered data. Based on the findings, there is a significant difference in the academic achievement of the Grade 7 students before and after the utilization of Differentiated Instruction. Thus, it was concluded that Differentiated Instruction motivates students to participate and confidently perform every task assigned to them, which leads to an increase in their academic achievement. It is hereby recommended that the teachers may continue to use Differentiated Instruction in teaching Math to Grade 7 students since this teaching-learning intervention can greatly cater to the learning needs of diverse students. Similar studies may be conducted to further enhance the instructional delivery, specifically focusing on differentiated instruction.

Keywords: Academic Achievement, Differentiated Instruction, Effectiveness, Mathematics Teaching, Quasi-Experimental, Surigao City, Philippines.

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INTRODUCTION

The students' differences in a class represent various backgrounds and capabilities in learning which teachers need to consider to cater to the learning needs of every learning individual. Students differ in their academic achievement level and even in the difficulty level in Math and the related concepts (Mulwa, 2015 as cited by Bandala, 2023), and teachers' Math anxiety has been found to play a role in the students' Math achievement (Ramirez, Hooper, Kersting, Ferguson, and Yeager, 2018).

Conderman and Hedin (2017) professed that with the increasing number of learners with diverse needs in general education classrooms, teachers need to be mindful of various ways to differentiate instructions by offering various choices, viewing the perspective of the students' background knowledge, skills, interests, and learning preferences. Additionally, teachers may provide different kinds of learning materials to allow the students to reinforce their efforts and allow them to maximize their potential as they utilize the learning materials and the learning space in various ways (Ogilvie, 2020).

An inclusive classroom is composed of teachers with positive attitudes that are essential for the success of the learners (Saloviita, 2018). This follows that teachers who are aware and working with the students who are learning in different ways create a safe and collaborative learning environment. In this way, teachers are using multiple methods to deliver course content and provide students with a variety of opportunities to share prior knowledge. Ismail and Allaq (2019) maintained Differentiated Instruction (DI) attracts a lot of attention from students and considers teachers to play significant roles in motivating learners and promoting interactive learning.

In the Philippine educational setting, a class with a heterogeneous type of students are present and can be observed in Mathematics classes where numerous Filipino secondary teachers are handling various types of students with different

level of skills, abilities, and intelligence which they struggle to feed with the learning competencies that their learners should learn the way they should be comfortably grasped knowledge and ability to realize the aspired learning. Students' Math development concerns the role of the Math environment in which students doing more general math activities acquire higher math skills (Hart, Ganley, & Purpura, 2016 as cited by Cheung & Kwan, 2021). Differentiated instruction helps the teacher to reach all the students in heterogeneous educational surroundings. The lead role of the application of Differentiated Instruction in teaching Mathematics is to teach students with different levels of learning abilities in the common classroom and at the same time without separating them from each other (van Geel, Keuning, Frerejean, Dolmans, van Merrienboer, & Visscher, 2019).

Recent studies in the Philippine context support the effectiveness of differentiated instruction. Arpilleda et al. (2023) highlighted that Filipino secondary mathematics teachers frequently encounter difficulties in addressing varied student competencies, particularly in online learning environments. The abrupt shift to remote education during the pandemic further exacerbated these challenges, revealing significant learning gaps and barriers to effective instruction. To address these challenges, Arpilleda (2021) demonstrated the effectiveness of strategic intervention materials in enhancing Grade 9 students' mathematical performance, underscoring the potential of targeted instructional resources. Furthermore, Arpilleda et al. (2024) emphasized the importance of assessing pupils' number knowledge readiness to tailor instruction appropriately. Understanding students' perceptions of flexible learning experiences, as explored by Arpilleda (2025), can inform the development of more effective differentiated instructional strategies.

At St. Paul University Surigao, a huge percentage of students who are very diverse need a learning process that is friendly and easy to access students' interest in grasping knowledge. Differentiated instruction, will keep the smart students interested by providing challenging tasks and keeps the average and struggling students motivated to succeed academically and reach their own best.

