STUDENT LEARNING PACKET (SLP) IN TEACHING SELECTED TOPICS IN MATHEMATICS 10

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Abstract

Students learn better when knowledge is connected to concepts they already know and their individual needs are more easily met. Learning in Mathematics become effective when there is a one-to-one interaction between the students and the teachers. It helps students to clarify, explain and reflect on their mathematical skills. From that context, the researcher was inspired to develop an instructional material which will be called SLP or Student Learning Packet which consists of selected topics in Mathematics 10, and this research study determined the acceptability and effectiveness of the SLP- Student Learning Packet in the Students' Performance of Grade 10 of TRACE College, the School Year 2021-2022.

It sought to answer the following questions: (1) What is the level of acceptability of the Student Learning Packet in terms of components with regards to specific objectives, content, language used, and concept evaluation; (2) What is the level of acceptability of Student Learning Packet in terms of characteristics with regards to adaptability, appropriateness, usability, and aesthetic value; (3) What is the level of the student's performance in Mathematics 10 in terms of pre-test and post-test and (4) Do the students' performance has a significant difference in terms of pre-test and post-test?

The research design utilized in this study is Quasi-experimental Research Design- In quasi-experiments, the participants are not randomly assigned, and as such, they are used in settings where randomization is difficult or impossible. This is suitable for this study because the researcher conducted a pre-test and post-test in collecting data. In a pretest-posttest design, the dependent variable is measured once before the treatment is implemented and once after it is implemented. The purposive Sampling Technique was used to determine the respondents which are selected based on their availability and purpose. It is composed of 59 Grade 10 online students of TRACE College. The mean and standard deviation are used to measure the acceptability level of the characteristics and components of the student learning packet in Mathematics 10. Paired t-test was used as a statistical treatment to determine the significant difference in the pre-test and post-test scores in the performance of the students in Mathematics 10.

Findings revealed that most of the teachers who evaluated the student learning packet highly accepted its components which are specific objectives, content, language used, and concept evaluation, and characteristics which are adaptability, appropriateness, usability, and aesthetic value. The pre-test level of the respondents before using the student learning packet in Mathematics 10 already has an average remark. After using the student learning packet, the post-test level became Above Average. This means that their understanding of concepts and theories has exceeded the core requirements and can transfer their understanding skills to solving further Mathematical problems. Lastly, it was found that there was a significant difference between the pre-test and post-test of the Grade 10 students before and after the treatment was given in all the questionnaires given to the respondents. The study shows that Student Learning Packet in Mathematics 10 helped the students in ensuring a better performance after the competencies were met in this New Normal Education.

Keywords: Student Learning Packet, Students' Performance, Mathematics, Acceptability

1. Main Text

Introduction

Since the COVID-19 pandemic happened, the total lockdown has been widely adopted, and stricter precautions are being enforced in every country. Furthermore, the world started adapting to the New Normal,

wherein the people's typical way of living is modified to prevent the further transmission of the coronavirus disease. Restrictions in social gatherings, including face-to-face learning, are also implemented. As a result, many countries utilize distance learning to continue students' education amid the pandemic. And the Philippines is one of those nations.

The Department of Education (DepEd) in the Philippines is utilizing online and modular learning modes to continue the education process throughout the COVID-19 pandemic. Unfortunately, Kritz (2020) claimed in her article that the Philippines cannot support online learning for the majority of its students, and only a small percentage of public schools have internet connections. Moreover, due to poverty, not all Filipino families have the financial means to purchase the necessary equipment for online education. As a consequence, Malipot (2020) deduced that between the two learning modalities, most Filipino parents and students prefer modular learning over online education. Likewise, most students choose an electronic copy of their student learning packet or the modules to avoid coronavirus disease and to have more control over their learning schedules.

Student Learning Packet (SLP) is a self-instructional package dealing with one specific subject in convenient form. Modular approach as a form of instruction can be employed so that the students could learn at their own pace and they also assume responsibility for their own learning, since the modular approach in teaching is structured so that students can go over and over the topics they less understand. The production of instructional materials is time consuming but quite rewarding since its goal is to enable the students learn the subject easier. Salandanan (2009) pointed that self-instructional materials are those which are described to be self-contained and the manner of presentation is such that the learning activities can be undertaken individually or in small groups. These materials are most effectively used in individualized instruction programs.

The researcher was inspired to develop an SLP or Student Learning Packet which is an instructional material because of the different advantages of the use of module in teaching Mathematics and the importance of developing more similar problems in Mathematics. This approach was initiated as a response to the need to improve students' performance which would help develop students' mathematical ability in comprehending Basic Mathematics and establishing its effectiveness for selected Grade 10 students.

Background of the Study

Students learn better, when knowledge is connected to concepts they already know and their individual needs are more easily met. Learning in Mathematics become effective when there is a one to one interaction between the students and the teachers. It helps students to clarify, explain and reflect on their mathematical skills. Learning Mathematics increases critical thinking and logical reasoning. Teachers' action and inactions impact positively or negatively on students learning experiences as majority of the respondents reported that their learning experiences are to a larger extent controlled by the teacher.

Reports of studies have proved that student perceptions of learning were highly correlated with their overall ratings of effectiveness of teaching. Mathematics is the root of science and technology. Student feedback on teaching practices and feedback on a particular module is considered to be a reliable and an important variable for measuring effectiveness of the learning packet.

During the implementation of the distance learning process, in Philippine education, it is critical to assess whether students genuinely grasp the self-learning modules such as student learning packet in various courses that they have completed via remote learning programs such as E-Learning. As a consequence, the role of learning packets in the academic performance and education of learners is being significantly explored.

Students who are new to distance education like E-Learning may struggle to concentrate and completely understand their self-learning modules on their own, as well as to be motivated to undertake self-study, especially when it comes to learning difficult subjects like mathematics.

A module is a self-contained, independent unit of instruction prepared for the purpose of attaining specific instructional objectives. It is characteristically self-directing since it includes instructions on how the various investigation will be pursued also included is a listing of the materials and other resources that should accompany the text of the module. Classroom instruction using modules is described as self-pacing where the pupil progress through the learning tasks at his own rate.

