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Application of Task-Based Learning Module in Mathematics V

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Abstract

This study aimed to determine the effectiveness of the task-based learning module in Mathematics in improving the computational skills of Grade V Students. The study used descriptive-experimental research design focused on students' perception of the lesson structure, evaluation of the module, and its effectiveness in improving the computational skills of the students. Generally, the students perceived the structure of the module in terms of pre-task, task, and review as very well structured. Likewise, the findings showed the evaluation in terms of adaptability, clarity, validity, usability, and aesthetic value to a very great extent. The results also showed a significant difference in the pre-test and post-test scores of the students in computational skills in terms of problem solving, decision making, sequencing, algorithm formation, and quantitative measurement. However, no significant relationship was found between the perceived structure of the lesson and the mean scores of the students in computational skills. Moreover, the perceived evaluation of the module has no significant relations with the computational skills. The study recommends the use of task-based learning module in Mathematics following the structure of pre-task, task, and review to improve the computational skills of the students.

Keywords: *task-based learning module, pre-task, task, review, computational skills*

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1. Introduction

Mathematics is the subject that pupils perceived as challenging and hard at times (Gafoor & Kurukkan, 2016). For instance, some find difficulty in answering mathematical sentences or equations involving the four fundamental operations, especially multiplication and division, and even harder answering answer arithmetic questions. As a challenging subject for its nature, it became more challenging during the present situation with the absence of face to face instruction. Since the Philippine Department of Education (DepEd) extensively uses printed modular remote learning as one of its instructional methods, notwithstanding some disagreement, learning materials are beneficial for the knowledge adaption of different concepts that needs to be learned from the crafted Most Essential Learning Competencies. Students get a sense of personal responsibility as an outcome of modular learning, which enhances independent learning.

According to Talimodao and Madrigal (2021), learners' academic achievement increased as a result of modular learning regardless of the setting. However, the current situations led to even poor performance in the field of mathematics. For example, in the researcher-administered diagnostic test in Mathematics V and the pre-test in the Division Numeracy as directed by the Schools Division of Quezon resulted to the Mean Percentage Score of 47.6 and 44.5, respectively. The MPS are relatively lower than the 75.0 standard MPS set by the Division. These statistics on the achievement of the students clearly indicate a problem within the level of the computational skills of the learners. With the concept of teaching to produce the desired learning outcome (Salandanan, 2012), it is relatively clear that it must consist of well-planned tasks. Learning is the definitive goal and teaching then is a personal venture.

During the pandemic, students in the Philippines are used to learning modules as part of the continuity plan. According to Putra and Novita (2015), students may study independently using modules since they are provided many instructions that are simple to understand and follow the learning activities. These modules are usually referred to as task-based learning (TBL) where the tasks are sequenced. TBL is described as activities that engage learners in meaningful, goal-oriented dialogue to solve issues, complete projects, and reach choices (Ellis, 2003). The TBL lessons allow students to complete a task, which entice interest from the students. However, it entails effective communication and a defined objective that students are oriented to be achieved. In the TBL process, the instructor starts the session by initiating the task. It is divided into three lesson structures: pre-task, task, and review. In the pre-task, the teacher introduces the task to the students and gets them excited. In task stage, the learners answer the given activities and the teacher serves as facilitator of the learning process. In the review stage, the aim is accuracy—reflecting on the completed task and analyzing it (Fithriani, 2018). The common examples of tasks include creating a presentation, solving mathematical issues, or answering computational inquiries.

In this study, the learning activities in Mathematics are provided to the students as part of the task-based teaching utilizing the learning module to address the requirement to improve students' mathematical performance. As such, this study aimed to determine the effectiveness of TBL module in improving the computational skills of Grade V students in Mathematics. Specifically, it aimed to evaluate the structure of the lesson in the TBL module in terms of pre-task, task, and review. It also evaluated the task-based learning module based on adaptability, clarity, validity, usability, and aesthetic value. During the implementation, it assessed the pretest and posttest mastery level of the student-respondents on computational skills in terms of problem-solving, decision-making, sequencing, algorithm formation, and quantitative measurement. For statistical inference, the study tested that significant difference between the pretest and posttest mastery level of the student-respondents on computational skills.