The Grade 7 students of St. Paul University Surigao particularly in Mathematics class are learning in different and various ways since they possess multiple intelligences. Aside from it, they are approaching and leading the way with technology which follows that their practices impact the way they connect with the world around them. Moreover, students need to learn in a more flexible way that takes into consideration the student's needs, likes, interests, and their preferred process of learning.

It can be inferred that Differentiated Instruction has a positive role in the pedagogy of Math teaching and the researcher wants to find out the level of its effectiveness among the Grade 7 students in learning Math, particularly in St. Paul University Surigao, Surigao City.

METHODOLOGY

Research Design

A Quasi-Experimental research design was utilized to test the significant difference in the academic achievement of Grade 7 students after the utilization of Differentiated Instruction as an intervention in the experimental group. This research design requires two groups which can be enumerated as control and experimental; thus, these two groups were investigated in terms of the respondents' academic achievement level which shall then be compared right after the treatment of the post-test assessment result. This design is considered appropriate since it mimics experimental conditions in which some individuals are randomly exposed to treatment while others are not by using nonexperimental (or researcher-induced) variation in the main independent variable of interest (Gopalan et al., 2020).

Research Respondents

The Grade 7 students of St. Paul University Surigao reached a total population of 89 who are distributed to two classes with 44 and 45 students in every class. In getting the accurate sample size of the total population of the Grade 7 students, a complete enumeration was utilized which all the students were directly and purposely chosen. The class with 44 students served as the experimental group and the class with 45 students served as the control group. There were 24 male and 20 female students in the experimental group while there were 23 males and 22 females in the control group. The final selection and distribution of the respondents are shown in Table 1. Of the five sections, the researcher decided to choose these two sections because of the learner's characteristics.

Table 1. Research Respondents' Distribution

Sections Population	No. of Students by Gender		Total
	Male	Female	
Our Lady of Fatima (Experimental)	24	20	44
Our Lady of Lourdes (Control)	23	22	45
Total	47	42	89

Research Instrument

The questionnaire was used as the major instrument in this study which was answered by the respondents during the pretest and posttest assessments within a given timeframe. A multiple-choice type of questionnaire with 40 items was crafted by the researcher using the references of Mathematics VII Textbook and Teacher's Guide. This questionnaire underwent validation and reliability testing.

The content of the questionnaire was validated by the

experts who were the selected Junior High school students and Secondary Math Teachers. In this way, the questionnaire is considered very substantial since it was reviewed and checked by the experts. This surely equipped the whole study with the needed correct information.

Regarding the construct of the research instrument, a table of specifications was used to ensure that the test items in the questionnaire appeared only once. A criterion-related validation was also considered in crafting the research questionnaire to which a design of concurrent validity was applied to obtain the correlation between the internal criterion which is the measured instruments' scores and the external criterion which is the related standard tool referring to the previous test papers for Grade VII of St. Paul University Surigao. With this, a correlational value of 0.87 was determined and could be said that criterion-related validity existed.

The crafted questionnaire was submitted to the thesis adviser for a thorough review and suggestions that should be carried out during the revision process of the research instrument. The revised questionnaire was presented to the board of panelists during the proposal defense which noting of the scholarly suggestions and comments from the board of panelists was also considered by the researcher.

A pilot testing was also conducted to 20 students from another section who are not included in the set of respondents. The results were tested for its internal consistency and got a Cronbach alpha value of 0.84 which can be interpreted as good internal consistency.

Statistical Treatment

Gathered data from the study conducted were treated and analyzed systematically to gain a correct and accurate result. The following statistical tools were used in this study:

Mean. This was utilized in determining the academic achievement level of the Grade 7 students before and after the utilization of Differentiated Instruction.

Frequency Count and Percentage Distribution. This was used to determine the number of students for each achievement level.

T-test. This was used in determining the significant difference in the academic achievement of the Grade 7 students after the utilization of Differentiated Instruction.

