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# EVALUATING MATHEMATICS LEARNING EXPERIENCE OF GRADE 7 STUDENTS OF BATO SCHOOL OF FISHERIES

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**Abstract**
A positive learning experience stems from active engagement with the lesson and greater interaction in learning activities. This study investigated the types of learning experience of students in Bato School of Fisheries, Leyte, Philippines such as Hands-on, Minds-on and Authentic Learning. Also, the study analyzed the students' level of achievement in learning mathematics under each type of learning experience. The study employed a random of 25% of the grade 7 students for experimental design that involves qualitative and quantitative approach. Result shows that the Hands-on learning experience of students is in beginning level which needs a proper guidance of the mathematics teacher. It is shown that students are more capable of Hands-on group activities in mathematics. For Minds-on learning experience, students are also in beginning level, however, it is found out that they are good in critical thinking processes which create and recreate mathematics concepts for the core topics. Furthermore, authentic learning experience is in beginning level, lowest among the 3 types of learning experience. This means that students must develop their problem solving skills in mathematics with the aid of suitable teaching strategies. Anyhow, it is found out that these students have a proficient level in mathematics achievement probably by their past knowledge. Hence, a good level of achievement in mathematics can be maintain or improve through enhancing the 3 types of learning experience especially the authentic aspect.

**Keywords**: grade 7 students, hands-on, minds-on, learning experience

## Introduction

The student learning experience is a key element of successful provision in higher education institutions (Can et al., 2017). In fact, it played a vital part in teaching and learning as it lays the foundation for developing students' knowledge and understanding of the subject as well as building up their confidence and employability skills. Learning experiences are important to a number of

conditions, including scaffolding, curriculum, and instructional methods (Tularam and Machisella, 2018). In classroom setting, any interaction, course or program in which learning takes would mean learning experiences. Especially in Mathematics when the students started to manipulate objects, their minds kept on asking questions which means they investigated ideas and finally found the solutions (Alabekee et al., 2015). Mathematics teachers should not only focus on the textbooks and worksheets otherwise they may not be able to move toward the new vision of the math classroom instead teacher must have a positive attitude, good personal qualities, and good teaching skills (Casinillo & Aure, 2018; Tularam & Machisella, 2018). To transform classrooms into learning communities of active and collaborative mathematical inquiry, teachers need to access and be able to use instructional materials for thought-provoking activities and projects, software for simulation and modeling, and resources in the community for authentic learning experiences, and a good teaching strategy (Casinillo & Guarte, 2018).

To implement reforms that engaged all students in meaningful mathematics learning, teachers need to learn a new role as a facilitator and coach in the classroom, expanded their knowledge based in mathematics, developed new curricular and instructional strategies, and changed their expectations for students. These changes required ongoing and intensive professional development that allows teachers to interact with their colleagues and that is based at their school and linked to its organizational development. The Bato School of Fisheries (BSF) is an autonomous school offering vocational course. It is located at the heart of Municipality of Bato, Leyte, Philippines. In BSF, the National Achievement Test (NAT) results serve as a parameter of whether a certain school is performing well or not in terms of academic achievement. The result in previous years, BSF scored below average in NAT examination particularly in Mathematics, and thus it is categorized as a low performing school having a mean percentage score (MPS) below 60% in the combined MPS of all subject areas. Of the five learning areas tested, the school got the lowest MPS in English followed by Science and next is Mathematics. This result seems to follow the trend of the overall national result of which Mathematics ranked if not the lowest then second from the lowest.

