LEARNING CHALLENGES USING MODULAR INSTRUCTION IN MATHEMATICS : A GIFTED AND TALENTED LEARNERS' EXPERIENCE

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Abstract

This study aimed to investigate the learning challenges among Grade 4 Gifted and Talented (GT) learners of Ayala Central School SPED Center in terms of the use of a modular approach in learning mathematics. Specifically, the study sought to explore the difficulties and challenges experienced by learners, the coping strategies they utilize to address the difficulties they encounter, and the effect of modular instruction on learners' mathematics learning. To achieve the objectives of the study, a mixed method research design employing methodological data triangulation technique was applied through the use of a survey and interview involving twenty learners enrolled in the GT class for the school year 2020-2021 who were selected through purposive sampling. The findings of the study revealed that the learners experienced difficulty in learning mathematics through modular instruction due to a lack of follow-up and support from the teacher. The quality of the modules and some personal factors, such as the inability to manage time in answering all modules in mathematics and other subjects and learners' weakness in problem-solving, also contribute to the difficulty that the learners have experienced. In addressing the identified difficulties, the learners usually ask for help from parents and siblings with sound background in mathematics. However, this strategy may imply a positive or diminishing effect on the overall learning, which results in most learners believing that they have learned sufficiently in mathematics.

Keywords: *Gifted and Talented; Mathematics; Modular Instruction*

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Introduction

Health emergencies are global problems that affect lives, properties, and even services offered by different sectors of society (Ecolin-Campanilla 2016, 261-271), including the education sector. It is an international problem that teachers should be concerned about in the light of finding a solution to reduce the risk, which may have an impact on learners' academic achievement and the normal operation of schools. In the Philippines, the global pandemic brought by COVID-19 disease introduced risks to the delivery of educational services as the schools throughout the country, particularly the state-funded ones, are not ready to face the technological challenges in the new normal. As a result, a sudden paradigm shift is necessary to sustain and direct educational activities to the goals of education. In this new normal, the teaching paradigm in most Department of Education (DepEd) schools shifted from the usual face-to-face approach to the use of different learning modalities.

Like everything else in our society today, forms of education have changed to adapt to the challenges brought about by a health emergency. This is the reason why educational technology must be made flexible to meet the current needs and demands of students (Lebrun 2001, 1-38). This indicates that schools must consider all other factors that inhibit the delivery of equitable education amidst health emergencies. In relation to this, teachers must opt to use educational technology, such as appropriate teaching materials (Padmapriya 2015, 44-46) that can facilitate maximizing students' achievement and adapt instructional methods to the student's knowledge and cognitive level (Guido 2014, 1126).

To continue the delivery of educational services amidst the pandemic, modular instruction is believed to be the most efficient method that is accessible to all. Researchers believe that modular instruction helps learners develop their capacity to learn (Padmapriya 2015,44-46; Columbano 2019,4203-4207) because learners will be learning the module content at their own pace. This claim is indeed applicable if the learners are mature enough to be responsible for their own learning. However, the aspect of independent learning becomes an issue at the elementary level, where most of the learners are not ready to learn on their own. The problem is compounded by the reality that most learners at the elementary level find mathematical concepts difficult to learn. Since this is the first time that modular instruction is utilized by the learners, the effect of this on their mathematics learning remains theoretically unclear. Hence, the effect of the sudden change of teaching paradigm on learners' mathematics learning becomes an area of concern among mathematics educators.

In the context of Ayala Central School SPED Center (ACSSC), many learners, even in the Gifted and Talented (GT) classes, find mathematics difficult to understand. Teachers applied several strategies and methods to effectively enhance learners' understanding and learning of mathematics. One of the strategies utilized by teachers to enhance learners' critical thinking skills is problem-solving in a face-to-face mode of instruction. However, due to the current health emergency situation, ACSSC adopted a modular learning strategy that embeds problem-solving to teach mathematics.

The use of different mathematical activities and strategies, such as problem-solving, plays a critical and important function in the development of learners' cognitive ability (Nwagbara and Ezekwe 2015,1-12), which is deemed necessary to prepare them to become independent learners. This is one of the reasons why the Department of Education placed emphasis on and exercised all efforts to deliver quality mathematics education, particularly among mathematically gifted learners. Along with this is the hope that these learners will someday become part of the country's pool of mathematics experts who will

engage in research and technological undertakings and contribute to the improvement of our economy.