2. Literature Review

Math computation skills are usually introduced during the early elementary grades in the following order: addition, subtraction, multiplication, and then division (Harris, 2017). Teachers often reinforce math computation skills via games, timed tests, and drills. New learning builds upon prior knowledge and is continually dependent until students have mastered all four skills (Harris, 2017). This new learning extends as the learner progress in learning. Generally speaking, computations entail finding an answer to a problem via math or logic.

According to Villanueva and Gayoles (2019), teaching should not only provide one stimulus to pupils. Teachers need to use interactive techniques to present material interestingly and effectively instead of using a textbook only. Much more in improving the computational skills of the learners, there must be a lot of activities that the teachers have to provide in order to achieve the learning objectives and competencies. To this, learning modules are recommended.

According to Educational Technologies, JPGM (2020), the use of learning modules is characterized as the method for presenting lesson materials in a direct style, with a chapter-by-chapter guide and with the freedom to control the release of the material in each turn. It embraces the idea of "chunking" information and can contain all types of content, such as text, graphics, and multimedia and assessment tools. In the current situation where plenty of students find difficulty in learning due to available limited learning resources, Rahmawati et al. (2019) proposes the utilization of modules in learning and in presenting lessons. The use of modules in instruction caters to individual differences in learning and provides an avenue for active participation where students learn by doing since they are involved in the manipulation of the instructional materials (Bedaure, 2012). In addition, the goal of instruction and the shifting of different strategies, methods, and approaches is the transfer of learning (Cabardo, 2015). This happens when learning in one context or with one set of materials affects performance in another context or with other related materials.

One of the elements of an effective learning module is the task-based learning. According to Fithriani (2018), the task-based learning is a lesson structure where there is a method of sequencing activities in the lesson. It has three parts or stages, the pre-task, task, and review. These stages follow a sequence of activities that involve the students in learning which the goal it to arrive in completing the objectives of the lesson. According to Rapanta et al. (2020), the task-based instruction is characterized by activities that engage learners in meaningful, goal-oriented communication to solve problems, complete projects, and reach decisions.

When utilizing task-based learning, teachers have to ask their students to perform tasks that resemble authentic "real-life" situations (Lemmolo, 2020). This approach particularly challenges students who are used to a more traditional classroom. There are given tasks that ask more from the students than the mere understanding of the lesson. Accordingly, learners have different ways of learning the subject matter. Thus, providing tasks to the learners that are within their abilities is needed in order to make learning happens (Reyes et al., 2019). Task-based learning offers the student an opportunity to do exactly the tasks given to them. The activity reflects real life learning where learners focus on meaning (Bowen, 2020). The tasks that should be given to the learners must develop them holistically and they must be able to use the learning in real-life situations rather just being mere taught.

Theoretical Framework

This study was anchored on the theory of scaffolding, an education term that was first used in context by Psychologist and instruction designer, Jerome Bruner (1978) and can also be traced from Lev Vygotsky's study of Zone of Proximal Development (1978). The term scaffolding refers to a process in which teachers' model or demonstrate how to solve a problem, and then step back, offering support as needed (Spadafora & Downes, 2020). Bruner stated that what determines the level of intellectual development is the extent to which the child has been given appropriate instruction together with practice or experience.

Wood et al. (1976) highlighted six important factors in the structure of social interactions with peers in students' education, including recruitment, decrease in degrees of freedom, direction maintenance, marking critical characteristics, frustration control, and demonstration. When showing or 'modeling' a solution to a task, for instance, "the tutor is 'imitating' in idealized form an attempted solution tried (or thought to have been tried) by the tutee with the hope that the learner would subsequently 'imitate' it back in a more acceptable form." "The only behaviors students' copy are all those they could already execute quite effectively," (Wood et al., 1976 p. 99)

3. Methodology

3.1. Research Design

The study employed descriptive and quasi-experimental research with intact group, wherein a task-based learning module was used to test if there is an improved computational skills of the Grade V students in Mathematics. The design entails manipulating the parameter, quasi-experimental research removes the directionality issue. As it does not include random assignment to conditions, it does not solve the problem of potential confounders. As a result, quasi-experimental research has a better internal validity than correlational studies but a lower internal validity than actual experiments (Jhangiani et al., 2015).

