INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue II
November 2024
Available online at https://www.instabrightgazette.com

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MINECRAFT APPLICATION UTILIZATION (MAU) AND LECTURE METHOD: THEIR EFFECTS ON THE PERFORMANCE OF NON-NUMERATE LEARNERS IN ENHANCED REGIONAL UNIFIED NUMERACY TEST (ERUNT)

ANNE KRISTINE E. PIAD
Teacher I
Lambunao National High School
piadannekristine@gmail.com

ABSTRACT

The study determined the effects of Minecraft Application Utilization (MAU) and lecture method in the performance of Grade 11 non-numerate learners of Lambunao National High School in Enhanced Regional Unified Numeracy Test (ERUNT). Based on the findings of the study, non-numerate learners were Nearly Proficient in pretest and Highly Proficient in posttest when exposed to MAU. There was a significant difference in the pretest and posttest performances of non-numerate learners in ERUNT when exposed to MAU. The performance of non-numerate learners who were exposed to lecture method in the pretest was Nearly Proficient and in the posttest was Proficient. There was a significant difference in the pretest and posttest performances of non-numerate learners in ERUNT using lecture method. There was no significant difference in the pretest performance of non-numerate learners using MAU and lecture method. There was a significant difference in the posttest performance of non-numerate learners who were exposed to MAU and lecture method.

Keywords: *Minecraft Application Utilization (MAU), Lecture Method, Enhanced Regional Unified Numeracy Test (ERUNT)*

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ISSN: 2704-3010
Volume VI, Issue II
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Available online at https://www.instabrightgazette.com

INTRODUCTION

Achieving mastery of the four mathematical and fundamental operations such as 1) addition, 2) subtraction, 3) multiplication, and 4) division is important in improving the learners' comprehension of numbers and calculation techniques.

Educators must embrace game - based learning resources, like Minecraft Application, to immerse students in interactive experiences in order to maintain pace with the increasing usage of technology. In addition, it helps learners in gaining a thorough comprehension of the fundamental mathematical ideas, connections, and applications in practical contexts, which eventually allows them to advance to more complex algebraic ideas.

Teachers may assist learners establish a strong foundation, foster deep knowledge, and lower the risk of calculator dependency in Mathematics, which hinders authentic mathematical comprehension, through integrating technology into the classroom, specifically game-based applications.

Following pandemic-related limitations that pushed the Department of Education (DepEd) to adopt new tactics in an attempt to enhance learning results, the agency is now adopting the concept of "game-based teaching."

Following a thorough examination of the topic, research was done on Minecraft as a teaching tool. The advantages and challenges of using Minecraft were taken into consideration additional to real-life example lessons.

The Minecraft Education Edition availability on worldwide span through Chromebooks, Mac, Windows, iPad, and in Android mobile devices is expanding the number of instructors

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
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and students who can use it. Making sure that everyone has access to technology is a persistent method that DepEd is giving to teachers and students the skills they need for the future (Department of Education, 2022).

Understanding how students learn is crucial for developing systems that support instruction and learning. Today, education takes place at anytime, anywhere and it is not only within the four classroom walls at any educational academy due to the ease with which knowledge is accessible.

The classroom–based, traditional learning, and teaching strategy, which permits students to move between formal settings and informal settings under the teacher's choice and supervision, is limited by recent technological advancements.

There are many methods for students to engage with new and fresh material because information is obtained from many different types of sources. New approaches to deal with the learners' shifting responsibilities have been inspired by the shifting demographics of the student body.

Since learners are expected to use technology for an increasing number of activities, they must learn how to translate knowledge they have acquired on digital platforms to physical learning environments. Creating interactive presentations, playing games with their classmates, and using digital textbooks are a few examples of the tasks.

Thus, the study was conducted to examine the effectiveness of Minecraft Application and lecture method to the performance of non-numerate learners on four basic operations in Enhanced Regional Unified Numeracy Test (ERUNT).

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ISSN: 2704-3010
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MATERIALS AND METHODS

Research Methodology

The chapter presents the research method, research design, respondents of the study, sampling design, data gathering procedure, research instrument, data analysis and statistical tools used in analyzing and interpreting the data in the study.

Research Method

Experimental method of research was used in this study. The "cause and effect" relationship of particular phenomena under control group setting, as well as the efficacy of a treatment or intervention, were all determined using the experimental method of study (David, 2005).

Research Design

Quasi-experimental research design using pretest and posttest method was employed in the study. Quasi-experimental method was a combination of descriptive research design and experimental method. It was called quasi-experimental since the study employed two types of methods. Minecraft Application Utilization (MAU) for the experimental group and lecture method for the control group. In quasi-experimental method, there was only one true experiment or study intervention conducted with the control group receiving no intervention, disruption from normalcy, or alteration. Pretest and posttest method were employed to compare results before and after the quasi-experimentation with the pretest results serving as baseline.