Considering the importance of mathematics education and the learning limitations of the present instructional paradigm, there is a need to understand the different challenges experienced by GT learners who utilized modular instruction which will serve as a basis for the formulation of intervention measures to eliminate factors that may affect learners' mathematics performance. Hence, there is a need to undertake a study.

Literature Review

As teachers, our main goal is to ensure that every student under our care will be successful in learning. In relation to this, every teacher must consider that knowledge of different teaching methods and approaches plays an important function in facilitating the learning process (Alelaimat and Al-Raheem Ghoneem 2012, 40-60). One of the instructional approaches known to be effective in promoting learning is personalized instruction. This instructional approach is anchored on the premise that learning will be effective if the individual needs of the learners are considered in the design of the curriculum and related instructional materials (Bautista 2012, 3294-3301).

The delivery of the modular approach is grounded on the concept of personalizing instruction to meet the needs of the learners. This is based on the argument presented by Bautista, who argued that schools must consider the individual students' characteristics and needs. He pointed out the importance of introducing flexible educational practices that will suit the individual needs of the learners. In one of his studies, he investigated the effect of personalized instruction on the academic performance of learners. One of the important findings of his study revealed that low and average students benefit most from this form of instruction. This is because personalized instruction helps students cope with their learning inabilities.

Bautista (2012, 573-583) conducted another study that focused on investigating the performance and attitude of students towards individualized education geared towards solving algebraic word problems. In his study, it was discovered that students who were placed in a personalized learning environment showed improved attitudes and performance when learning how to solve algebraic word problems. His study further revealed that students' academic performance is greatly influenced by personalized instruction, especially in the area of problem-solving.

According to Dick, et.al (2014) as cited in Bautista (2015, 184), modular instruction is personalized in a way that it proceeds based on the learner's ability and constructed in a way that learners proceeds from a topic to the next at his/her own speed. This is similar to the idea presented by Highland (2015, 4-49) who said that learners do not learn at the same speed and rate with the same method. Hence, he proposed individualized and personalized instruction to ensure that the learning needs of students at different cognitive levels will be addressed accordingly.

Further, personalized instruction is relevant to the theory of individualizing instruction. Kemp and Smelie (1989), referenced in Lim (2016, 59–65), state that individualized education is crucial to modular instruction. Lim emphasized that the main attribute of the theory is focused on assuming that individuals can be responsible for their own learning by using modular materials at their own speed and level. The theory of individualizing instruction coincides with the law of effect and law of readiness proposed by Thorndike. These laws of learning suggest that when the learners are prepared to respond, giving the necessary input and tasks will result in student satisfaction.

Modular instruction is an approach with identified pros and cons. Bickerstaff, Fay, and Trimble (2016, 1-41) explicitly discussed the advantages and disadvantages of modular instruction based on their study. They explained that modular instruction is a beneficial teaching approach because student-led pacing allows learners to have control of their own learning speed according to their needs and allows teachers to support students with poor time management skills and learning difficulties. This form of instruction also helps to develop self-learning capacity among students (Padmapriya 2015, 44-46) since students will be working independently in the module at their own pace. Similarly, Columbano (2019, 4203-4207) explained that self-instructional modules are a convenient approach so that students might take charge of their own education and learn at their own speed. On the other hand, Bickerstaff, Fay, and Trimble explained that modular instruction can be a burdensome approach for the teacher especially when students make very low progress. This problem is compounded by the problems and difficulties in module preparation, scheduling, and registration processes. More so, modular instruction limits the time intended for relationship building and it limits instructional choices for students with diverse learning styles.

There are studies conducted in local and international settings that investigated the effectiveness of modular instruction in mathematics and the general education outcomes of the students. For instance, the study of Nwagbara and Ezekwe (2015, 1-12), which investigated the upshot of modular instruction on the mathematics learning of the students, revealed that modular instruction has a positive effect on the overall mathematics learning of the learners. A similar study conducted by Lim (2016, 59-65) exposed that modular instruction in mathematics is an efficient method to improve mathematics learning, specifically in teaching word problem-solving among students, and is comparatively better than the lecture method. Further, the study conducted by Alelaimat and Al_Raheem Ghoneem (2012, 40-60) which aimed to determine the effect of learning modules to learners' science achievement revealed the advantage of using modular instruction compared to the traditional lecture method. Their study further shows that students exposed to the modular approach manifested superior performance than students exposed to the traditional method.