RESULTS AND DISCUSSION

On the Academic Achievement Level (Pre-test) of the Control Group

Table 2 presents the pre-test scores of the students in the control group.

Table 2. *Pre-test Scores of the Control Group of Grade 7 Students*

Scores (X)	No. of Students (Y)	XY	DE
5	3	15	P
6	2	12	P
7	2	14	P
9	5	45	P
10	4	40	P
11	8	88	F
12	7	84	F
13	7	91	F
14	3	42	F
15	1	15	F
16	3	48	F
∑	45	494	
Mean Academic Achievement	10.98		
Academic Achievement Level	Poor		

Range	Descriptive Equivalent
31.00 – 40.00	Very Good (VG)
21.00 – 30.99	Good (G)
11.00 – 20.99	Fair (F)
01.00 – 10.99	Poor (P)

As can be gleaned in Table 2, the overall mean of 10.98 is gained and described as *Poor*. The pre-test assessment result of the control group gives an implication that the students do not have a concrete knowledge of the second quarter Math

lessons more specifically in angles since previous instructions and activities are not delivered according to their strengths and learning styles. Students who learned in a non-differentiated class were noted to have fair learning compared to the students who learned in a differentiated way. With this, it could be said that practitioners need to understand the components of differentiation to design lessons that address the needs of learners. Malacapay (2019) articulated that the student's preferred learning style influenced the student's academic achievement and with the contribution of differentiated instruction, learners may absorb maximum information in their styles and this served as a salient feature of differentiating the instruction.

The poor performance of students, as indicated by the overall mean of 10.98, can be attributed to several interrelated factors. Firstly, the lack of engagement in the learning process is a significant concern; students often struggle to connect with material that is not presented in a manner that resonates with their individual learning preferences, leading to disengagement and diminished motivation. Secondly, inadequate teacher training in differentiated instruction can hinder the effective implementation of tailored teaching strategies, resulting in a one-size-fits-all approach that fails to meet the diverse needs of students. Lastly, external factors such as limited access to educational resources and support systems can exacerbate learning difficulties, making it challenging for students to grasp essential concepts, particularly in complex subjects like mathematics.

Table 3. *Achievement Level in the Pre-test of the Control Group of Grade 7 Students*

Achievement Level	f	%
Fair	29	64.44
Poor	16	35.56

Table 3 presents the achievement level in pre-test of the students in the control group. It can be gleaned from Table 3 that as to the pre-test achievement of the control group, 29 (64.44%) of the students got a *fair* achievement while 16 (35.56%) of them got a *poor* achievement.

There are 16 out of 45 respondents gained an academic achievement level of *Poor*. These students could be said to have less interest in learning math lessons because they find it complicated to understand maybe because of the traditional method that has been used in teaching which results in students having low and very weak foundation and background not just in the present time but also with their past lessons in their previous grade levels. The academic achievement of the students is the reflection of the transfer of knowledge from one studying level to another and there are factors affecting it such as the utilization of traditional methods instead of modern methods in teaching and the poor relationship between the teacher and learners that leads to the rejection of the students' enthusiasm to learn (Al-Zoubi & Younes, 2015 as cited by Benoza & Palaoag, 2023).

Out of 45 respondents, 29 of them gained an academic achievement level of *Fair* which gives an implication that more students have little background knowledge of basic math and need to study more to increase their mathematical skill and ability to analyze mathematical equations and problems. These students have only a concrete understanding of fundamental lessons in mathematics during the first few years at the elementary level but are confused and struggling in the later part of their studies in their elementary years. Gafoor and Kurukkan (2015) as cited by Evardo and Itaas (2024) affirmed that the majority of the students have less interest in learning mathematics since they are full of anxiety believing that they cannot understand the subject matter and the teacher's instruction is a related factor that makes them less adaptive with less self-efficacy.

On the Academic Achievement Level (Pre-test) of the Experimental Group

Table 4 presents the pre-test scores of the students in the experimental group.

