ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

Implementation of the Computer-Based Instruction by Junior High School Mathematics Teachers

Gypsy Rose Francisco-Honrado
Labit National High School, Labit Proper, Urdaneta City, Pangasinan, Philippines
Corresponding Author e-mail: *gypsy_rose15@yahoo.com*

Received: 27 December 2023 **Revised**: 10 February 2024 **Accepted**: 14 February 2024

Available Online: 14 February 2024

Volume III (2024), Issue 1, P-ISSN – 2984-7567; E-ISSN - 2945-3577

Abstract

Aim: This study focused on the implementation of computer-based instruction by the junior high school Mathematics teachers (JHSMT) in the Schools Division of Urdaneta City during the school year 2022-2023.
Methodology: The descriptive-correlational method was used in this study. Seventy (70) junior high school Mathematics teachers from SDO Urdaneta City participated in the study. Data were collected through a questionnaire-checklist designed by the researcher and validated by experts in the field.
Results: Findings revealed that the "use of computer software" as one of the indicators in teaching Mathematics was the least utilized instructional method. This is attributed to the limited availability of licensed computer software for computer-based instruction in Mathematics. Moreover, the difference between the Extent of the Implementation of the Computer-Based Instruction by the respondent-JHSMT based on the questionnaire checklist conducted across their age is 3.341 significantly at 0.010 level. The values indicate a significant result. Therefore, the research hypothesis which states that there is a significant difference in the Extent of the Implementation of Computer-Based Instruction by the respondent-JHSMT across age is accepted. This implies that the Extent of the Implementation of the Computer-Based Instruction by the respondent-JHSMT across the variable age is comparable. Furthermore, findings revealed that significant relationships exist between the Extent of Implementation of Computer-Based Instruction by Junior High School math teachers and the profile variables age and number of years teaching Mathematics.
Conclusion: According to the results, the junior high school Mathematics educators of Urdaneta City are presently in their prime of adulthood, holding appropriate educational qualifications and pertinent training sessions, and have been in the field for several years. Moreover, to facilitate the implementation of computer-based instruction, the researcher created a sequential video guide on utilizing a freely available Mathematics simulation website.

Keywords: preparatory processes, computer software, computer-based instruction, evaluation, learning outcomes

INTRODUCTION

Mathematics is 80% different from what is needed in the actual world. Computers have made computing more automated than anybody could have imagined. However, in today's math classes, students spend 80% of their time learning to calculate traditionally rather than utilizing a computer. Instead of the difficulty of comprehending the intricacy of the issue, the curriculum is arranged by the difficulty of the abilities required to finish the calculation rather than conceptual difficulties and computational complexity Wolfram (2020).

The very fact that mathematical or computational thinking abilities seem to be so pervasive and deeply ingrained in all spheres of life is the reason why mathematics is considered as being so vital in education today. However, this is a relatively recent development. The use of mathematics beyond elementary arithmetic was far more limited in the days before mechanized computers, and it was only relevant to some branches of physics and accounting. Data sets, messy quantitative issues, or those that required answers quickly did not function well with

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

them. The major revolution has been brought about by computers, without which many other disciplines that are currently active and developing quickly would not exist.

Computers are essential for bridging this gap because only when they perform the calculations can math be applied to challenging problems in various situations. Computer-based calculations have revolutionized real-world arithmetic; today, traditional math education also needs this fundamental transformation.

The demands of the workplace in the twenty-first century are growing, and the educational system has to reflect those abilities. The Philippines' educational system has started the reform process to bring about change to meet these new capabilities by formulating standards for instructors and students that are appropriate for the twenty-first century. Developing 21st-century abilities is accomplished by incorporating numerous methodologies and cutting-edge resources into the teaching-learning process. (Campilla, 2021)

In the Philippines, Republic Act No. 10533, also known as the "Enhanced Basic Education Act of 2013" Section 7, mandates that the education and training of teachers will be implemented to ensure that better education programs will meet the needs of good teachers and school principals, the Commission on Higher Education (CHED) and the Department of Education (DepEd), in collaboration with key partners from the government, academia, industry, and non-government, will organize various trainings, institutions, and it is a development program to improve their abilities and their roles in education, organization, and community leaders. Such professional growth or improvement programs shall be commenced and executed consistently throughout the academic year to guarantee continuous enhancement of teacher abilities.

The Framework for Philippine Mathematics Teacher Education comprises materials that can assist universities, math teacher professional associations, and school leaders in assessing and enhancing the effectiveness and professional growth of math teachers through a set of benchmarks. Characteristics of good mathematics teachers in terms of what they need to know (subject knowledge), what they need to do to achieve high learning outcomes (learning knowledge), and what they need to manage multiple aspects of the teaching and learning process (management skills). All of them are based on the goal of improving mathematics education quality. Mathematics education and educational leaders should be concerned about how teachers develop and evolve as one of our country's most essential citizens in the following decades.

Nowadays, Mathematics teachers face many challenges and issues as presented by different studies and surveys conducted internationally and locally. Philippine Education Sector Assessment (PESA) project, research undertaken by the International Technology Management Corporation (INTEM), in July 2013, attempted to capture the condition of Philippine education in a single sector-wide assessment. Assessment examines the situation of all education sectors (early childhood education, primary education, vocational and technical education, non-formal education / alternative education, and higher education/university). It identifies the main challenges, problems, and concerns of the government. Their general conclusions include: The quality of primary education has deteriorated. Regarding quality standards, the country is among the most efficient in East Asia and the rest of the world.

Another report presented the low performance of Filipino students in mathematics is the 2019 report "The Trends in International Maths and Science Study" 2019 (TIMSS), which revealed that Filipino pupils placed last out of 58 nations in an international evaluation of mathematics and science for Grade 4 students (Baclig, 2020). In a study conducted from March to June 2019, the Philippines received 297 in mathematics and 249 in science. According to TIMMS, these scores are "much lower" than other participating countries. 19 percent of Filipino students achieved a low intermediate level in mathematics, suggesting that only a tiny proportion possess a basic grasp of mathematical concepts.

The dismal results triggered the Department of Education (DepEd) to launch its reform program called "Sulong Edukalidad," which means moving forward to improving the quality of primary education in the country (DepEd, 2019). This battle cry for quality primary education demands curriculum updates and review, improvement of the learning environment, teachers upskilling and retooling, and engagement of stakeholders for support and collaboration. These surveys and studies will be directly faced by the teachers.

With the current innovation in education, teachers are bound to learn more skills in teaching. One of the factors teachers need is the integration of innovative teaching strategies, such as computer-based instruction (Ramani, 2012). To overcome student's challenges, teachers should use various teaching methods, such as the drill technique, audio-visual aids, computer-assisted instruction, and mathematical clubs. The auto-instructional approach is one of the ways. It is a type of differentiated instruction. In instructional teaching, one of its forms is Computer Assisted/Aided Instruction.

Computer-based teaching refers to using computers to control computer-based operations such as lesson preparation, assessment of learning, data recording of students, and statistical analysis of data learning. All

ETCOR's Website : https://etcor.org
Facebook Page : https://www.facebook.com/EmbracingTheCultureOfResearch
Twitter Account : https://twitter.com/ETCOR_research
YouTube Channel : https://tinyurl.com/YouTubeETCOR
E-mail Address : embracingthecultureofresearch@etcor.org
Mobile Number : 0939-202-9035
Thank you for embracing the culture of research with us!