Moreover, Adnyana and Citrawathi (2017, 1871-1878) conducted a study that focused on determining the effect of a Question-based Instructional Module (BBIM) to the biology learning of the students. The findings of their study revealed that students enjoyed using the modules and responded positively to the QBIM. The findings of their study also uncovered certain factors that influence students' appreciation and positive attitudes towards modular learning. It was found out that students manifested a positive attitude towards modular learning when the following are considered: learning experiences are appealing and attractive, tasks are challenging, module contents are easy to learn, and the assessment provided is good. This is similar to the findings of Sadiq and Zamir (2014, 103-109) who claimed based on their study that the modular approach improves students' performance and suggested that a broad implementation of the modular approach be made at different educational levels.

There are existing studies that focused on determining the effectiveness of the modular approach as compared to other instructional approaches. For instance, Paspasan (2015, 51-58) conducted a study that compared the effectiveness of self-paced modular approach (SPMA) and structured lecture-demonstration based approach in terms of improving the mathematics performance of the students. The result of his study showed that SPMA caused the learning styles of the students more self-reliant since they like to work at their own speed and this resulted to more improved students' mathematical

abilities. Further, his study revealed that SMPA improved students' level of performance in plane trigonometry.

Research Questions

This study aimed to determine the experiences and effect of modular instruction on mathematics learning among Grade four (4) gifted and talented learners of Ayala Central School SPED Center for the School Year 2020-2021. Specifically, it sought to answer the following questions:

1. What are the perceived difficulties and challenges of the learners in mathematics using modular instruction?
2. What are the strategies employed to help learners cope with the challenges they experienced in learning mathematics using modular instruction?
3. What is the learners' perception on the effect of modular instruction to their mathematics learning?

Scope and Limitation

This study focused on investigating the impact of modular instruction on Mathematics learning among Grade 4 Gifted and Talented (GT) learners of Ayala Central School SPED Center (ACSSC) for the School Year 2020-2021.

The study is delimited to the experiences in relation to the utilization of modular instruction among Grade 4 GT students and the study did not include GT students outside ACSSC. Hence, the findings of this study can only be applied and generalized to the learners of ACSSC. Further, the performance of the learners in mathematics is delimited to the post-test results using the modules in mathematics during the first grading period.

Method

Research Design

This study utilized mixed methods in research where qualitative and quantitative data obtained from surveys and interviews were used and processed to shed light on the identified themes. Specifically, this study utilized a case study approach to investigate the difficulties and experiences of Grade 4 GT learners at Ayala Central School SPED Center. Further, a methodological triangulation technique was employed in this study to get in-depth information and analysis of the phenomenon being investigated through the use of surveys and interviews. This involves gathering firsthand information from the experiences of the participants in relation to the impact of modular instruction on mathematics learning. This study also involves the utilization of thematic analysis to answer different frameworks, questions, and objectives relevant to the direct experience of the learners.

Research Participants

The participants of the study were taken from the population of Grade 4 GT learners of Ayala Central School SPED Center. The survey was administered to the intact group of Grade 4 GT learners to get a holistic view of the variable being investigated. In the selection of participants for the interview, the researcher utilized purposive sampling that focuses on the participant's specific characteristics of having low, moderate, and high performance

in mathematics to determine the impact of modular instruction on the mathematics performance of GT students. The classification of learners' mathematics performance was based on the average score of three consecutive post-test results in mathematics during the first grading period.

Research Instrument

The instrument that was utilized in this study is a survey questionnaire that contains a set of questions asked to the participants. This questionnaire is designed to elicit ideas, opinions, beliefs, attitudes, facts, and behavior of learners towards modular instruction in mathematics. An interview guide is also used as a tool to gather in-depth information on learners' experiences which cannot be obtained through the use of a survey questionnaire. The instruments were submitted to three experts for content validation to ensure that the tool measures what it intends to measure. The expert's suggestions were incorporated in the final copy of the instrument then it was pilot tested twice on five Grade 4 GT students outside ACSSC. The result of the pilot test determined the reliability, appropriateness, and usability of the tool to gather information relevant to the experiences of the learners towards modular instruction in mathematics. Further, the final form of the instrument was crafted based on the result of the pilot test.