Table 4. *Pre-Test Scores of the Experimental Group of Grade 7 Stude nts Before the Utilization of Differentiated Instruction*

Scores (X)	No. of Students (Y)	XY	DE
5	2	10	P
7	2	14	P
8	4	32	P
9	4	36	P
10	2	20	P
11	4	44	F
12	7	84	F
13	4	52	F
14	6	84	F
16	4	64	F

17	1	17	F
18	3	54	F
20	1	20	F
∑	44	531	
Mean Academic Achievement	12.07		
Academic Achievement Level	Fair		

Range	Descriptive Equivalent
31.00 – 40.00	Very Good (VG)
21.00 – 30.99	Good (G)
11.00 – 20.99	Fair (F)
01.00 – 10.99	Poor (P)

As can be gleaned in Table 4, the overall mean of 12.07 is gained and described as *Fair*. This suggests a moderate level of understanding or performance among the students. The pre-test assessment results of the experimental group further suggest that the students possess a certain level of knowledge regarding the second quarter Math lessons, particularly in the topic of angles. This implies that the students have received prior instruction or exposure to this content.

Table 5. *Achievement Level in the Pre-test of the Experimental Group of Grade 7 Students Before the Utilization of Differentiated Instruction*

Achievement Level	f	%
Fair	30	68.18
Poor	14	31.82

Table 5 presents the achievement level in pre-test of the students in the experimental group. It can be gleaned from the table that 30 (68.18%) of the students got a *fair* achievement while 14 (31.82%) of them got a *poor* achievement.

It projected that there are 14 out of 44 Grade 7 students who got scores that range from 1 – 10 and described as Poor indicating that these students have a very low understanding of mathematical concepts, and it follows that there is a need for the teaching-learning intervention to increase the academic achievement level of the student-respondents. It is very essential to equip students with mathematical skills to eliminate math anxiety and increase the students' confidence to perform at their very best so that they could reach their highest potential in learning (Jolejole-Caube, Dumlao, & Abocejo, 2019).

The student-respondents who gained scores that range from 11 – 20 and described as Fair reached up to 30 out of 44. This gives an implication that there is a higher rate of student respondents in the experimental group who are having little background on math lessons in Grade 7 and these students are just about getting oriented with the new lessons in math junior high school which they need ample time to adjust with the new concepts and new learning style. With this result, it could be said that these students need more various learning activities to improve the quality of learning in Math. In learning mathematics, it is a bit challenging since students like this learning area that they perform less and hesitate to participate which could be the reason to have a very low academic achievement in mathematics (Murphy, 2019).

Table 6 presents the summary of the academic achievement levels of the control and experimental groups during the pre-test.

Table 6. *Summary of the Academic Achievement Level of the Two Groups during the Pre-test Assessment*

Group	Mean Academic Achievement	Academic Achievement Level
Control	10.98	Poor
Experimental	12.07	Fair
Mean Difference	1.09	

As can be gleaned from the table, the two groups gained different mean values such as 10.98 for the control group which is described as Poor and 12.07 for the experimental group which is described as Fair. The mean difference of 1.09 was gained from the mean values of the two groups which gives an implication that there was little difference in the academic achievement level of the two groups during the pre-test assessment since the Differentiated Instruction was not yet implemented and that learning styles of the students were not catered. Instructions were based on the usual delivery of the lesson causing the students to be unmotivated and shared less interest in learning the lesson and find it difficult to understand the studied topic. Anthony, Hunter, and Hunter (2019) postulated that differentiation is a universal concept that aims to support the differences of students towards learning the lessons in Mathematics and the need to be reframed in the

mathematics classroom gives a wide range of practices and current implementation of exposing the differentiated instruction. In doing so, a focus on the student's cognitive achievement/achievement should be equated with the differentiation practices inside the mathematics classroom.

On the Academic Achievement Level (Post-test) of the Control Group

Table 7 presents the post-test scores of the students in the control group.