A student learning packet is a printed teaching material that is designed to be studied independently by students because it is equipped with various instructions in studying a material (Susilo, 2016). In line with this, Meyer states that the module has a series of well-coordinated learning related to material, media, and evaluation. Lidy et al (in Susilo, 2016) stated that the quality of the module is seen from the aspects of material, language, presentation, and graphics. Material aspects include the suitability of the material with the expected learning outcomes of the course and competencies, the correctness of the content of the course material, the usefulness of the material to increase knowledge, and the suitability of the material with moral and social values. Aspects of language include readability of the language used, clarity of information, writing following the rules of writing Indonesian that is good and correct, and the use of sentences effectively and efficiently. The presentation aspect includes the clarity of the delivery of the achievement of the learning objectives in detail, the clarity of the presentation of the material, the presentation accompanied by motivational sentences, attraction, interaction, and completeness of information. Graphic aspects include legibility of illustrations and graphics,

One of the instructional material that can be utilized in learning is the SLP or the Student Learning Packet. The use of this material is one of the innovations of TRACE College to ensure continuity of learning among students without internet access this A.Y. 2020- 2021. In this Student Learning Packet, students are required to go through a series of learning activities in order to achieve the target learning competencies/ outcomes. Lessons are subdivided into subsets to guide them on the step-by-step procedures of accomplishing them. The Mathematics 10 provides the basic concepts of Probability. The researcher believes that if they master Probability at this level, it is easy for them to understand more complex topics in the preceding level.

With the foresaid concepts, the researcher motivated to conduct a study on developing a Student Learning Packet in selected topics in Mathematics 10 and measuring its effectiveness to the academic performance of Grade 10 students at TRACE College.

Theoretical Framework

This study is anchored on the theories on individualizing instruction through modules. According to Kemp and Smelie (2009), individualizing instruction plays a big role in modular instruction. Its main attributes include the individual assuming responsibility for their own learning, proceeding with activities and materials at their own level and studying at their own pace. This principle is in consonance with Thorndike's law of readiness and law of effect where the law of readiness states that when a person is prepared to respond or act, giving the response is satisfying and being prevented of doing so is annoying.

Another theoretical foundation related to learning using student learning packet is Vygotsky's Theory. Vygotsky's theory as stated by Mc Leod (2018) includes that knowledge is constructed collaboratively between individuals and circumstances that can be adjusted by each individual. Four of Vygotsky's principles related to learning are: (1) Social learning that students learn through interaction with adults or more capable friends. (2) ZPD (zone of proximal development) through the help of adults or friends (peer) so that the child is able to do tasks or questions of a higher level of complexity than the level of cognitive development of the child. (3) The period of cognitive apprenticeship (cognitive apprenticeship), a process that allows students to gradually acquire intellectual skills through interaction with more skilled people, adults or smarter friends. (4) Mediated learning which emphasizes scaffolding. Students are given complex, difficult and realistic problems and then given sufficient assistance in solving student problems.

Based on Vygotsky's principles relating to learning, students who study in modules conform to Vygotsky's principles. Students learn by using the module through the discussion method which means interacting with their teacher and group friends who are more familiar with the subject matter. Students are able to work on more complicated questions of cognitive development through the ZPD stages. ZPD is the zone between the level of actual development and the level of potential development. The actual level of development can be seen from the child's ability to complete tasks independently.

Meanwhile, the level of potential development can be seen from the child's ability to complete tasks or solve problems with the help of adults. When enrolled in ZPD, children actually can, but it would be optimal if an adult or companion knows better.
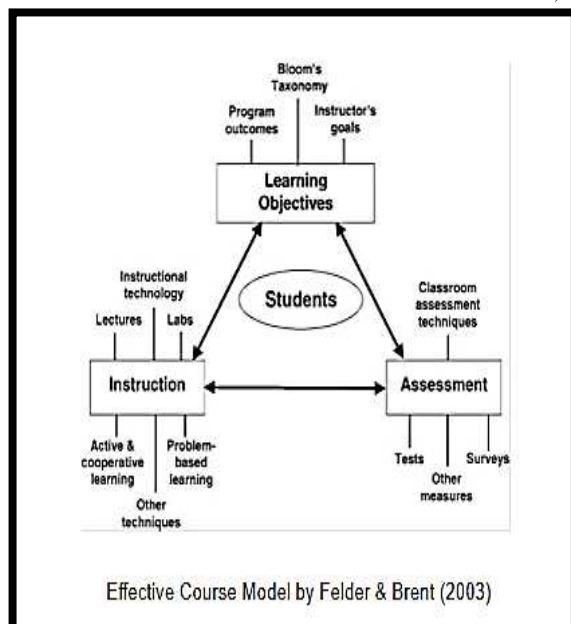
Since we are now on an Outcome-based education (OBE) approach where the product defines the process, i.e., the outcomes that specify what students should be able to demonstrate upon leaving the system are defined first, and drive decisions about the content and how it is organized, the educational strategies, the teaching methods, the assessment procedures and the educational environment (Harden, Crosby, & Davis, 1999; Spady, 1988). A number of models have been developed to represent the application of OBE in the design of effective courses. One of these model is the Effective Course Model by Felder & Brent (2003); This model either directly or indirectly identify four main elements that must be tightly aligned when defining a course design that is essential in developing an instructional material, i.e., course objectives, content, assessments, and pedagogy. Therefore, one of the main challenges in adhering to an outcome-based approach is maintaining the alignment between course elements. Inconsistencies in the interrelation of these elements can lead to the overall incoherence of the course.

Figure 1. Effective Course Model by Felder and Brent (2003)

As can be seen in the model, one approach for achieving alignment among course element is through a "backward-looking" design process where the desired results are identified first, and then assessments are designed to verify that these results have been achieved. The learning experiences and instruction are then formulated around the desired results and the assessments.

The researcher conceptualized the development and acceptability of student learning packet as tool to help the students learning in Mathematics. It consists of learning objectives for each selected topics in Mathematics 10, instructions such as the lessons and different assessments in order to determine if the student learning packet is effective to the student's academic performance.

Statement of the Problem

The goal of this study is to determine the acceptability and effectiveness of the SLP- Student Learning Packet in the Academic Performance of Grade 10 students.

1. What is the level of acceptability of Student Learning Packet in terms of components with regards to:
    1.1. Specific Objectives;
    1.2. Content;
    1.3. Language used; and
    1.4. Concept Evaluation?
2. What is the level of acceptability of Student Learning Packet in terms of characteristics with regards to:
    2.1 Adaptability;
    2.2 Appropriateness;
    2.3 Usability; and
    2.4 Aesthetic Value?
3. What is the level of the student's performance in Mathematics 10 in terms of:
    3.1. Pre-Test; and
    3.2 Post-Test?
4. Do the students' performance has a significant difference in terms of pre-test and post-test?