Data from Bato School of Fisheries showed a dismal performance of the students in Mathematics. For instance, the Bato School of Fisheries in the NAT of school year 2009-2010 revealed that the MPS posted by the students was only 49.39. In the school year 2010-2011, the NAT posted an MPS of 57.85 and the MPS of the NAT in 3rd year level for the school year 2012-2013 was 61.23. There was a substantial increase in MPS from the school year 2009-2010 to present school year but still very far to the target of 75% MPS. According to Casinillo (2019), failure rate in mathematics are influence by poor study habits and negative learning attitude. The National Achievement Test is crafted to finally address the weaknesses of learners and sustain those that they have in the terms of learning. Mathematics teachers may create different learning experiences either inside or outside the classroom just to help achieve the intended learning outcomes for students (Ross & Kurtz, 1993). This is to make sure that teachers meet the primary goal of the students in mathematics which is to gain mathematical power. It means an individual's abilities to explore, conjecture, and

reason logically, as well as the ability to use a variety of mathematical methods to solve no routine problems. However, as it is being administered, there seems to be some ironies and conflicts that need to be attended to for some significant reasons. Hence, this study was conducted.

The main purpose of this research study is to evaluate and analyze the mathematics learning experiences of grade 7 students. Also, this study determined if learning experiences have an impact on students' mathematics achievement level. An exhaustive investigation through structured questionnaire and face-to-face interview was conducted to reach a richer information about the students' learning process and academic performance in mathematics. Furthermore, the aim of this study is to document and highlight important outcomes to develop some existing policy in education and improve the well-being of students as well as the teachers.

***Conceptual Framework***

Active learning experience emphases on being effective, rich, interactive, and happy in the classroom setting (Beghetto, 2016; Mazana et al., 2019; Riley et al., 2017). In mathematics, it involves an essential learning experience in order to grasp the topics such as Hands-on, Minds-on and Authentic Learning (Prez et al., 2018). In Hands-on learning, students allows to directly take on board and understand what is happening in a particular event (Long and Rule, 2004). In other words, Hands-on learning stimulates all the senses and allowing the student to become more fully captivated in the experience. Hands-on lessons engage learners with real-world applications for classroom concepts. In minds-on learning, the student is thinking about what type of learning and doing he or she experiencing. This study claims that hands-on and minds-on activities without requiring specific expensive materials can be one of the interactive engagement methods (Lassonde and Reinhart, 2004; Nicaise et al., 2000). In the study of Nicaise and colleagues (2000), it is stated that authentic learning is an instructional approach that allows students to explore, discuss, and meaningfully construct concepts and relationships in contexts that involve real-world problems. This also includes some projects or activities that are relevant to the students to engaged in the manipulative activities and showing enthusiasm (Lassonde and Reinhart, 2004; Long and Rule, 2004). Seemingly, authentic learning helps the students to discover concrete representations or configuration of what they are learning in the classroom.

Hence, the conceptual framework of this study assumed that the mathematics learning experiences of grade 7 students in Bato School of Fisheries were described in terms of hands-on, minds-on and authentic learning. In general, the purpose of this study is to examine the different types of learning experiences of grade 7 students in mathematics in relation to their level of achievement. Specifically, this study sought the following objectives: to measure their learning experiences in terms of hands-on, minds-on, and authentic learning; to determine their level of achievement in mathematics; and to determine if there is a significant difference between their performances in three kinds of learning

experiences such as hands-on, minds-on and authentic learning.

## Method

This section elaborates the process of scoring and measuring the different variables in the study, the research design, the population sampling, the research instrument, data gathering procedure and the statistical treatment of the data. Prior to conduct this study, the researcher sent a letter of permit to the proper authority particularly in BSF, Bato, Leyte, Philippines. The researcher gathered the necessary information to be collected in order to gain the relevant information for the survey. Then, questionnaires were administered by the researcher. Data were gathered and organized in form of tables, and analyzed with the aid of descriptive and inferential methods.

### *Research Design and Research Respondents*

In order to gather more accurate and extensive data information in this study, the researcher only consider 22 students or 25% of all grade 7 students for quantitative and qualitative design survey. Qualitative Research is primarily exploratory research with the purpose of researching the cognitive competencies of prospective mathematics students related to the methodologies used in mathematics learning. It is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research and the design is based on the study of Yilmaz (2020). The research respondents involved in this study are composed of the grade 7 students which comprise 25% of the population of all grade 7 in BSF, Leyte, Philippines.

