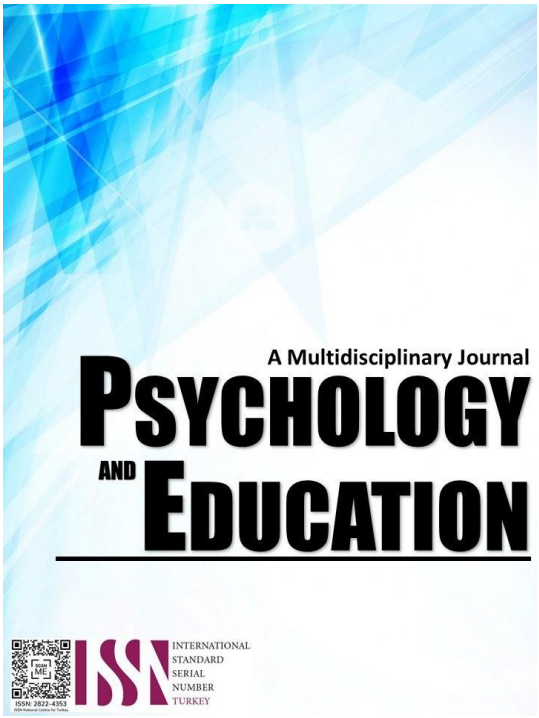
UTILIZATION OF QUIZIZZ-ASSISTED INSTRUCTIONAL MATERIALS FOR MATHEMATICS 8



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Research Article

Utilization of Quizizz-Assisted Instructional Materials for Mathematics 8

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Abstract

This study focused on the utilization of Quizizz-Assisted Instructional Materials for Mathematics for the Grade 8 students at San Jose National High School, City Schools Division Office of Antipolo, School Year 2022 – 2023. The topics that were developed into Quizizz-Assisted Instructional Materials based on the school quarterly test result for two consecutive years' school year 2020 – 2020 and 2021 – 2022 were the topics under the second quarter on which gained least mean percentage score. The evaluation of Math experts and Math teacher respondents on the developed instructional materials in terms of content, organization and presentation, ease of use, usefulness, impact was interpreted as very highly acceptable, with a grand weighted mean of 3.89 and 3.92, respectively which also showed no significant difference. Meanwhile, the level of performance of the control group and the experimental group based on the pretest revealed that the performance of the control and experimental groups has mean scores of 7.87 and 7.67, respectively, and standard deviations of 2.97 and 3.10, with both interpreted as Not Proficient, On the other hand, the posttest performance of two groups of students, the control group has the mean score of 16.83 and standard deviation of 5.14 with verbal interpretations of Nearly Proficient, while the experimental group has the mean score of 23.20 and standard deviation of 4.73 with verbal interpretation of Proficient. Also, there was a significant difference between the pretest and posttest mean scores of the experimental groups. Comments and suggestions were given by the respondents to further improve the instructional material.

Keywords: *Quizizz, Mathematics 8, instructional material*

Introduction

Educators, in their role as facilitators of knowledge acquisition, are responsible for creating a conducive learning atmosphere that enables learners to attain their complete cognitive, affective, somatic, and psychological capabilities.

The Department of Education extend quality education to all through discovering different teaching materials that would help develop quality learners. Educators identify the needs of modern and modified teaching materials to conform with the growing needs of the students as well as the teachers that will still suit to the Most Essential Learning Competencies despite with the learning modalities being used. According to DepEd Order No. 12, series 2020, will allow teachers to focus on learning activities and resources while still allowing time for covering and mastery. It is in response to the conclusions that the curriculum is congested.

The Department of Education is concerned with the way mathematics is being taught in elementary education. Villegas (2021) authored an article on the Human Side of Economics, which discusses the issue of the education crisis in the Philippines. Prior to the outbreak, the Philippines had been grappling with a crisis in the realm of education. The crisis was predominantly publicized through a report by the Organization for Economic Cooperation and Development (OECD) on the Program for International Student Assessment (PISA) in 2018. This report indicated that Filipino students ranked last among 79 countries in mathematics, science, and reading, and was widely circulated. The 15-year-old Filipino cohort demonstrated a mean score of 353 and 357 points in mathematics and science, respectively, which is notably lower than the OECD average of 489 points in both subjects.

From the article of Kurt (2019) in Educational Technology website narrated that, technology has become important part of student's life beyond and inside the classroom. Thus, the teacher must implement several forms of technology inside the classrooms yet many of the teachers face difficulties in doing it.