Research Methodology

This research explores the Student Learning Packet in teaching selected topics in Mathematics 10. However, specifically, it addressed the acceptability and effectiveness of the SLP- Student Learning Packet in the Academic Performance of Grade 10 students.

Research Design

The research design used in this study is experimental specifically the Quasi-experimental Research Design- In quasi-experiments, the participants are not randomly assigned, and as such, they are used in settings where randomization is difficult or impossible. The term "experimental research design" is centrally concerned with constructing research that is high in causal (or internal) validity. Causal validity concerns the accuracy of statements regarding cause and effect relationships.

This research design is suitable for this study because the researcher conducted a pre-test and post-test in collecting data. In a pretest-posttest design, the dependent variable is measured once before the treatment is implemented and once after it is implemented. The collected data was compared if there is a significant difference between the two. Moreover, Choueiry (2021) elucidated that the outcomes of the pre-intervention and post-intervention measurements are compared to evaluate the effect of the independent variable on the dependent variable.

In this research, a homogeneous group sharing similar characteristics, namely; Grade-10 students enrolled using the online mode of studying implemented in TRACE College.

Specifically, the study utilized the quasi-experimental research design to gather the required primary data on the homogenous group that undergone a pre-examination or initial test and a post-examination or final test both containing mathematical concepts and exercises. Applying the pretest-posttest design in this research is the right approach as the score results collected from the initial and final test would be the primary data that was compared in the final procedure. Using a quasi-experimental research design allows the researcher to manipulate the independent variable as well as the treatment and the conditions that the participants are assigned to before measuring the dependent variable..

Population and Sampling Technique

The respondents of the study were the Grade 10 Junior High School students of TRACE College comprising of 59 students for Academic School Year 2021-2022. All of these students are opted online Learning as their mode of learning.

The sampling technique used in this study is the Purposive Sampling Technique, it is a technique where respondents are selected based on its criteria or purpose which are Grade 10 students. Because of the pandemic, there is no face-to-face interaction, the selected respondents are only those who would answer pre-test and post-test as well as with the survey questionnaire.

Purposive sampling, according to Vijayamohan (2022), is the process of picking samples from a larger sample size depending on the survey taker's or researcher's assessment. In other words, a purposive sample is chosen to meet the needs of the test, survey, or research for which it will be utilized.

Research Procedure

This research aims to find out the acceptability of the Student Learning Packet in Selected topics in Mathematics 10 and its effectiveness to the academic performance of the students. Data were collected following standard operating procedures. The researcher identified the problem to be constructed, analyzed and approved. In order to be acquainted with the concepts, the researcher have procedures and findings which have connection and may help in formulating objectives, hypothesis, framework and procedure of the research.

The researcher prepared the research materials including the development of the Student Learning Packet in Mathematics 10, as well as the Pre-test and Post- test. The developed Student learning packet is validated by the experts. After the validation and evaluation of the learning packet, the researcher seek permission from the dean of GSAR-Department and School principal of TRACE College, Inc. to administer the

pre-test to the Grade 10 students of TRACE College. Before the administration of pre-test, each questions in the items is tested its reliability and also item analysis is being done. After administering the post test, the student learning packet is then distributed to the students to utilize this in learning the lessons covering 3rd quarter period. After 10 weeks of discussion with the help of student learning packet, the post-test is administered to the respondents.

The researcher collected the data through Google form containing the answer of the respondents. The test and questionnaire results guided the researcher in determining the acceptability and effectiveness of Student Learning Packet in Mathematics 10 to the Academic Performance of the students.

The data based on the information that was taken from the respondents were tabulated, analyzed and interpreted by the researcher.

Research Instrument

This study is quasi-experimental research therefore some instruments are needed by the researchers that enabled them to collect data and a medium to exercise the said experiment. The following will serve as the instrument and medium for the research:

Google Forms. This is a survey administration software that is included in the *Google* Form survey. Because of the ongoing pandemic, distributing questionnaires face-to-face interaction is prohibited therefore the researchers will use the internet in conducting the pretest and posttest, and the survey, with the use of Google forms.

Questionnaire (Pre-Test and Post-Test). The Pre-Test and Post-Test questionnaire are defined as the simplest evaluation, to measure whether the expected effect or results and changes took place in the participants after administering the student learning packet, the use the pre-test is to evaluate the skills of the participants before using the student learning packet, then the post-test is the evaluation of their skills after using the student learning packet. The questionnaire for both the pre-test and the post-test consists of sixty (60) questions multiple choice questions, the topics included in the questions are from the Mathematics subject. Because of the ongoing pandemic, distributing questionnaires face-to-face interaction is prohibited therefore the researchers will use Google forms as the medium where participants could answer the questionnaire.

The rating scale below was used to determine the frequency and relative frequency of the scores of the respondents in pre-test and post-test.

Scores	Verbal Interpretation
49-60	Outstanding
37-48	Above Average
25-36	Average
13-24	Below Average
0-12	Needs Improvement

Survey Form (Likert Scale). A research instrument that collects information from participants through a series of questions or statements, the choices that participants may choose is in the form of the Likert scale, a type of rating to measure the opinion regarding the statements given in the form. The researchers will use this to determine the level of acceptability of Student Learning Packet in Mathematics 10 as rated by the Math teachers and experts and students.

Ratings	Scale	Remarks	Verbal Interpretation
5	4.21-5.00	Strongly Agree	Highly Acceptable
4	3.41-4.20	Agree	Acceptable
3	2.61-3.40	Moderately Agree	Slightly Acceptable
2	1.81-2.60	Disagree	Less Acceptable
1	1.00-1.80	Strongly Disagree	Not Acceptable

Statistical Treatment of Data

After collecting the data needed, the researcher tabulated and analyzed the gathered data with the help of statistical tools for an easy interpretation and presentation of gathered data. The following were used for analyzing results:

To determine the level of acceptability of components of Student Learning Packet in teaching Mathematics 10 as rated by the students in terms of: (1) Specific Objectives Aspects; (2) Content Aspects; (3) Language Aspects used; and (4) Concept Evaluation Aspects, and also the level of acceptability of characteristic of the Student Learning Packet in terms of (a) Adaptability; (b) Appropriateness; (c) Usability and (d) Aesthetic Value; the researcher used Mean and Standard Deviation.

To determine the level of students' performance in terms of pre-test and post, the researcher used the Percentage Frequency.

To determine if there is a significant difference between the pre-test and post test scores of Grade 10 students in using the Student Learning Packet, independent t-test will be used in the study. T-test will also utilized to determine if there is a significant difference in the Academic Performance of the students using the Student Learning Packet in teaching selected topics in Mathematics 10.