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

educational and instructional tasks by computers in computer-based teaching. Computers are the primary instructor, instructing students on the subject and establishing goals and attitudes (Tosun, 2006). Computer applications are used to carry out all educational and instructional tasks. Being of secondary significance, the instructor handles organizational tasks. Students can learn all of the knowledge by using various computer exercises. In these exercises, the teacher can assist or direct the students. The use of problem-solving abilities is unavoidable at all stages of our life. Students may process and develop knowledge, uncover alternate answers, participate actively in the learning process, and improve their problem-solving abilities when educational materials are presented via computer technology. Furthermore, because of the methods and approaches produced via the strength of problem-solving skills, these advancements result in good improvements in people's lives. Every stage of our life necessitates the use of problem-solving abilities.

Regarding the educational qualifications of teachers and their impact on their preparedness for using ICT, the results from Pillai's Trace test indicated that the educational background of teachers did not have a significant influence on their overall readiness to incorporate ICT into their teaching methods (Allazam et al. 2012).

These statements indicate that Mathematics teachers are duty-bound to enhance student performance in Mathematics using computer-based instruction in the public secondary schools in the Division of Urdaneta City.

The outcome of this study will be used as a basis for formulating an action plan for enhancing the implementation of computer-based instruction in Mathematics instruction in the Division of Urdaneta City.

Objectives

This study determined the level of implementation of computer-based instruction by the Junior High School Mathematics Teachers (JHSMT) in the Urdaneta City Division, DepEd Region I, during the SY 2022- 2023.

Specifically, it intended to address the following problems:

1. What is the profile of the Junior High School Mathematics Teachers (JHSMT) concerning the following variables:
   a. age;
   b. sex;
   c. highest educational attainment;
   d. number of years teaching Mathematics; and
   e. number of relevant in-service training
2. What is the level of implementation of the computer-based instruction by the Junior High School Mathematics Teachers (JHSMT) along the following areas of pedagogy:
   a. preparatory processes;
   b. use of computer software;
   c. implementation of computer-based instruction; and
   d. evaluation of learning outcomes?
3. Are there significant mean differences in the Extent of implementation of the computer-based instruction by the respondent-JHSMT across their profile variables?
4. Are there significant relationships between the Extent of Implementation of the Computer-Based Instruction by the JHSMT and their profile variables?
5. What is the least mastered competencies in Junior High School Mathematics?
6. What training program for enhancing the implementation of computer-based instruction by the JHSMT was formulated and proposed?

METHODS

This chapter described the research design and methodology including the location, population, techniques for data collection, data gathering tool, and the statistical analysis of the collected and organized data in detail.

Research Design

The descriptive-correlational method was used in this study. According to Rasco (2014), the objective of the descriptive-correlational study is to observe, describe, and document characteristics of a scenario as they naturally occur and occasionally serve as a beginning point for hypothesis creation and theory construction. Descriptive research seeks to collect information without altering the research situation. Further, the researcher's primary goal is to describe associations between variables rather than demonstrate a causal connection. It was used to gather and

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

evaluate information. Furthermore, correlational research attempts to determine the link between or among the two or more essential variables under scrutiny.

According to Arriola (2022), descriptive-correlational research is most appropriate for studies such as this present study, as it focused on implementing computer-based instruction by the Junior High School Mathematics Teachers (JHSMT) in the Urdaneta City Division. Further, this study will determine the relationships between the respondent teachers' computer-based instruction in teaching Mathematics and their profile variables.

Population and Locale of the Study

This study was conducted in the twenty-two (22) public secondary schools in the Division of Urdaneta City. Seventy (70) respondents in Junior High School Mathematics Teachers (JHSMT) were involved in this study, which is focused on implementing computer-based instruction in teaching Mathematics during the SY 2022-2023. This study used complete enumeration as a sampling design. The Junior High School Mathematics Teachers (JHSMT) served as the respondents and unit of analysis of this study.

Instrument

The questionnaire checklist is the primary data-gathering tool of this study. It consists of two (2) parts. Part I gathered the background information, which constituted the profile of the respondents, and Part II focused on the data regarding the Extent of Implementation of the Computer-Based Instruction by the respondent-Junior High School Mathematics Teachers.

The data included in the questionnaire was based on the reviewed materials related to the study and on ideas based on actual observation in the field. The first draft of the questionnaire was included in the thesis proposal. All the suggestions of the oral examination committee and the thesis adviser are incorporated in the revised copy.

Five (5) experts were requested to participate in the content validation process of the data-gathering instrument. The ''Content Validation Instrument" developed by Dr. Lelia V. Meimban (revised 2021) was used by the five (5) evaluators to validate the data-gathering instrument. The ratings given by the evaluators were tallied, and the mean was computed, and then the results were interpreted based on the scale.

Data Collection

Approval of the Request for Permission to Conduct the Study was secured from the Schools Division Superintendent for the administration of the Questionnaire Checklist for gathering the needed information from the respondents. Upon approval, the researcher will collect data from different schools in the Urdaneta City Division. The respondents-JHSMT were oriented by the researcher on the Questionnaire Checklist, specifically on the information they provided, which was held strictly confidential.

The researcher compiled the questionnaire checklist. An Excel spreadsheet was used to collect data and analyze using SPSS version 17. The statistical findings were organized and tabulated, and the conclusions were interpreted.

Statistical Treatment of Data

The data for each problem were treated accordingly. To answer problem No. 1, which is the profile of the respondents, frequency counts and percentages were used.

To solve problem No. 2 on the Extent of Implementation of the Computer-Based Instruction by the respondent, JHSMT, the weighted mean (WM) was used. The following scales were used for interpreting the WM and the overall weighted mean (OWM), as well as the grand overall weighted mean (GOWM).

Numerical value	Weighted Score Range	Descriptive Rating	Transmuted Rating
5	4.50-5.00	Always (A)	Highly Implemented (HI)
4	3.50-4.49	Often (O)	Implemented (I)
3	2.50-3.49	Sometimes (S)	Moderately Implemented (MI)
2	1.50-2.49	Seldom (Sl)	Slightly Implemented (SI)
1	1.00-1.49	Never (N)	Not Implemented (NI)

In order to solve problem No.3, are there significant mean differences in the Extent of Implementation of the Computer-Based Instruction by the respondent-JHSMT across the profile variables? The t-test was used to test the significant mean differences in the Extent of Implementation of the Computer-Based Instruction by the

ETCOR's Website : https://etcor.org
Facebook Page : https://www.facebook.com/EmbracingTheCultureOfResearch
Twitter Account : https://twitter.com/ETCOR_research
YouTube Channel : https://tinyurl.com/YouTubeETCOR
E-mail Address : embracingthecultureofresearch@etcor.org
Mobile Number : 0939-202-9035

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

respondent-JHSMT across the profile variable Sex while ANOVA (Analysis of Variance) was used to test the significant mean differences in the Extent of Implementation of the Computer-Based Instruction by the respondent-JHSMT across the other profile variables except for sex. The formula for computing the variance is shown below.

To resolve issue No.4, the Pearson product-moment correlation coefficient (r-value) was utilized to calculate the significant correlations between the Extent of Implementation of the Computer-Based Instruction by the respondent-JHSMT and the profile variables. As shown below is the formula for the Pearson Coefficient of Correlation.

Ethical Considerations

Research protocols were observed by the researcher to ensure the quality and reliability of the study and research findings. This involved obtaining consent from participants, and the confidentiality had to be maintained.

RESULTS and DISCUSSION

This chapter presents the presentation, analysis, and interpretation of data gathered to answer the problems raised and clarify the research hypotheses formulated in this study.

Profile of the Respondents

Teachers of mathematics at public secondary schools from Urdaneta City Schools Division made up the study's respondents. The researcher categorized the respondents into groups based on their profile variables, which included age, sex, the highest level of education attained, number of years spent teaching mathematics, number of school-related in-service training, number of division-related in-service training, number of regional in-service training, number of national in-service training, and number of international in-service training.

