

**STUDENTS PERFORMANCE IN GRADE 8 MATHEMATICS
IN THE NEW NORMAL**

**College of Teacher Education
BOHOL ISLAND STATE UNIVERSITY
Zamora, Bilar, Bohol**

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JUNE 2022

STUDENTS 'PERFORMANCE IN GRADE 8 MATHEMATICS IN THE
NEW NORMAL

A Thesis
Presented to the Faculty of the
College of Teacher Education
BOHOL ISLAND STATE UNIVERSITY
Zamora, Bilar, Bohol

In Partial Fulfillment of the
Requirements for the Degree in
Bachelor of Secondary Education

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June 2022

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APPROVAL SHEET

This thesis entitled "STUDENTS' PERFORMANCE IN GRADE 8 MATHEMATICS IN THE NEW NORMAL", was prepared and submitted by Michelle J. Abaniel, Aldrin B. Butron, Jhulie Khryss dela Cruz, in partial fulfillment of the requirements for the degree Bachelor in Secondary Education Major in Mathematics, has been examined and recommended for acceptance and approval for oral defense.

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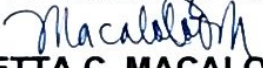

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ACKNOWLEDGMENT

The researchers would like to express their sincere gratitude, endless appreciation and heartfelt indebtedness first and foremost to the Almighty Father for the wisdom, knowledge and perseverance that He bestowed upon them. For being their strength during hard times and for guiding them in everything they do and in whatever decision they make.

Heartfelt thanks and gratitude are also extended to the following persons for their invaluable assistance, guidance, support and encouragement in the realization of this work.

Ms. Donna Ruth P. Talo, MSc., Thesis Adviser and Statistician, for her whole-hearted supervision, support, encouragement, and for sharing her brilliant ideas and professional guidance in making this research work possible. Also, extending her assistance in the statistical treatment of data;

Mrs. Melodina A. Sendrijas, MAEd., Research Editor, for sharing her knowledge and expertise and for her untiring effort and patience in editing the manuscript.

Mrs. Judith S. Real, External Editor, for being approachable and patient in making corrections for the improvement of manuscript;

Grade 8 students of Bilar National High School and Immaculate Mother School, Inc., Thesis Respondents, for their time and honesty as they conduct the survey to realize the study;

Grade 8 students of Vallehermoso High School, Pilot Test Respondents, for their cooperation to accomplish the study;

Dr. Marietta C. Macalolot, Campus Director, Bohol Island State University Bilar Campus, for her approval of the study;

Dr. Ma. Quimar Q. Gahit, Dean of the College of Teacher Education, BISU Bilar Campus for her patience, understanding, suggestions, and encouragement to pursue and finish the research work;

Dr. Libarada S. Quilas, Chairperson, Department of Secondary Education, for her time and valuable suggestions;

Mr. Real A. Baguin, MAEd., Research Instructor, for the advice and knowledge that he helped for the betterment of this study;

The **researcher's families**, for all kinds of support and being always behind their back, for being their number one motivation for this research to be a success;

To all our **classmates**, for their willingness to help when needed and for continually inspiring the researchers as they go along in making this research;

To all persons whose names may not appear here but who in one way or another gave their valuable time and assistance to pursue the study.

Michelle Ann J. Abaniel

Aldrin Butron

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ABSTRACT

The main thrust of the study is to determine the Grade 8 students' Mathematics performance in Bilar National High School and Immaculate Mother School, Inc., the School Year 2021-2022. Specifically, it aims to assess the performance of the students exposed to modular and blended distance learning modality, the level of performance of the students, and the significant difference between the two groups. The study used a descriptive survey method with 62 Grade 8 students as the respondents of the study. The researcher-made test questionnaire was applied in the study. Percentage, arithmetic mean, and t-test for independent samples were used to analyze and interpret the data. The findings of the study revealed that both groups of students exposed to modular and blended distance learning modalities have the same satisfactory performance as perceived by their scores on the researcher-made test. Moreover, the findings revealed that there is not enough evidence to conclude that there is a significant difference in the student's performance in Grade 8 Mathematics exposed to modular and blended distanced learning approaches. Therefore, the researchers concluded that the performance of the Grade 8 students does not differ when exposed to different distance learning modalities. Furthermore, this implies that both learning approaches utilized in Bilar National High School and Immaculate Mother School, Inc. have helped students achieved a quality Mathematics performance. With this, researchers recommended the use of modules and online resources for the lessons in Mathematics even in face-to-face instruction.

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Chapter 1

THE PROBLEM AND ITS SCOPE

Rationale

Education plays an important role for every individual because it equips them with the necessary skills to be functional member of society. According to the World Bank, education can also be one of the strongest weapons for reducing poverty, thereupon improving the well-being of the people. With this, sufficient investments must be made to build and maintain a high-quality education system. It is necessary to highlight the abilities of students in disciplines that prepare them to take on the challenges of life, such as mathematics. It is one subject that pervades life at any age and in any circumstance. According to Carl Friedrich Gauss, it is the queen of all sciences because it is the driving force behind scientific discoveries. Thus, its value goes beyond the classroom and the school.

However, the emergence of the COVID-19 has greatly affected the educational systems around the world, causing the closure of nearly all schools in order to curb the spread of the virus. As a result, the ways of teaching and learning have dramatically changed. To respond to the needs of the learners, schools and universities immediately switch to distance learning to ensure the continuity of education. It paves the way for the use of different distance learning approaches that can adapt well to a new normal classroom or environment. This allowed students to learn in the comfort of their homes, where limited contact with the teachers and parents or guardians takes place as the learners' model.

This shift in the paradigm of education brought an entirely different experience for learners and educators. Some may have adapted well but some are struggling. Even before the pandemic, the mathematics learning experience was distinct and regarded as difficult. It is in this context that the researchers would like to assess the performance of the students in Mathematics in the new normal as perceived by Grade 8 students exposed to modular and blended distance learning modalities. Furthermore, this study aims to determine which distance learning modality generates better performance in Grade 8 Mathematics to give a significant plan to the educators to improve the teaching-learning process in the new normal.

Literature Background

The Section 2 of Republic Act No. 10533, or the Enhanced Basic Education Act of 2013, the state shall establish, maintain and support a complete, adequate, and integrated system of education relevant to the needs of the people, the country, and society.

Pursuant to this, the Department of Education issued the Memorandum Order No. 012, s. 2020, "Adoption of the Basic Education Learning Continuity Plan for School Year 2020-2021 In Light of the Covid-19 Public Health Emergency. The BE-LCP aims to ensure the health, safety, and well-being of the learners, teachers, and personnel in the time of COVID-19 while finding ways for education to continue amidst the crisis through different learning modalities. In particular, the BE-LCP has been designed with a legal framework responsive to the new normal. It is to

ensure that learning opportunities are safely provided to the learners, through blended, modular, online and other learning approaches.

This study was anchored on the constructivist learning theory which states people actively construct or make their own knowledge, and that reality is determined by your experiences as a learner (Western Governor's University, 2020). The basic principle of constructivism is that students construct their own knowledge by doing rather than by listening or observing, and therefore teachers should not convey knowledge to students instead, students must take an active role by creating new knowledge for themselves. Constructivism argues that the use of interactive activities in which learners play active roles can engage and motivate learning more effectively than activities where learners are passive. In connection to this, the new normal in education supports the tenets of constructivism by freeing class time for inquiry-based learning. It enables learners to engage in interactive, creative, and collaborative activities during knowledge construction.

This study also meshes well with the Sociocultural Theory (Vygotsky) which focuses on the role social interaction and culture play in the development of higher-order thinking skills Allman, B. (2018). It is centered on the three fundamental concepts: (1) social interaction plays an important role in learning, (2) language is an essential tool in the learning process, and (3) learning occurs within the Zone of Proximal Development. Social interaction plays an important role in learning. Vygotsky believed that thinking has social origins and that cognitive development

cannot be understood without reference to the social context within which it is embedded. He proposed that social interaction plays a critical role in the process of cognitive development, especially in the development of higher-order thinking skills. Social activity between a parent and a child or a teacher and a learner lay a foundation for how and what the child will think and do in other situations (Driscoll, 2000).

Merlina Hernando-Malipot (2020) reported that of all the alternative learning modalities offered by the Department of Education (DepEd) most students prefer to use the 'modular' distance learning options. She added that based on the partial results of the Learner Enrollment and Survey Forms (LESFs) distributed during the enrollment period, it showed 7.2 million enrollees prefer to use modular distance learning, TV & Radio based instruction, and other modalities while only 2 million enrollees prefer online for the school year 2020-2021.