3.2. Respondents of the Study

The participants of the study consisted of 35 Grade V-Emerald students of a public elementary school in a town in the Philippines. The study used cluster-sampling technique and included all the 35 learners enrolled in the class as students-respondents of the study. This is the only section in Grade V which consist of 16 male and 19 female students.

3.3. Research Instrument

The instruments used in the study are research-made tests, task-based learning module and evaluation tool.

Pretest and posttest. The pretest and posttest on computational skills in Mathematics are supported by table of specifications (TOS) anchored on the Most Essential Learning Competencies and PIVOT 4A Budget of Work during the second quarter identified by the Department of Education. The pre-test and posttest are composed of five mathematical word problems each that test the mastery level of the students on computational skills in the aspects of problem-solving, decision making, sequencing, algorithm formation, and quantitative measurement. The answers of the students were rated using a researcher-made rubric. The pre-test and posttest were content-validated by seven experts in the field of education composed of one Head Teacher, three Master Teachers and three Teachers, all in line with Mathematics.

Task-based learning module. The task-based learning module was anchored from the Curriculum Guide of the K-12 Curriculum Program and based on the Most Essential Learning Competencies identified by the Department of Education covering the topics on the second grading period, which are addition, subtraction, multiplication, and division of decimals, as well as, ratio and proportion. The module follows the pre-task, task, and review stages.

Evaluation tool. A survey instrument was constructed for module evaluation. It has two parts: part 1 describes the extent of appreciation of the students-respondents on the three parts of the learning module: pre-task, task, and review stage; and part 2 describes the evaluation of the task-based learning module based on adaptability, clarity, validity, usability, and aesthetic value. All the statements were rated using the 5-point Likert Scale.

3.4. Research Procedure

Pre-test. The administered pre-test on computational skills covered the lessons on the second grading period based on the Most Essential Learning Competencies (MELC) identified by the Department of Education. The parents of the participants received the pre-test materials and were given instructions on how to answer the test. After one week, the accomplished pre-tests were retrieved while the first set of task-based learning module was given.

Task-based learning module. The task-based learning module was given on the second week. The module on the addition of decimals was given first to the students which was answered within one week. On the following week, the parents submitted the first set of learning module and received another one. The cycle went on for five learning weeks until all the lessons based on the 'budget of work' were given to the students which are addition, subtraction, multiplication, and division of decimals, and ratio and proportion.

Posttest. After the utilization of the task-based learning module, the posttest for the students' computational skills that has the same learning competencies with the pre-test were given to the students-respondents. It was given to the parents during distribution schedule on the 7th week and retrieved on the 8th week of the second grading.

Module evaluation. The module evaluation instrument was given to the respondents on the 8th week. This evaluation assessed the students' perception on the structure of the module.

Online monitoring, teacher-researcher's written feedback on the module, and parents-teacher evaluation of students' works after every quarter were done to monitor the progress of the student-respondents as they answer the module. Following the government standard health protocol, the parent of the learner received the instruments through the learning hubs or stations set by the school.

3.4. Statistical Treatment of Data

The data were gathered, tabulated, tallied, and they were interpreted through statistical method. In assessing the module, mean and standard deviation were used. To find-out the significant difference between the mean pre-test and mean posttest scores of the student-respondents, paired t-test were utilized. The significant relationship was calculated using Pearson Product-Moment Correlation were used.

4. Findings and Discussion

Table 1 shows the extent to how student-respondents described the structure of the lesson in the task-based learning module in terms of pre-task. The result of the study reveals that the student-respondents strongly agreed with all the statements on the criteria indicated with a general mean of 4.61. It implies that the structure of the pre-task in the task-based learning module is very well-structured.