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ISSN: 2704-3010
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According to Ardales (2010) participants are assigned to the experimental and control groups at random from a single population in the method. At the start of the experiment, these two groups get initial findings for pretests in order to determine the differences and serve as the basis for determining the gains of both groups at the end of the experiment.

The method of research was used since it would determine the effects of Minecraft Application Utilization to four basic operations of non-numerate learners.

Participants of the Study

The participants of the study were the Grade 11 non-numerate learners who belonged to Senior High School Department HUMSS 11-Shakespeare and HUMSS 11-Dickens of Lambunao National High School, Schools District of Lambunao East, Schools Division of Iloilo, during the school year 2023-2024.

If a learner answered less than 80% of the modified tool correctly, they were classified as non-numerate learners.

The researcher was certain that the problem exists in the identified group of learners.

Sampling Design

In the selection of participants, Purposive sampling was employed. Purposive sampling was used since it was appropriate to target the solution to the same group of learners.

Purposive sampling was the approach employed when the researcher applied judgment to select a sample that was believed, based on prior information, would give the data, it best fitted the participant selection process. Through purposive sampling, the

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ISSN: 2704-3010
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researcher implemented the study with ease, homogeneity, and control (Fraenkel, Wallen, & Hyun, 2012).

Research Instrument

The ERUNT and the teacher-made lesson plan were used in the study. A standardized Electronic Regional Unified Numeracy Test instrument for pretest and posttest was utilized in gathering the data. The research instrument was composed of 40-item test. It is composed of 10 items each operation; 10 in addition, 10 in subtraction, 10 in multiplication, and 10 in division.

Validity of the Research Instrument

The lesson plans were utilized using Minecraft Application Utilization (MAU) and lecture method and had undergone validation by the committee of experts.

Validators' comments, corrections, and suggestions regarding the instrument were considered before they were used in the experiment.

Data Gathering Procedure

The researcher made a request letter and sent it to the school principal for the approval to conduct the study. Permits were secured from the thesis adviser, to the Dean of the Graduate School, School Principal and teachers prior to the conduct of the study.

When permission was granted, the researcher solicited the cooperation and understanding of the school head and teachers and learners.

The researcher prepared a lesson plan in every topic. The lesson plan contained topics that covered the first grading period. The researcher made eight (8) lesson plans for the

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experimental phase. The experimental group and control group used same lesson plans and other activities except for the teaching methods the researcher used MAU for experimental group.

The study implementation treatment was divided into three stages: (1) pre-experimentation stage included study material preparations, validity and reliability of research instrument; (2) experimental stage with two weeks of actual teaching with Minecraft Application Utilization (MAU) for the experimental group and lecture method for the control group; and (3) post-experimental stage for the interpretation and analyses of the results.

During the pre-experimental stage, before the two groups were exposed to any treatment, the pretest was administered to them. The direction was read carefully to ensure the learners' understanding of what they would do. The test limit for the test was fifty minutes. The researcher used the standardized Enhanced Regional Unified Numeracy Test (ERUNT) Pretest. The test papers were checked by the researcher and the results of the test of both groups were recorded. The scores that were attained by the members of both groups were tallied, tabulated, and computer-processed to determine their scores in ERUNT as baseline data or information.

After the pretest, was the experimental stage wherein, the experimental group was required to download the free Minecraft Application in Google play store. The Minecraft Application can be played offline and online. In the study, the respondents used the offline and used the "creative world" of Minecraft. The experimental group played Minecraft for free anytime and anywhere. Each group was exposed to treatment for two weeks. While in the

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ISSN: 2704-3010
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control group, the traditional method of teaching. The same lesson plans, activities, assignments were utilized to both groups. Two days were intended for addition, two days for subtraction, three days for multiplication and three days for division.

The post-experimental stage happened at the end of the two weeks of study intervention or experiment, a posttest was given to both experimental and control groups to determine their numeracy skills.

The data gathered were computer - processed, tabulated, analyzed, and interpreted using appropriate statistics.

Data Analysis

The research instruments were reproduced in accordance with the study's number of participants. After the completion of the tests, data were arranged, calculated, and tabulated on a computer using the SPSS (Statistical Package for Social Sciences) software.

For analysis, the researcher used the following scale of scores and interpretations adopted from interpretation used in Department of Education Regional Memorandum order 630, s. 2023.

Mean of Scores	Description
36.00 – 40.00	Highly Proficient
30.00 – 35.99	Proficient
20.00 – 29.99	Nearly Proficient
10.00 – 19.99	Low Proficient
0.00 – 9.99	Not Proficient

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RESULTS AND DISCUSSIONS

The study aimed to determine the effects of Minecraft Application Utilization (MAU) and lecture method on the performance of Grade 11 non-numerate learners in Enhanced Regional Unified Numeracy Test (ERUNT) at Lambunao National High School, Schools District of Lambunao East, Schools Division of Iloilo during the school year 2023 - 2024.