Data Gathering Procedure

The process of data collection comes with three stages that include the preliminaries, administration of the survey, and conduct of the interview. The process of each stage is clearly discussed hereunder.

Preliminaries. To successfully carry out the study, the researcher followed standard research protocols. First, permission to conduct the study was sent to the school's division superintendent through the principal of Ayala Central School SPED Center. Upon receipt of the letter of approval to conduct the study, the researcher conducted a pilot test of the instrument that was used in the study. A letter of invitation with an attached Informed Assent Form (IAF) was sent to the parents of the learners to confirm their participation in the study. The researcher utilized the national language (Filipino) in the construction of the letter and IAF to ensure that it will be understandable to learners and parents with diverse educational backgrounds. Upon receipt of the confirmation to participate in the study, the researcher proceeds to the next stage of data gathering.

Administration of the Survey Tool. The survey questionnaire was attached to the weekly module in mathematics that was given to the learners. The researcher contacted the parents to confirm receipt of the tool. The researcher also created a messenger group chat as a platform for learners to be able to communicate with the researcher easily and address all concerns and questions regarding the survey tool. The retrieval of the tool followed the standard procedure set by ACSSC in claiming and submitting modules.

Conduct of Interview. Based on the result of the pre-tests provided in the module, the researcher selected learners with the highest performance, lowest performance, and moderate performance in mathematics as participants in the interview. An invitation letter was sent to the parents asking for permission to conduct a face-to-face interview with their children following standard health protocols. After confirmation is secured, the researcher scheduled the interview with the identified learner. In the conduct of the interview, the researcher translated the questions from Filipino or Chavacano to English. This is to ensure that the questions are comprehensible to the level of the learners and encourage honest and comprehensive responses from the participants. A video camera and audio

recorder will be utilized for the purpose of documenting and recording the interview process.

Data Analysis

The data from the survey were analyzed using frequency count and frequency percentage. Further, the data obtained through the interview was processed using thematic analysis by looking into the areas of convergence in the responses of the participants.

Results and Discussion

Challenges and Difficulties of Learners in Mathematics. Learning mathematics can be a rewarding yet challenging experience for many students. Understanding and addressing these challenges involves a holistic approach that considers not only the cognitive aspects of learning but also the emotional and environmental factors.

Table 1: Challenges and Difficulties of the Learners in Mathematics Using Modular Instruction

Question	Response	Frequency	Percentage
1. Do you find modular learning in mathematics difficult?	YES	14	70%
	NO	6	30%
2. How difficult is it to learn mathematics using the modules?	Difficult	12	60%
	Slightly Difficult	8	40%
3. Are the examples given in the module useful for you to understand mathematical concepts?	YES	18	90%
	NO	2	10%
4. Do you find the language utilized in the module easy to understand at your level?	YES	17	85%
	NO	3	15%
5. What is the extent of difficulty of the mathematical problems provided in the modules?	Easy	6	30%
	Difficult	13	65%
	Very Difficult	1	5%
6. Do you call your Math teacher whenever you encounter problems in the module?	YES	5	25%
	NO	15	75%
7. Is your Math teacher extending extra effort to address your queries and 8. difficulties in the modules?	YES	6	30%
	NO	14	70%
9. What makes you feel that learning mathematics using a module is so difficult?	Some parts of the module is not clear and understandable.	6	30%
	I am weak in problem-solving and I cannot answer problems all alone.	10	50%
	I find it difficult to manage my time in working with the module on other subjects.	4	20%

It can be observed in the table that most of the GT learners responded: "YES" and "Difficult" to questions 1 and 2 respectively indicating that most of the learners find difficulty in learning mathematical concepts using modular instruction. The language used and the examples in the modules are useful for the learners to understand mathematics using modular instruction as shown in items 3 and 4 where most of the learners answered "YES". This is supported by the common response similar to that of the statement made by respondent 6 who said:

> "*Because I learned from it. When there was a time I didn't know how to divide, I just looked back from the example and then I got it."*

This means that learner can do well in their modules when appropriate language is used and sufficient and clear examples are provided. The findings are in line with the study of Adnyana and Citrawathi (2017, 1871-1878) who claimed that students' appreciation and positive attitude towards the modular approach are enhanced when the contents of the modules are clear and challenging but easy to learn and provides appealing learning experiences.