The distribution of the respondents based on their profile variables is shown in Table 1.

Age. According to the cliche, a teacher's wisdom increases with age. This indicates that a teacher with extensive expertise will learn more. Age was, therefore, one of the factors utilized in this study since the researcher thought about how thoughts and thinking varied between younger and older teachers.

Table 1:
Distribution of Respondent's Profile

Profile Variables	Variable Category	Frequency	Percentage
Age	25 years old and below	7	10.0
	26-30 years old	9	12.9
	31-35 years old	7	10.0
	36-40 years old	15	21.4
	41-45 years old	7	10.0
	46 years old and above	25	35.7
Sex	Male	29	41.4
	Female	41	58.6
Highest Educational Attainment	College Degree	2	2.9
	College Degree with MA/MS units	47	67.1
	Master's Degree	13	18.6
	Master's Degree with Doctorate units	7	10.0
	Doctorate Degree	1	1.4
Number of Years in Teaching Mathematics	Five years and below	18	25.7
	6-10 years	22	31.4
	11-15 years	10	14.3
	16-20 years	5	7.1
	21 years and above	15	21.4
No. of School	Five or below	27	38.6

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

Related In-Service Training		6-10	26	37.1
		11 and above	17	24.3
	Division	Five or below	24	34.3
		6-10	26	37.1
		11 and above	20	28.6
	Regional	Five or below	56	80.0
		6-10	9	12.9
		11 and above	5	7.1
	National	Five or below	59	84.3
		6-10	11	15.7
		11 and above	0	0
	International	Five or below	69	98.6
		6-10	1	1.4
		11 and above	0	0

The data reveals that 35.7 percent or 46 years of age and older make up the bulk of math teachers. It may imply that most of the respondents are educators who are just reaching the point at which they are mature enough to engage students actively in the teaching and learning of mathematics. The table also reveals that 10.0 percent of respondents are in the age brackets 25 years old and below, 31 to 35 years old, and 41 to 45 years old.

Sex. The same table reveals 58.6 percent of female respondents compared to 41.4 percent of male respondents. Given that teaching is a profession dominated by women, as seen in the many public schools around the nation, it suggests that there are more female mathematics teachers than male teachers.

Highest Educational Attainment. The motivation, efficiency, self-assurance, and dedication to the teacher's teaching increase through ongoing professional development. Teachers are leaders and facilitators who may further their professions by pursuing graduate and postgraduate degrees.

As shown in the table, 67.1 percent of mathematics instructors mostly have bachelor's degrees with MA/MS units. Unexpectedly, just 1.4 percent of people have completed their doctorates. The findings suggest that respondents who teach mathematics believe in the significance of education as a lifelong learning process since a good teacher will always be on the lookout for new information.

Number of Years in Teaching Mathematics. Teacher's ability to develop mastery and skills in teaching is influenced by how long they have been teaching mathematics. The table shows that the highest group classification is 6-10 years, with a percentage of 31.4, while 7.1 percent have taught mathematics for 16–20 years.

Number of Relevant Training Attended. The academic performance of the learners will improve because of the teachers' development programs that enhance teaching competencies and knowledge. Surprisingly, most mathematics teachers have participated in below five training at the school, regional, national, and international levels. However, most respondents have 37.1 percent in which they have already completed more than six trainings at the division level. The table also shows that 37.1 percent of respondents have participated in 6-10 training at the school level, 12.9 percent have participated in 6-10 training at the regional level, 15.7 or 16.7 percent have participated in 6-10 training at the national level, and 1.4 or 1 percent have participated in 6-10 training at the international level.

The Extent of the Implementation of the Computer-Based Instruction by the Junior High School Mathematics Teachers (JHSMT)

This section presents the Extent of the Implementation of Computer-Based Instruction by Junior High School Mathematics Teachers along preparatory processes, use of computer software, implementation of computer-based instruction, and evaluation of learning outcomes.

Table 2 presents the Extent of the Implementation of Computer-Based Instruction by Junior High School Mathematics Teachers along preparatory processes.

ETCOR's Website : https://etcor.org
Facebook Page : https://www.facebook.com/EmbracingTheCultureOfResearch
Twitter Account : https://twitter.com/ETCOR_research
YouTube Channel : https://tinyurl.com/YouTubeETCOR
E-mail Address : embracingthecultureofresearch@etcor.org
Mobile Number : 0939-202-9035
Thank you for embracing the culture of research with us!

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

Table 2:
The Extent of the Implementation of the Computer-Based Instruction by the Junior High School Mathematics Teachers Along Preparatory Processes

A. PREPARATORY PROCESSES Statement Indicators As a Junior High School Mathematics teacher, I ...	**Total Weighted Mean**	**Transmuted Rating**
1. Prepare a set of notes including the necessary information to be covered as part of the preparation for using computer-based instruction in teaching Mathematics;	4.00	(I)
2. Review the key facts, concepts, or information that the students will be using the computer-based instruction in teaching Mathematics;	4.31	(I)
3. Assess the capability of each learner who will receive computer-based instruction in teaching Mathematics;	4.16	(I)
4. Can be led by the basic ideas of computer-based learning in mathematics teaching;	3.96	(I)
5. Include critical thinking in planning the computer-based instruction in teaching Mathematics to the students to be able to showcase their higher-order thinking skills;	4.19	(I)
6. Attend seminars and training on how to develop skills in teaching using computer-based instruction in teaching Mathematics;	4.03	(I)
7. Identify the availability of the materials to be used in computer-based instruction in teaching Mathematics;	4.11	(I)
8. Set up an adequate learning environment before using computer-based instruction in teaching Mathematics;	4.03	(I)
9. Prepare a contingency plan in case problems arise in using computer-based instruction in teaching Mathematics; and	3.67	(I)
10. Conduct a diagnostic evaluation of the student's capabilities regarding how to use computer-based instruction in teaching Mathematics.	3.80	(I)
Overall Weighted Mean	**4.03**	**(I)**

Legend:

Numerical value	Weighted Score Range	Descriptive Rating	Transmuted Rating
5	4.50-5.00	Always (A)	Highly Implemented (HI)
4	3.50-4.49	Often (O)	Implemented (I)
3	2.50-3.49	Sometimes (S)	Moderately Implemented (MI)
2	1.50-2.49	Seldom (SI)	Slightly Implemented (SI)
1	1.00-1.49	Never (N)	Not Implemented (NI)

The preliminary process is an essential step in guaranteeing efficient instruction and education encounters. (Haerazi et al., 2019) By planning goals, evaluations, suitable resources, teaching sequences, and student progress, instructors can establish a learning atmosphere that optimizes student achievement.

The data shows that the Junior High School Mathematics Teachers used computer-based education extensively during the preparation stages, with an average weighted mean of 4.03, signifying an "Implemented" transmuted rating. The weighted averages for all ten (10) items, which range from 3.67 to 4.31, were all assessed as comprehensive. The indicator, "review the key facts, concepts, or information that the students will be using in the computer-based instruction in teaching mathematics," ranked the highest with a weighted mean of 4.31, which indicates an "Implemented" transmuted equivalent rating. In contrast, the indicator, "prepares a contingency plan in case problems arise in using computer-based instruction in teaching mathematics," ranked the lowest with a weighted mean of 3.67 although, rated as "Implemented."