Llego (2020), defined modular distance learning as learning in the form of individualized instruction that allows learners to use self-learning modules (SLM) in print or digital format/electronic copy whichever is applicable in the context of the learner, and other learning resources like learners' materials, textbook, activity sheets, study guides, and other study materials. Learner's access electronic copies of learning materials on a computer, tablet PC, or Smartphone, CD/DVDs /USB storage, and computer-based applications can all be used to deliver e-learning materials, including offline E-Books. The learners may ask assistance from the teacher via e-mail, telephone, text message/instant messaging, etc.

Similarly, Dr. Sejpal (2013) defined modular learning as a unit of work that is virtually self-contained and a method of teaching that is based on building up skills and knowledge on discrete units that should be independent, self-contained, self-instructional, and well defined and have clearly defined objectives. Also, the modular method of teaching is a more effective, recent, and technology-based teaching method in the present educational field. It provides more flexibility to distance teaching made as well to learners. Using a modular approach, the students improve their mathematical understanding of the material that is given to them. The use of modules in learning makes students with high academic ability tend to be more active in the discussion process Jazim & Rahmawati (2017).

Balderas (2012), added that modules are used as enrichment or supplementary instructional materials for learning concepts and skills, or as remedial instruction is necessary for slow learners and as advanced instruction for the fast and highly motivated ones. The limitations of the modular approach are mostly related to its short duration- there is only so much that can be accomplished with only one week of instruction. A modular approach would be more effective than only the other Martin & Furey, (2018). Self-learning method permits to overcome some challenges like the lack of student-teacher interaction.

On the other hand, Blended Distance Learning, or the integration of modular and online distance learning modalities was also adopted by other schools. Blended learning forces us to consider the characteristics of digital technology, in general, and information communication technologies (ICTs), more specifically.

Floridi also helps us to identify the next blend in education, involving ICTs, or specialized artificial intelligence (Floridi 2014, 25; Norberg 2017, 65). Learning analytics, adaptive learning, calibrated peer review, and automated essay scoring (Balfour 2013) are advanced processes that, provided they are good interfaces, can work well with the teacher allowing him or her to concentrate on human attributes such as being caring, creative, and engaging in problem-solving. This can, of course, as with all technical advancements, be used to save resources.

According to Braband (2008) cited by Botman, Van Rensburg, Coetzee, & Heyns (2015), students are competent when they can apply their knowledge and skills with an appropriate attitude in various environments and circumstances. The elements of learning opportunities that promote competence are activation of existing knowledge to serve as a foundation for new knowledge; application of knowledge in real-world settings; active engagement of students in real-time and real-world situations; practicing of assessment, critical thinking, communication, and leadership skills through 390 collaborative learning processes; multiple authentic formative assessments to ensure mastery of the complete competence; and objective assessment measures that are aligned with the competencies cited in Carraccio, Wolfsthal, Englander, Ferentz, & Martin, (2002). It is the responsibility of the educator to ensure that all teaching and learning activities are aligned with the outcome, reality, and assessment tasks while it is the students' responsibility to actively engage with the learning material to internalize the theory and skills and in this way construct new knowledge cited in Reaburn & Strategy (2009).

In the study of Ellis & Worthington (2002), they described the concept of scaffolding in sociocultural theory the practice of an expert guiding a novice. A construct that Vygotsky introduced in this context was the zone of proximal development (ZPD). The ZPD is a cognitive state that consists of what learners can do with the support of a competent peer or instructor. The ZPD lies between two other cognitive states that consist of (a) what learners can do by themselves independent of any guidance, and (b) what learners cannot do by themselves even with guidance. Vygotsky was convinced that a child could be taught any subject efficiently using scaffolding practices by implementing the scaffolds within the child's ZPD.

When applied to the new normal in education, students are escorted and monitored through learning activities that function as interactive conduits to get them to the next stage of development. Thus, learners may add new understanding to their prior knowledge through the support delivered by more capable individuals (Raymond, 2000). Several peer-reviewed studies have shown that when there is a deficiency in guided learning experiences and social interaction, learning and development is obstructed (Bransford, Brown, & Cocking, 2000), which is often the case in the traditional classroom.

For many generations, the delivery of education was teacher standing in front of students, who are sitting at their desks, in uniform rows. The technology was a stick of white chalk and a slate blackboard on which the teacher would write the lessons for the day. The teacher was the disseminator of knowledge and the

students were to function as sponges to soak up the learning as the best they could from what they saw on the blackboard or read from traditional textbooks. However, the borders in education were set by the COVID-19; the schools were shutting down. These push the schools in the Philippines to shift from a traditional face-to-face way of teaching to a distance learning approach, where interaction takes place between the teachers and students who are geographically remote from each other during instruction and the lesson proper delivered outdoors the traditional face-to-face platform viewed by Bonz Magsambol (2020).

It would appear that, in the time of the new normal, the shift from a teacher-led education to a student-led and technology-enhanced one has become not only necessary, but more apparent (Casal, 2020). Thus, it would seem that the aims of Philippine education have shifted from one that is focused on the students to one that is focused on the family (not just the students) and getting the most out of technology. Since students are studying at home, they can easily approach their family members to ask for information or assistance regarding their lessons. In addition, despite the fact that students are provided modules and/or course packs that will guide them on what they need to study, it is within the student's grasp to go beyond what has been determined by their curricula and learn something new. This is made possible by the presence of technological devices in their respective homes that may not be available inside the classroom as well as the absence of a structured day-to-day schedule that is implemented in schools. This, however, is not without its disadvantages. Some students tend to lose focus since distractions are abundant at home, parents worry about having to shell out money for additional

remote-learning-related expenses, and teachers are doing more work without the increase in compensation (Nicholls, 2020). In some cases, relatives are the ones who work on the requirements instead of the students (Bernardo, 2020). Thus, the increased involvement of the family in the education of the student – and knowing when to get involved as well as the extent and limits of their involvement – has now become more in demand and relevant than ever before. Unfortunately, this shift has resulted in an additional burden to many poor families whose members are now forced to divide their time among managing the household, clocking in the required hours for work, and guiding the children in their education, among other things. Whereas rich parents can afford hiring tutors to help their children with their lessons, poor parents rely on teachers to educate their young.

Moreover, Ma. Theresa Bringas Nardo (2017) claimed modular Instruction is an alternative instructional design that uses developed instructional materials which are based on the needs of the students. Students are encouraged to work on various activities that are interesting and challenging to maintain focus and attention, thereby encouraging independent study. Students engaged themselves in learning concepts presented in the module. They developed a sense of responsibility in accomplishing the tasks provided in the module. With little or no assistance from the teacher, the learners progressed on their own, they learned how to learn; they were empowered.

The Principles and Standards for School Mathematics recommended the use of materials in mathematical problem solving NCTM (2000). Japona (2000)

also mentioned that teachers who teach with materials bring life to the students. It can reinforce if properly motivated, the student's achievement in understanding the abstract nature of mathematics. If students lack understanding of concepts, they are unlikely to construct the desired algebraic ideas. In his study on the visual approach in teaching, it was revealed that the visual approach was more effective in increasing students' achievement than the traditional approach. The use of patterns is related to the visual approach as a material in teaching mathematics because it includes pictures or images which will be observed by the students and discover the algebraic concept behind them.

Effective teaching and learning of mathematics can be achieved with the availability and use of materials and resources. Teaching resources play a significant role in learning. According to Ankomah (1998), cited in Enu (2015), "effective teaching and learning greatly lied on the competencies of its human resources as well as material resources which were needed for the impartation of knowledge".

According to the U.S. Department of Education, student performance is defined as the academic progress of a single student, such as formative and summative assessment of data, coursework, instructor observations, student engagement and time on task, and similar information. A student's performance is a specific statement of what a student should be able to do as the result of instruction. In most cases, it would or should be a short period of instruction and would involve the student completing some simple tasks correctly. Whatever the

task is, it must be something that can be evaluated by observing the student or having the student responds to a test question. Pedleton (2005)

In addition, Anthony Abaidoo (2018) as cited in Narah and Abdullah (2016), academic performance is the knowledge gained which is assessed by marks by a teacher and/or educational goals set by students and teachers to be achieved over a specific period and they added that these goals are measured by using continuous assessment or examinations results. Apart from this, Don Elger (n.d.) claimed performance, as the adage goes, is a “journey, not a destination.” The location in the journey is labeled as the level of performance. Each level characterizes the effectiveness or quality of performance.

Dr. Friestad-Tate, Dr. Schubert, and Dr. Mccoy (as cited in Biggs, 1999) claimed modular learning is the approach where the focus is on learning outcomes, and its success relies on connecting outcomes to student learning and course design. These areas combine to make a course constructively aligned. For the curriculum to be constructively aligned, it is important to define outcomes, to determine learning and teaching outcomes that lead to the successful realization of appropriately assessed student outcomes.