With this the article suggests studying and use the Technological Pedagogical Content Knowledge (TPACK Framework) Theory by Koehler and Mishra (2006) in developing instructional material with the use of technology. For many years, the TPACK framework has been a potent concept because its diverse parts allow for a variety of particular educational contexts. TPACK Framework taught how to use technology and which available technology to use to teach concepts in a way that enhances the students learning experiences. This framework also helps the educators to know the relationship between technology, content and pedagogy. It also helps teachers engage their students in collaborative learning and create the notion of digital pedagogies.

Haripriya (2022) defined Quizizz as an educational platform that provides a diverse range of resources to enhance classroom dynamics by promoting interactivity, liveliness, and engagement. Educators can utilize this tool to design instructional plans, administer formative assessments, assign homework, and facilitate interactive communication with their pupils. The Quizizz characteristics that were examined are as follows: Instructor-paced quizzes and lessons involve a pedagogical approach in which the teacher determines the pace of the instruction, and the entire class responds to each question posed. Student-paced quizzes and lessons allow learners to proceed at their own speed. Each question or lesson is accompanied by a scorecard and instantaneous feedback.

In San Jose National High School, the decline of students' performance was experienced as revealed in the two consecutive school

years (2020-2021, 2021-2022) report of test results prepared by the School Testing Coordinator, Mathematics ranked third to the lowest among the eight subjects. The researcher handled Grade 8 Mathematics. According to the report, Grade 8 students had the lowest Mean Percentage Score (MPS) in Mathematics during the 2nd quarter based on the summative tests.

Within the context of the aforementioned perspectives and premises, the researcher identified the need to conduct the "Utilization of Quizizz-Assisted Instructional Materials for Mathematics 8" study in order to provide another phase in the teaching-learning process and address the issue of students' perspectives on studying Mathematics. Similarly, the researcher was motivated to implement the aforementioned material that could assist learners in Mathematics 8 because most learners are heavily involved in technology, such as surfing the web, gaming, message transfer via social media, watching videos to further understand lessons, and using various web in their various activities.

Research Questions

This study focused on the utilization of Quizizz-Assisted Instructional Materials for Mathematics for the Grade 8 students at San Jose National High School, City Schools Division Office of Antipolo, School Year 2022-2023. Specifically, it sought answers the following questions:

1. What were the least mastered topics in Math 8 which served as basis in developing the Quizizz-assisted Instructional Materials for Mathematics 8?
2. What was the evaluation of the math teachers and expert respondents on the developed Quizizz-assisted Instructional Materials for Mathematics 8 in terms of the following:
    2.1. content;
    2.2. organization and presentation;
    2.3. ease of use;
    2.4. usefulness; and
    2.5. impact?
3. Was there a significant difference between the evaluations of the two groups of respondents on the developed Quizizz-assisted Instructional Materials for Mathematics 8?
4. What was the level of performance of Grade 8 students participants based on their pretest and posttest scores in Mathematics?
5. Was there a significant difference between the mean scores of pretest and posttest of the control group in Mathematics 8?
6. Was there a significant difference between the mean scores of pretest and posttest of the experimental group in Mathematics 8?
7. Was there a significant difference between the mean scores of the control and experimental groups in the posttest?
8. What were the comments and suggestions offered by the respondents to further improve the developed Quizizz-Assisted Instructional Materials for Mathematics 8?

Literature Review

Agyei (2021) ascertained the attributes of an instructional resource that utilizes information and communication technology (ICT) to facilitate interactive teaching and is suitable for the classroom environment of senior high school physics in Ghana. The research advocates for the use of instructional materials that possess crucial attributes such as immediate accessibility, enduring relevance, and a specialized ICT-based teaching and learning environment. Additionally, it emphasizes the importance of a comprehensive knowledge base on ICT for teachers to facilitate their adoption of this technology. Furthermore, the study proposes an ICT integration framework that is informed by a critical analysis of 13 scholarly articles on the use of ICT in scientific education, the efficacy of simulations as an instructional tool, and interactive teaching methodologies that incorporate ICT. The study examines the attributes of educational resources within the framework of scholarly inquiry and discusses the consequences of the results.

According to Heru (2020), the utilization of Information and Communication Technology (ICT) in education encompasses various applications, one of which is the implementation of interactive instructional multimedia teaching resources. The utilization of interactive learning multimedia is a recent development for educators at Muhammadiyah 1 Palembang. Previously, teachers solely relied on ICT tools such as Microsoft PowerPoint software for their presentation needs. This approach, however, may have limited the students' ability to fully comprehend the intricacies of media presentation as a pedagogical tool.

In addition, Makewa (2018) stated that if the students and instructors utilize technology in the classroom, then that technology transforms into a learning tool, and the students' and teachers' capabilities become more important. Technology has the potential to provide aid in the form of guidance by identifying problems and enabling as much practice, rehearsal, and support as is required to finish a job. Students may improve their cognitive talents with the assistance of technology.