Table 1

Perceived Structure of the Lesson in the Task-Based Learning Module

Statements	Mean	SD	VI
Pre-Task			
The pre-task stage of the Task-Based Learning module…			
1. stated the expected learning outcomes	4.66	0.64	SA
2. had clearly explained the objectives	4.77	0.43	SA
3. provided instructions and materials that supported my study	4.83	0.45	SA
4. had an organized content	4.63	0.6	SA
5. stimulated my interest to proceed with the lesson	4.69	0.58	SA
6. made me understand the aims and requirements of the module from the introductory stage	4.71	0.52	SA
7. provided sufficient background information	4.66	0.59	SA
8. used ideas and representations that are familiar to me	4.74	0.56	SA
9. increased my confidence in carrying out the task	4.8	0.47	SA
10. encouraged me to conduct independent work	4.6	0.65	SA
Overall	4.71	0.46	SA
Task			
The task stage of the Task-Based Learning module…			
1. presented situations and ideas that are factual	4.66	0.64	SA
2. supplied materials that support my study	4.71	0.62	SA
3. had activities that are within my level of understanding	4.63	0.65	SA
4. presented topics in an appropriate order	4.63	0.73	SA
5. is suitable for independent work	4.57	0.74	SA
6. provided explanation to guide my learning	4.69	0.68	SA
7. has appropriate content	4.69	0.63	SA
8. gave activities in preparation for assessment	4.54	0.7	SA
Statements	**Mean**	**SD**	**VI**
9. paced the lesson to meet student needs	4.54	0.7	SA
10. enabled me to feel enthusiastic in completing the tasks	4.66	0.64	SA
Overall	4.63	0.58	SA
Review			
The review stage of the Task-Based Learning module…			
1. has organized supplemental activities	4.69	0.58	SA
2. provided learning tasks that support my understanding of the lesson	4.77	0.49	SA
3. helped increase my knowledge of the discipline	4.86	0.43	SA
4. probed for clarification and understanding	4.71	0.52	SA
5. created support (scaffolding) to make it easier to understand the lesson	4.69	0.58	SA
6. made connections between and among ideas	4.66	0.59	SA
7. provided independent thinking at the end of the lesson	4.6	0.69	SA
8. have met the learning outcomes	4.51	0.78	SA
9. made me excited to proceed to the next lesson	4.6	0.65	SA
10. helped me in understanding the lesson at a higher level	4.6	0.6	SA
Overall	4.67	0.48	SA

Legend: 4.50-5.00 Strongly Agree/ Very Well Structured, 3.50-4.49 Agree/ Well Structured, 2.50-3.49 Moderately Agree/ Structured, 1.50-2.49 Disagree/ Not so Structured, 1.00-1.49 Strongly Disagree/ Not Structured

It points out that the construction stage where the objectives and topic are being introduced, and where engagement of the lesson is being done is highly appreciated by the respondents. It also shows that the pre-task stage was able to engage the learners to continue doing the task that the material presented to them. The result implicates that the structure of the lesson in the task-based learning module in terms of pre-task provides clear direction on the tasks to be performed by the students. It is similar to the established task of Belotti (2010) which provides activities that embody units of knowledge and with those activities comes learning that is important as children progress.

Moreover, the result also demonstrates the strong agreement of the student-respondents on the structure of the TBL module in terms of task with the overall mean of 4.63. This implies that the task stage of the lesson is very well-structured and the design of the task stage is highly acceptable. This is the exact explanation of Bowen (2010) that the task should reflect real-life learning where learners focus on meaning.

In terms of review, the student-respondents strongly agreed on the indicators with a general mean of 4.67. This means that they viewed the particular stage of the learning module as very well-structured and constructed in accordance with the preference and ability of the students. This compensates the consideration of McLeod (2008) that the learner’s material must fit their learning style or ability.

In summary, the structure of the TBL module based on the student-respondents’ description has been found to be very well-structured, and the way how the instructions, activities, and assessment were presented has been a significant factor why the students were able to progress in performing the tasks and understanding the lessons. The result is supported by Mitchell and Carbone (2011) which indicates that the structure of the task that students are carrying out will influence students’ engagement with the lesson for them to understand fully the lessons included.

Table 2 presents the respondents’ perception of the module based on various indicators. In terms of adaptability, the results showed a grand mean of 4.63 that depicts strong agreement. It implies that they evaluated the learning module based on its adaptability to the very great extent. Moreover, the task-based learning module is highly adaptable or has a quality of being able to adjust to new conditions or the capacity to be modified for a new use or purpose.