Spreadsheet software- SPSS was used to compute and interpret the results of the gathered data.

Results and Discussion

Level of Acceptability of Student Learning Packet in terms of Component

The respondents assessed the level of acceptability of Student Learning Packet in teaching selected topics in Mathematics 10 in terms of Components.

The following table shows the average mean, standard deviation, and remarks of the components with regards to specific objectives, content, language used and concept evaluation, which shows the mean, standard deviation, and remarks.

Table 1. Level of Acceptability of Student Learning Packet in terms of Components with regards to Specific Objectives

Statement	Mean	SD	Remarks
The lessons are aligned to the specific objectives.	5.00	0.00	Strongly Agree
The objectives are stated in behavioral terms.	4.83	0.38	Strongly Agree
The specific objectives are measurable.	4.87	0.35	Strongly Agree
The specific objectives are realistic.	4.83	0.38	Strongly Agree
The specific objectives are attainable.	4.90	0.31	Strongly Agree

Overall Mean = 4.89

Standard Deviation = 0.23

Verbal Interpretation= Highly Acceptable

Table 1 illustrates the level of acceptability of Student Learning Packet in terms of components with regards to Specific Objectives. Among the statements below, the lessons are anchored to the specific objectives yielded the highest mean (M=5.00, SD=0.00) and was remarked as Strongly Agree. This is followed by the objectives are attainable with a mean score of (M=4.90, SD= 0.31) and remarked as Strongly Agree. It is also observed that the objectives are measurable has a mean of (M=4.87, SD= 0.35) with a remarks of Strongly Agree. Lastly, the objectives are stated in behavioral terms and the objectives are realistic received the lowest mean score of (M=4.83, SD=0.38) with a remarks of Strongly Agree.

Overall, the level of acceptability of Student Learning Packet in terms of components with regards to Specific Objectives attained a mean score of 4.89 and a standard deviation of 0.23 and was Highly Acceptable among the respondents.

Learning objectives, according to Cavero (2016), are at the heart of every instruction. They give learning a purpose. They serve as the building blocks for lesson planning. She instills in students that objectives give criteria for evaluating student achievement of a lesson, hence reducing learners' incomplete thinking.

The study revealed that a specific objectives of student learning packet is highly acceptable by the respondents. The result implies that the respondents highly accepted each lesson in the student learning packet is accompanied by specific objectives which are stated in behavioral terms, measurable, realistic, and attainable as it is anchored in the objectives in the most essential learning competencies. It can be concluded that teacher educators will strongly adopt the proposed instructional tool and integrate it into their teaching and learning activities. Well-defined and articulated learning objectives are important because they provide students with a clear purpose to focus their learning efforts direct your choice of instructional activities and guide your assessment strategies.

Table 2. Level of Acceptability of Student Learning Packet in terms of Components with regards to Content

Statement	Mean	SD	Remarks
Expected learning competencies are contained in the student learning packet.	4.93	0.25	Strongly Agree
The lessons are presented at a pace that allows for reflection and review.	4.80	0.41	Strongly Agree
There is an adequate presentation/discussion of content.	4.73	0.45	Strongly Agree
The ideas, concepts and points presented are well-explained.	4.87	0.35	Strongly Agree
Supplementary activities enhance students' understanding of the content.	4.81	0.45	Strongly Agree

Overall Mean = 4.81
Standard Deviation = 0.26
Verbal Interpretation = Highly Acceptable

As shown in Table 2, level of acceptability of Student Learning Packet in terms of components with regards to Content. Among the statements above, in the student learning packet is aligned with learning competencies yielded the highest mean score of (M=4.93,SD= 0.25) and was remarked as Strongly Agree. This is followed by the ideas, concepts and points presented are well-explained with a mean score of (M=4.87, SD= 0.35) with a remarks of Strongly Agree. Supplementary activities enhance students' understanding of the content has a mean score of (M=4.81, SD= 0.45) and has a remarks of Strongly Agree.

It is also observed that the lessons are presented at a pace that allows for reflection and review has a mean of (M=4.80, SD= 0.41) with a remarks of Strongly Agree. Lastly, the statement there is an adequate presentation/discussion of content received the lowest mean score of (M=4.73, SD= 0.45) with remarks of Strongly Agree.

Overall, the level of acceptability of Student Learning Packet in terms of components with regards to Content attained a mean score of 4.81 and a standard deviation of 0.26 and was Highly Acceptable among the respondents.

The result is supported by the study of Richardson (2019), in order to properly use the learning package, teachers must have a fundamental comprehension of the content and a coherent sequence for teaching the topics. The framework serves as a learning aid and a means of motivating kids to learn. The relationships between reading, thinking, and learning are facilitated by an instructional framework that identifies successful components of a content lesson. Furthermore, a content is a strategy, according to Rach (2012), will frequently assume responsibility for the activities and deliverables related with each of them. In many cases, reliable resources concerning these practices are already available, both online and offline. They focus on an

introduction to content as a strategy, so they made it our job to synthesis this information and frame it up in ways that allow teams to tackle content challenges holistically. When it comes to content development and maintenance, people have specific needs and challenges that deserve to be acknowledge.

The content of the student learning packet was found to be highly acceptable by the respondents in the survey. The results indicate that the contents of the learning packet, such as the presentation and discussion of the lessons as they relate to the competencies covered, were well received by the respondents. It may be concluded that teachers will use the lessons and content in the student learning packet to assist pupils grasp the topic.

Table 3. Level of Acceptability of Student Learning Packet in terms of components with regards to Language Used

Statement	Mean	SD	Remarks
The words used in the student learning packet are correctly used.	4.83	0.38	Strongly Agree
The choice of words is suitable to the comprehension level of students.	4.73	0.45	Strongly Agree
Instructions to students are clear and easy to follow.	4.90	0.31	Strongly Agree
The lessons are presented in the form of sentences/paragraphs with proper grammar usage.	4.90	0.31	Strongly Agree
The student learning packet has a clear and specific directions.	4.83	0.38	Strongly Agree

Overall Mean = 4.84
Standard Deviation = 0.24
Verbal Interpretation = Highly Acceptable

As shown in Table 3, the respondents strongly agreed that the level of acceptability of Student Learning Packet in terms of components with regards to language used. Among the statements below, the instructions are clear and easy to follow by students and the lessons presented has proper grammar usage." yielded the highest mean score of (M=4.90, SD=0.31) and was remarked as Strongly Agree. This is followed by the student learning packet has a clear and specific directions and the words used in the student learning packet are correctly used with a same mean score of (M=4.83, SD= 0.38)and has a remarks of Strongly Agree. Supplementary activities enhance students' understanding of the content has a mean score of (M=4.81, SD=0.45) with a remarks of Strongly Agree.