Capinding (2022) conducted a study titled Utilization of 'Quizizz' as a Game-based Assessment: An Instructional Strategy in Secondary Education Science 10. It was found out that the use of Quizizz as an intervention significantly improved student interest, motivation, and performance in the subject matter of physics. His findings revealed that, the use of Quizizz as an intervention tool for the purpose of boosting students' engagement, motivation, and academic accomplishment in the field of physics led to the production of favorable

results. These outcomes included an improvement in the students' overall academic performance.

Moreover, Gonzales (2021) carried out research on the Evaluation of Developed Computer-Assisted Instructional Materials in Mathematics 9. The descriptive research approach with a survey questionnaire was utilized in the study. This study used five least mastered abilities from first and second quarter tests to create computer-assisted training materials. The examination found no significant difference in terms of appropriateness, comprehensibility, clarity, usefulness, and relevance between the two sets of responders.

From the study conducted by Navalta (2020) on the "Utilization of ICT-Based Instructional Materials for Mathematics 9" It focuses on developing teaching materials for use at San Roque National High School for the school year 2019-2020 for chosen Geometry topics. The class was addressed using Microsoft PowerPoint, which displays figures with visual fundamentals. The graphs, symbols, and colors were considered to be highly appealing, which encouraged pupils to read and learn. Following the administration of the materials, both students and teachers unanimously agreed that it contained high-quality, schematically organized, thoroughly clear, and valuable educational content.

Methodology

Research Design

This study utilized two research design, the first one is the descriptive research method and the second one is experimental research design. According to McCombes (2019) asserts that the primary objective of descriptive research is to depict a population, circumstance, or phenomenon accurately and comprehensively. The approach is suited for this study since it also tries to determine the opinions of two groups of respondents: experts and math instructors, on the developed Quizizz-Assisted Instructional Materials Mathematics 8.

The present study employed an experimental research methodology, utilizing a Pretest and Posttest design with two distinct groups. According to Hall (2014), experimental research is the process by which a researcher controls certain factors while manipulating others to see if the findings of the experiment show that the manipulations directly produced the given outcome. This sort of research varies from descriptive studies in several ways, including the use of random assignment. The method was relevant to the study because it tested the efficacy of the developed Quizizz-Assisted Instructional Materials for Mathematics 8 on the two groups. Furthermore, this strategy assures that individuals in an experiment are always allocated at random, or that methodology is always random, to ensure that no bias or inaccuracy in the experiment skews the study results.

Respondents

Twenty (20) teacher respondents which were comprised of ten (10) experts and ten (10) Math teachers evaluated the developed instructional materials based on Content, Organization and Presentation, Ease of Use, Usefulness and Impact.

Sixty (60) students were selected by purposive sampling from the four sections of Grade 8 of school year 2022-2023 at San Jose National High School, Antipolo City. The researcher divided the section into two groups, the first group of students were the students that belonged to the two sections handled by the researcher namely Larimar and Pearl, as the control group. The second group of students were the students who belonged to the two remaining sections handled by the researcher namely Topaz and Zircon, as the experimental group.

Instrument

The criteria used in the questionnaire for evaluating the developed Quizizz-Assisted Instructional Material for Mathematics 8 were based on content, organization and presentation, ease of use, usefulness and impact. Each indicator in the criteria was rated using 4 to 1 rating scales with corresponding verbal interpretations: Very Highly Acceptable (VHA), Highly Acceptable (HA), Less Acceptable (LA) and Least Acceptable (LeA), respectively.

A thirty-item Grade 8 Mathematics multiple choice test was used. Thirty questions were selected for four subtopics on the MELCS were included Illustrate and differentiates linear inequalities in two variables and equations in two variables, Graph linear inequalities in two variables, Solves problems involving (a) linear inequalities in two variables, (b) systems of linear inequalities in two variables. The pretest/posttest were used to determine the difference of students' performance in Mathematics 8 before and after the utilization of Quizizz-Assisted Instructional Material for Mathematics 8.

Procedure

The study was conducted during the second quarter of the school year 2022 – 2023. Permission to conduct the research secured from the City Schools Division Office of Antipolo City through the Schools Division Superintendent to the principal of San Jose National High School to administer the study on the said institution and to other school heads for the administration of questionnaire - checklist to math teachers and experts from their school. Followed by developing of Quizizz-Assisted instructional materials in selected topics in Mathematics 8. Then preparation of the pretest–posttest examination and the questionnaire-checklist which validated by the experts. The topics included in the study were the identified Least Mastered Competencies for the last two consecutive years: 2020-2021, and

2021-2022. The features of Quizizz-Assisted Instructional Materials will be based on an online web learning platform (www.quizizz.com) where students will be progressing in their own pace, the researcher both meet and present the Quizizz-Assisted Instructional Materials to the experts and teachers.