Table 2

Perception on Task-Based Learning Module

Statements	Mean	SD	VI
Adaptability			
The module			
1. is suitable for distance learning modality	4.54	0.66	SA
2. can be adapted to respond to the needs, interests and goal of the learners	4.54	0.61	SA
3. is aligned to Grade V level	4.74	0.56	SA
4. is appropriate to the different types of learners	4.74	0.51	SA
5. consists of current and relevant ideas	4.57	0.61	SA
Overall	**4.63**	**0.49**	**SA**
Clarity			
The module…			
1. has clear direction on how to answer	4.66	0.64	SA
2. is self- directed that students can follow the given directions in answering	4.6	0.69	SA
3. clearly emphasizes completing tasks	4.49	0.74	A
4. has clear learning objectives	4.6	0.65	SA
5. presents information in appealing and clear ways	4.54	0.61	SA
Overall	**4.58**	**0.61**	**SA**
Validity			
The module…			
1. presents opportunities for task-based learning	4.51	0.7	SA
2. primarily considers the students' needs and interests	4.51	0.7	SA
3. gives factual ideas and information throughout the lesson	4.66	0.64	SA
4. relies on the learners' prior knowledge for building new skills	4.57	0.65	SA
5. is aligned to the learning competencies	4.63	0.69	SA
Overall	**4.58**	**0.62**	**SA**
Usability			
the module			
1. is answerable for learners regardless of intellectual ability	4.6	0.69	SA
2. is designed so that learners can immediately apply the skills and knowledge acquired	4.49	0.7	A
3. provides opportunity for learners to apply what they have learned in authentic situations	4.57	0.61	SA
4. sets up so that learners can advance at their own pace	4.51	0.61	SA
5. is convenient to use with regards to the new normal setting	4.57	0.61	SA
Overall	**4.55**	**0.57**	**SA**
Aesthetic Value			
the module			
1. has texts are big enough to be read by students	4.83	0.45	SA
2. has decluttered lay out which is not intimidating	4.69	0.58	SA
3. breaks up the texts through visuals and helps the reader to understand it	4.69	0.58	SA
4. is attractive to the learners	4.71	0.52	SA
5. looks easy to read and understand	4.69	0.53	SA
Overall	**4.72**	**0.38**	**SA**

Legend: 4.50-5.00 Strongly Agree/ Very Great Extent, 3.50-4.49 Agree/ Great Extent, 2.50-3.49 Moderately Agree/ Moderate Extent, 1.50-2.49 Disagree/ Some Extent, 1.00-1.49 Strongly Disagree/ Not At all

It infers that the developed and contextualized learning module can be more adaptable. This adaptable feature of the module as reiterated by Ambrose et al. (2013) can help lead students toward self-sufficiency and lifelong advancement.

In terms of clarity, the grand mean yields a strong agreement with the mean of 4.58. The students perceived it to be at very great extent based on clarity. It denotes that the respondents clearly understand the contexts of the lesson presented in the task-based learning module. Moreover, it can be inferred that the students perceived the module to be clear leading to the understanding of the module content. The result fits the same evaluation of Khalil and Elkhider (2016) that TBL module uses clear instructional design.

In terms of validity, result shows that students strongly agreed that the module is valid after garnering the grand mean of 4.58. It signifies that the module has the quality or state of being valid and fact-based, appropriate to measure what it intends to measure and suitable to be used considering the factors that affect how they learn during the modular distance learning. This is similar to the description of Buntins et al. (2017) that validity is met when skills have been measured well and developed to what the learning outcomes have been met.

In terms of usability, there is strong agreement to the indicators with an average mean of 4.55 denoting usability at the very great extent. The developed TBL module is capable of being used in the distant learning modality. Moreover, the evaluation also fits the criteria of Garin et al. (2016) on the designed objectives, instructions, and activities that allow learners to explore ahead and discover new solutions to the problem.

There is also strong agreement on the aesthetic value of the module as evidenced by an overall mean of 4.72. The learning module appearance provided positive effects on how the students see the module as a material that aids the achievement of their learning goals. Similarly, the description of Duh and Krašna (2011) that aesthetic value does not only pertain on its appearance but also with the natural concept used in presenting the lesson to make it more relevant. True enough, the aesthetic value of the material also affects the attitude of the learners using it.