### *Research Instruments and Data Gathering Procedure*

The mathematics learning experiences were described in terms of hands-on, minds-on and authentic learning. Each of these were based on the possible tasks or instructional experiences mentioned by Professional Standards for Teaching Mathematics (1991). For qualitative data, a face-to-face interview was conducted with the procedure of Focus Group Discussion (FGD) in order to gather richer and relevant information. On the other hand, a developed structured questionnaire was used to gather data for quantitative survey design. There are four facets of the questionnaires with a rubric on how to rate each item of the questionnaires. The instruments was used to meet the research objectives in this study. These are the following:

Part I. It is a Minds-on questionnaire on students learning experiences. The selected students answered a 10-item activity questionnaire. The instrument contained items that described the student's minds-on learning in mathematics.

Part II. It is a 10-item activity questionnaire on the hands-on learning in Mathematics. This was consisted of items that described the hands-on learning of selected students.

Part III. Another 10-item activity questionnaire were answered by the selected grade 7 students to measure their authentic learning level.
Part IV. It is the questionnaire on the Achievement of all 22 Grade 7 students in Mathematics. The questions covered from the first grading up to third grading periods topics in mathematics.

Standardized test items were adopted from www.cde.ca.gov/ta/tg/sr/documents/rtqgr7math.pdf, October 2013. The researchers requested Mr. Edgardo P. Goron (Master of Arts in Education), head of the Mathematics department and Mrs. Rochelle J. Gertos (Master of Arts in Education), grade 7 teacher of Bato School of Fisheries to check whether the topics in each item of the questionnaires are included in the grade 7 curriculum.

This study used a Complete Randomized Design (CRD) to determine which learning experience influence the mathematics achievement the most. Hence, in terms of student's learning experiences in Mathematics, the grade 7 students of Bato School of Fisheries answered questionnaires that contain items describing their different learning experiences on Hands-on learning, Minds-on learning and Authentic learning. Table 1 shows the type of learning experiences and the number of students investigated under each type.

Table 1. Type of learning experiences and corresponding number of students of each type.

| Learning Experiences | Experimental Units (No. of Students) |
|---|---|
| Hands-on learning | 7 |
| Minds-on learning | 7 |
| Authentic learning | 8 |

Each kind of learning has a questionnaire 10 items. The use of rubrics employed on how to rate each item. Then, the respondents answered the achievement test. There were 50 items- multiple choices. It was answered for only one hour. In rating each item in the test, a rubric is used to determine the level of proficiency of student. In Table 2, it shows the Level of achievement in mathematics and the corresponding percentage score intervals (Casinillo et al., 2020).

Table 2. Level of achievement in mathematics and the percentage score intervals.

| Level of Achievement in Mathematics | Percentage Score Intervals (%) |
|---|---|
| Beginner | 74 and below |
| Developing | 75-79 |
| Approaching proficiency | 80-84 |
| Proficient | 85-89 |
| Advanced | 90-100 |

***Data Analysis Procedure***

This study used quantitative and qualitative in approaches; it employed descriptive survey and inferential research design. This method will be used to determine the significant difference between the level of achievement of grade 7 students in mathematics in relation to their learning experiences in terms of hands-on learning, minds-on learning and authentic learning. Then, descriptive survey will also determine the level of achievement of grade 7 students in Mathematics.
With the aid of Statistical Packages for Social Sciences (SPSS) version 20, the following statistical tests were used in this study:

1. *Frequency Counts and Percentages*. These were used in the organization and analysis of the mathematics learning experiences and the mathematics achievement of the students.
2. *Average Mean.* This tool was used in getting the over-all description of the mathematics achievement of the students.
3. *Complete Randomized Design (CRD) and Univariate Analysis of Variance (ANOVA)*. This was used in determining the significance of the difference of the mathematics learning experiences across the three types namely: minds-on, hands-on and authentic learning.
4. *Tukey Honestly Significant Difference (HSD) Test.* This was used to show the homogenous subgrouping of the three types of learning experience to identify which is the highest or most experienced tasks.