Table 7. *Post-test Scores of the Control Group of Grade 7 Students*

Scores (X)	No. of Students (Y)	XY	DE
8	1	8	P
11	2	22	F
13	1	13	F
14	2	28	F
15	1	15	F
16	2	32	F
17	2	34	F
18	2	36	F
19	2	38	F
20	3	60	F
21	2	42	G
22	4	88	G
23	3	69	G
24	2	48	G
26	4	104	G
27	1	27	G
28	3	84	G
29	2	58	G
30	2	60	G
31	1	31	VG
32	2	64	VG
33	1	33	VG
Σ	**45**	**994**	
Mean Academic Achievement	**22.09**		
Academic Achievement Level	**Good**		

Range	Descriptive Equivalent
31.00 – 40.00	Very Good (VG)
21.00 – 30.99	Good (G)
11.00 – 20.99	Fair (F)
01.00 – 10.99	Poor (P)

As can be seen in the table, with a greater number of the student-respondents who got the academic level of Good, it follows that the average mean resulted in the value of 22.09 which could be described as Good. This gives an implication that these students have increased their learning and acquired knowledge, but it did not reach the maximum level since the teaching style applied by the teacher in the control group settled for traditional with a homogeneous teaching-learning process that basically cannot cater to the learning needs of the diverse learners. Behtouei, Faillace, Palumbo, Spataro, Variola, and Migliorati (2020) assessed that Mathematics is a challenging subject to master students, and authorities in Mathematics concur that attaining mathematics conceptual understanding and procedural skills encompasses various cognitive processes. To explore differentiated instruction, students need to learn concentration and motivation that gives an impact of academic achievement and an opportunity to learn and build up the diversity of education within varied educational settings Moosa, & Shareefa, 2019).

Table 8. *Achievement Level in the Post-test of the Control Group of Grade 7 Students*

Achievement Level	f	%
Very Good	4	8.89
Good	23	51.11
Fair	17	37.78
Poor	1	2.22

Table 8 presents the achievement level in post-test of the students in the control group. It can be gleaned from the table that 4 (8.89%) of the students got a *very good* achievement, 23 (51.11%) got a *good* achievement, 17 (37.78%) got a *fair* achievement, and 1 (2.22%) of them got a *poor* achievement.

Comparing the scores displayed in the aforementioned table, the majority of the student-respondents are described to have Good academic achievement levels in Math which gives an implication that they achieved the learning competencies such as using a compass and straight edge to bisect line segments and angles and constructing perpendiculars and parallels, illustrates polygons: (a) convexity; (b) angles; and (c) sides, constructs triangles, squares, rectangles, regular pentagons, and regular hexagons, illustrates subsets of a line, and represents point, line and plane using concrete and pictorial models.

On the Academic Achievement Level (Post-test) of the Experimental Group

Table 9 presents the post-test scores of the students in the experimental group.

Table 9. *Post-test Scores of the Experimental Group of Grade 7 Students After the Utilization of Differentiated Instruction*

Scores (X)	No. of Students (Y)	XY	DE
29	1	29	G
30	3	90	G
31	3	93	VG
32	2	64	VG
33	2	66	VG
34	8	272	VG
35	13	455	VG
40	12	480	VG
Σ	**44**	**1549**	
Mean Academic Achievement	**35.20**		
Academic Achievement Level	**Very Good**		

Range	Descriptive Equivalent
31.00 – 40.00	Very Good (VG)
21.00 – 30.99	Good (G)
11.00 – 20.99	Fair (F)
01.00 – 10.99	Poor (P)

Based on the table, a mean academic achievement of 35.20 was gained by the experimental group which is described as Very Good as it is based on the parameters of the study. A great change in the academic achievement level of the student-respondents can be observed in the results of the posttest assessment as the intervention of Differentiated Instruction is being utilized in the experimental group. Bondie, Dahnke, and Zusho (2019) contented that using various approaches to differentiating instruction may enhance students' skills and abilities. Dack (2019) reported that the utilization of differentiated mathematics instructional strategies of small group instruction, collaborative group instruction, and online instruction in a class implied educational change by assisting the challenges of meeting the needs of diverse learners. Providing better instructional strategies in could lead to higher achievement and opportunities for success (Schwab, Sharma, & Hoffmann, 2019).