Table 3 shows the students' performance on the pretest and posttests involving computational skills such as problem-solving, decision-making, sequencing, algorithm formation and quantitative measurement. Overall, the students had extremely better performance in the posttest signifying a positive effect on the students after the implementation of the TBL module. From the low level of achievement on the pretest, the students obtained very good to excellent performances in problem-solving, decision-making, sequencing, algorithm formation and quantitative measurement. This result affirms the findings of Putra and Novita (2015), Ellis (2003), Fithriani (2018), Rapanta et al. (2020), Lemmolo (2020) and Reyes et al. (2019) that TBL module improves students' performance.

The results show that during the pre-test no respondent was able to perform excellently in problem solving. However, 25 students obtained a score of 16-20, which corresponds to 71.4% interpreted as very good. It indicates that most of the students select the solution that is the most effective for overcoming the obstacle or constraint but does not completely explain why it is the most effective of the possible solutions.

Table 3

Pre-test and Posttest Scores on Computational Skills

Problem-Solving

Scores	Pre-test F	Pre-test %	Posttest F	Posttest %	Remarks
21-25	-	-	31	88.6	Excellent
16-20	25	71.4	4	11.4	Very Good
11-15	6	17.1	-	-	Good
6-10	4	11.4	-	-	Fair
0-5	-	-	-	-	Poor

Decision-Making

Scores	Pretest F	Pretest %	Posttest F	Posttest %	Remarks
21-25	-	-	32	91.4	Excellent
16-20	23	65.7	3	8.6	Very Good
11-15	6	17.1	-	-	Good
6-10	5	14.3	-	-	Fair
0-5	1	2.9	-	-	Poor

Sequencing

Scores	Pre-test F	Pre-test %	Posttest F	Posttest %	Remarks
21-25	-	-	32	91.4	Excellent
16-20	21	60	3	8.6	Very Good
11-15	8	22.9	-	-	Good
6-10	5	14.3	-	-	Fair
0-5	1	2.9	-	-	Poor

Algorithm Formation

Scores	Pre-test F	Pre-test %	Posttest F	Posttest %	Remarks
21-25	-	-	31	88.6	Excellent
16-20	22	62.9	4	11.4	Very Good
11-15	7	20	-	-	Good
6-10	5	14.3	-	-	Fair
0-5	1	2.9	-	-	Poor

Quantitative Measurement

Scores	Pre-test F	Pre-test %	Posttest F	Posttest %	Remarks
21-25	-	-	32	91.4	Excellent
16-20	23	65.7	3	8.6	Very Good
11-15	6	17.1	-	-	Good
6-10	5	14.3	-	-	Fair
0-5	1	2.9	-	-	Poor

In terms of decision making, the pretest results infer that more than half of the respondents obtained scores at 16-20 bracket with 23 students in total comprising 65.7% rated as very good in decision making. The result shows that majority of the learners during the pre-test used relevant criteria to select the most appropriate option but does not completely explain why the option selected is the most appropriate.

As to the frequency of sequencing, no student received a score from 21-25 during the pretest. However, 21 or 60% of the respondents scored at 16-20 equivalent to very good performance in answering the mathematical word problems. In this test, most of the students can organize simple sequences sets with assistance to reveal patterns that suggest relationships. Similarly, none of the students did excellently in forming the algorithm during the pretest. There are 22 out of 35 students performed at very good level score of 16-20 comprising 62.9% of the respondents. This points out that students have created, generated or used symbols, with assistance, to form simple algorithms to compare alternative solutions to a computational problem.

In terms of quantitative measurement, still no student was able to meet the excellent scores of 21-25 during the pretest. However, there are 23 students or 65.7% at a very good level. The score of 16-20 implies the ability to describe or measure quantities such as number of blocks, number of moves and time to address spatial questions and problems.