In like manner, the modular approach in Mathematics learning proved to be an effective and efficient tool to help students to learn mathematics themselves. Jazim and Rahmawati (2017) stated students improve their mathematical understanding of the material that is given to them. As they explained, the use of modules in learning mathematics makes students with high academic ability tend

to be more active in the discussion process. Moreover, this approach is also useful for students with a poor mathematical background and lack of motivation (Abramovitz, Berezina, & Shvartsman).

In the study of Botman, Van Rensburg, Coetzee, & Heyns (2015), "Conceptual Framework or Educational Design at Modular Level to Promote Transfer of Learning", they mentioned learning theories have reshaped themselves from behaviorism to information processing to constructivism. Cognitive science and cognitive psychology confirm that the process of constructing knowledge is dependent on existing knowledge, the context or situation, and the internalization of information in an organized cognitive structure cited in Bruce, Klopper, & Mellish (2011).

Augmenting these characteristics, Foreman (2003) provided several elements of learning theory that are essential for the distance learning: it is customized, constructive, motivating, enduring, and it provides immediate feedback. This model enables instructors to tailor instruction to students based on the feedback they receive when reviewing their homework assignments. There is no need to wait to see how they did on an assignment as students get immediate feedback during in-class activities because the instructor is physically present working with students. More hands-on activities provide students with a constructive environment filled with active discovery.

Although not directly related to the distance learning, Kay and Kletskin (2012) examined the aspect of using technology outside of the classroom to

convey lecture material to students. Their study involved the use of podcasts to teach mathematics in higher education where a podcast was defined as audio-visual files that are distributed in a digital format through the Internet using personal or mobile devices (McGarr, 2009). In particular, Kay and Kletskin used podcasts to fill in any gaps that might exist in prerequisite knowledge that introductory calculus students had with respect to precalculus.

In the study of Dangle & Sumaoang (2020) in their title 'The Implementation of Modular Distance Learning in the Philippine Secondary Public Schools,' the key purpose of the research was to find out the challenges encountered, opinions, and recommendations of teachers, parents, and students in the implementation of Modular Distance Learning. These challenges, opinions, and recommendations were identified through a mixed quantitative and qualitative approach by conducting surveys of the 37 participants in the selected schools through quota and purposive sampling. The main challenges that emerged were lack of school funding in the production and delivery of modules; students' struggle with self-studying and parents' lack of knowledge to academically guide their children. In conclusion, the study was able to determine the prevailing challenges of the participants in terms of resources, preparedness, and communication.

Additionally, in the study of Tsai (2010) about the epistemological relationships on students' beliefs and perceptions of constructivist learning environments where they could (1) interact and negotiate meanings with others, (2) integrate their prior knowledge and experiences with newly constructed

knowledge, and (3) meaningfully control their learning activities. The main findings drawn from this study indicates that teachers need to be very aware of students' mathematical knowledge and conceptual understanding to be able to complement these preferences when designing learning experiences, especially to provide constructivist-based lessons to enhance mathematics learning for students. The use of patterns in teaching is a constructivist-based approach and may be of help in improving the students' conceptual understanding.

Consistently, Qureshi, Schaeffer, & Zareen (2019) in their study entitled "Effect of m-learning on student's academic performance mediated by facilitation discourse and flexibility", as they suggested that a multifaceted phenomenon, influenced by diverse factors such as meta-reflective learning and cognition, interest, motivation for learning, skills, engagement, quality of teaching and socio-economic status, characterized by enhancing student's capability to perform at the desired level Lewin & Mawoyo, 2014; Moseki & Schulze (2010). Tinto (1987) defined students' academic performance as a longitudinal process that involves exchanges between students' characteristics such as resources, intentions, temperaments, and commitments as well as characteristics of the academic institution. Academic performance is increased by positive students' experiences that alter their commitments and intentions to positive encounters.

Edgar Julius A. Lim (2016), in his study entitled "Effectiveness of Modular Instruction in Word Problem Solving of BEED Students", used a Quasi-experimental design for the third-year BEED students. Based on the findings cited,

it concluded that modular instruction in teaching Math specifically word problem solving is an effective teaching approach. Another study by Edrian E. Gonzalez (2015) entitled "A Modular Approach Utilizing Decision Tree in Teaching Integration Techniques in Calculus" stated many students failed Mathematics courses because they did not know how to arrive at the correct decision when doing a mathematical task. This finding led to the conclusion that both modular and traditional instructions are equally effective in facilitating the learning of integration by parts.

Moreover, Dochy, F.J.C., and others (n.d.) entitled "Modularization and Students Learning in Modular Instruction in Relation with Prior Knowledge", the study found the importance of prior knowledge, suggesting that in a modular Education environment, according to the changing ideas in today's society on personal development, students requested a kind instruction more fully in accordance to their personal characteristics and their prior knowledge stated resulting in a more efficient and effective education for the learner.

In the study of Carmen L. Vedal Rodeiro and Rita Nadas on "Effects of Modularisation", a modular specification was one in which the content was divided into a member of units or modules, each of which was examined separately. The study found out mathematics students were more satisfied with their grade reports (most common/from feedback) and gained more information from them. Furthermore, mathematics students found it easier. However, grade reports did not help identify students' learning needs and inform their learning strategies.

Students reported missing the opportunity of going through their own marked papers or receiving suggestions about the areas they needed to improve on in order to change, if necessary, their focus on learning and strategies of exam preparation. "Structured Module vs. Self-Paced Modular Approach in Teaching Trigonometry" by Rodin M. Paspasan (2015) based on the result showed that the self-passed modular approach helped them also improve their level of performance in relation to plane trigonometry and regardless of their mathematical abilities compared to the structured approach.

Based on the study by Awodeyi, Akpan, & Udo (2012) entitled "Enhancing Teaching and Learning of Mathematics: Adoption of Blended Learning Pedagogy in University of Uyo", revealed that using blended learning, improved students' learning outcomes in Pre-algebra. Also, there was a difference in learning outcomes in the Pharmaceutical Care Course between face-to-face and distance education in the study of Gossenheimer, Bem, Carneiro, & Silveira de Castro (2017). Therefore, the student performance was better in the distance education module.

On the contrary, when the traditional approach in the teaching and learning process was compared to the online approach, Amin and Li (2010), indicated that online student performance does not differ significantly compared to face-to-face student performance. Also, a study by Ary and Brune (2011) and Topper (2007) further supports the claim that there is no significance for either online or face-to-face students regarding course grades. Further, Eggert's (2009) comparison study

of online versus classroom-based developmental mathematics showed "no statistically significant difference in the successful course completion means of the two instructional delivery systems" (p. ii).

Another study indicated "it seems that the quality of the education gained from online basic skills mathematics courses is relatively equivalent to face-to-face courses" (Rey, 2010, pp. viii-ix). Also, Daymont and Blau (2011) demonstrated that online courses can be as effective as traditional courses. Further, a comparison study of developmental math student success in an online, blended, and face-to-face learning environment contradicted previous research findings of there being no significant difference in success based on the learning environment. Students in the blended environment had the least success in the course, while face-to-face students performed poorly when compared to online students Ashby, Sadera, & McNary (2011).

Apart from this, Bennett, Padgham, McCarty, and Carter (2007) reported the presence of positive results in the course grades of online students when compared to traditional students; students taking distance education classes outperformed those in traditional classes. Furthermore, research on the topic of student performance in online learning formats as compared to traditional formats has had mixed results. To compare the two methods of instruction, online and face-to-face, Jahng, Krug, and Zhang (2007) reported there was a lack of significant difference in course grades for students in the two methods of instruction. Further studies by Abdullah, Falloon, Solan, Linardopoulos, Ary, Brune, and Anderson (2011), Hatcher, Henson, and LaRosa (2013), and Wagner, Garippo, and Lovaas

(2011) concluded with similar results. On the other hand, Bennett, Padgham, McCarty, and Carter (2007) reported the presence of positive results in the course grades of online students when compared to traditional students; students taking distance education classes outperformed those in traditional classes.

Moreover, Campbell, Floyd, and Sheridan (2011) established that students in online courses learned as much as students in traditional courses as noted by their GPA, but on the final exam, online students performed better than traditional students. Other researchers concluded that face-to-face students outperformed online students. The researchers Dellana, Collins, and West (2000), Sharma, Bryant, and Murphy (2013), and Driscoll, Hunt, Tichavsky, and Thompson (2012) found that the mean grade point average (GPA) of face-to-face students in all courses were significantly higher than the mean GPA for online students.