The data gathering instrument was administered by the researcher own set of students to ensure that all questions would be answered and checked completely. Scores from the pretest were recorded and treated with the use of mean and standard deviation. During the sessions with the used of the Quizizz-Assisted Instructional Material, summative tests were given. Scores from the summative test were recorded to check the progress of the students' participants. Quizizz-Assisted Instructional Materials for Mathematics 8 was implemented during the second quarter following the daily lesson log. After the utilization of the Quizizz-Assisted Instructional Materials, posttest was administered to the student participants. Scores from the posttest were recorded and treated with the use of mean and standard deviation. To examine the significant difference between the scores of the pretest and posttest, the paired t test was used.

Ethical Considerations

The researcher himself explained and gave the informed consent to each participant before the conduct of the study. He ensured them that the information would be used with utmost confidentiality and within the purpose of the study only.

Results and Discussion

This section presents the findings according to the study's research questions.

Least Mastered Topics in Mathematics 8 as Basis in Developing the Quizizz-Assisted Instructional Materials

Table 1. *Mean Percentage Score of Least Mastered Topics in Mathematics 8 for School Year 2020 – 2022*

Quarter	*School Year*		*Average*
	2020 – 2021	*2021 – 2022*	
First	42.21	43.47	42.84
Second	41.56	38.90	40.23
Third	42.56	44.87	43.72
Fourth	48.25	49.65	48.95

As revealed in Table 5, the consolidated test result of Mathematics 8 from school year 2010 up to 2022 the second quarter gained the least mean percentage score of 40.23.

Table 2. *Computed Mean and Rank of Least Mastered Competencies on the Two Consecutive Test Results in Second Quarterly Test in Mathematics 8, School Year 2020 – 2022*

LC Number	*Competencies*	*Mean*	*Rank*
M8AL-IIa-2	Illustrate and differentiates linear inequalities in two variables and equations in two variables.	39.25	4
M8AL-IIa-2	Illustrates and graphs linear inequalities in two variables.	36.02	3
M8AL-IIa-4	solves problems involving linear inequalities in two variables.	34.55	1
M8AL-IIb-2	solves problems involving systems of linear inequalities in two variables.	35.67	2

The aforementioned four learning competencies for the second quarter in Mathematics 8 were identified as challenging topics for the students, as well as essential skills that require improvement and acquisition by Grade 8 students. The fundamental skills required by students at the eighth-grade level in mathematics, which are considered to be the most challenging, were utilized as a foundation for the creation of instructional materials aided by Quizizz.

Evaluation of the Math Teachers and Expert Respondents on the Developed Quizizz-Assisted Instructional Materials for Mathematics 8

Table 3. *Respondents' Evaluations on the Developed Quizizz-Assisted Instructional Materials for Mathematics 8 with respect to Content*

The Quizizz-assisted instructional material:	*Respondents*			
	Teachers		*Experts*	
	WM	*VI*	*WM*	*VI*
1. is aligned with DepEd curriculum and standards, and is current;	3.89	VHA	4.00	VHA
2. is age appropriate and is designed to meet the needs of individual learners;	4.00	VHA	4.00	VHA
3. builds a good foundation of the subject matter for Math 8.	4.00	VHA	4.00	VHA
4. contains information given in the infographics was factually stated;	3.89	VHA	4.00	VHA
5. is sufficient in quality to cover stated objectives.	3.78	VHA	3.75	VHA
Overall Weighted Mean	3.91	VHA	3.95	VHA
Standard Deviation	0.11		0.09	

The math teachers had obtained the weighted mean of 3.91 while the experts obtained 3.95 with standard deviations of 0.11 and 0.09, respectively, which are verbally interpreted as Very Highly Acceptable. It means that the content of the Quizizz-assisted instructional material in mathematics 8 was aligned with DepEd curriculum and standards, appropriate and designed to meet the needs of individual learners, builds a good foundation of the subject matter for Math 8, the information given in the infographics was factually stated, is sufficient in quality to cover stated objectives.

This supports the findings of Navalta (2020) and Tumaque (2018) who concluded that it is essential for the contents and skills to be understandable, for the topics to be in accordance with the standards set by the Department of Education, for the content to be arranged in a logical and sequential manner, for the content to inspire students to combine concepts, and for the exercises to be intellectually stimulating for the purpose of evaluating students' level of proficiency.