The cause-and-effect relationship of particular phenomena under controlled conditions, as well as the effectiveness of a treatment or intervention, were all determined using the experimental method of study.

Quasi - experimental research design using pretest and posttest method was employed in the study since the study utilized two types of methods, Minecraft Application Utilization (MAU) and lecture method for the experimental group and control group, respectively. There was only one true experiment or study intervention conducted with the control group receiving no intervention, disruption from normalcy, or alteration in quasi-experimental method.

The participants of the study were the Senior High School Grade 11 non-numerate learners of Lambunao National High School. Learners belonged to HUMSS 11-Shakespeare and HUMSS II-Dickens sections. Each section had twenty-seven (27) non-numerate learners. The experimental group was assigned to HUMSS 11-Shakespeare and the control the control group to HUMSS 11-Dickens. Both classes were comparable in terms of their Mathematics performance or grades.

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To determine which section belonged to experimental and controlled group, a toss-coin method was used. The experimental group was exposed to Minecraft Application Utilization (MAU) while the control group used lecture method.

In selecting the participants of the study, purposive sampling design was used. The researcher conducted the study with ease, homogeneity, and control during the study implementation through purposive sampling.

Standardized pretest and posttest instruments were used to gather the data. The research instrument was composed of 40-item test regarding the four basic Math operations (10-item test for addition, 10-item test for subtraction, 10-item test for multiplication, and 10-item test for division) based on the DepEd Memorandum Order 827 s.2022. The standardized instrument was used to determine and check the performance of Grade 11 learners pretest and posttest.

The researcher designed a matrix of activities by using Minecraft Application Utilization (MAU) and lecture method and came up with the same scheme which was followed by the researcher during the duration of the experiment, and gave importance to the following: objectives or topics, time allotment and number of days intended for each topic or objective, and corresponding teachings.

Permits were secured from the thesis adviser to the Dean of the Graduate School, to the school's district supervisor of Lambunao, to the school head, and to the teachers before the conduct of the study.

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ISSN: 2704-3010
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The researcher prepared a lesson plan for every topic. The lesson plan contained topics that covered the four basic operations. The researcher made ten (8) lesson plans for the experimental phase of the study. The experimental group and controlled group used same lesson plans and other activities except for the teaching methods used in which the researcher applied Minecraft Application Utilization (MAU) for the experimental group and lecture method for the control group.

The study implementation treatment was divided into three stages: the pre-experimentation stage which included study material preparations, validity and reliability of research instrument; the experimental stage with two weeks of actual teaching through Minecraft Application Utilization (MAU) for the experimental group and lecture method for the control group; and the post-experimental stage for the interpretation and analyses of the results.

Using the appropriate statistics, the data gathered were computer-processed, tabulated, analyzed and interpreted.

The researcher utilized the descriptive and inferential statistics. Mean, Frequency count and Percentage were used for descriptive statistics. Wilcoxon Signed Rank test set at 0.05 level of significance and Mann-Whitney U test were used for inferential statistics.

Findings of the study revealed that the non-numerate learners' performance in Enhanced Regional Unified Numeracy Test (ERUNT) who were exposed to Minecraft Application Utilization (MAU), Nearly Proficient for the pretest, while Highly Proficient in the posttest.

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There was a significant difference in the pretest and posttest performances of learners in Enhanced Regional Unified Numeracy Test (ERUNT) using Minecraft Application Utilization (MAU).

Non-numerate learners' performance in Enhanced Regional Unified Numeracy Test (ERUNT) who were exposed to lecture method was Nearly Proficient for the pretest and Proficient in the posttest.

There was a significant difference in the pretest and posttest performances of learners in Enhanced Regional Unified Numeracy Test (ERUNT) using lecture method.

There was no significant difference in the pretest performance of the non-numerate learners using Minecraft Application Utilization (MAU)and lecture method.

There was a significant difference in the posttest performance of the non-numerate learners using Minecraft Application Utilization (MAU) and lecture method.

Conclusion

Based on the findings of the study, the following conclusions were hereby presented:

With the use of lecture method in four basic operations in Math, learners' performance was improved. Lecture method still has a place in the classroom especially with learners who are having advance classes.

The use of lecture method significantly improved performance of the learners in Enhanced Regional Unified Numeracy Test (ERUNT).

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With the use of Minecraft Application Utilization (MAU) in teaching four basic operations in Math, learners' performance was improved.

Learners could really improve their performance in Enhanced Regional Unified Numeracy Test (ERUNT) using Minecraft Application Utilization (MAU) and good results are expected once MAU is applied.

Non-numerate learners were more knowledgeable and interested in Minecraft Application Utilization (MAU) than the use of lecture method.

Non-numerate learners' performance in Enhanced Regional Unified Numeracy Test (ERUNT)was improved further and better using Minecraft Application Utilization (MAU) rather than lecture method. Learners found Minecraft Application Utilization (MAU) more enjoyable and useful than lecture method.

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