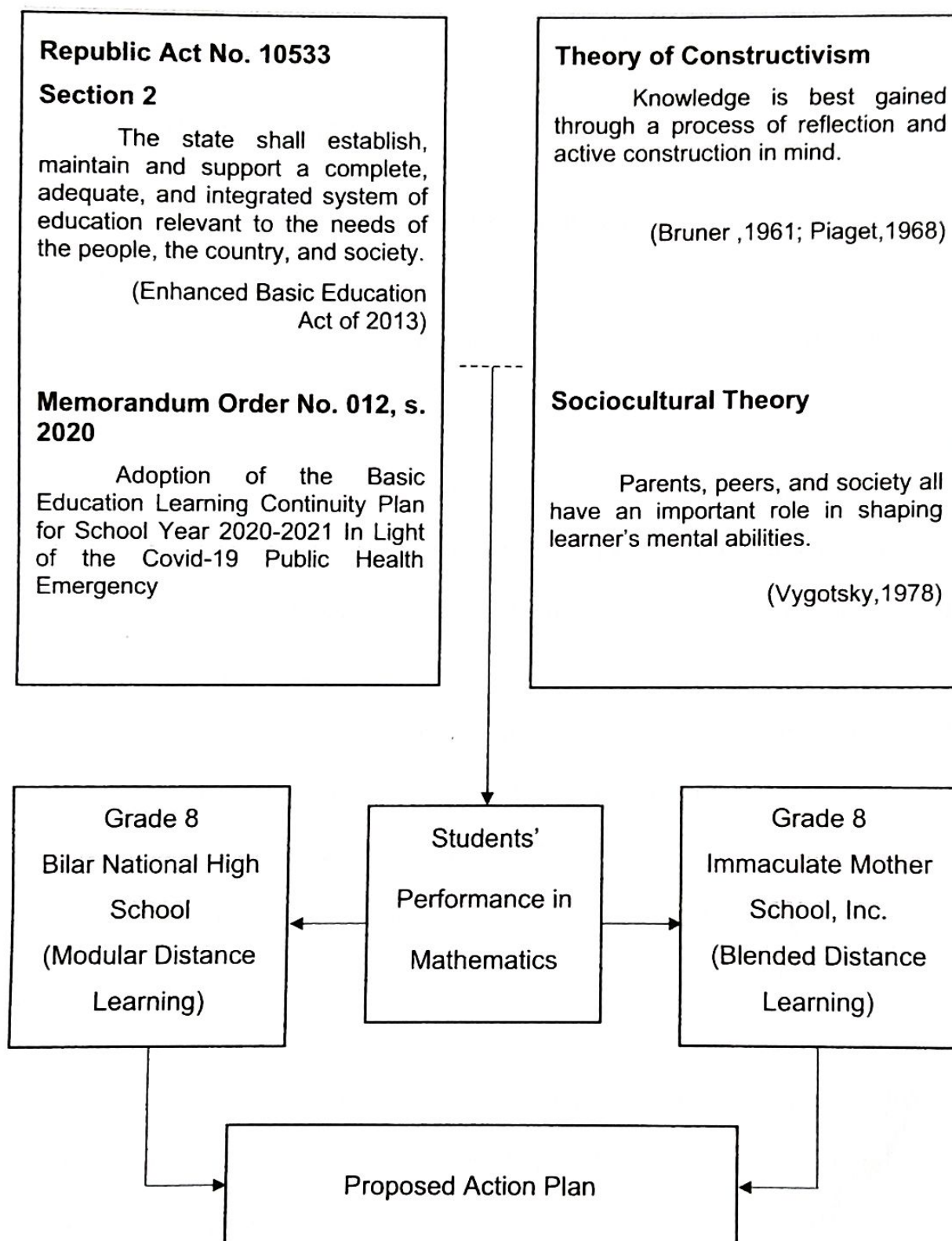


Figure 1. Theoretical and Conceptual Framework

THE PROBLEM

Statement of the Problem

The main thrust of the study was to determine the performance of the students in Grade 8 Mathematics in Bilar National High School and Immaculate Mother School, Inc. using modular distance learning and blended distance learning modality in the new normal.

Specifically, this study sought answers to the following questions:

1. What is the Mathematics performance of the Grade 8 students exposed to modular distance learning and blended distance learning modality in the new normal?
2. Is there a significant difference on the student's performance in Grade 8 Mathematics using modular distance learning and blended distance learning modality in the new normal?
3. What action plan can be proposed based on the findings?

Null Hypothesis

There is no significant difference in the performance of Grade 8 students in Mathematics exposed to modular distance learning and blended distance learning modality in the new normal.

Significance of the Study

The results of the study would benefit the following:

Students. The result of this study would help the students do self-evaluation of their performance in Mathematics. It would also assist them in improving their performance.

Educators. This study would give hints to the educators of the different methods to increase student performance in mathematics. It would also help them assess the effectiveness of their mode of teaching and allows them to understand its importance in the achievement of the students. Hence, challenge them to employ appropriate teaching methodologies.

School Administrators. The findings of the study would be used to support trainings that would help students improve their math skills. As a result, promote and assist teachers in their efforts to improve their teaching methods.

Parents. The parents would be guided on what possible actions to be taken to help their children improve their performance in Mathematics.

Future Researchers. This study would serve as a reference for other future researchers in conducting similar studies for further verifications or contradictions.

RESEARCH METHODOLOGY

Design

This study used a descriptive research design to test the hypothesis and systematically analyze the data in determining the performance of the Grade 8 students in Mathematics in the new normal. The students were given a researcher-made test questionnaire to determine the performance level of the students in the subject. Statistical treatment was applied in getting the results. According to Dr. Dela Cruz and Dr. Silverio (2019), the Descriptive Research Design of research illustrated present characteristics, conditions, images, and the like based on impressions, perceptions, or reactions of the respondents.

Environment and Participants

The respondents of the study were one of the pioneer batches of K to 12 in the Philippines- the thirty-one (31) Grade 8 students of Immaculate Mother School, Inc. (IMS, Inc.) and the thirty-one (31) Grade 8 students of Bilar National High School (BNHS) of School Year 2021-2022. This study used total enumeration for Immaculate Mother School, Inc. because the population was small enough to warrant the inclusion of all of them in the study. For Bilar National High School, stratified random sampling was used for selecting the participants in this study. This technique was employed to ensure a fairly equal representation of the variables for the study. The stratification was based on their sections (Resilience, Generosity, Humility, Fortitude, and Peace). Within each section, selection of students were by simple random sampling through Microsoft Excel.

Instrument

The researchers utilized a test questionnaire for data gathering. This was prepared by the researchers with the view to gather data for the study. The questionnaire made by the researchers consisted of two parts: the first part was the profile of the respondents and the second part was the test questions in line with the competencies in Grade 8 Mathematics, specifically in the first quarter. It was made to determine the performance of the students in the new normal.

Data Gathering Procedure

As initial preparation for the gathering of data, the researchers presented the instrument to the research adviser for comments and improvement hence all necessary adjustments were made. Items that were found unsuitable were removed. After which, the researchers conducted a pilot study before the actual data collection to establish the validity and reliability of the instruments applied. The instruments were tested by providing them to the Grade 8 students in Vallehermoso High School. The researchers secured permission from the Campus Director, Dean of the College of Teacher Education, the principal of Bilar National High School, and Immaculate Mother School, Inc. to conduct the study. In addition, the researchers secured parental permission for students to participate in the research.

In data gathering, the researchers coordinated with the Grade 8 advisers to have the list of students and in communicating with them through their social media

accounts since the conduct of the study was done through Google forms. The researchers sent the link of the questionnaire to the students for them to answer for a week, beyond that the responses were not accepted. After all the questionnaires were retrieved, the data were tallied and tabulated, and further statistically treated to answer the specific questions of the study.

Statistical Treatment

In interpreting the data effectively, the researchers employed the following statistical treatment:

In determining the profile of respondents, the researchers used the percentage formula:

$$P = \frac{f}{N} \times 100 \%$$

Where:

P is the percentage

f is the Frequency

N is the total number of respondents

In showing the level of performance of students exposed to modular distance learning and blended learning, the researchers used the arithmetic mean formula.

$$\text{Arithmetic Mean} = \frac{\sum x}{n}$$

Where:

x is the data value

n is the number of data values

The computed mean of the scores were interpreted according to the following scale:

Scores	Description
25-28	Outstanding
19-24	Very Satisfactory
13-18	Satisfactory
7-12	Fairly Satisfactory
1-6	Did Not Meet Expectation

In determining the significant difference in the performance of students in Grade 8 Mathematics exposed to modular and blended distance learning, the researchers used the **Two-Sample T-test**. This compares the means of two independent groups to determine whether there is statistical evidence that the associated population means are significantly different. In performing the Two-Sample Independent T-test, it used the formula:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{s^2\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where:

t is the t-value,

x_1 and x_2 are the means of the two groups being compared,

s_2 is the pooled standard error of the two groups;

n_1 and n_2 are the numbers of observations in each of the groups

A larger *t*-value showed that the difference between group means is greater than the pooled standard error, indicating a more significant difference between the groups.