Lastly, the choice of words is suitable to the comprehension level of students received the lowest mean score of (M=4.73, SD= 0.45) with remarks of Strongly Agree.

Overall, the level of acceptability of Student Learning Packet in terms of components with regards to Language Used attained a mean score of 4.84 and a standard deviation of 0.24 and was Highly Acceptable among the respondents.

To back up their findings, Lidy et al. (as cited in Hasibuan, 2021), Torralba (as cited in Yazon, 2018), and Nepomuceno (as cited in Yazon, 2018) all stated that self-learning modules should be self-paced, concisely defined, and include material and language aspects, as these are the essential characteristics of a module that will allow students to effectively study and comprehend their learning materials and thus improve their academic performance.

The language employed in the student learning packet was found to be highly acceptable by the respondents. The findings suggest that the respondents favored the language used in the learning packet, such as the terms used in the lesson, clear directions for the learner, and well-presented lessons. It may be stated that students will grasp the student learning package because the words and language used are appropriately presented and grammatically correct.

Table 4. Level of Acceptability of Student Learning Packet in terms of Components with regards to Concept Evaluation

Statement	Mean	SD	Remarks
The student learning packet provides effective pretest, self-assessment and posttest in each lesson.	4.77	0.43	Strongly Agree
The tests/evaluation activities are easy to score.	4.70	0.47	Strongly Agree
The items in the evaluation are congruent to the specific objectives.	4.80	0.41	Strongly Agree
There are test items that measure higher-order thinking skills.	4.80	0.41	Strongly Agree
The test items cover the key competencies to be developed.	4.87	0.35	Strongly Agree

Overall Mean = 4.79
Standard Deviation = 0.30
Verbal Interpretation = Highly Acceptable

Table 4 illustrates the level of acceptability of Student Learning Packet in terms of components with regards to Concept Evaluation. Among the statements below, the test items cover the key competencies to be developed yielded the highest mean score of (M=4.87, SD= 0.35) and was remarked as Strongly Agree. This is followed by the items in the evaluation are congruent to the specific objectives and there are test items that measure higher-order thinking skills with a same mean score of (M=4.80, SD= 0.41) and remarked as Strongly Agree. The student learning packet provides effective pre-test, self-assessment and post-test in each lesson has a mean score of (M=4.77, SD= 0.43) and has a remarks of Strongly Agree. Lastly, tests/evaluation activities are easy to score received the lowest mean score of (M=4.70, SD=0.47) with remarks of Strongly Agree.Overall, the level of acceptability of Student Learning Packet in terms of components with regards to Concept Evaluation attained a mean score of 4.79 and a standard deviation of 0.30 and was Highly Acceptable among the respondents.

This is sustained by the study of Birbarium (2013) mentioned that performance tasks allow students to demonstrate their capacity to integrate and apply their knowledge, abilities, and work habits in a meaningful activity. It is the manifestation in pupils of actual observable and measurable language in a real-life context, rather than simply supplying information on students' theoretical knowledge, that causes rote learning rather than memory. In conclusion, performance is the outcome of an individual's learning acquired through the teaching-learning process. It is necessary to recognize an individual's strengths and shortcomings, as well as to find a remedy to the flaws.

The study revealed that the concept evaluation of the student learning packet is highly acceptable by the respondents. The result implies that the respondents highly accepted the concept evaluation included in the learning packet such as the pre-test, self-assessment and post-test in each lesson. It can be concluded that teachers can assessed the students' performance based on the evaluation included in the student learning packet.

Level of Acceptability of Student Learning Packet in terms of Characteristics

The respondents assessed the acceptability level of the characteristics of Student Learning Packet in teaching selected topics in Mathematics 10 as revealed in the following table, which shows the average mean, standard deviation, and remarks.

Table 5. Level of Acceptability of Student Learning Packet in terms of Characteristics with regards to Adaptability

The student learning packet…	Mean	SD	Remarks

	Mean	SD	Remarks
...shows the versatility that can be used across curricula.	4.67	0.48	Strongly Agree
...shows alignment to the various learning styles of students.	4.77	0.43	Strongly Agree
...contains problems that can be done on target learners of different aptitude levels.	4.73	0.45	Strongly Agree
...can be revised in order to fit to the purposes.	4.80	0.41	Strongly Agree
...encourages the students to become actively involved in the learning activities.	4.67	0.55	Strongly Agree

Overall Mean = 4.73
Standard Deviation = 0.36
Verbal Interpretation = Highly Acceptable

Table 5 illustrates the level of acceptability of Student Learning Packet in terms of characteristics with regards to Adaptability. The student learning packet can be revised in order to fit to the purposes yielded the highest mean score of (M=4.80, SD=0.41) and was remarked as Strongly Agree. The student learning packet shows alignment to the various learning styles of students with a mean score of (M=4.77, SD= 0.43) and remarked as Strongly Agree.

It is also observed that the student learning packet contains problems that can be done on target learners of different aptitude levels has a mean of (M=4.73, SD= 0.45) 4.73 with a remarks of Strongly Agree. Lastly, the student learning packet shows the versatility that can be used across curricula and the student learning packet encourages the students to become actively involved in the learning activities received the lowest mean score of (M=4.67, SD=0.48, 0.55), respectively with a remarks of Strongly Agree.

Overall, the level of acceptability of Student Learning Packet in terms of characteristics with regards to Adaptability attained a mean score of 4.73 and a standard deviation of 0.56 and was Highly Acceptable among the respondent.

In the study of Salcedo (2016), measured the acceptability of self-learning modules based on module content or subject matter, objectives, language aspects, topic organization and presentation, learning activities, discussion aids and guide questions, evaluative exercises, adaptability, and design characteristics, demonstrating the adaptability of learning packets.

The respondents in the study found that the adaptability of the student learning packet is very acceptable. The results indicate that the adaptability of the learning packet was very well accepted by the respondents, as it illustrates the flexibility and alignment of the topics with the most effective learning competencies. It may be argued that the student learning packet is highly adaptable by teachers since it stimulates students to learn.