Table 10. *Achievement Level in the Post-test of the Experimental Group of Grade 7 Students After the Utilization of Differentiated Instruction*

Achievement Level	f	%
Very Good	40	90.91
Good	4	9.09

Table 10 presents the achievement level in post-test of the students in the experimental group. It can be gleaned from the table that 40 (90.91%) of the students got a *very good* achievement while 4 (9.09%) got a *good* achievement.

The majority of the student-respondents in the experimental group gained scores of 31 – 40 which could be described as Very Good. This gives an implication that students in experimental group have the ability to perform the learning competencies intended for the third quarter of Mathematics 7 which could be mentioned as represents point, line and plane using concrete and pictorial models; illustrates subsets of a line; classifies the different kinds of angles; derives relationships of geometric figures using measurements and by inductive reasoning supplementary angles, complementary angles, congruent angles, vertical angles, adjacent angles, linear pairs, perpendicular lines, and parallel lines; derives relationships among angles formed by parallel lines cut by a transversal using measurement and by inductive reasoning; uses a compass and straightedge to bisect line segments and angles and construct perpendiculars and parallels; illustrates polygons: (a) convexity; (b) angles; and (c) sides; derives inductively the relationship of exterior and interior angles of a convex polygon; illustrates a circle and the terms related to it: radius, diameter chord, center, arc, chord, central angle, and inscribed angle; constructs triangles, squares, rectangles, regular pentagons, and regular hexagons; and solves problems involving sides and angles of a polygon.

Table 11 presents the summary of the academic achievement levels of the control and experimental groups during the post-test.

Table 11. *Summary of Academic Achievement Level of the Grade 7 Students based on the Post-test results*

Group	Mean Academic Achievement	Academic Achievement Level
Control	22.09	Good
Experimental	35.20	Very Good
Mean Difference	**13.11**	

As can be gleaned in Table 11, the summary of the academic achievement of the Grade 7 students based on the post-test assessment of the two groups in the study is shown which gained different qualitative descriptions of Very Good for the experimental group and Good for the control group.

Both of the groups have availed teaching-learning instructions that make an increase in the academic achievement levels of the respondents. However, the groups experienced different teaching-learning instructions causing the two groups to have different results in the posttest assessment; the control group that utilized the usual way of teaching-learning instruction involves the utilization of a homogenous instruction and single learning material for all types of learners during Math classes have minimal learning which could be said that there are some of the Math learning competencies that they cannot perform perfectly. Alsubaie (2020) supposed that the implementation of appropriately differentiated instruction may offer students an opportunity to learn specific skills and improve students' interest and confidence in learning competencies.

Regarding the academic achievement of the experimental group, it could be said that the increase in the academic achievement level of the respondents is the significant result of the intervention utilized during the Math lessons for the respondents in the experimental group. This gives an implication that Differentiated Instruction gives way to the educational progress of the students specifically in terms of Mathematics since it catered the learner diversity and brought more positive attitudes towards the students in performing various tasks in the classroom. Deunk, Smale-Jacobse, de Boer, Doolaard, and Bosker (2018) underscored the effects of differentiation practices on academic achievement in primary education synthesize the positive result. There is always a positive effect on the student's achievement and a guarantee that stressed a broader educational context especially since differentiated instruction is increasingly utilized during the delivery of lessons (Galuschka, Görgen, Kalmar, Haberstroh, Schmalz, & Schulte-Körne, 2020).

On the Difference in the Academic Achievement of the Grade 7 Students

Table 12 indicated the significant difference in the academic achievement of the Grade 7 students in St. Paul University Surigao par ticularly in the control and experimental group.