**Findings and Discussion**

This section shows the descriptive measure on the type of learning experience such as Hands-on Learning, Minds-on Learning and Authentic Learning. Also, it shows the summary of the level of achievement of the students in learning mathematics. Furthermore, this presents the ANOVA table that indicates the significant difference between the types of learning experience and the corresponding multiple comparison test table.

***Hands-on Learning***

Table 3 presents the average percentage of each of the task in the hands-on instructional learning experiences of the selected grade-7 students. As shown in the table, the result shows that first in the rank is "*Do a group activity in answering mathematical problems that will enable them to discuss within their group mates.*" got 100 average percentage (see Figure 1). This task is the most experienced task among the Grade 7 that enables students to share ideas and discuss it within the group. According to the idea of Lassonde and Reinhart (2004), hands-on learning, more formally known as Experiential Education, reflects a teaching philosophy that promotes learning by doing. Experiential learning is praised as a top teaching method by higher educational institutions. The first task, *students have an active role in formulating, designing, and managing the tasks* got 66.71% which is second in the rank. In this task, the students had actively formulated and designed the right mathematical expression, and managed to answer the item in the questionnaire. This task clearly shows that students were

able to manage the task, that this always experienced by the students in the classroom. This particular response is related to the study of Beghetto (2016) that this encourages students' creativity in problem solving, promote student independence, improves skills specifically reading, arithmetic computation, and communication. Task 2 is *on the students art of questioning that leads to the solution of the problem and formulation of another concept.* This task got 30.14% and in the fourth rank. It implies that grade 7 students had poor questioning skills that may lead to the solution of the problem. This idea is supported by criticalthinking.org/ the Critical Thinking Committee. Unfortunately, most students ask virtually none of these thought-stimulating types of questions. They tend to stick to *dead questions* like "*Is this going to be on the test*?" Questions that imply the desire not to think. Most teachers in turn are not themselves generators of questions and answers of their own, that are not seriously engaged in thinking through or rethinking through their own subjects. Rather, they are purveyors of the questions and answers of others- usually those of a textbook. Dead questions reflect dead minds, The art of Socratic questioning is important for critical thinker because the art of questioning is important to excellence of thought. What the word Socratic adds is "systematicity", "depth", and a keen interest in assessing the truth or plausibility of things. Next is the fifth in rank that got the lowest average percentage of 23.86%. This *task enables students to generate new concept and ideas based on the new knowledge learned.* This implies that students did not comprehend the concepts by actively utilizing acquired knowledge. Lastly, the fifth task which is 61.43% shows the *solution of the students with the aid of the teacher as the facilitator*. This is parallel to that study of Mensah and colleagues (2013) that emphasizes that children learn better when they can touch, feel, measure, manipulate, draw, and make charts, record data and a good attitudes towards the task. In addition, when students are working on a craft project or in centers, ask each student to quickly explain what they're doing and why, as well as what they're learning along the way. However, the Mean Percentage Score (MPS) of hands-on learning experiences in Mathematics is 56.43 with a description of beginning. This means that students are needing the guidance of the teacher to improve their academic performance in mathematics. It is also advice that students must be expose to technology to develop their Hands-on learning (Casinillo et al., 2020; Jonassen et al., 2008; Lombardi, 2011).

Table 3. Average percentage of hands-on learning experiences in mathematics

| Hands-on Instructional Learning Experiences | Average Percentage | Rank |
|---|---|---|
| 1. Students have an active role in formulating, designing, and managing the tasks. | 66.71 | 2 |
| 2. The task build on mathematically interesting questions or problems that students have raised. | 30.14 | 4 |
| 3. The task generate new knowledge and products and often have spinoffs into other subjects. | 23.86 | 5 |
| 4. Do a group activity in answering mathematical | 100.00 | 1 |

| | | |
|---|---|---|
| problems that will enable them to discuss within their group mates. | | |
| 5. Students are able to come up with the solution with the supervision of the teacher as the facilitator. | 61.43 | 3 |
| MPS | **56.43** | |
| ***Description*** | ***Beginning*** | |

Note: See Table 2 for details.