Table 6. Level of Acceptability of Student Learning Packet in terms of Characteristics with regards to Appropriateness

The student learning packet...	Mean	SD	Remarks
...is suited to the objectives of each lesson.	4.90	0.31	Strongly Agree
...problems are based on real - life contexts.	4.73	0.45	Strongly Agree
...contains suitable, interesting, current, and up-to-date activities.	4.77	0.43	Strongly Agree
...contains problems that are suitable, interesting, current and up to date.	4.77	0.43	Strongly Agree
...considered the varying attitudes and capabilities of the learners.	4.63	0.56	Strongly Agree

Overall Mean = 4.76
Standard Deviation = 0.35
Verbal Interpretation = Highly Acceptable

Table 6 illustrates the level of acceptability of Student Learning Packet in terms of characteristics with regards to Appropriateness. Among the statements below regarding the student learning packet is suited to the objectives of each lesson yielded the highest mean score of (M=4.90, SD=0.31) and was remarked as Strongly Agree. The student learning packet contains suitable, interesting, current, and up-to-date activities and contains problems that are suitable, interesting, current and up to date with a same mean score of (M=4.77, SD=0.43) and remarked as Strongly Agree. It is also observed the student learning packet problems are based on real - life contexts has a mean of (M=4.73, SD=0.45) with a remarks of Strongly Agree. Lastly, the student learning packet considered the varying attitudes and capabilities of the learners received the lowest mean score of (M=4.67, SD) with a remarks of Strongly Agree.

Overall, the level of acceptability of Student Learning Packet in terms of characteristics with regards to Appropriateness attained a mean score of 4.76 and a standard deviation of 0.35 and was Highly Acceptable among the respondents.

The results is supported by the study by Salandanan (2001) quoted by Badillo (2015), the following components makes up an effective module/learning packet: overview this gives students an idea of what they expected to learn from the module. This is to see if student is ready to participate in activities. Furthermore, according to William (as referenced by Tubiera (2014)), an objective is a main objective that can be substantially accomplished with the resources available. In general, an aim is broader in scope than a goal, and it may include the goals of numerous people.

The respondents in the survey showed that the appropriateness of the student learning packet is highly acceptable. The respondents strongly agreed that the learning packet is appropriate since such courses and issues are appropriate for the learners and are based on real-life scenarios. To conclude, the student learning packet contains a multitude of activities that learners can effectively solve which are appropriate for them to learn and understand.

Table 7. Level of Acceptability of Student Learning Packet in terms of Characteristics with regards to Usability

The student learning packet	Mean	SD	Remarks
...provides tasks that sharpen the target learner's mathematical skills.	4.87	0.35	Strongly Agree
...contains problems that are relevant to the target learners' personal experiences	4.70	0.47	Strongly Agree
...offers various word problems.	4.80	0.41	Strongly Agree
...illustrates real – life experiences that can be a basis for comprehension.	4.70	0.47	Strongly Agree
...serves as a supplement for students finding the topic difficult.	4.80	0.41	Strongly Agree

Overall Mean = 4.77
Standard Deviation = 0.29
Verbal Interpretation = Highly Acceptable

Table 7 shows the level of acceptability of Student Learning Packet in terms of characteristics with regards to Usability. Among the statements below regarding the student learning packet provides tasks that sharpen the target learner's mathematical skills yielded the highest mean score of (M=4.87, SD=0.35) and was remarked as Strongly Agree. The student learning packet offers various word problems and serves as a

supplement for students finding the topic difficult with a same mean score of (M=4.80,SD=0.41) and remarked as Strongly Agree. Lastly, the student learning packet contains problems that are relevant to the target learners' personal experiences and illustrates real – life experiences that can be a basis for comprehension." received the lowest mean (M=4.70,SD=0.47) with a remarks of Strongly Agree.

Overall, the level of acceptability of Student Learning Packet in terms of characteristics with regards to Usability attained a mean score of 4.77 and a standard deviation of 0.29 and was Highly Acceptable among the respondents.

According to Reganit (2010) cited that instructional goals or objectives provide direction for the instructional process by clarifying the intended learning outcomes. In education according to Education Reform (2014), learning objectives are brief statements that describe what students will be expected to learn by the end of school year, course, unit, lesson, project, or class period. In many cases, learning objectives are the interim academic goals that teachers establish for students who are working toward meeting more comprehensive learning standards. Also, Moore as cited by Rahman (2011) lecture can be used to effectively survey the structure of knowledge in a particular area as well as suggest the connection between cases and real decision-making, reaches students at an emotional level, and provides necessary motivation for learning difficult material. In the study of Salcedo (2016), the level of acceptability of self-learning modules is measured according to module content or subject matter, objectives, language aspects, organization and presentation of topic, learning activities, discussion aids and guide questions, evaluative exercises, adaptability, and design characteristics. Meanwhile, Nordin et al. (2018) focused on determining the acceptability of mobile learning module according to usability such as easy to learn, useful, easy to use, and pleasant to use.

The study revealed that the usability of student learning packet is highly acceptable by the respondents. The result implies that the respondents highly accepted the usability of the learning packet learning packet provides activities that sharpen the target learner's mathematical skills and also relevant to the target learners' personal experiences. It can be concluded that student learning packet is usable for the learners to attain the mathematical skills needed.

Table 8. Level of Acceptability of Student Learning Packet in terms of Characteristics with regards to Aesthetic Value

The student learning packet...	Mean	SD	Remarks
...contains an icon that is visual – pleasing and easy to understand.	4.63	0.61	Strongly Agree
...uses appropriate text, font, size and type.	4.73	0.45	Strongly Agree
...contains visuals that fit the level of interests, knowledge and skills of the target learners.	4.70	0.47	Strongly Agree
...incorporates illustrations that simplify complex concepts to acquire mathematical skills.	4.70	0.47	Strongly Agree
...utilizes illustrations that are interesting and suited to the problems.	4.67	0.48	Strongly Agree

Overall Mean = 4.69
Standard Deviation = 0.44
Verbal Interpretation = Highly Acceptable

Table 8 illustrates the level of acceptability of Student Learning Packet in terms of characteristics with regards to Aesthetic Value. Among the statements below regarding the student learning packet used appropriate text, font, size and type yielded the highest mean score of (M=4.73, SD=0.45) and has a remarks of Strongly Agree. This is followed by the student learning packet contains visuals that fit the level of interests, knowledge and skills of the target learners and it incorporates illustrations that simplify complex concepts to acquire mathematical skills with a same mean score of (M=4.70, SD=0.47) and remarked as Strongly Agree.