Table 12. *The difference in Academic Achievement Level between the Two Groups of Grade 7 Students*

	Groups	
	Control	**Experimental**
N	45	44
Mean	22.09	35.20
Variance	39.04	11.42
Standard Error of Mean	0.93	0.51
Standard Deviation	6.25	3.38
Confidence of Interval	-20.23 to 23.95	-34.18 to 36.22
Degrees of Freedom	44	43
Mean of Difference	13.11	
Confidence Level	95%	
T-Value	12.37	
P-Value	< 0.00001	
Decision:	**Reject H_o**	
Interpretation:	**The result is significant at $p < 0.05$**	

Table 12 emphasized the significant contribution of Differentiated Instruction as a teaching-learning intervention to the academic achievement level of the Grade 7 students at St. Paul University Surigao. Based on the True Value obtained from the treated data which is 12.37 and the value of probability which is < 0.00001, it could be said that the hypothesis is rejected since the p–value is less than the 0.05 level of significance. This means that there is a significant difference between the academic achievement levels of the two groups after the Differentiated Instruction has been implemented in the experimental group. This further implies that the differentiated instruction, as an intervention, contributed to the significant increase in the achievement of the students. Moreover, it also means the performance of the experimental group who were exposed to differentiated instruction is significantly higher than the control group.

The teaching-learning intervention which is the utilization of Differentiated Instruction renders a positive effect on the Grade 7 students' academic achievement in Math. van Geel, Keuning, Frèrejean, Dolmans, van Merriënboer, and Visscher (2019) contented that providing differentiated instruction (DI) is considered an important but complex teaching skill, yet it is the key to sustain and even increase the quality of teaching and learning. This may provide an optimal academic environment that leads to conditions for achieving excellence in the learning outcomes for every student (Serdyukov, 2017).

Research by Alsalhi et al. (2021) and Yavuz (2020) highlighted a positive relationship between differentiated instruction and academic achievement, aligning with the observed improvements in the Grade 7 students' performance. Additionally, the study by Njagi (2015) as cited by Grain et al. (2022) emphasized the importance of adapting teaching strategies to cater to students' diverse needs, which resonates with the positive impact of Differentiated Instruction on student achievement.

Further supporting this, Arpilleda et al. (2023) conducted a study on learning gaps in Integrated Mathematics 9 and emphasized the necessity of tailored interventions to address students' diverse learning needs. Their research underscores the importance of DI in bridging learning gaps and enhancing student performance.

Moreover, Bigcas et al. (2024) examined the extent of teachers' utilization of various pedagogical approaches, including DI. Their findings revealed that teachers who effectively employ diverse instructional strategies can better cater to students' individual learning preferences, thereby improving academic outcomes.

Additionally, Villa et al. (2023) explored students' engagement levels in blended learning environments. They found that DI contributes to higher engagement by accommodating different learning styles and preferences, which, in turn, positively affects academic achievement.

CONCLUSIONS

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

1. The academic achievement levels of the Grade 7 students in the pre-test show that the experimental group had a higher mean score compared to the control group, indicating a positive initial difference in achievement levels between the two groups.
2. In the post-test, there was a substantial improvement in academic achievement levels for both groups. However, the experimental groups showed a significantly higher mean score than the control group, indicating the effectiveness of the differentiated instruction approach.
3. Differentiated instruction significantly improve the academic achievement of the Grade 7 learners in mathematics.

RECOMMENDATIONS

After thoroughly analyzing the concluded research, the following recommendations are stated below.

School administrators are encouraged to monitor the teachers' performance in teaching Math effectively to the students through disseminating school circulars and memorandum regarding the utilization of Differentiated Instruction as a teaching-learning intervention for diverse

learners.

Teachers may be inspired to utilize Differentiated Instruction in teaching Math to Grade 7 students since this teaching-learning intervention can greatly cater to the learning needs of diverse students.

Students may increase their potential and interest in acquiring knowledge and performing the learning competencies intended for the Math lessons especially if they have mastered already the learning competencies which they can easily relate to and reflect on it.

Parents may continually support their children in honing their ability and skills in Mathematics.

Future researchers may use this study as a reference that enables them to gain information and insights about the problem being studied.

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