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

Table 3:
The Extent of the Implementation of Computer-Based Instruction by Junior High School Mathematics Teachers Along Use of Computer Software

B.USE OF COMPUTER SOFTWARE Statement Indicators As a Junior High School Mathematics teacher, I ...	Total Weighted Mean	Transmuted Rating
1. Received teaching materials to be used in computer-based instruction in teaching Mathematics, such as storage devices;	2.66	(MI)
2. Have the skills in using a variety of software to be used in computer-based instruction in teaching Mathematics;	3.56	(I)
3. Installed license computer software to be used in computer-based instruction in teaching Mathematics;	3.06	(MI)
4. Checked the availability of computer software for the students;	3.60	(I)
5. Understand the process of troubleshooting computer software in case problems arise;	3.07	(MI)
6. Provide training assistance for the students in using computer software in computer-based instruction in teaching Mathematics;	3.00	(MI)
7. Supplement or elaborate course content that is particularly important or challenging for learners to learn directly using computer software;	3.36	(MI)
8. Allow maximum control of the learning experience when using computer software during computer-based instruction in teaching Mathematics;	3.49	(MI)
9. Offer current information (more up-to-date) from many sources of computer software used in computer-based instruction in teaching Mathematics; and	3.40	(MI)
10. Allow students to exchange ideas and discuss with other students during computer-based instruction in teaching Mathematics.	3.80	(I)
Overall Weighted Mean	**3.30**	**(MI)**

Legend:

Numerical value	Weighted Score Range	Descriptive Rating	Transmuted Rating
5	4.50-5.00	Always (A)	Highly Implemented (HI)
4	3.50-4.49	Often (O)	Implemented (I)
3	2.50-3.49	Sometimes (S)	Moderately Implemented (MI)
2	1.50-2.49	Seldom (Sl)	Slightly Implemented (SI)
1	1.00-1.49	Never (N)	Not Implemented (NI)

Computer programs have become a fundamental and necessary instrument in education. Educators can utilize the potential of programs to improve and enhance their teaching approaches, involve students in dynamic educational activities, and offer customized guidance that suits each student's distinct requirements and preferred learning methods (Gezici et al., 2021).

Table 3 shows the Extent of the Implementation of Computer-Based Instruction by the Junior High School Mathematics Teachers using computer software.

As observed in the table, the use of computer software in teaching Mathematics obtained an average weighted mean of 3.30, representing a "Moderately Implemented" transmuted rating. Out of the ten (10) indicators that were rated, the first indicator, "received teaching materials to be used in computer-based instruction in teaching Mathematics, such as storage device," ranked the lowest with a weighted mean of 2.66 despite being rated as "Moderately Implemented," while the indicator, "allow students to exchange ideas and discuss with other students during computer-based instruction in teaching mathematics," ranked the highest with a weighted mean of 3.80, which indicates an "Implemented" transmuted equivalent rating.

ETCOR's Website : https://etcor.org
Facebook Page : https://www.facebook.com/EmbracingTheCultureOfResearch
Twitter Account : https://twitter.com/ETCOR_research
YouTube Channel : https://tinyurl.com/YouTubeETCOR
E-mail Address : embracingthecultureofresearch@etcor.org
Mobile Number : 0939-202-9035
Thank you for embracing the culture of research with us!

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

Table 4:
The Extent of the Implementation of Computer-Based Instruction by Junior High School Mathematics Teachers' Along Implementation of Computer-Based Instruction

C. IMPLEMENTATION OF COMPUTER-BASED INSTRUCTION Statement Indicators As a Junior High School Mathematics teacher, I ...	**Total Weighted Mean**	**Transmuted Rating**
1. Integrate a variety of higher-order thinking skills that can be applied to any situation in a way of life that necessitates contemplation, analysis, and planning during computer-based instruction;	4.03	(I)
2. Adopt a strategic approach to issue solving and follow a strategy that may include rapid action or a well-planned wait-and-see approach during computer-based training;	3.91	(I)
3. Give students a chance to speak in a non-threatening environment that leads students from one another in a natural way during computer-based;	4.19	(I)
4. Give teachers a break from being the center of attention by shifting a teacher-centered classroom into a student-centered classroom during computer-based instruction;	3.97	(I)
5. Let students gain practice in self-teaching, which is a valuable skill that can help them learn by using computer-based instruction;	4.00	(I)
6. Provide enough time for the students to accomplish activities included in the computer-based instruction;	4.17	(I)
7. Help students to create their understanding of a new concept and to have ownership of what they are doing in computer-based instruction;	3.99	(I)
8. Encourage cooperation between the students to complete a task successfully during computer-based instruction;	4.17	(I)
9. Keep students active during computer-based instruction in teaching Mathematics, which increases their ability and desire to learn; and	4.21	(I)
10. Limit off-task thinking and off-task behavior, and keep students focused on the task at hand during computer-based instruction.	3.94	(I)
Overall Weighted Mean	**4.06**	**(I)**

Legend:

Numerical value	**Weighted Score Range**	**Descriptive Rating**	**Transmuted Rating**
5	4.50-5.00	Always (A)	Highly Implemented (HI)
4	3.50-4.49	Often (O)	Implemented (I)
3	2.50-3.49	Sometimes (S)	Moderately Implemented (MI)
2	1.50-2.49	Seldom (Sl)	Slightly Implemented (SI)
1	1.00-1.49	Never (N)	Not Implemented (NI)

Computer-based education is a technique of providing educational material through computers or computer systems. This style of education enables interactive and captivating learning encounters, as it incorporates different multimedia components like visuals, videos, audio files, and simulations. (Liaw et al., 2019) Utilizing computer-based education, students can conveniently access educational materials and resources at their preferred speed and in diverse formats.

Table 4 presents the Extent of the Implementation of Computer-Based Instruction by Junior High School Mathematics Teachers and the implementation of computer-based instruction.

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

Moreover, the results indicate that the Junior High School Mathematics Teachers utilized computer-based education extensively during the implementation of computer-based instruction, with an average weighted mean of 4.06, signifying an "Implemented" transmuted rating. The weighted averages for all ten (10) items, which range from 3.91 to 4.21, were all assessed as comprehensive. The indicator, "keep students active during computer-based instruction in teaching Mathematics which increases their ability and desire to learn," ranked the highest with a weighted mean of 4.21, which indicates an "Implemented" transmuted equivalent rating, while the indicator, "adopt a strategic approach to the problem and follow a process that may include immediate action or a well-planned wait-and-see approach during computer-based instruction," ranked the lowest with a weighted mean of 3.91, although rated as "Implemented."

Table 5:
The Extent of the Implementation of Computer-Based Instruction by Junior High School Mathematics Teachers Along Evaluation of Learning Outcomes

D. EVALUATION OF LEARNING OUTCOMES Statement Indicators As a Junior High School Mathematics teacher, I ...	**Total Weighted Mean**	**Transmuted Rating**
1. Use the appropriate assessment tool to evaluate the worksheets of students.	4.34	(I)
2. Carefully analyze and interpret the information from the students and draw reasonable inferences they can make after using the computer-based instruction;	4.07	(I)
3. Use formative tests interpreted in the learning module to assess the progress of the students;	4.30	(I)
4. Set criteria for evaluating the students' outcomes;	4.39	(I)
5. Explain the process of assessment and evaluation to the parents and students;	4.14	(I)
6. Provide a variety of assessment tools for diverse types of learners;	4.03	(I)
7. Report to the parents/guardians about the learning progress of the children.	4.21	(I)
8. Emphasis should be placed on the application and integration of newly learned information and abilities.	4.26	(I)
9. Use different assessment tools to evaluate the specific elements in the learning outcomes:	4.21	(I)
Overall Weighted Mean	**4.22**	**(I)**

Legend:

Numerical value	**Weighted Score Range**	**Descriptive Rating**	**Transmuted Rating**
5	4.50-5.00	Always (A)	Highly Implemented (HI)
4	3.50-4.49	Often (O)	Implemented (I)
3	2.50-3.49	Sometimes (S)	Moderately Implemented (MI)
2	1.50-2.49	Seldom (Sl)	Slightly Implemented (SI)
1	1.00-1.49	Never (N)	Not Implemented (NI)

Implementing a Learning Outcomes Assessment document offers a summary and backdrop for the assessment procedure. It delineates the intention and aims of the assessment, recognizes the particular learning areas and objectives evaluated, and portrays the evaluation instruments that will be employed (Harju-Luukkainen et al., 2016). The document further elucidates the significance of harmonizing course specifications, teaching methods, and assessment strategies to foster an education centered on outcomes.