Table 4

Test of Significant Difference between the Pre-test and Posttest Scores on Computational Skills

Computational Skills	Test	Mean	SD	Paired Differences				t	Sig
						95% Cl of the Diff.			
				Mean	SD	Lower	Upper		
Problem Solving	Pretest Posttest	16.89 23.80	4.07 2.08	6.91	3.58	5.683	8.145	11.413	0.000
Decision Making	Pretest Posttest	15.89 23.20	4.48 2.34	7.31	3.77	6.019	8.610	11.474	0.000
Sequencing	Pretest Posttest	15.69 23.40	4.40 2.37	7.71	3.50	6.511	8.918	13.029	0.000
Algorithm Formation	Pretest Posttest	15.06 23.20	4.45 2.32	8.14	3.90	6.802	9.484	12.339	0.000
Quantitative Measurement	Pretest Posttest	15.60 23.91	4.47 1.95	8.31	4.00	6.941	9.688	12.302	0.000

Table 4 presents a significant difference between the pre-test and posttest mastery levels on computational skills in terms of problem solving, decision making, sequencing, algorithm formation, and quantitative measurement. After utilizing the TBL module, students were able to improve their computational skills. Additionally, they were able to reach the excellent level in the mastery of their skills to select the solution that is the most effective in solving the problem, determine the most appropriate option in answering the question, identity the sequences and patterns, generate and use symbols, and measure data in the form of numbers. The quantitative measurement skill garnered the highest mean difference of 8.31. This entails that among the five skills, this most developed enabled the students to advance their ability to describe, measure or estimate quantities. While the problem-solving skills gained the lowest mean difference of 6.91, it is sufficient to show that students were able to select the solution that is the most effective in solving the problem. This result affirms the studies of Putra and Novita (2015), Ellis (2003), Fithriani (2018), Rapanta et al. (2020), Lemmolo (2020) and Reyes et al. (2019).

5. Conclusion

The main objective of this study was to determine the effectiveness of the task-based learning module in Mathematics V in improving the computational skills of the students. In addition, it examined any significant difference between the mean pre-test and posttest mastery levels of the students on computational skills. The study employed descriptive and quasi-experimental research designs where a TBL module was developed and used as the primary instrument in improving the computational skills of the students.

Results of the module evaluation showed the TBL lesson as very well structured as evidenced by the obtained average means on pre-task (4.71), task (4.73), review (4.67) and a grand mean of 4.67 describing the module adaptable, clear, valid, usable, and aesthetically made. The students' performance also showed significant improvement from pretest to posttest. The posttest scores posted significantly higher scores in all five learning skills, an average of 32 students or 91% of the whole population is considered excellent, while the remaining 3 students or 9% is very good. The result showed significant difference between the pre-test and posttest scores on computational skills of the students resulting to affirmation that TBL module had been an effective tool in improving the computational skills of the students.

This study suggests that teachers may construct TBL module with directions that are precise and appropriate for the students to perform the tasks properly. Teachers are likewise encouraged to use the TBL module in teaching Mathematics as it was found to be significant in improving the computational skills of the students. Future researches are encouraged to conduct a similar study both in Mathematics and other disciplines using the same variables or input additional variables to expand the scope of the study.

References

Ambrose, V. K., Davis, C. A., & Ziegler, M. F. (2013). A framework of contextualized teaching and learning: Assisting developmental education instructors.

Bedaure, A. A. (2012). Modular Instruction in Biology: It's Effect on Students' Performance. *International Peer Reviewed Journal*, *9*, 284-304.

Bellotti, F., Berta, R., De Gloria, A., & Primavera, L. (2010). Supporting authors in the development of task‐based learning in serious virtual worlds. *British Journal of Educational Technology*, *41*(1), 86-107.

Bowen, T. (2010). Teaching approaches: task-based learning. *Onestopenglish. com*.

Bruner, J. S. (1978). The role of dialogue in language acquisition. In A. Sinclair, R., J. Jarvelle, and W. J.M. Levelt (eds.) *The Child's Concept of Language.* New York: Springer-Verlag.

Buntins, M., Buntins, K., & Eggert, F. (2017). Clarifying the concept of validity: From measurement to everyday language. *Theory & Psychology*, *27*(5), 703-710.

Cabardo, J. R. (2015). Effectiveness of Enhanced Learning Materials in Science for the Open High School Program. Available at SSRN 2615161.