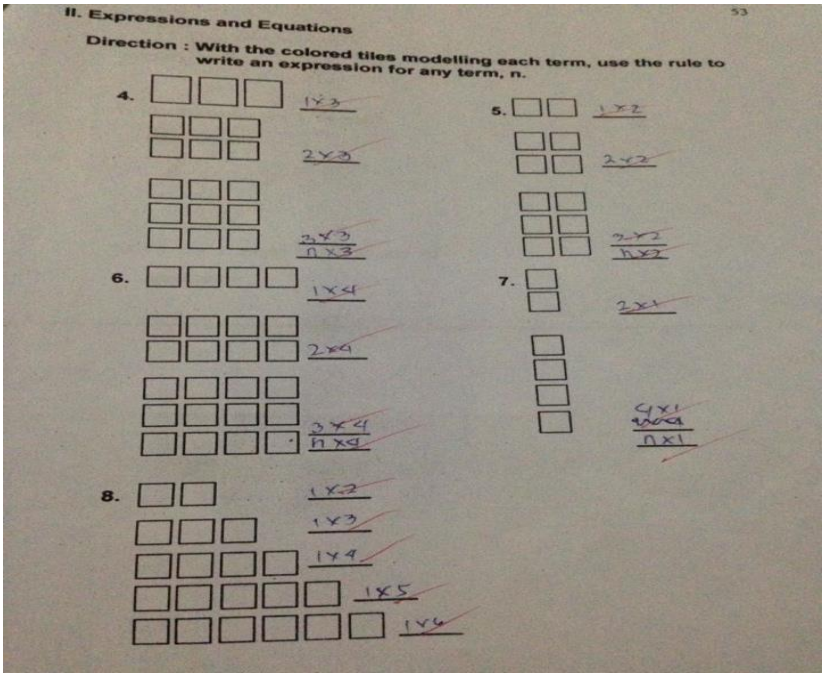


**Figure 1. Exhibit A** Filled Hands-on Questionnaire by selected Grade-7 Student

***Minds-on Learning***

Table 4 presents the average percentage of minds-on learning experiences in Mathematics of selected students. In task number 1, *students connect meaningfully to each other to bring about significant mathematical development over the course of the year and ultimately , throughout the pre-K-12 experience* that falls on the third rank. On the fourth rank is task number 2 *that involved non-routine problems- that is there is no way to specify in advance how to solve the problems and there are many ways in which the problems may be solved*. This task was not carried out and it's the lowest among the five tasks. Task number 3 in which students focused on the core concept, is on rank number 2. This shows that students are familiar with the basic concepts learned. This supports the idea of Casinillo and Aure (2018) that learners constructed knowledge and understandings on the basis of what they already knew and believed. This means that teaching should utilize students' prior knowledge as the basis for further learning. Next, first in rank is task number 4 *using critical thinking processes to create and recreate math concepts.* It shows that students are creative in learning

mathematics (See figure 2). Task number 5 which is *finding relations between and among concepts got the fourth rank.* This is parallel to some studies (Mazana et al., 2019; Riley et al., 2017) that not only it is important to consider the content of the mathematics curriculum, it's important to know about how people learn mathematics. Students need to learn mathematical concepts and to see relationships among these concepts. Because concepts and relationships are constructed by people and exist only in their minds, to learn mathematics, students must construct these concepts and relationships in their own minds. Also presented in Table 4 is the total average mean of 62.03%. This means that most of the students task in Minds-on is beginning level. This suggest that students must be properly guided by the mathematics teacher in order to improve the Minds-on learning.