Table 5 presents the Extent of Implementation of Computer-Based Instruction by Junior High School Mathematics Teachers, along with an evaluation of learning outcomes. It is reflected in the table that the Extent of the Implementation of Computer-Based Instruction by the Junior High School Mathematics Teachers, along with an evaluation of learning outcomes, obtained an average weighted mean of 4.22, signifying an "Implemented" transmuted rating. The weighted averages for all nine (9) items, which range from 4.03 to 4.39, were all assessed as comprehensive. The indicator, " set criteria in evaluating the students' outcomes," ranked the highest with a

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

weighted mean of 4.39, which indicates an "Implemented" transmuted equivalent rating. In contrast, the indicator, "provides a variety of assessment tools for diverse types of learners," ranked the lowest with a weighted mean of 4.03, although rated as "Implemented.

Table 6:
Summary Table on the Extent of the Implementation of Computer-Based Instruction by Junior High School Mathematics Teachers

Indicators	Overall Weighted Mean	Transmuted Rating
1. Preparatory Processes	4.03	(I)
2. Use of Computer Software	3.30	(MI)
3. Implementation of Computer-Based Instruction	4.06	(I)
4. Evaluation of Learning Outcomes	4.22	(I)
Grand Overall Weighted Mean	**3.90**	**(I)**

Legend:

Numerical value	Weighted Score Range	Descriptive Rating	Transmuted Rating
5	4.50-5.00	Always (A)	Highly Implemented (HI)
4	3.50-4.49	Often (O)	Implemented (I)
3	2.50-3.49	Sometimes (S)	Moderately Implemented (MI)
2	1.50-2.49	Seldom (Sl)	Slightly Implemented (SI)
1	1.00-1.49	Never (N)	Not Implemented (NI)

Furthermore, as observed in the table, the overall Extent of the Implementation of Computer-Based Instruction by Junior High School mathematics teachers obtained an overall weighted mean of 3.90, denoting an "Implemented" transmuted rating.

It is interesting to note that the "evaluation of learning outcomes" got the highest average weighted mean of 4.22, indicating an "Implemented" transmuted rating. It implies that the mathematics teachers utilized computer-based instruction often while evaluating learning outcomes. On the other hand, an indicator of the "use of computer software" is the least utilized instruction of mathematics teachers, having an average weighted mean of 3.30, signifying "Moderately Implemented." Due to the limited installed license computer software for computer-based instruction in teaching Mathematics.

In general, junior high school mathematics teachers extensively implement computer-based instruction in teaching mathematics.

Differences in the Extent of the Implementation of the Computer-Based Instruction by the respondent-JHSMT Across Profile Variables

Tables 7–8 show the tabulation of the differences in the Extent of the Implementation of Computer-Based Instruction by the Junior High School Mathematics Teachers across profile variables with the corresponding significant indicators and remarks for each source of variation. The researcher utilized analysis of variance and t-test for a deeper review of the data gathered in this study.

Table 7.1:
Group Statistics of the Extent of the Implementation of the Computer-Based Instruction by the respondent-JHSMT across sex

Group Statistics					
	Sex	N	Mean	Std. Deviation	Std. Error Mean
The Extent of Implementation of the Computer-Based Instruction by the respondent-JHSMT	Male	29	4.10	.618	.115
	Female	41	3.98	.474	.074

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

As gleaned from Table 7.1, the mean Extent of Implementing Computer-Based Instruction by male mathematics teachers is 4.10, and that of the female is 3.98.

Table 7.2:
Differences in the Extent of the Implementation of the Computer-Based Instruction by the respondent-JHSMT across sex

Sex										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
The Extent of Implementation of the Computer-Based Instruction by the respondent-JHSMT	Equal variances assumed	3.682	.059	.980	68	.331	.128	.130	-.133	.388

The t-test result between the male and female groups of teachers of mathematics is 0.980 with the assumption of equal variances and 0.936 under the assumption of unequal variances, according to Table 7.2.

The P-value for Levene's test of equality of variance is 0.059, which is higher than 0.05 and indicates that the variances of the two groups are similar. Therefore, the P-value is 0.331 and is considered. This number provides evidence that the mean difference that there is no statistically significant difference between the sexes in the JHSMT's use of computer-based instruction at the 0.05 significance level. This implies that the effect of the gender element on educators who use computer-based instruction is a subject of considerable research attention. Research has indicated contradictory results concerning the impact of gender on teachers' beliefs, confidence in their abilities, and attitudes toward computers (Kimaiyo, 2016).

Table 8:
Mean Difference in the Extent of the Implementation of the Computer-Based Instruction by the respondent-JHSMT across the Profile Variables

		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	4.128	5	.826	3.341	.010
	Within Groups	15.815	64	.247		
	Total	19.943	69			
Highest Educational Attainment	Between Groups	1.970	4	.492	1.781	.143
	Within Groups	17.973	65	.277		
	Total	19.943	69			
Number of Years in Teaching Mathematics	Between Groups	2.141	4	.535	1.954	.112
	Within Groups	17.802	65	.274		
	Total	19.943	69			
Number of School-Related In-Service Training	Between Groups	1.648	2	.824	3.017	.056
	Within Groups	18.295	67	.273		
	Total	19.943	69			
Number of Division-Related In-Service Training	Between Groups	.356	2	.178	.609	.547
	Within Groups	19.587	67	.292		
	Total	19.943	69			
Number of Regional Related In-Service	Between Groups	1.029	2	.514	1.822	.170
	Within Groups	18.914	67	.282		

ETCOR's Website : https://etcor.org
Facebook Page : https://www.facebook.com/EmbracingTheCultureOfResearch
Twitter Account : https://twitter.com/ETCOR_research
YouTube Channel : https://tinyurl.com/YouTubeETCOR
E-mail Address : embracingthecultureofresearch@etcor.org
Mobile Number : 0939-202-9035
Thank you for embracing the culture of research with us!

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Google
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
NBDB
RUN RESEARCHERS RUN
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

Training	Total	19.943	69			
Number of National Related In-Service Training	Between Groups	.011	1	.011	.036	.849
	Within Groups	19.932	68	.293		
	Total	19.943	69			
Number of International Related In-Service Training	Between Groups	.957	1	.957	3.429	.068
	Within Groups	18.986	68	.279		
	Total	19.943	69			

Table 8 presents the ANOVA results showing the significant mean difference in the Extent of the Implementation of the Computer-Based Instruction by the respondent-JHSMT across the profile variables.