On the other hand, most of the learners find difficulty in understanding and answering the mathematical problems provided in the modules as shown in item 5 where most of the learners answered "Difficult". This is supported by the interview data where most of the learners gave a similar statement to that of respondent number 5 who said that:

> "*I always ask for help from my parents most especially in division and multiplication and other difficult questions and when I received the modules, I prioritize the mathematics and I have always asked help from my parents for there were many difficult questions and there were SAQ questions that I find hard to answer*."

The results imply that most of the learners need proper guidance as they are not ready to learn independently, and the mathematical problems provided in the module are difficult at the level of the learners. The findings agree with that of Lim (2016, 59-65), who emphasized the theory of individualizing instruction in his study, which coincides with the law of readiness and effect, explaining that when the learners are prepared to respond, giving the necessary task will result in student satisfaction.

Further, when specific problems are explored, item number 8 revealed that learning mathematics using modular instruction is difficult because of different reasons. First, the learners are weak in problem-solving, and they cannot solve mathematical problems all alone. Secondly, some parts of the module are not clear and understandable. Lastly, they find it difficult to manage their time in answering all the modules in mathematics and other subjects. This is supported by the statements of the learners in the interview, where most of them said similar responses to respondent number 5, who said:

> "*Every Monday, I suppose to answer the Math and Filipino. When there were two or three modules in mathematics, it took me time to answer because sometimes there are too many questions and sometimes, they are too hard to solve. That made me answer my Filipino on the following day because it took me the whole day to answer my Math modules. Sometimes, there were also no modules and my mother have to print it.*"

The results imply that teachers need to consider the ability of the learners to prepare the modules, including the examples to include in them. Also, teachers should consider proper scheduling so as not to overschedule the learners with too many modules to work

with. The findings of this study agree with Din (2006, 1-11) who explained that students' poor attitude to work inhibits interest in the subject and this happens when students are overscheduled because too many activities have diminishing returns and predominantly negative effects on students' performance.

Teachers are supposed to be part of the solution to students' learning problems and give instructional support to students who are struggling in learning mathematics using modular instruction. However, it appears that teachers somehow become part of the problem instead of the solution. It can be seen in item number 6 that most of the learners responded "NO" indicating that the learners do not call or contact their teachers whenever they encounter difficulties and problems in answering mathematics modules. Further, results show that most of the learners responded "NO" on item number 7 indicating that the teachers do not extend extra effort to address learners' queries and difficulties in the modules. This is supported by the learners' responses in the interview. For instance, respondent 2 answered:

> "No, *when they asked him sometimes my teacher gets mad and I think he might be busy*" when asked if she calls her math teacher whenever she encounters a problem in the module. Meanwhile, some of the learners responded that *"sometimes when he thinks his students do not know the answer, that is the time he replies.*"

when asked if their math teacher responds to their queries regarding the modules. The results imply that teachers' dedication towards work and open communication between teachers and learners/guardians of learners is deemed important to ensure the effectiveness of modular instruction. This agrees with Mart (2013, 437-442); Bibiso, Olango, and Bibiso (2017,75-80) who claimed from their studies that dedicated teachers can cultivate the curiosity and interest of students in learning that motivate students to develop their potential towards greater achievements by investing their time and material to attain the objective of the school.