DEFINITION OF TERMS

For clarification and a thorough understanding of the study, the following terms were defined operationally.

Blended Learning. This refers to a learning delivery that combines face-to-face with any, or a mix of, Modular Distance Learning and Online Distance Learning. Blended learning will enable the schools to limit face-to-face learning, ensure social distancing, and decrease the volume of people outside the home at any given time.

Distance learning. This refers to a modality where learning takes place between the teacher and the learners who are geographically remote from each other during instruction. This modality has three types, namely: Modular Distance Learning, Online Distance Learning, and Television/Radio-Based Instruction.

Face-to-face. This refers to a modality where the students and the teacher are both physically present in the classroom, and there are opportunities for active engagement, immediate feedback, and the socio-emotional development of learners. Notably, this modality is feasible only in very low-risk areas with no history of infection, easily monitored external contacts, and with teachers and learners living in the vicinity of the school.

Modular Distance Learning. A learning method where students can use printed self-learning modules and modules that can be accessed digitally or through electronic devices such as laptops, computers, tablets, and smartphones.

New Normal Education. It refers to the shift in the teaching delivery mode from traditional face-to-face classes to flexible learning and teaching approaches.

Online Distance Learning. A learning method where teachers can teach their students through the internet. Students can also download learning materials and submit their homework through online means.

Students' Performance. Achievement of the students in Grade 8 Mathematics as measured by their test scores on the first quarter assessment made by the researchers.

CHAPTER 2

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter deals with the presentation, analysis, and interpretation of the gathered data on the performance of the Grade 8 students in Mathematics exposed to modular and blended distance learning modalities.

Table 1 presented the frequency and percentage distribution values of the respondents' performance in Grade 8 Mathematics as perceived by their test scores. It was revealed that 25 out of 31 or 80.65% of the respondents from Bilar National High School achieved a satisfactory to outstanding level of performance while 24 out of 31 or 77.42% of the respondents from Immaculate Mother School, Inc. achieved a satisfactory and very satisfactory performance in Mathematics test. This means that the two groups had almost the same performance as measured on their test scores.

One plausible explanation for these results is grounded in the theory of constructivism (i.e., students learn by doing rather than by observation). Doing rather than observing is exactly what took place in the new normal of education. It is feasible that each class session spent via guided practice reinforced the concepts that the students had covered. These guided practice sessions allowed the students to ask questions and shore up any misconceptions in real time while working on their homework. Hence, it is conceivable that both the modular and blended distance learning approach promoted a more meaningful learning experience that enabled students to strengthen their understanding of the course

material, which then led to better retention of the concepts.

Table 1
Students' Performance in Grade 8 Mathematics as Perceived by their Test
Scores
N= 62

Range Score	Description	Bilar National High School N= 31		Immaculate Mother School, Inc. N= 31	
		Frequency	%	Frequency	%
25-28	Outstanding	1	3.23	0	0
19-24	Very Satisfactory	6	19.35	10	32.26
13-18	Satisfactory	18	58.07	14	45.16
7-12	Fairly Satisfactory	6	19.35	7	22.58
1-6	Did Not Meet Expectation	0	0	0	0
Average		16.13		16.19	
Description		Satisfactory		Satisfactory	

A second plausible explanation was the social interactions that the students experienced in the new normal. With the advent of social media, students are more inclined to interact and communicate with one another when answering their activities rather than sitting and listening to a lecture. Because of this, students in the new normal were more engaged in the learning process.

The data in Table 2 showed the T-values of the independent sample test for comparison of means with equal variances on the performance of the students in Grade 8 Mathematics in the new normal if they are grouped by the learning modality used. The results showed that there was no significant difference $[(t= 0.056, p = 0.649 > 0.05)]$ on the performance of Grade 8 students in

Mathematics in Bilar National High School and Immaculate Mother school, Inc. exposed to modular and blended distance learning modalities in the new normal.

Table 2
Significant Difference in the Students' Performance in Grade 8 Mathematics
Exposed to Modular and Blended Distance Learning Approach

	Mean Difference	t-value	Df	Significance (2-tailed)	Decision
Bilar National High School	-0.065	-0.056	60	0.956	Accept the null hypothesis
Immaculate Mother School, Inc.					

One plausible explanation for this result was grounded in Theory of Educational Productivity by Herbert J. Walberg. Walberg's theory tackles the influences on learning that affects the academic performance of a student. Walberg's theory sought to explain student performance. Being aware of the factors and variables that condition it, as these are clues as to why a student isn't reaching their full potential. That's why their grades don't match their capabilities. It is an exploration of academic achievement wherein he used a variety of methods on how to identify the factors that affect the academic performance of a student. Walberg's theory of academic achievement, cited by Dr. Rugutt and Chemosit, posited that the psychological characteristics of the students and their immediate psychological environments influence educational outcomes (cognitive, behavioral, and attitudinal).

This result contradicts the study of Ashby, Sadera, and McNary (2011) which cited those students in the blended environment had the least success in the course, while face-to-face students performed poorly when compared to online students. This further implies that modular and blended are effective distance modalities in the new normal.

CHAPTER 3

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary of findings, conclusions, and recommendations drawn from the findings.

This study evaluated the performance of the Grade 8 students in Mathematics in the new normal. Specifically, it determined the performance of the students exposed to modular and blended distance learning modality, the level of their performance as perceived by their test scores, and the significant difference between the performance of the two groups.

This study used a descriptive research design and utilized the researcher-made test to gather the data. The participants were the Grade 8 students of Bilar National High School and Immaculate Mother School, Inc. The data were analyzed and interpreted using the SPSS computer programming. The level of academic performance was interpreted using arithmetic mean. The hypothesis of a significant difference in students' performance in Grade 8 Mathematics in the new normal exposed to modular and blended distance learning approach was tested using t -test for an independent sample.

After a thorough analysis of the study, the researchers came up with the following findings:

1. The level of performance of students in Grade 8 Mathematics as perceived by their test scores was satisfactory. As revealed, the mean

score of Bilar National High School is 16.13 and 16.19 in Immaculate Mother School, Inc. which fall in the range score 13-18 identified as satisfactory.

2. The null hypothesis for the difference in the performance of Grade 8 students in Mathematics in Bilar National High School and Immaculate Mother School, Inc. exposed to modular and blended distance learning modality, respectively, was accepted. The data indicated that there is not enough evidence to conclude that there is a significant difference on the performance of the students. The students had the same performance since the mean difference is not significant at the alpha level of 0.05. Therefore, there is no significant difference on their performance when they were grouped by the learning modality used.
3. Both distance learning modalities have a positive effect on Grade 8 students as perceived in their test scores.

Conclusions

In this study, the performance of Grade 8 students in Mathematics exposed to modular and blended distance learning approaches achieved satisfactorily. This further implied that Grade 8 students of Bilar National High School and Immaculate Mother School, Inc. needs more improvement and mastery in the subject specifically on the topics about Algebra. The hypothesis of having no significant difference on the performance of students in the new normal when they are

grouped according to the learning modality used was accepted. Hence, the researcher concluded that the performance of the Grade 8 students in Mathematics was not affected by the learning modality used. This means that the quality of performance in getting a high, average, or low scores did not depend on their distance learning approaches. The researchers also concluded that both modular and blended distance learning approaches help students to achieve satisfactory Mathematics performance.

Recommendations

Based on the results of this study, the researchers recommended the following:

1. The use of modules and online resources for the lessons in Mathematics should be utilized even in face-to-face instruction because it helps in improving mathematical understanding and help the students perform well. This is also helpful for students to read in advance specific topics in Mathematics.
2. Teachers should monitor the learners' progress and guide those who needed special attention. They also have to be flexible and even-minded in preparing the modules in Mathematics that students can easily understand.
3. Future research must be conducted incorporating other variables such as factors that influence their performance which is not investigated in this study.