The table shows that the computed F-value for the difference between the Extent of the Implementation of the Computer-Based Instruction by the respondent-JHSMT based on the questionnaire checklist conducted according to their age is 3.341 at 0.010 significance level. The values indicate a significant result. The computed significance level at 0.01 is lower than the set value of .05. Therefore, the research hypothesis, which states that there is a significant difference in the Extent of the Implementation of the Computer-Based Instruction by the respondent-JHSMT across age, is accepted. This implies that the extent of implementing the computer-based instruction by the respondent-JHSMT based on the questionnaire checklist conducted across their age is comparable. In other words, the age of the teacher-respondents affects the Extent of the Implementation of the Computer-Based Instruction by the respondent-JHSMT based on the questionnaire checklist conducted. The age factor of educators in technology-driven teaching is a crucial factor to consider. The age of educators has the potential to affect their ease and familiarity with technology, which can affect their effectiveness in implementing technology-driven teaching (Yıldırım et al., 2020). Younger educators have been raised in an era of digital advancements and are more inclined to have had experience with technology in their educational journey.

Highest Educational Attainment. The table shows that the computed F-value for the difference in the Extent of Computer-Based Instruction Implementation by the respondent-JHSMT based on the questionnaire checklist conducted across their highest educational attainment is 1.781 at a significance level of 0.143. The values indicate a non-significant result. Compared to the preset value of 0.05, the computed significance level at 0.143 is higher. As stated by Allazam et al. (2012), regarding the educational qualifications of teachers and their impact on their preparedness for using ICT, the results from Pillai's Trace test indicated that the educational background of teachers did not have a significant influence on their overall readiness to incorporate ICT into their teaching methods.

Number of Years in Teaching Mathematics. As shown in the table, the computed F-value for the difference in the Extent of the Implementation of Computer-Based Instruction by the respondent-JHSMT based on the questionnaire checklist conducted across several years in teaching mathematics is 1.954 at a level of significance of 0.112, which is higher than the set value of 0.05. The values indicate a non-significant result.

As reflected in the table, the computed F-value for the difference in the Extent of Computer-Based Instruction Implementation by the respondent-JHSMT based on the questionnaire checklist conducted across several school-related in-service training is 3.017 at a significance level of 0.056. The values indicate a non-significant result. The computed significance level at 0.056 is higher than the set value of 0.05.

Division Related In-Service Trainings. The table shows that the computed F-value for the difference in the extent of implementing the computer-based instruction by the respondent-JHSMT based on the questionnaire checklist conducted across "number of Division level related to in-service training" is 0.609 at a significance level of 0.547, which is a higher than the set value of 0.05. The values indicate a non-significant result.

Number of Regional Related In-Service Training. As shown in the table, the computed F-value for the difference in the extent of implementing computer-based instruction by the respondent-JHSMT based on the questionnaire checklist conducted across several regional-related in-service training is 1.822 at a significance level of 0.170. The values indicate a non-significant result. The computed significance level of 0.170 is higher than the set value of 0.05.

As revealed in the table, the computed F-value for the difference in the Extent of Implementation of Computer-Based Instruction by respondent-JHSMT based on the questionnaire checklist conducted across several nationally related in-service training is 0.036 at a significance level of 0.849, higher than the set value of 0.05. The values indicate a non-significant result.

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Google
Website: https://etcor.org
iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577
NBDB
RUN RESEARCHERS RUN
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

Furthermore, as shown in the table, the computed F-value for the difference in the Extent of Computer-Based Instruction Implementation by the respondent-JHSMT based on the questionnaire checklist conducted across several international-related in-service training is 3.429 at a significance level of 0.068.

Moreover, educators in the 21st century are encountering fresh obstacles due to the widening opportunities of ICT incorporation in all facets of the school environment. Research has indicated the promise of teacher professional development (TPD) that is customized to specific circumstances and worldwide elements and utilizes collaborative assistance among educators, as well as a demonstration of successful methods (Albion et al. 2015).

Relationships between the Extent of the Implementation of the Computer-Based Instruction by the respondent-JHSMT Across Profile Variables

The researcher also established relationships for future research using the data acquired in this study between the Extent of Implementation of the Computer-Based Instruction by the Junior High School Mathematics Teachers and their profile variables using Pearson product-moment correlation coefficient (r-value).

Table 9:
Relationships between the Extent of the Implementation of the Computer-Based Instruction by the JHSMT Across Profile Variables

Profile Variables	Pearson Correlation	Sig. (2-tailed)
Age	-.390**	.001
Sex	-.118	.331
Highest Educational Attainment	.042	.730
Number of Years in Teaching Mathematics	-.316**	.008
Number of School-Related In-Service Training	-.196	.104
Number of Division-Related In-Service Training	-.098	.421
Number of Regional Related In-Service Training	-.208	.084
Number of National Related In-Service Training	-.023	.849
Number of International Related In-Service Training	.219	.068

As seen in the table, the r-value for the profile variables like age and number of years spent teaching are significant. The Extent of the Implementation of Computer-Based Instruction by the JHSMT and the profile variables age and the number of years in teaching mathematics are associated with the extent of the Implementation of the Computer-Based Instruction by the Junior High School mathematics teacher.

In this context, the null hypothesis states that no significant relationships exist between the profile variables, age, and number of years teaching mathematics is rejected. However, the other variables are accepted.

The Extent of the Implementation of Computer-Based Instruction by the JHSMT, however, is significantly correlated with the age and number of years spent teaching mathematics but not with the variables, sex, highest educational attainment, and relevant training attended at the school, division, regional, national, and international levels. The researcher thereby rejected the null hypothesis. It implies that the JHSMT use of computer-based instruction is significantly associated with the profile variables, age, and number of years teaching Mathematics.

The result implies that one common stereotype is that old teachers do not use technology. This stereotype may hold for some older teachers, but it is essential to recognize that not all teachers fit this profile. Furthermore, it is crucial to consider the reasons behind this perceived lack of technology usage among older teachers. One possible reason for this perception is that many older teachers did not receive formal training or exposure to technology during their own education and professional development. As a result, they may feel less confident or comfortable using technology in the classroom (Teacher Education in the Digital Age: Opportunities and Challenges, n.d).

Least Mastered Competency

Educating the students of the current era has always been a recurring difficulty for educators, especially when equipping these students with the essential skills to thrive in a globalized world and be proficient in practical tasks (Santos, 2017).

ETCOR's Website : https://etcor.org
Facebook Page : https://www.facebook.com/EmbracingTheCultureOfResearch
Twitter Account : https://twitter.com/ETCOR_research
YouTube Channel : https://tinyurl.com/YouTubeETCOR
E-mail Address : embracingthecultureofresearch@etcor.org
Mobile Number : 0939-202-9035
Thank you for embracing the culture of research with us!

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

Table 10 presents the consolidated level of mastery by the Grade 7 learners in Urdaneta City Division based on the result of the First Quarter Examination.

Table 10:
Consolidated Level of Mastery in Urdaneta City Division
Mathematics 7 First Quarter Examination Result, First Quarter Learning Competency
n=2518

Item No.	Learning Competencies	Total number of students who got the item correctly	Percentage	Level of Mastery
1	Illustrates well-defined sets, subsets, universal sets, the set cardinality, set union and intersection and difference between two sets	1891	**75.1**	**MTM**
2		1792	**71**	**MTM**
3		1672	**66**	**MTM**
4		1695	**67**	**MTM**
5		1611	**64**	**AM**
6		1664	**66**	**MTM**
7		1601	**64**	**AM**
8		1563	**62**	**AM**
9	Solves problems involving sets with the use of a Venn diagram	1621	**64**	**AM**
10		1642	**65**	**AM**
11		1486	**59**	**AM**
12		1662	**66**	**MTM**
13		1556	**62**	**AM**
14	Represents the absolute value of a number line as the distance of a number from zero	1586	**63**	**AM**
15		1673	**66**	**MTM**
16		1620	**64**	**AM**
17		1495	**59**	**AM**
18		1500	**60**	**AM**
19		1463	**58**	**AM**
20		1582	**63**	**AM**
21	Performs fundamental operations on integers	1508	**60**	**AM**
22		1536	**61**	**AM**
23		1467	**58**	**AM**
24		1427	**57**	**AM**
25		1330	**53**	**AM**
26		1461	**58**	**AM**
27		1554	**62**	**AM**
28		1515	**60**	**AM**
29	Illustrates the properties of operations on the set of integers	1444	**57**	**AM**
30		1315	**52**	**AM**
31		1383	**55**	**AM**
32		1386	**55**	**AM**
33		1437	**57**	**AM**
34		1366	**54**	**AM**
35		1360	**54**	**AM**
36		1350	**54**	**AM**
37	Converts rational numbers from fraction to decimal and vice versa.	1359	**54**	**AM**
38		1243	**49**	**AM**
39		1334	**53**	**AM**
40		1308	**52**	**AM**
41		1246	**49**	**AM**