Table 2: Learners' Response to Relevant Questions Regarding Strategy to Cope with Challenges in Learning Mathematics through Modular Instruction

Question	Response	Frequency	Percentage
1. How often do you ask for help in answering your modules in mathematics?	Always	2	10%
	Sometimes	18	90%
2. Who helps you in answering your module in mathematics?	Parents	17	85%
	Siblings	3	15%
3. What is the highest educational attainment of the one who is helping you in answering the learning module in mathematics?	Master	3	15%
	College	15	75%
	High School	2	10%

The results show that most of the learners encounter difficulty in mathematics using modular instruction, and one of the strategies they apply to address these difficulties is by asking for help from others, as shown in item number 1, where most of the learners responded "sometimes". Item number 2 shows that most of the learners obtain assistance from their parents or siblings as a strategy to answer the activities provided in the module. Further, it appears that the learners seek help from people who have sufficient knowledge

in mathematics, who are usually college graduates as shown in item number 3. This strategy may help learners overcome the challenges in learning mathematics using modular instruction to some extent. However, the results of the interview revealed the reality that the strategy of asking for help from parents/siblings might be beneficial sometimes. It was noted in the student's responses in the interview that sometimes their parents are the ones answering the activities, and they just copy the answers to their own module. This is evident in the response of respondent 1, who said:

> "*They will solve the problem and put the answer on the paper and I will copy it" when asked if how their parents/siblings help them whenever they encounter problems that they do not know how to answer*

The results imply that parents are the new teachers in the new normal education but there is a need to reorient parents of their role in the new normal education particularly in the implementation of modular instruction so that they can effectively facilitate learning. The findings agree with that of Hornby and Lafaele (2011, 37-52) who emphasize the importance of home-based parental involvement in education that includes helping the learners in completing their homework.

Table 3: Perceived Effect of Modular Instruction to their Mathematics Learning

Question	Response	Frequency	Percentage
Do you think that you have learned enough in mathematics using the module?	YES	15	75
	NO	5	25
TOTAL		15	100

It can be seen from the table that when students were asked if they have learned enough in mathematics using the module, 75% of learners responded "YES" while 25% responded no. The result indicates that most of the learners believed that they have learned enough in mathematics by applying effective strategies to address the difficulty they encountered and learn in the process. However, we cannot just ignore the 25% of those who feel that they did not learn sufficiently in mathematics using modular instruction because of the challenges and difficulties they encountered. This is supported by the statement of respondent number 3, who said:

> "*I think I have not learned enough in mathematics using the module because sometimes I didn't understand what is written in the module, some were small and some were big*"

The results imply that modular instruction could potentially help students to learn effectively in mathematics when they are guided and supported in the right way. The findings agree with that of Bautista (2012, 573-583); Lim (2016, 59-65), and Paspasan (2015, 51-58) who confirmed based on their studies that modular instruction has a positive consequence on the overall mathematics learning of the students, particularly in mathematics.

Conclusion and Recommendations

Based on the findings, it is concluded that the GT learners experienced difficulty in learning mathematics through modular instruction due to a lack of follow-up and support from the teacher. The quality of the modules and some personal factors such as the inability to manage time in answering all modules in mathematics and other subjects and learners' weakness in problem-solving also contribute to the difficulty that the learners have experienced. Further, it is also concluded that in addressing the identified difficulties, the learners usually apply the strategy of asking for help from parents and siblings who have sound a background in mathematics. In addition, GT learners benefited positively in modular instruction in mathematics. However, the strategy that learners apply to overcome challenges they encountered may have a positive or diminishing effect on the overall learning which results in most learners believing that they have learned sufficiently in mathematics.

Based on the conclusions drawn, it is recommended that teachers should establish open communication with learners and their parents to ensure that all problems regarding the modules are addressed properly. Teachers are also encouraged to monitor and follow up on students' progress regularly to facilitate the learning process and provide immediate interventions to the difficulties that students experience in the course of using the modules in mathematics. Aside from modular instruction, math teachers could possibly conduct virtual classes to reinforce learners' understanding and correct misconceptions.

The school heads may also lead in making initiatives that will encourage teachers to perform their job effectively in implementing modular instruction to support learning in mathematics during the time of the pandemic. Likewise, the school heads are encouraged to take actions such as monitoring and evaluating teachers' efficiency and effectiveness in terms of implementing modular instruction and supporting students' immediate learning needs. As the Schools Division Office- Curriculum and Instruction Division, they are encouraged to take extra measures to ensure the quality of the modules used in mathematics checking the content and language used in the materials including the quality of reproduced modules to prevent students from getting confused and keep them motivated in answering the modules.