It is also observed that the student learning packet utilizes illustrations that are interesting and suited to the problems has a mean of (M=4.67, SD=0.48) with a remarks of Strongly Agree. Lastly, the statement the student learning packet contains an icon that is visual – pleasing and easy to understand received the lowest mean score of (M=4.63, SD=0.61) with a remarks of Strongly Agree.

Overall, the level of acceptability of Student Learning Packet in terms of characteristics with regards to Aesthetic value attained a mean score of 4.69 and a standard deviation of 0.44 and was Highly Acceptable among the respondents.

In the study of Torralba (as cited in Yazon, 2018) stated that learning packets in the Philippines should be self-pacing, short and well-defined, and written in the correct language. It is supported by Nepomuceno (as cited in Yazon, 2018), who described self-learning modules as self-teaching and fairly short to make students use their study time efficiently. Likewise, modules include a list of further readings or sources relevant to the supplied lesson.

The study revealed that aesthetic value of student learning packet is highly acceptable by the respondents. The result implies that the respondents highly accepted the aesthetic value of the learning packet as it contains icons, symbols and visuals that fit the level of interests, knowledge and skills of the target learners. There's an illustrations that simplify complex concepts to acquire mathematical skills. It can be concluded that aesthetic value adds interests to the student's willingness to learn.

Level of the Student's Performance in Mathematics 10 in terms of Pre-test and Post Test

The respondents assessed the level of the Student's Performance in Mathematics 10 in terms of Pre-test as revealed in the following table, which shows the average mean, standard deviation, and remarks.

Table 9. Level of the Student's Performance in Mathematics 10 in terms of Pre-test

Scores	Frequency	Relative Frequency	Remarks
49-60	0	0%	Outstanding
37-48	13	22.03%	Above Average
25-36	28	47.46%	Average
13-24	17	28.81%	Below Average
0-12	1	1.69%	Needs Improvement
Total	**59**	**100%**	
Mean		**28.88**	**Average**
SD		**8.65**	

Table 9 illustrates the level of the Student's Performance in Mathematics 10 in terms of Pre-test. There are 28 out of 59 students or 47.47% of the respondents got a score ranging from 25-36; 17 out of 59 students or 28.81% of the respondents got a score of 13-14; 13 out of 59 students or 22.03% got a score of 37-48; 1 out of 59 students or 1.68% got a score of 0-12 and no student got a score from 49-60.

It can be gleaned from the table that most of the scores of the respondents obtained by the score 25-36 got a mean score of 28.88 and a standard deviation of 8.65 with a remarks of Average. This means that the students, before using the student learning packet in Mathematics 10 already have an average remarks with some of the topics such as the Permutation, Combination, Probability of Simple Events and Probability of Compound Events. The students at this stage acquire a minimum level of knowledge and core understanding about the selected topics in Mathematics 10.

Estrada (2021) pointed that each student has their level of learning and that not every learner can comprehend the concepts, particularly the complicated ones included in the modules without additional reference from various sources or someone with greater knowledge.

Table 10. Level of the Student's Performance in Mathematics 10 in terms of Post-test

Scores	Frequency	Relative Frequency	Remarks
49-60	5	8.47%	Outstanding
37-48	31	52.54%	Above Average
25-36	17	28.81%	Average
13-24	6	10.17%	Below Average
0-12	0	0%	Needs Improvement
Total	**59**	**100%**	
Mean		**38.46**	**Above Average**
SD		**9.11**	

Table 10 illustrates the level of the Student's Performance in Mathematics 10 in terms of Post-test. There are 31 out of 59 students or 52.54% of the respondents got a score ranging from 25-36; 17 out of 59 students or 28.81% of the respondents got a score of 13-14; 6 out of 59 students or 10.17% got a score of 37-48; 5 out of 59 students or 8.59% got a score of 0-12 and no student got a score from 0-12.

It can be gleaned from the table that after using the student learning packet, most of the scores of the respondents obtained by the score 37-48 got a mean score of 38.46 and a standard deviation of 9.11 with a remarks of Above Average. This means that their understanding about concepts and theories has exceeds the core requirements and can transfer their understanding skills in solving further Mathematical problems. It is also observed that some of the students obtained Outstanding in their mathematics performance. This indicates that the students were able to follow the correct information given that would lead them to correct responses despite the absence of the traditional face-to-face classroom approach.

In the study of Salvacion (2010) experimental group exposed to the instructional material in teaching Fundamentals of Math performed better than the controlled group. The modules were acceptable as textbook in the subject. An investigation of Mian (1982) in her "Experimental Study of Teaching Science through Modules" found out that her students welcomed the use of modules on account of the following advantages: (1) The class does not hold fast students back and they are not bored by extra drill they do not need since they may go on with the next topic in accordance with the decision of the teacher. (2) The student can proceed at his own pace knowing that he has an excellent opportunity of getting grades comparable to that of the fast students and he gets more individual attention in times of difficulty. (3) All students get steady feedback on their progress and more individual attention when needed.

Significant Difference of the Students' Performance in Mathematics 10 in terms of Pre Test and Post Test upon using the Student Learning Packet

Table 10 shows the difference of the Students' Performance in Mathematics 10 in terms of Pre Test and Post Test upon using the Student Learning Packet. The data were statistically treated using Paired t-test. The following shows estimation for mean, mean difference, standard deviation, p-value, and its analysis.

Table 11. Significant Difference of the Students' Performance Mathematics 10 in terms of Pre Test and Post Test upon using the Student Learning Packet

Variables	Mean	Mean Difference	df	Computed t-value	p-value	Critical t-value	Analysis
Pre-test	28.88	9.58	58	9.000	0.000	2.001	Significant

Post-test	38.46						

$$\alpha = 0.05$$

The test of the difference between the pre-test and post-test of students' mathematics in Mathematics 10 shows a computed value of (t-value= 9.000; p< .05) interpreted as Significant.

Based on the data, it is shown that there is a significant difference between the Students' performance of the Grade 10 students in pre-test and post test scores in using the Student Learning Packet at 0.05 level of significance. It shows that the null hypothesis "There is no significant difference between the Students' performance of the Grade 10 students in pre-test and post test scores in using the Student Learning Packet" is being rejected.

Acelajado (2005) cited by Badillo (2015), she found out that the use of modular approach or using of learning packet has made significant improvement in the learners achievement persistence and confidence level in Mathematics , regardless their abilities most especially among the respondents from the low ability group.

Summary of Findings

This chapter includes the presentation of a summary of findings, conclusion based on the hypothesis, and the corresponding recommendations.