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar Bohol



Proposed Action Plan in Mathematics
School Year 2022-2023

Key Result Areas	Objectives	Program/Project /Strategies/ Activities	Time Frame	Resources Needed	Expected outcome
Student Development	<p>1.Harnessing students' adaptability in the new normal of the learning process specifically in the Mathematics subject</p> <p>2.Providing empowerment in their academic track</p> <p>3.Immersing students in the digital literacy and mental health.</p> <p>4.Identify learner's mathematical mastery and understanding</p>	<p>1.Digital campaign, news streams, parental talk and leaflet regarding set-up of new normal education.</p> <p>2.Conducting virtual "kamustahan" and orientation via google meet or FB messenger.</p> <p>3. Promote high performance of student at home in Mathematics at home via YouTube videos, modules and teacher-made assessment tools.</p> <p>4. Remedial learning</p>	Year Round	Internet Connection, Leaflets, Modules, Assessment Materials	<p>Communication between parents and teachers were established</p> <p>Activities were successfully implemented</p>

Curriculum Development	<p>1. Restructuring the content of modules in the context of identified learner's needs</p> <p>2. Ensure the instructional plans are clear for learners, teachers and guardians, as to how teaching and learning happens in the new normal.</p>	<p>1. Crafting of adjusted content-levelled worksheets and activities based from books or downloaded modules.</p> <p>2. Establishing performance tasks which reflects individual understanding and mastery of the students on the mathematical concepts.</p>	Year Round	Internet Connection Printing Materials	Well-structured learning materials and assessment tools.
Teacher's Development	<p>1. To upgrade learnings, professional growth and development.</p> <p>2. To be more competent and equip in the learning outcomes</p> <p>3. To uplift and update to the new trends of learning.</p>	Continuous Professional Development Program (attending INSET trainings, seminars or workshops online and face to face following minimum safety protocols.	Year round	Internet connectivity	Teachers attended seminars
Parents / Guardians Involvement	To strengthen the support of the learners in the new normal	Consistent update on parents through online or face to face meetings.	Year Round	Communication technology	Active involvement of parents

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APPENDICES

APPENDIX A.1

LETTERS



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar Bohol



October 25, 2021

MARIETTA C. MACALOLOT, Ph.D.
 Campus Director
 Bohol Island State University- Bilar
 Zamora, Bilar, Bohol

Madam:

Greetings!

The undersigned BSED IV major in Mathematics students of Bohol Island State University- Bilar, Zamora, Bilar, Bohol humbly request permission from your good office to conduct our research through Google Forms "**STUDENTS' PERFORMANCE IN GRADE 8 MATHEMATICS IN THE NEW NORMAL**" in partial fulfillment of the requirements for the degree of Bachelor in Secondary Education (BSEd).

May this request merit your approval, thank you.

Respectfully yours,

(Sgd.) **MICHELLE ANN J. ABANIEL**

(Sgd.) **ALDRIN B. BUTRON**

(Sgd.) **JHULIE KHRYSS DELA CRUZ**

Student Researchers

Recommending Approval:

(Sgd.) **DONNA RUTH P. TALO, MSc.**
 Thesis Adviser

Approved:

(Sgd.) **MARIETTA C. MACALOLOT, Ph.D**
 Campus Director

APPENDIX A.2

LETTERS



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar Bohol



October 25, 2021

MARIA QUIMAR Q. GAHIT, Ed.D.
 Dean, College of Teacher Education
 Bohol Island State University- Bilar
 Zamora, Bilar, Bohol

Madam:

Greetings!

The undersigned BSED IV major in Mathematics students of Bohol Island State University- Bilar, Zamora, Bilar, Bohol humbly request permission from your good office to conduct our research through Google Forms **“STUDENTS’ PERFORMANCE IN GRADE 8 MATHEMATICS IN THE NEW NORMAL”** in partial fulfillment of the requirements for the degree of Bachelor in Secondary Education (BSEd).

May this request merit your approval, thank you.

Respectfully yours,

(Sgd.) **MICHELLE ANN J. ABANIEL**

(Sgd.) **ALDRIN B. BUTRON**

(Sgd.) **JHULIE KHRYSS DELA CRUZ**

Student Researchers

Noted:

(Sgd.) **DONNA RUTH P. TALO, MSc.**
 Thesis Adviser

Recommending Approval:

(Sgd.) **LIBRADA S. QUILAS, Ph.D.**
 Chairperson, College of Teacher Education

Approved:

(Sgd.) **MA. QUIMAR Q. GAHIT, Ed.D**
 Dean, College of Teacher Education

APPENDIX A.3

LETTERS



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar Bohol



October 28, 2021

JUDITH S. REAL

School Principal
 Vallehermoso High School
 Vallehermoso, Carmen, Bohol

Madam:

Greetings!

We, the BSEd-Math IV students of Bohol Island State University – Bilar Campus, Zamora, Bilar, Bohol, are conducting our thesis entitled “**STUDENTS’ PERFORMANCE IN GRADE 8 MATHEMATICS IN THE NEW NORMAL**”.

In this connection, we humbly request permission from your good office to conduct pilot testing through Google Forms specifically among the Grade 8 students.

We are hoping for your approval on this request.

Thank you and God Bless.

Respectfully yours,

(Sgd.) **MICHELLE ANN J. ABANIEL**

(Sgd.) **ALDRIN B. BUTRON**

(Sgd.) **JHULIE KHRYSS DELA CRUZ**
 Student Researchers

Noted:

(Sgd.) **DONNA RUTH P. TALO, MSc.**
 Thesis Adviser

Recommending Approval:

(Sgd.) **MA. QUIMAR Q. GAHIT, Ed.D.**
 Dean, College of Teacher Education

Approved:

(Sgd.) **JUDITH S. REAL**
 School Principal

APPENDIX A.4

LETTERS



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar Bohol



October 28, 2021

MARLON S. JALA, Ph.D
 School Principal
 Bilar National High School
 Yanaya, Bilar, Bohol

Sir:

Greetings!

We, the BSEd-Math IV students of Bohol Island State University – Bilar Campus, Zamora, Bilar, Bohol, are conducting our thesis entitled “**STUDENTS’ PERFORMANCE IN GRADE 8 MATHEMATICS IN THE NEW NORMAL**”. In this connection, we humbly request permission from your good office to conduct our study through Google Forms specifically among the Grade 8 students.

We are hoping for your approval on this request. Thank you and God Bless.

Respectfully yours,

(Sgd.) **MICHELLE ANN J. ABANIEL**

(Sgd.) **ALDRIN B. BUTRON**

(Sgd.) **JHULIE KHRYSS DELA CRUZ**
 Student Researchers

Noted:

(Sgd.) **DONNA RUTH P. TALO, MSc.**
 Thesis Adviser

Recommending Approval:

(Sgd.) **MA. QUIMAR Q. GAHIT, Ed.D.**
 Dean, College of Teacher Education

Approved:

(Sgd.) **MARLON S. JALA, Ph.D**
 School Principal

APPENDIX A.5

LETTERS



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar Bohol



October 28, 2021

SR. MARIA PAZ M. DAYAP, O.P.

Directress-Principal
 Immaculate Mother School
 Poblacion, Bilar, Bohol

Madam:

Greetings!

We, the BSEd-Math IV students of Bohol Island State University – Bilar Campus, Zamora, Bilar, Bohol, are conducting our thesis entitled **“STUDENTS’ PERFORMANCE IN GRADE 8 MATHEMATICS IN THE NEW NORMAL”**. In this connection, we humbly request permission from your good office to conduct our research through Google Forms specifically among the Grade 8 students.

We are hoping for your approval on this request. Thank you and God Bless.

Respectfully yours,

(Sgd.) **MICHELLE ANN J. ABANIEL**

(Sgd.) **ALDRIN B. BUTRON**

(Sgd.) **JHULIE KHRYSS DELA CRUZ**
 Student Researchers

Noted:

(Sgd.) **DONNA RUTH P. TALO, MSc.**
 Thesis Adviser

Recommending Approval:

(Sgd.) **MA. QUIMAR Q. GAHIT, Ed.D.**
 Dean, College of Teacher Education

Approved:

(Sgd.) **SR. MARIA PAZ M. DAYAP, O.P.**
 Directress-Principal

APPENDIX A.6

LETTERS



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar, Bohol



PARENTAL OR GUARDIAN PERMISSION FORM FOR STUDENT'S PARTICIPATION AS RESPONDENTS OF THE STUDY

Title of Study: Students Performance in Grade 8 Mathematics in the New Normal

Researchers: Abaniel, Michelle Ann J., Butron, Aldrin B. and dela Cruz, Jhulie Khryss

Introduction

The purpose of this form is to provide you (as the parent of a prospective respondent of the study) information about their search study we are going to conduct. Please read the following information below as we will describe our research study to you and may this answer all your questions.

Purpose of the research: The purpose of this study is to assess the performance of the students in the Grade 8 Mathematics in the new normal. This study was also to determine the effectivity of the distance learning approaches used as teaching-learning material in Mathematics subject in order to give significant plan to the educators to improve the teaching-learning process.

Procedure to be followed: This study will utilize google forms in gathering the data. A link of the test will be provided to your child on the day of the conduct of study. During testing, your child will answer a multiple-choice question about the topics in Grade 8 Mathematics.

Discomforts/risks: The risks in this study are minimal (i.e., no greater than those ordinarily encountered in daily life or the performance of routine physical or psychological examinations or tests). There are no foreseeable discomforts or dangers to either you or your child in this study.

Incentives/ benefits for participation: There are no direct benefits to your child. The results of this study, however, will increase our knowledge on the effectiveness of the distance learning approaches used as teaching-learning in Mathematics.