Table 4. Average percentage of minds-on learning experiences in mathematics

| Minds-on Learning Experiences | Average | Rank |
|---|---|---|
| 1. The tasks connect meaningfully to each other to bring about significant mathematical development over the course of the year and ultimately , throughout the pre-K-12 experience. | 91.43% | 3 |
| 2. The tasks involve non-routine problems- that is there is no way to specify in advance how to solve the problems and there are many ways in which the problems may be solved. | 0% | 5 |
| 3. Focus on the core concept. | 94.29% | 2 |
| 4. Using critical thinking processes to create and recreate math concepts. | 95.86% | 1 |
| 5. Finding relations between and among concepts. | 28.57% | 4 |
| **Mean** | **62.03%** | |
| **Description** | **Beginning** | |

Note: See Table 2 for details.

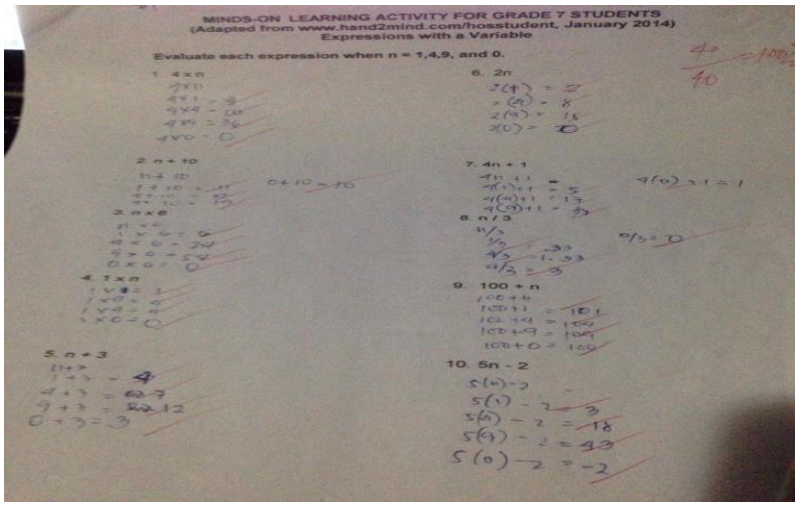


**Figure 2. Exhibit B** Filled Minds-on Questionnaire by selected Grade-7 Student

**Authentic Learning**

Table 5 presents the students average percentage of authentic learning experiences in Mathematics of selected grade 7 students. The tasks *often relate to problems that students encounter in their lives or communities* has an average percentage 28.75% and third in rank. This shows that students were not used in solving problems in real life situations. Students often express a preference for doing rather than listening. At the same time, most educators consider authentic learning the most effective way to learn. Yet for decades, authentic learning has been difficult to implement. Certain experiments are too dangerous, difficult, or expensive to conduct in the classroom; many are simply impossible to perform. This is supported by Lassonde and Reinhart (2004), according to them authentic tasks are not the norm in schools and classrooms. The next task is the *issues and concepts involved that can be solved using the same mathematical concept* that has an average percentage of 22%. This means that students had a hard time to identify whether two or more problems can be answered by the same rule or concept. Likewise Gestalt approaches emphasized the importance of experience, meaning, problem-solving and the development of insights (Baroody, 1987). It is noted that this theory has developed the concept that individuals have different needs and concerns at different times, and that they have subjective interpretations in different contexts.

The third task is the task that *contain another concept or theme that are rich enough to be explored over a substantial period of time, from a week to an entire school year and beyond*. This task is ranked the first. According to Reys and Colleagues (1995), that learning might not manifest itself in observable behavior until sometime after the educational program has taken place.

Task no.4 is the task that *enable the student to try to construct an illustration based on his understanding.* According to the study of Silver and Colleagues (1990), learning does not mean simply receiving and remembering a transmitted message; instead, educational research offers compelling evidence that students learn mathematics well only when they construct their own mathematical understanding. Table 5 shows that average percentage mean is 47.60. This implies that the tasks being done were beginning level.