As the primary stakeholders and partners of the school in the formation of the learners, parents are expected to know their specific roles and limitations in implementing modular instruction. In a similar way, students are encouraged to communicate their thoughts and difficulties to their parents and teachers to ensure the effective delivery of modular instruction. They are also encouraged to work on the modules independently. However, in cases where independent learning is difficult for the learner, parents may guide the learners to perform the tasks but never answer them for them to ensure that authentic learning will happen using a modular approach. In addition, future researchers can use the findings of the current study as a reference for similar investigations in the future bearing on the impact of modular instruction on students' learning in mathematics. Hence, quantitative and experimental approaches are highly recommended for future studies.

Dissemination and Advocacy Plan

The findings of the study will be disseminated through research presentations in different possible venues like schools, districts, and division research forums/caravans. This study will serve as a guide to Teachers on the effective utilization of modular instruction in mathematics. Thus, this can help enhance performance and students' learning. The School Heads can use the result of this study to assess the use and impact of modular instruction in mathematics on students' learning and performance. Thus, this can serve as baseline information that can be used in addressing the needs of teachers to equip them with skills and knowledge in the development of a proper intervention to mitigate the existing educational problem.

Rationale

The current study revealed the flaws and challenges of implementing pure modular instruction in pupils' mathematics learning, as a result of the findings, this study also proposes a blended learning approach in mathematics which involve the delivery of modular instruction and online instruction in teaching mathematics. The primary goal of Blended Instruction in Mathematics (BIM) is to enhance students' learning and mathematics performance. Specifically, it seeks to achieve the following objectives:

Objectives

The proposed intervention

1. Neutralize the negative impact of pure modular instruction on learners' mathematics learning.
2. Cultivate the interest of the learners to learn mathematics.
3. Provide quality learning experiences that will contribute to enhancing learners' mathematics performance.

Strategy

From the findings and conclusions of the study, Blended Instruction in Mathematics (BIM) is proposed as a strategy and possible intervention. The BIM is proposed to address the identified learning challenges in implementing modular instruction in mathematics. This can be implemented by orienting and equipping, both the students and the teachers with the technological and pedagogical skills to implement the online component of the BIM. The utilization of BIM will provide a flexible delivery of distance education in mathematics that will address the needs of the learners during pandemic and beyond.

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Financial Report

Date	Particulars	Amount
November 20, 2020	Bond papers and data materials) (proposal gathering	(199.00 x 5 reams) PHP 995.00
December 5, 2020	Epson Ink	(275.00 x 4 bottles) PHP 1,100
December 6, 2020	Fare for Data Gathering Data	PHP 250
December 7, 2020	Fare for Data Gathering Data	PHP 250
December 8, 2020	Fare for Data Gathering Data	PHP 250
December 9, 2020	Fare for Data Gathering Data	PHP 250
December 10, 2020	Fare for Data Gathering Data	PHP 250
December 11, 2020	Fare for Data Gathering Data	PHP 250
December 12, 2020	Fare for Data Gathering Data	PHP 250
December 13, 2020	Fare for Data Gathering Data	PHP 250
December 26 2020	Bond papers for (proof reading and final copy)	PHP 199
January 4, 2021	Book Binding	PHP 450
January 14, 2021	Snacks expenses for research presentation at school level	PHP 600
TOTAL EXPENSES		**PHP 5,344**

Appendices

Survey Questionnaire

Name :_____
Grade and Section:_____
Age:_____
Sex:_____

Direction: Answer the following questions by putting an "✓" in the box that corresponds to your answer. You may answer two or more options when applicable.

1. How often do you ask for help in answering your modules in mathematics?

	Always
	Sometimes
	Never

2. Who helps you in answering your module in mathematics?

	Mother/Father
	Sister/brother
	Aunty/ward
	Cousins
	Tutor
	None

3. What is the highest educational attainment of the one who is helping you in answering the learning module in mathematics?

	Doctorate level
	Master's level
	College level
	High School level
	Elementary level

4. Do you find modular learning in mathematics difficult?

	Yes
	No

5. If you answered yes in number 3, how difficult is it to learn mathematics using the modules?

	Very difficult
	difficult
	Slightly difficulty

6. What makes you feel that learning mathematics using module so difficult? I do not understand the language used in the module.
   - ☐ The activities in the module are difficult to do at my level.
   - ☐ Some parts of the module is not clear and understandable.
   - ☐ I am weak in problem solving and I cannot answer the problems all alone.
   - ☐ I find it difficult to manage my time in working with the module in other subjects.