Time duration of participation: Participation in the study will not exceed 1 hour.

Statement of confidentiality: All records are kept confidential and will be available only to the researchers. The results of this study will be published, but the data will be presented in group form and individual children will not be identified.

If you have further questions about this research, you can contact the following:

Abaniel, Michelle Ann J.: 09500607833/ michelle.abaniel@gmail.com

Butron, Aldrin B.: 09207703818/ aldrin.butron08@gmail.com

dela Cruz, Jhulie Khryss: 09304152217/ jhuliekhryssdelacruz18@gmail.com

In this view, we humbly request permission for your child to be one of the respondents of our study. We are hoping for your kind approval on this request.

Thank you and God Bless.

SIGNING THE FORM BELOW WILL ALLOW YOUR CHILD TO BE ONE OF THE
RESPONDENTS OF THE STUDY

I, _____ the parent or guardian of _____, a Grade 8 student of Immaculate Mother School, Inc., permit his /her participation in a program of research named above and being conducted by the student researchers of Bohol Island State University-Bilar Campus mentioned above.

Signature over Printed Name of Parent /Guardian

Date

APPENDIX A.7**LETTERS**

Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
Zamora, Bilar, Bohol



October 25, 2021

Dear Students,

We, **Michelle Ann J. Abaniel, Aldrin B. Butron, and Jhulie Khryss dela Cruz**, BSEd Math IV students of Bohol Island State University are conducting action research entitled **“Students’ Performance in Grade 8 Mathematics in the New Normal”**.

In view of this, we humbly request your help by answering the attached questionnaire to give us the data needed in our study. Rest assured that any information will be kept confidential.

Thank you very much for your cooperation.

Respectfully yours,

The Researchers

APPENDIX B

MOST ESSENTIAL LEARNING COMPETENCIES



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar, Bohol



Quarter	Content Standards	Performance Standards	Most Essential Learning competencies	Duration	K to12 CG Code
	The learner...	The learner...	The learner...		
Q1	demonstrates understanding of key concepts of factors of polynomials, rational algebraic expressions, linear equations and inequalities in two variables, systems of linear equations and inequalities in two variables and linear functions.	is able to formulate real life problems involving factors of polynomials, rational algebraic expressions, linear equations and inequalities in two variables, systems of linear equations and inequalities in two variables and linear functions, and solve these problems accurately using a variety of strategies.	factors completely different types of polynomials (polynomials with common monomial factor, difference of two squares, sum and difference of two cubes, perfect square trinomials, and general trinomials).	Week 1 to 2	8AL-1a-b-1
			solves problems involving factors of polynomials		8AL-1b-2
			Illustrates rational algebraic expressions.	Week 3	8AL-1c-1
			simplifies rational algebraic expressions.		8AL-1c-2
			performs operations on rational algebraic expressions.	Week 4	8-AL-1c-d-1
			solves problems involving rational algebraic expressions		8AL-1d-2
			illustrates the rectangular coordinate system and its uses.	Week 5	M8-AL-1e-1
			illustrates linear equations in two variables.		M8-AL-1e-3
			Illustrates and finds the slope of a line given two points, equation, and graph.	Week 6	
			writes the linear equation $ax+ by+ c$ in the form $y= mx + b$ and vice versa.		M8-AL-1f-1
graphs a linear equation given (a) any two points;		M8-AL-1f-2			

		(b) the x - and y - intercepts; (c) the slope and a point on the line.		
		describes the graph of a linear equation in terms of its intercepts and slope.		M8-AL-lf-3
		finds the equation of a line given (a) two points; (b) the slope and a point; (c) the slope and its intercepts	Week 7	M8-AL-lg-1
		solves problems involving linear equations in two variables		M8-AL-lg-2
		illustrates a system of linear equations in two variables	Week 8	M8-AL-lh-1
		graphs a system of linear equations in two variables.		M8-AL-lh-2
		categorizes when a given system of linear equations in two variables has graphs that are parallel, intersecting, and coinciding.		M8-AL-lh-3
		solves problems involving systems of linear equations in two variables by (a) graphing; (b) substitution; (c) elimination.	Week 9	

APPENDIX C

TABLE OF SPECIFICATION



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar, Bohol



FIRST QUARTER MELCs	No. of Days Taught	PLACEMENT OF ITEMS						% of the Topic	No. of Items per Topic
		R	U	A	A	E	C		
MELC 1	4	1	1	1	2			11.11%	5
MELC 2	4	1	1	2	1			11.11%	5
MELC 3	4		1	2	2	1		11.11%	6
MELC 4	4	1	1	2	2			11.11%	6
MELC 5	4		1	2	1	2		11.11%	6
MELC 6	4	1	2	3				11.11%	6
MELC 7	4		2	1	2	1		11.11%	6
MELC 8	4		1	4				11.11%	5
MELC 9	4			3	1	1		11.11%	5
	36	4	6	18	2			100%	50
SUGGESTED ITEM TYPE								MULTIPLE CHOICE	

R – emembering

U – nderstanding

A – pplying

A – nalyzing

E – valuating

C – reating

APPENDIX C

TABLE OF SPECIFICATION



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar, Bohol



FIRST QUARTER MELCs	No. of Days Taught	PLACEMENT OF ITEMS						% of the Topic	No. of Items per Topic
		R	U	A	A	E	C		
MELC 1	4	1	1	1				11.11%	3
MELC 2	4	1	1	1				11.11%	3
MELC 3	4			2	1			11.11%	3
MELC 4	4	1	2					11.11%	3
MELC 5	4		1	2				11.11%	3
MELC 6	4			3				11.11%	3
MELC 7	4	1	1	1				11.11%	3
MELC 8	4			3				11.11%	3
MELC 9	4	1		3				11.11%	4
	36	4	6	17	1			100%	28
SUGGESTED ITEM TYPE								MULTIPLE CHOICE	

R – emembering

U – nderstanding

A – pplying

A – nalyzing

E – valuating

C – reating

APPENDIX D

QUESTIONNAIRE



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar, Bohol



Vision: A premier Science and Technology university for the formation of a world class virtuous human resource for sustainable development in Bohol and the country.

Mission: To provide quality higher education in the arts and sciences, as well as in the professional and technological fields; undertake research and development, and extension services for the sustainable development of Bohol and the country.

GRADE 8 MATHEMATICS 1st QUARTER ASSESSMENT

Name:

School:

Distance Learning Approach used:

General Instruction: Read each item carefully. Encircle the letter of the correct answer.

1. Which of the following binomials can be factored out using the sum of two cubes?

a. $8x^3 + 1$

b. $32d^3 + 8d$

c. $80x^5 - 75x^3 - 15x^2$

2. Which of the following is still factorable?

a. $x^2 - 16$

b. $x(x+1)$

c. $x+8$

3. Factor $x^2 - 36$.

a. $(x+9)(x-4)$

b. $(x-6)(x-6)$

c. $(x+6)(x-6)$

4. Which mathematical statement is correct?

a. $(x+1)(x-1) = x^2 - 1$

b. $x(x+2) = x^2 + 2$

c. $x+1 = x-1$

5. What are the factors of $a^2 - 2a + 1$?
- a. $(a+2)(a-1)$ b. $(a-1)(a-1)$ c. $(a+1)(a-1)$
6. One of the factors of $a^2 - 4x$ is $x-4$. What is the other factor?
- a. $x-1$ b. x c. -1
7. The sum of two numbers is 22 and the sum of their squares is 250. Find the numbers.
- a. 10 and 12 b. 9 and 13 c. 7 and 1
8. What number must be added to $x^2 - 12x$ to make it a perfect square trinomial?
- a. 6 b. 24 c. 36
9. What are the dimensions of the rectangle whose area is defined as $x^2 + x - 12$?
- a. $(x-4)(x+3)$ b. $(x+4)(x-3)$ c. $(x+4)(x+3)$
10. Given that $x/3 + 4 = 49$, find the value of x .
- a. 135 b. 215 c. 105
11. What is the side of the square whose area is $x^2 - 10x + 25$?
- a. $x+5$ b. $x+1$ c. $x-5$
12. Which expression is prime?
- a. $5x-1$ b. $2x^2+4$ c. x^2+1
13. What rational algebraic expression is the same as $\frac{x^2-1}{x-1}$?
- a. 1 b. $x+1$ c. $x-1$