Department of Education Memorandum No. 89, s. 2020, Clarifications on the use of Most Essential Competencies and other Related Issues (June 15, 2020)

Department Order No. 12, s. 2020, Basic Education Continuity Plan (BE-LCP) for school year 2020-2021 (July 20, 2020)

Dewi, P. Y., & Primayana, K. H. (2019). Effect of learning module with setting contextual teaching and learning to increase the understanding of concepts. *International Journal of Education and Learning*, *1*(1), 19-26.

Duh, M., & Krašna, M. (2011). Aesthetics and creativity in e-learning material. *International journal of knowledge and learning*, *7*(1-2), 130-144.

Ellis, R. (2003). *Task-based language learning and teaching*. Oxford university press.

Fithriani, R. (2018). Task-Based Language Teaching in Grammar Instruction: A Literature Review. *Inteligensia: Jurnal Studi Keislaman, 4*(1), 67-79.

Gafoor, K. A., & Kurukkan, A. (2016). Self-regulated learning: A motivational approach for learning mathematics. *International Journal of Education and Psychological Research*, *5*(3), 60-65.

Garin, R., Reyes, R., Domantay, G., & Rosals, J. (2017). Contextualized and Localized teaching as a technique in teaching basic statistics. *Asia Pacific Journal of Education, Arts and Sciences*, *4*(1), 62-67.

Harris, A. (2017). What Are Math Computation Skills?. Retrieved from: https://sciencing.com/fundamental-similarities-between-fractions-decimals-8510600.html

Jhangiani, R. S., Chiang, I. A., & Price, P. C. (2015). *Research methods in psychology-2nd Canadian Edition*. BC Campus.

JPGM (2010). Creating Learning Modules, Educational Technologies. Regional Order No. 306, s. 2020, Corrigendum to the Enclosures in Regional Order No. 10, s. 2020, RE: Guidelines on the Implementation of MELC PIVOT 4A Budget of Work (BOW) in All Learning Areas for Key Stage 1-4 (June 16, 2020)

Khalil, M. K., & Elkhider, I. A. (2016). Applying learning theories and instructional design models for effective instruction. *Advances in physiology education*, *40*(2), 147-156.

Lemmolo, G. (2020). Academics Answer: What is Task-Based Learning

McLeod, S. A. (2008). Bruner-learning theory in education. *Simply Psychology*.

Mitchell, I., & Carbone, A. (2011). A typology of task characteristics and their effects on student engagement. *International Journal of Educational Research*, *50*(5-6), 257-270.

Putra, M., & Novita, R. (2015). Profile of Secondary School Students with High Mathematics Ability in Solving Shape and Space Problem. *Indonesian Mathematical Society Journal on Mathematics Education*, *6*(1), 20-30.

Rahmawati, Y., Ridwan, A., & Hadinugrahaningsih, T. (2019). Developing critical and creative thinking skills through STEAM integration in chemistry learning. In *Journal of Physics: Conference Series* (Vol. 1156, No. 1, p. 012033). IOP Publishing.

Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2020). Online university teaching during and after the Covid-19 crisis: Refocusing teacher presence and learning activity. *Postdigital Science and Education*, *2*(3), 923-945.

Reyes, J., Insorio, A. O., Ingreso, M. L. V., Hilario, F. F., & Gutierrez, C. R. (2019). Conception and application of contextualization in mathematics education. *International Journal of Educational Studies in Mathematics*, *6*(1), 1-18.

Salandanan (2012), Teaching and the Teacher, Lorimar Publishing

Spadafora, N., & Downes, T. (2020). Scaffolding in Learning.

Talimodao, A. J. S., & Madrigal, D. V. (2021). Printed Modular Distance Learning in Philippine Public Elementary Schools in Time of COVID-19 Pandemic: Quality, Implementation, and Challenges. *Philippine Social Science Journal*, *4*(3), 19-29.

Villanueva, S. M. P., & Gayoles, L. A. M. (2019). Lived Experiences of Incarcerated Mothers. *Philippine Social Science Journal*, *2*(1), 37-52. https://doi.org/10.52006/main.v2i1.55

Vygotsky, L. S. (1978). Mind in Society: the Development of Higher Psychological Processes. Cambridge, MA: Harvard University Press.

Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of child psychology and psychiatry*, *17*(2), 89-100.