7. Do you think that you have learned enough in mathematics using the module?
   - ☐ Yes
   - ☐ No

8. Are the examples given in the module useful for you to understand mathematical concepts?
   - ☐ Yes
   - ☐ No

9. Do you find the language utilized in the module easy to understand at your level?
   - ☐ Yes
   - ☐ No

10. What is the extent of difficulty of the mathematical problems provided in the modules?
   - ☐ Very easy
   - ☐ Easy
   - ☐ Difficult
   - ☐ Very Difficult

11. Do you call your Math teacher whenever you encounter problems in the module?
   - ☐ Yes
   - ☐ No

12. Is your Math teacher extending extra effort to address your queries and difficulties in the modules?
   - ☐ Yes
   - ☐ No

Guide Questions for Interview

1. How often do you ask for help in answering your modules in mathematics? Can you please justify your answer?

2. Who helps you in answering your module in mathematics? Why?
3. Do you find modular learning in mathematics difficult? Can you please explain why?
4. How difficult is it to learn mathematics using modules? Justify your answer.
5. What makes you feel that learning mathematics using module is difficult?
6. Do you think that you have learn enough in mathematics using the modules? Why?
7. Are the examples provided in the modules useful for you to better understand mathematical concepts?
8. Do you find the language utilized in the module easy to understand at your level?
9. Do you call your math teacher whenever you encountered problems in your module?
10. Is your math teacher extending extra effort to address your queries and difficulties in the modules? Why?

Informed Assent Form

Introduction

I am Osler P. Paypa, a teacher-researcher from Ayala Central School-SPED Center. You are being asked to take part as a respondent in basic research. Before signing this consent form, please read the following information carefully.

Purpose of the Study

We are inviting you to participate in the study because we would like to know the learning challenges of GT learners in mathematics when they are exposed to modular instruction. As a GT learner, you are fit to be the respondent of the study.

Procedure

You will be asked to answer a survey form which will be attached to the modules. The survey form is sanitized for your safety. You are also expected to attach the accomplished survey form upon returning of the accomplished modules. Also, you might be considered as one of the interview participants. You will receive a call on one of these days to confirm your voluntary participation.

Potential Risks and Discomforts

There are no known risks associated with participating in the study. Your identity will be kept anonymous, and all information will be kept confidential, with data used solely for research purposes. Your answers will not in any way affect your grade performance in the subject. However, please notify the primary investigator if you are uncomfortable with your participation.

Potential Benefits

The expected output of the study is to propose a school-based policy and intervention that will help in improving the delivery of mathematics instruction using modules during the pandemic period and beyond. Hence, you will also benefit in a way that the end product of quality instruction is students' learning.

Confidentiality

Any information gathered in connection with the study that can be linked to you will remain private and will only be shared with your consent. The information acquired through the examinations given will be coded with numbers and letters to remain anonymous. The study's results will be kept in a locked cabinet in the researcher's office. After the study is completed, the data will be maintained there for about ten years before being destroyed. When the study's findings are published or discussed at conferences, no information that can be used to identify you will be provided. Your genuine identity will be protected, and photographs and videos of you will only be used for research purposes.

Rights of Research Subjects

Your participation in this study is voluntary; you may withdraw your consent anytime and discontinue your participation without penalty. If you have any questions about your rights as a study subject, please see or contact the teacher-researcher.

Identification of the Principal Investigator

Should there be concerns, please feel free to contact the researcher through his mobile number 09678115194. You may also contact his assistant at 09952791690 for further clarification about the study.

Consent

Your signature below confirms that you have decided to volunteer as a research subject for this study and that you have read and understood the information provided above. Further, the signature of your parent/guardian validates your agreement to be part of the experimental group which will be exposed to virtual instruction in science.

Student's Name:_____
Subject's Signature:_____
Date Signed: _____

Guardian's Name:_____
Guardian's Signature:_____
Date Signed: _____