22. How do you describe the graphs of the system of linear equations in two variables which has no solution?
- It is inconsistent and the lines of the graph are parallel.
 - If a system has no solution, it is consistent and the lines are intersecting.
 - The graph is coinciding.
23. The sum of three numbers is 14. The largest is 4 times the smallest, while the sum of the smallest and twice the largest is 18. Find the numbers.
- the numbers are 3, 6, and 5
 - the numbers are 2, 4, and 8
 - the numbers are 2, 5, and 7
24. Who is the father of Modern Mathematics?
- Aristotle
 - Rene Descartes
 - Plato
25. Which of the following equation is in a slope-intercept form?
- $-3x + 2y = 7$
 - $2x + 6y = 10$
 - $y = 4x + 6$
26. Determine the systems of linear equations which has solution (1,3).
- $x+y=5$ and $2x-y=7$
 - $2x+y=5$ and $x-y=2$
 - $3x+y=6$ and $4x-3y=6$
- I and II only
 - II and III only
 - III only

27. The four regions created by the intersection of the axes in the coordinate plane is called?

- a. Abscissa b. Ordinate c. Quadrants

28. Determine in which quadrant the point $(-4, 8)$ located?

- a. Quadrant II b. Quadrant I c. Quadrant IV

APPENDIX E

ITEM ANALYSIS



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar, Bohol



FORMULA:

$$\text{Difficulty Index} = \frac{U+L}{N}$$

$$\text{Discrimination Index} = \frac{U - L}{n}$$

where:

- U is the number of students in the upper group who answered the item correctly
- L is the number of students in the lower group who answered the item correctly
- N is the total number of students
- n is the number of students in each group

INTERPRETATION

Difficulty Index		Discrimination Index	
0.76-1.00	Easy	0.40- above	Very Good
0.25- 0.75	Average	0.30-0.39	Reasonably good
0.00- 0.24	Difficult	0.20- 0.29	Marginal item
		0.19- below	Poor item

ITEM NO.	LOWER GROUP	UPPER GROUP	DIFFICULTY INDEX	DISCRIMINATION INDEX	DECISION
1	5	5	0.3448276	0	REJECT
2	2	4	0.2068966	0.25	ACCEPTABLE
3	2	7	0.3103448	0.625	ACCEPTABLE
4	3	6	0.3103448	0.375	ACCEPTABLE
5	2	5	0.2413793	0.375	ACCEPTABLE
6	6	4	0.3448276	-0.25	REJECT
7	0	4	0.137931	0.5	ACCEPTABLE
8	1	5	0.2068966	0.5	ACCEPTABLE
9	1	2	0.1034483	0.125	REJECT
10	1	1	0.0689655	0	REJECT
11	1	5	0.2068966	0.5	ACCEPTABLE
12	1	6	0.2413793	0.625	ACCEPTABLE
13	1	1	0.0689655	0	REJECT
14	4	7	0.3793103	0.375	ACCEPTABLE
15	1	5	0.2068966	0.5	ACCEPTABLE
16	2	6	0.2758621	0.5	ACCEPTABLE
17	4	2	0.2068966	-0.25	REJECT
18	3	1	0.137931	-0.25	REJECT
19	2	5	0.2413793	0.375	ACCEPTABLE
20	8	8	0.5517241	0	REJECT
21	4	7	0.3793103	0.375	ACCEPTABLE
22	4	4	0.2758621	0	REJECT
23	5	8	0.4482759	0.375	ACCEPTABLE
24	1	3	0.137931	0.25	ACCEPTABLE
25	2	4	0.2068966	0.25	ACCEPTABLE
26	1	7	0.2758621	0.75	ACCEPTABLE
27	4	6	0.3448276	0.25	ACCEPTABLE
28	3	4	0.2413793	0.125	REJECT
29	4	2	0.2068966	-0.25	REJECT
30	2	2	0.137931	0	REJECT
31	2	6	0.2758621	0.5	ACCEPTABLE
32	2	3	0.1724138	0.125	REJECT
33	2	2	0.137931	0	REJECT
34	4	4	0.2758621	0	REJECT
35	2	7	0.3103448	0.625	ACCEPTABLE
36	3	7	0.3448276	0.5	ACCEPTABLE

37	6	4	0.3448276	-0.25	REJECT
38	0	4	0.137931	0.5	ACCEPTABLE
39	0	0	0	0	REJECT
40	5	7	0.4137931	0.25	ACCEPTABLE
41	3	7	0.3448276	0.5	ACCEPTABLE
42	2	6	0.2758621	0.5	ACCEPTABLE
43	0	3	0.1034483	0.375	ACCEPTABLE
44	4	7	0.3793103	0.375	ACCEPTABLE
45	6	5	0.3793103	-0.125	REJECT
46	2	3	0.1724138	0.125	REJECT
47	3	5	0.2758621	0.25	ACCEPTABLE
48	4	4	0.2758621	0	REJECT
49	5	5	0.3448276	0	REJECT
50	5	5	0.3448276	0	REJECT

APPENDIX F

NORMALITY TEST



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar, Bohol



Group		Statistic	Std. Error
Score	Bilar National High School	Mean	16.1290 .80555
		95% Confidence Interval for	
		Mean	Lower Bound 14.4839
			Upper Bound 17.7742
		5% Trimmed Mean	16.0520
		Median	16.0000
		Variance	20.116
		Std. Deviation	4.48510
		Minimum	8.00
		Maximum	26.00
		Range	18.00
		Interquartile Range	5.00
		Skewness	.407 .421
		Kurtosis	-.300 .821
	Immaculate Mother School, Inc.	Mean	16.1935 .82751
		95% Confidence Interval for	
		Mean	Lower Bound 14.5035
			Upper Bound 17.8835
		5% Trimmed Mean	16.2903
		Median	16.0000
		Variance	21.228
		Std. Deviation	4.60738
		Minimum	7.00
		Maximum	24.00
		Range	17.00
		Interquartile Range	7.00
		Skewness	-.198 .421
		Kurtosis	-.583 .821

Tests of Normality

Group	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Score Bilar National High School	.133	31	.176	.965	31	.387
Immaculate Mother School, Inc.	.086	31	.200*	.970	31	.529

APPENDIX G

RAW DATA



Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY- BILAR
 Zamora, Bilar, Bohol



Respondent	School	Learning Modality	Test Score
1	Bilar National High School	Modular	22
2	Bilar National High School	Modular	17
3	Bilar National High School	Modular	21
4	Bilar National High School	Modular	12
5	Immaculate Mother School Inc.	Blended	12
6	Immaculate Mother School Inc.	Blended	12
7	Immaculate Mother School Inc.	Blended	13
8	Immaculate Mother School Inc.	Blended	15
9	Immaculate Mother School Inc.	Blended	18
10	Immaculate Mother School Inc.	Blended	14
11	Immaculate Mother School Inc.	Blended	11
12	Immaculate Mother School Inc.	Blended	7
13	Immaculate Mother School Inc.	Blended	15
14	Immaculate Mother School Inc.	Blended	20
15	Bilar National High School	Modular	9
16	Immaculate Mother School Inc.	Blended	8
17	Immaculate Mother School Inc.	Blended	8
18	Immaculate Mother School Inc.	Blended	14
19	Bilar National High School	Modular	15
20	Bilar National High School	Modular	14
21	Immaculate Mother School Inc.	Blended	26
22	Bilar National High School	Modular	23
23	Bilar National High School	Modular	23
24	Bilar National High School	Modular	23
25	Bilar National High School	Modular	21
26	Bilar National High School	Modular	14
27	Bilar National High School	Modular	24
28	Bilar National High School	Modular	12
29	Bilar National High School	Modular	10
30	Bilar National High School	Modular	17

31	Bilar National High School	Modular	9
32	Bilar National High School	Modular	16
33	Bilar National High School	Modular	14
34	Bilar National High School	Modular	16
35	Bilar National High School	Modular	15
36	Immaculate Mother School Inc.	Blended	16
37	Immaculate Mother School Inc.	Blended	7
38	Immaculate Mother School Inc.	Blended	16
39	Immaculate Mother School Inc.	Blended	22
40	Bilar National High School	Modular	12
41	Bilar National High School	Modular	18
42	Bilar National High School	Modular	14
43	Bilar National High School	Modular	11
44	Bilar National High School	Modular	18
45	Bilar National High School	Modular	16
46	Bilar National High School	Modular	17
47	Bilar National High School	Modular	13
48	Bilar National High School	Modular	16
49	Immaculate Mother School Inc.	Blended	14
50	Immaculate Mother School Inc.	Blended	14
51	Bilar National High School	Modular	16
52	Immaculate Mother School Inc.	Blended	13
53	Immaculate Mother School Inc.	Blended	15
54	Immaculate Mother School Inc.	Blended	21
55	Immaculate Mother School Inc.	Blended	23
56	Immaculate Mother School Inc.	Blended	17
57	Immaculate Mother School Inc.	Blended	18
58	Immaculate Mother School Inc.	Blended	22
59	Immaculate Mother School Inc.	Blended	19
60	Immaculate Mother School Inc.	Blended	24
61	Immaculate Mother School Inc.	Blended	20
62	Immaculate Mother School Inc.	Blended	20