Summary

This study determined the acceptability and effectiveness of the SLP- Student Learning Packet in the Academic Performance of Grade 10 students of TRACE College, School Year 2021-2022. The information on related literature and studies were gathered to formulate the objectives of the studies. Specifically, the information is found in books, journals, documents, published and unpublished materials like thesis, journals, and the internet.

It sought to answer the following questions: (1) what is the acceptability level of the components of Student Learning Packet in teaching selected topics in Mathematics 10 in terms of specific objectives, content, language used and concept evaluation; (2) What is the acceptability level of characteristic of Student Learning Packet in teaching selected topics in Mathematics 10 in terms of adaptability, appropriateness, usability and aesthetic value; (3) What is the level of the student's performance in Mathematics 10 in terms of pre-test and post-test and (4) Do the students' performance of the Grade 10 students in pre-test and post test scores has a significant difference in using the Student Learning Packet?

The research design utilized in this study is experimental specifically the
Quasi-experimental Research Design- In quasi-experiments, the participants are not randomly assigned, and as such, they are used in settings where randomization is difficult or impossible. This is suitable for this study because the researcher conducted a pre-test and post-test in collecting data. In a pretest-posttest design, the dependent variable is measured once before the treatment is implemented and once after it is implemented.

Purposive Sampling Technique was used to determine the respondents which are selected based on the purpose and criteria. Because of the pandemic, there is no face-to-face interaction, the selected respondents are only those who will answer pre-test and post-test as well as with the survey questionnaire. The Grade 10 junior high school students of TRACE College was composed of 59 students for Academic School Year 2021-2022. All of these students are opted online Learning as their mode of learning.

A teacher-made test was used to determine the pre-test and post-test scores of the respondents and a questionnaire checklist to describe the acceptability level of the characteristics and components of the student learning packet in Mathematics 10.

After administering the questionnaire to the respondents, all the data were gathered, analyzed, and interpreted. The mean and standard deviation are used to measure the acceptability level of the characteristics and components of the student learning packet in Mathematics 10. Paired t-test was used as a statistical treatment to determine the significant difference in the pre-test and post-test scores as the performance of the

students in Mathematics 10. Electronic forms and spreadsheet applications were used in tabulating and computing and validating the results.

After tabulating and analyzing the results, the following findings were revealed.

Level of Acceptability of Student Learning Packet in terms of Components

Most of the teachers who evaluated the student learning packet highly accepted its components which are specific objectives, content, language used and concept evaluation. Teachers strongly agreed that learning objectives identify what the learner will know and be able to do by the end of a course or program; the lessons presented in paragraphs/sentences that are grammatically correct and accompanied by clear and specific directions for their use and the questions covered the important competencies to be developed; measures higher-order thinking skills (HOTS); the questions in the evaluation are congruent to the specific objectives; and that the tests/evaluation activities are easy to score.

Level of Acceptability of Student Learning Packet in terms of Characteristics

Most of the teachers who evaluated the student learning packet highly accepted its characteristics which are adaptability, appropriateness, usability and aesthetic value. This led to ensured that Student Learning Packet in Mathematics 10 as a learning tool can improve their performance and provide the necessary knowledge and skills in Math.

Level of the Student's Performance in Mathematics 10 in terms of Pre-test and Post Test

The pre-test level of the respondents before using the student learning packet in Mathematics 10 already have an average remarks with some of the topics such as the Permutation, Combination, Probability of Simple Events and Probability of Compound Events. The students at this stage acquire a minimum level of knowledge and core understanding about the selected topics in Mathematics 10. After using the student learning packet, the post-test level became Above Average. This means that their understanding about concepts and theories has exceeds the core requirements and can transfer their understanding skills in solving further Mathematical problems. It is also observed that some of the students obtained Outstanding in their mathematics performance. This indicates that the students were able to follow the correct information given that would lead them to correct responses despite the absence of the traditional face-to-face classroom approach.

Significant Difference of the Students' Performance Mathematics 10 in terms of Pre Test and Post Test upon using the Student Learning Packet

It was found out that there was a significant difference between pre-test and post-test of the Grade 10 students before and after the treatment was given in all the questionnaires given to the respondents. The study shows that Student Learning Packet in Mathematics 10 helped the students in ensuring a better performance after the competencies were met in this New Normal Education. The level of significance ($p< .05$) indicated that there is a significant difference between the pre-test and post-test scores in math performance.

Conclusions

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

The test of the difference between the pre-test and post-test of the respondents resulted that there is a significant difference in the level of the mathematics performance. This implies that there is a significant improvement in students' acquired skills and knowledge, therefore the null hypothesis there is no significant difference between the Students' performance of the in terms of pre-test and post-test has been rejected.

The study implies that student learning packet is a self-learning style in which immediate reflection of the self is possible, which will motivate the students to regulate and manage their own learning styles, and thereby to create an interest and attitude towards Mathematics among the students as they are free to learn at their own pace. Hence, teachers should promote self-learning among the students to make them better learners. With help of learning packet, students can learn according to their own pace and interest which boosts their confidence in their own learning. The teachers should prepare self-learning modules or learning packets and

packages in different subjects and thereby they could make the teaching learning environment more active and interesting.

Recommendations

Based on the results and conclusion posted in the study, the following recommendation was formulated to the following.

1. Through the finding of this study, students may spend their time gathering different instructional materials such as learning packets or modules that may best help them in learning mathematics especially in this new normal education where the students learn independently. Different reliable sources may help such as DepEd Commons, LRMDS portal, DepEd TV, Pivot LEAP and ETULAY. The use of Student Learning Packet as instructional materials may help the students to support their independent learning so that there will no gap during the learning process.

2. The findings of the study would create an opportunity to provide the best tools that support their learning process during new normal education. The student learning packet should be also aligned to the Most Essential Learning Competencies so that students may be able to acquire the expected knowledge, skills, and values expected of them. Teachers can also utilize the results of the current research to design multiple versions of the same learning packet to ensure that all students' learning styles and skills will be catered and thus improving their quality of education and retention of lessons.

3. Since the study found out that there is an improvement in the Mathematics performance of the students, the teacher may use the student learning packet that can be paired in their selected learning competency targets. Teachers may add other activities that can fit in to the skills and knowledge of the students. With the use of Student Learning Packet, teachers can improve the No Left behind System of Department of Education.

4. The Department of Educations can share the result of the study with all teachers in the public and private sector for an innovative learning mobile approach. Furthermore, the modular approach in teaching is just one of the many ways to introduce the lessons; it is further recommended that the different schools through the mathematics department should establish linkages with other agencies to be updated with the latest trends in Mathematics.

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