ETCOR's Website : https://etcor.org
Facebook Page : https://www.facebook.com/EmbracingTheCultureOfResearch
Twitter Account : https://twitter.com/ETCOR_research
YouTube Channel : https://tinyurl.com/YouTubeETCOR
E-mail Address : embracingthecultureofresearch@etcor.org
Mobile Number : 0939-202-9035

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

42		1237	**49**	**AM**
43		1229	**49**	**AM**
44		1269	**50**	**AM**
45	Performs operations on rational numbers	1217	**48**	**AM**
46		1210	**48**	**AM**
47		1219	**48**	**AM**
48		1300	**52**	**AM**
49		1207	**48**	**AM**
50		1306	**52**	**AM**

Source: Education Program Supervisor in Mathematics, Urdaneta City Division

Legend:

Level of Mastery

0% - 4%	Absolutely No Mastery (ANM)
5% - 14%	Very Low Mastery (VLM)
15% - 34%	Low Mastery (LM)
35% - 65%	Average Mastery (AM)
66% - 85%	Moving Toward Mastery (MTM)
86% - 95%	Closely Approximating Mastery (CAM)
96% - 100%	Mastery (M)

Based on the result, the least-mastered competency for the First Quarter Examination of Grade 7 is "Performs Operations on Rational Numbers," 51.0 percent or 1377 students got the item correctly out of 2710 total students per school. Furthermore, this denotes that the level of mastery of the learners is Average Mastery (AM). To encourage imagination, creativity, and critical thinking of learners, ICT is one of the essential skills for the 21st century. Thus, learners must be exposed to interactive classes that use ICT.

Proposed Training Program

In today's digital world, the demand for computer-based instruction in education is becoming increasingly vital. With technological advancements and widespread use of computers and the Internet, incorporating computer-based instruction in education is critical for preparing students for the modern world and providing them with the necessary skills in information retrieval, critical thinking, and problem-solving. Moreover, computer-based training provides students with a flexible and convenient learning environment by allowing them to access educational resources and materials from any location at any time (Castro et al. 2021).

Nevertheless, some of the teachers at Labit National High School are still unfamiliar with this instructional method. As a result, the proponent will organize SLAC sessions to encourage computer-based instruction across different subject areas.

The Proposed Training Matrix presented below outlines the activities to be accomplished in a workshop on the school level so that the implementation of the computer-based instruction will be enhanced.

School Learning Action Cell (SLAC) Plan

TOPIC	SESSION OBJECTIVES	PERSONS INVOLVED	RESOURCES MATERIALS NEEDED	MENTORING	EXPECTED OUTPUT
1. Technology Integration in Teaching and Learning Process	Incorporate computer software programs with other educational resources	School Head, Head Teacher, all Teaching staff	Notebook, Internet connection, Laptop, Cellphone, Printer, Ink, Certificates	January 2024	Teachers incorporate computer software programs with other educational resources

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

2.	Empowering Teachers with Interactive Materials for Hands-on Math	Explore various teaching tools and resources for math concepts, including number sense, operations, geometry, measurement, and data analysis.	School Head, Head Teacher, all Teaching staff	Notebook, Internet connection, Laptop, Cellphone, Printer, Ink, Certificates	January 2024	Make interactive math materials that are aligned with students needs and particular learning goals.
3.	Utilization of computer-based instruction in Lesson Planning	Prepare lesson plan/DLL using computer-based instruction	School Head, Head Teacher, all Teaching staff	Notebook, Internet connection, Laptop, Cellphone, Printer, Ink, Certificates	January 2024	Prepared lesson plan/DLL using computer-based instruction

Open-source Mathematics Simulation Website

According to the research conducted by (Cataloglu, 2006), free open-source software (FOSS) simulations in visualizing vectors and related concepts proved beneficial for students, aiding their understanding and reducing the time required to grasp these concepts. Thus, the researcher created a sequential video guide on utilizing a freely available Mathematics simulation website.

The concept of the website is to provide mathematics in a pleasurable and accessible way, as we are convinced that mathematics is entertaining. The platform strives to encompass the entire curriculum from Kindergarten to Year 12. MathsIsFun.com is supervised by Rod Pierce DipCE BEng, with inputs from numerous other individuals (Pierce, 2021).

According to Vidergor et al. (2020), Khan Academy is efficient in fostering customization, autonomy, and inventive teaching-learning methods. Nonetheless, the instructor's facilitation of cognitive and emotional education is vital. Therefore, educators should utilize KA while establishing and sustaining direct channels of teacher-student engagement.

The researcher stored a copy of the sequential video guide in a storage disk and Google Drive: *https://tinyurl.com/mathvideoguide.*

Summary, Conclusions, and Recommendations

This chapter presents the study's analysis and interpretation summary, findings, and recommendations of the study's findings entitled "Implementation of the Computer-Based Instruction by Junior High School Mathematics Teachers."

The findings of this study reveals that 35.7 percent or 46 years of age and older make up the bulk of math teachers, female-dominated is 58.6 percent, 67.1 percent of mathematics instructors mostly have bachelor's degrees with MA/MS units, the highest group classification is 6-10 years, with a percentage of 31.4. Most of mathematics teachers have participated in below five training at the school, regional, national, and international levels. However, most of respondents, 37.1 percent, have already completed more than six trainings at the division level. The Extent of Implementing of Computer-Based Instruction by the Junior High School Mathematics Teachers obtained an overall weighted mean of 3.90, denoting an "Implemented" transmuted rating.

The Extent of the Implementation of Computer-Based Instruction by the JHSMT, however, is significantly correlated with the age and number of years spent teaching mathematics but not with the variables, sex, highest educational attainment, and relevant training attended at the school, division, regional, national, and international levels. The researcher thereby rejected the null hypothesis. There is a significant difference in the Extent of the Implementation of the Computer-Based Instruction by the respondent-JHSMT across age and number of years in teaching mathematics.

The least-mastered competency for the First Quarter Examination of Grade 7 is "Performs Operations on Rational Numbers," 51.0 percent, or 1377 students, got the item correctly out of 2710 total students per school. To facilitate the implementation of computer-based instruction, the researcher created a sequential video guide on utilizing a freely available Mathematics simulation website.

ETCOR's Website : https://etcor.org
Facebook Page : https://www.facebook.com/EmbracingTheCultureOfResearch
Twitter Account : https://twitter.com/ETCOR_research
YouTube Channel : https://tinyurl.com/YouTubeETCOR
E-mail Address : embracingthecultureofresearch@etcor.org
Mobile Number : 0939-202-9035
Thank you for embracing the culture of research with us!

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Google
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181
NBDB
RUN RESEARCHERS RUN

According to the results, the junior high school Mathematics educators of Urdaneta City are presently in their prime of adulthood, holding appropriate educational qualifications and pertinent training sessions, and have been in the field for several years. Relevant to the results, this demonstrates that the participants are extensively employing computer-oriented education in their instructional and educational procedures, indicating the widespread use of ICT devices in the modern classroom environment.