Table 5. Average percentage of authentic learning experiences in mathematics

| Authentic-on Learning Experiences | Average | Rank |
|---|---|---|
| 1. The tasks often relate to problems that Students encounter in their lives or communities. | 28.75% | 3 |
| 2. The issues and concepts involved can be Solved using the same mathematical concept. | 22% | 4 |
| 3. The tasks contain another concept or theme that are rich enough to be explored over a substantial period of time, from a week to an entire school year and beyond. | 87.5% | 1 |
| 4. The task enable the student to try to construct illustration based on his understanding. | 52.13% | 2 |
| **Mean** | **47.60** | |
| **Description** | **Beginning** | |

Note: See Table 2 for details.

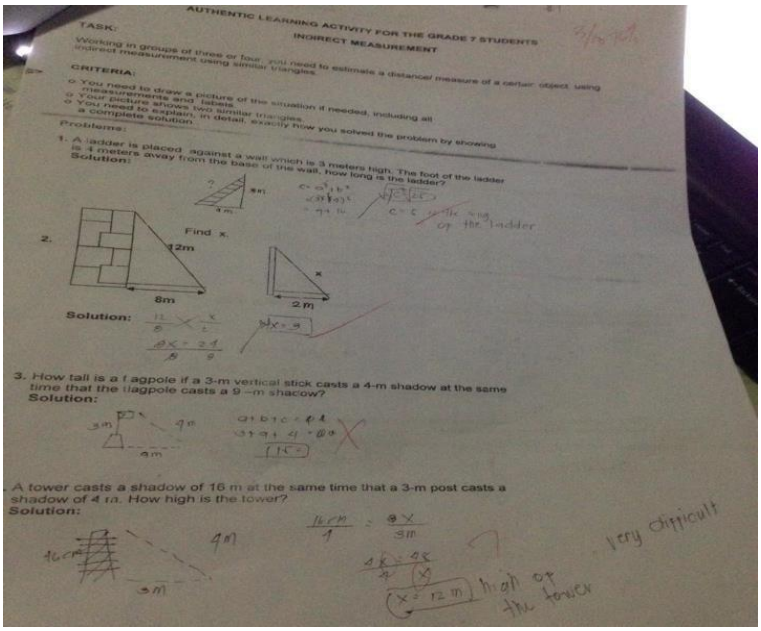


**Figure 3. Exhibit C.**
Filled Authentic Questionnaire by selected Grade-7 Student

### *Level of Students' Achievement in Mathematics*

Table 6 presents the distribution of level of students' achievement in Mathematics. As presented in the table, there are 9.10% of students fall under beginning level, about 27.27% students fall on developing and approaching proficiency, 31.82% are considered a proficient student, and 4.55% and advanced students. The average percentage is 89.57% which implies that on the average grade 7 students are proficient level in regards to their achievement in mathematics. This implies that students proficiency in mathematics can be improve by proper guidance of the teacher. Implementing meaningful undertakings in mathematics implanted in real-life applications can be creative and can enhance their learning experience.

Table 6. Distribution of level of students' achievement in mathematics

| **Level of Students' Achievement in Mathematics** | **Frequency** | **Percentage (%)** |
|---|---|---|
| Beginning | 2 | 9.10 |
| Developing | 6 | 27.27 |
| Approaching Proficiency | 6 | 27.27 |
| Proficient | 7 | 31.82 |
| Advanced | 1 | 4.55 |
| **Average Percentage** | **89.57** | |
| **Over all Description** | **Proficient** | |

Note: See Table 2 for details.

***Different Mathematics Learning Experiences of Grade 7 Students***

In determining the significant difference between the different types learning experiences of the students, the total points gained in the achievement mathematics questionnaire was used. These also described in consonance with the experiences identified per activity. As reflected in Table 7, there is a highly significant difference (F=38.451, p-value<0.001) across the three types of mathematics learning experiences of the students.