Moreover, mathematics teachers are significantly different from each other in their level of Extent of Implementation of Computer-Based Instruction across the variables, age, and number of years in teaching mathematics. The age and number of years teaching of the teacher-respondents affects the Extent of the Implementation of the Computer-Based Instruction by the respondent-JHSMT based on the questionnaire checklist conducted.

The proponent will organize SLAC sessions to encourage computer-based instruction across different subject areas. As a result, they are urged to incorporate the instructional video as an additional resource in the teaching and learning of Mathematics. Based on the study's results and conclusions, the researcher recommends that Junior High School Mathematics Teachers pursue their advanced and postgraduate studies in order to improve their professional development.

In addition to their studies, they must also enhance their teaching performance by participating in more relevant training at all levels to refine further their knowledge and skills, enhancing their expertise in teaching Mathematics.

Moreover, junior high school Math educators should enhance their widespread utilization of computer-assisted instruction to enhance students' academic achievement. As a result, they are urged to incorporate the instructional video as an additional resource in the teaching and learning of Mathematics. The researcher stored a copy of the sequential video guide in a storage disk and Google Drive: *https://tinyurl.com/mathvideoguide.*

REFERENCES

Albion, P. R., Tondeur, J., Forkosh-Baruch, A., & Peeraer, J. (2015). Teachers' professional development for ICT integration: Towards a reciprocal relationship between research and practice. *Education and Information Technologies*, *20*, 655-673. "https://link.springer.com/article/10.1007/s10639-015-9401-9"

Alazzam, A. O., Bakar, A. R., Hamzah, R., & Asimiran, S. (2012). Effects of Demographic Characteristics, Educational Background, and Supporting Factors on ICT Readiness of Technical and Vocational Teachers in Malaysia. *International Education Studies*, *5*(6), 229-243. "https://eric.ed.gov/?id=EJ1067080"

Baclig, C. E. (2020, December 10). PH's Grade 4 students lowest in math, science around the world — int'l study. *Inquirer.net*, p. 1. "https://newsinfo.inquirer.net/1370289/phs-grade-4-students-lowest-in-math-science-around-the-world-study"

Campilla , J. ., & Castañaga , V. A. . (2021). Teaching Strategies Utilized by Mathematics Teachers in the 21st-Century. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, *59*(2), 140–160. "https://www.gssrr.org/index.php/JournalOfBasicAndApplied/article/view/12854"

Castro, M. D. B., & Tumibay, G. M. (2021). A literature review: efficacy of online learning courses for higher education institution using meta-analysis. *Education and Information Technologies*, *26*, 1367-1385. "https://link.springer.com/article/10.1007/s10639-019-10027-z"

Cataloglu, E. (2006). Open Source Software in Teaching Physics: A Case Study on Vector Algebra and Visual Representations. *Turkish Online Journal of Educational Technology-TOJET*, *5*(1), 68-74. "https://eric.ed.gov/?id=EJ1102461"

Enhanced Basic Education Act of 2013. Republic Act No. 10533. May 2013. https://www.officialgazette.gov.ph/2013/05/15/republic-act-no-10533/

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

Gezici, H. S., Taşpinar, Y., & Kocaoglu, M.. (2021, October 31). Digitalization in international and mass education: A model proposal for Turkey. *World Journal on Educational Technology Current Issues,* 13(4), 911-933. HYPERLINK "https://doi.org/10.18844/wjet.v13i4.6277"

Haerazi, H., Vikasari, R. M., & Prayati, Z.. (2019, November 27). The Use of Scientific-Based Approach in ELT Class to Improve Students' Achievement and Classroom Interaction. HYPERLINK "https://scite.ai/reports/10.18326/rgt.v12i2.157-180"

Harju-Luukkainen, H., Vettenranta, J., Ouakrim-Soivio, N., & Bernelius, V.. (2016, January 1). Differences between students' PISA reading literacy scores and grading for mother tongue and literature at school: A geostatistical analysis of the Finnish PISA 2009 data. HYPERLINK "https://scite.ai/reports/10.3402/edui.v7.29413"

Kimaiyo, L. (2016). Influence Of Teacher Trainee's Perceptions On Ict Integration In Primary Schools: A Study In Public Teacher Training Colleges In Selected Counties In Rift Valley, Kenya (Doctoral Dissertation, University Of Eldoret). "erepository.uoeld.ac.ke/handle/123456789/106"

Liaw, Ying, Sok et al. (2019, May 28). Finding the Right Blend of Technologically Enhanced Learning Environments: Randomized Controlled Study of the Effect of Instructional Sequences on Interprofessional Learning. *Journal of Medical Internet Research,* 21(5), e12537. https://doi.org/10.2196/12537

Ore Arriola, D. P. (2022). Emotional competencies and ethics in initial teacher training in pedagogical institutes of the southern cone of Lima, 2021. "https://repositorio.ucv.edu.pe/handle/20.500.12692/77690"

Pierce, Rod. (29 Oct 2020). "About Math is Fun". Math Is Fun. Retrieved 18 Jan 2024 from http://www.mathsisfun.com/aboutmathsisfun.html

Ramani, P., & Patadia, H. (2012). Computer assisted instruction in teaching of mathematics. *IOSR Journal of Humanities and Social Science*, *2*(1), 39-42. https://www.researchgate.net/profile/Pramila-Ramani-2/publication/269751368_Computer_Assisted_Instruction_in_Teaching_of_Mathematics/links/5c74e093458515831f6ff9f6/Computer-Assisted-Instruction-in-Teaching-of-Mathematics.pdf

Rasco, A. C. (2014). Bullying as a Problem in the Elementary and Secondary Schools in San Carlos City Division; Bases for Intervention Measures. *San Carlos City: San Carlos City Divsion.*

Santos, J. M. (2017). 21st century learning skills: A challenge in every classroom. *International Journal of Emerging Multidisciplinary Research*, *1*(1), 31-35. journal_ijemr_1-1_862118709-libre.pdf (d1wqtxts1xzle7.cloudfront.net)

Teacher Education in the Digital Age: Opportunities and Challenges. (n.d). https://link.springer.com/chapter/10.1007/978-981-19-4226-6_2

Tosun, N. (2006). The Effect Of Computer Assisted And Computer-Based Teaching Methods On Computer Course Success And Computer Using Attitudes Of Students. *The Turkish Online Journal of Educational Technology*, 1-4. https://files.eric.ed.gov/fulltext/ED501444.pdf

Vidergor, H. E., & Ben-Amram, P. (2020). Khan academy effectiveness: The case of math secondary students' perceptions. *Computers & Education*, *157*, 103985. https://www.sciencedirect.com/science/article/abs/pii/S0360131520301834

ETCOR Educational Research Center PHILIPPINES
Sta. Ana, Pampanga, Philippines
Website: https://etcor.org
iJOINED ETCOR P - ISSN 2984-7567 E - ISSN 2945-3577
The Exigency P - ISSN 2984-7842 E - ISSN 1908-3181

Wolfram, C. (2020). The Math's Fix: An Education Blueprint for the AI Age. Wolfram Media, Incorporated. *Computer-Based Maths: How to Fix Maths Education (computerbasedmath.org)* https://www.computerbasedmath.org

Yıldırım, M. and Yelken, T.Y., 2020. The development of transformative learning scale for information and communication technologies. *Technology, Knowledge and Learning*, *25*, pp.989-1006. https://link.springer.com/article/10.1007/s10758-019-09424-7