Table 7. Test results on the difference of mathematics learning experiences

| **TESTS OF BETWEEN-SUBJECTS EFFECTS** | | | | | |
|---|---|---|---|---|---|
| DEPENDENT VARIABLE: MATHEMATICS LEARNING EXPERIENCES | | | | | |
| SOURCE OF VARIATION | SUM OF SQUARES | DF | MEAN SQUARE | F | P-VALUE |
| BETWEEN GROUPS | 1948.571 | 2 | 974.286 | 38.451*** | <0.001 |
| WITHIN GROUPS | 481.429 | 19 | 25.338 | | |
| TOTAL | 2430.000 | 21 | | | |

NOTE: ***-HIGHLY SIGNIFICANT AT 1% LEVEL.

Based on the homogenous subsets shown in Table 8 and with the aid of using Tukey Honestly Significant Diffirence (HSD) test, the three types of mathematics learning experiences were found to be significantly different pairwise, with the minds-on experiences as the highest (mean=99.90) followed by hands-on (mean=92.71) and the last is authentic (mean=77.00) learning experiences. These results manifest that students have to be exposed to more activities that will enhance authentic learning since students are weak in this type. In order to enhance authentic learning, teachers must consider experiential learning theory. The experiential learning theory is a holistic perspective that combines experience, perception, cognition, and behavior. The theory presented a cyclical model of learning, consisting of four stages. One may begin at any stage, but must follow each other in the sequence: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Perhaps, authentic learning needs more time to be developed (Nicaise et al., 2000). And this is the reason why authentic learning experience is low. In this case, constancy and consistency in the exposure of authentic learning-driven activities are worthy to be considered. Hence, level of achievement in mathematics can be improve by developing and enhancing the authentic learning attitudes of the students (Code et al., 2016).

Table 8. Multiple comparison test for different type of learning experiences

| **TYPE OF MATHEMATICS LEARNING EXPERIENCES** | **N** | **SUBSET** | | |
|---|---|---|---|---|
| | | **C** | **B** | **A** |
| AUTHENTIC | 8 | 77.00 | | |
| HANDS ON | 7 | | 92.71 | |
| MINDS ON | 7 | | | 99.00 |

NOTE: DIFFERENT LETTERS MEANS IT IS SIGNIFICANTLY DIFFERENT.

## Conclusion

This study attempted to evaluate the different types of learning experiences of grade 7 students in relation to their level of achievement in Mathematics. The 3 types of learning experience involve in this study are Hands-on, Minds-on and Authentic learning of students. Results revealed that the Mean Percentage Score (MPS) of the 3 types of learning experiences are beginning level. This means that most of the students are not expose and enhance by these learning experience in mathematics. Hence, based on the findings, it is concluded that teachers should let the students actively participate and engage in learning activities, develop skills and processes for problem solving, reasoning and communicating. Mathematics teachers must give activities that involves Hands-on learning embedded by real life applications. Particularly, a group activities that will enable them to discuss within their group mates to come up with new ideas. The students will learn to work with others, and value the diverse ideas with their peers. Apparently, in order to keep the students improve the Minds-on experience is to let them experience the challenge and logic accompanied by interest and motivation. This experience focus on the core topics in mathematics that use a critical thinking processes to create and discover new concepts. Further, authentic learning must involve motivation and enthusiasm in problem solving. This will develop their decision making and critical thinking towards mathematical problems. The study revealed that there is highly significant difference across the three types of mathematics learning experiences of the students and authentic learning has the lowest percentage score.

It is concluded that a proper assessment must be done in authentic learning aspect. Assessment should be contextualized and allow students to show deep understanding of concepts. Also, it emphasized students' ability to link ideas in mathematics, apply the knowledge in realistic view and solve mathematical problems. Thus, it lies completely upon the mathematics teachers in creating learning experiences to be more meaningful and improve the level of academic performance. It is recommended that teachers must use of a variety of manipulatives and teaching strategies that can address the diversity of learning styles and developmental stages of grade 7 students. It will help also if the mathematics teacher has a positive attitude and good personal qualities that will surely have a positive impact on student's mathematics achievement. Furthermore, it is strongly recommended that similar research study should be led with larger sample size of high school students to come up with richer information about the learning experience and its corresponding level of achievement in mathematics.

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