Table 4. *Respondents' Evaluations on the Developed Quizizz-Assisted Instructional Materials for Mathematics 8 with respect to Organization and Presentation*

The Quizizz-assisted instructional material:	*Respondents*			
	Teachers		*Experts*	
	WM	*VI*	*WM*	*VI*
1. has infographics that is formatted for easy reading;	3.89	VHA	3.88	VHA
2. has graphics/color that adds to, rather than distract from instruction;	3.78	VHA	4.00	VHA
3. has layout that is consistent, clear and intuitive;	4.00	VHA	3.75	VHA
4. provides information that are arranged logically;	4.00	VHA	4.00	VHA
5. is interactive and provide high quality sensory experiences for all the students.	3.78	VHA	3.88	VHA
Overall Weighted Mean	3.89	VHA	3.90	VHA
Standard Deviation	0.15		0.15	

The math teachers had obtained the weighted mean of 3.89 while the experts obtained 3.90 with standard deviations of both 0.15, which are verbally interpreted as Very Highly Acceptable.

These findings inferred that the organization and presentation of the Quizizz-assisted instructional materials for mathematics 8 make the lessons interactive and give learners a high-quality sensory experience. The text is easy to read. The infographics has consistent, clear, and intuitive layout. The graphics/color adds more interest for the users. And the information was arranged logically.

This is similar with Castor (2019) which stated that the format of instructional material makes the lesson more enjoyable. The illustrations are clear and descriptive, and font is readable, paragraphs are not crowded, with airy space that illustrations, pictures and the other drawings are clearly presented.

Table 5. *Respondents' Evaluations on the Developed Quizizz-Assisted Instructional Materials for Mathematics 8 with respect to Ease of Use*

The Quizizz-assisted instructional material:	*Respondents*			
	Teachers		*Experts*	
	WM	*VI*	*WM*	*VI*
1. can be used by students without supervision or special assistance;	3.78	VHA	3.88	VHA
2. works properly without purchase or is readily available;	3.78	VHA	3.75	VHA
3. can be understood in given time frame;	4.00	VHA	4.00	VHA
4. provides positive feedback for correct responses.	4.00	VHA	4.00	VHA
Overall Weighted Mean	3.89	VHA	3.91	VHA
Standard Deviation	0.13		0.19	

The math teachers had obtained the weighted mean of 3.89 while the experts obtained 3.91 with standard deviations of 0.13 and 0.19, respectively, which are verbally interpreted as Very Highly Acceptable.

These findings inferred that the developed Quizizz-Assisted Instructional Material for Mathematics 8 can be used by students without supervision or special assistance, works properly without purchase or is readily available, can be understood in given time frame, provides positive feedback for correct responses.

This supports the study of Navalta (2020) that claimed that the developed ICT-Based Instructional Material for Mathematics 9 software was user-friendly, easy to operate, and manageable, that it performed its function efficiently, and that it produced accurate results. Furthermore, the digital learning material was significant and beneficial to both students and teachers.

Table 6 shows that the math teachers had obtained the weighted mean were both 3.94 with standard deviations of 0.13 and 0.19, respectively, which are verbally interpreted as Very Highly Acceptable. It means that the usefulness of Quizizz-assisted instructional mathematics in Mathematics 8 is useful in developing students' ability to identify mathematical patterns, useful in identifying students' learning styles and evaluating students' performance, and can be used as an additional resource in teaching and learning Math 8.

Table 6. *Respondents' Evaluations on the Developed Quizizz-Assisted Instructional Materials for Mathematics 8 with respect to Usefulness*

The Quizizz-assisted instructional material:	*Respondents*			
	Teachers		*Experts*	
	WM	*VI*	*WM*	*VI*
1. is useful in developing students' ability in identifying mathematical patterns;	4.00	VHA	4.00	VHA
2. is useful in identifying students' learning styles;	3.78	VHA	3.88	VHA
3. is useful in evaluating students' performance;	4.00	VHA	3.88	VHA
4. can be used as additional resources in teaching and learning Math 8.	4.00	VHA	4.00	VHA
Overall Weighted Mean	3.94	VHA	3.94	VHA
Standard Deviation	0.11		0.18	

This is similar with Gonzales (2021) who posited that the undeniable impact of instructional materials on students' academic performance and educational development in teaching and learning is a widely acknowledged fact.

Table 7. *Respondents' Evaluations on the Developed Quizizz-Assisted Instructional Materials for Mathematics 8 with respect to Impact*

The Quizizz-assisted instructional material:	*Respondents*			
	Teachers		*Experts*	
	WM	*VI*	*WM*	*VI*
1. increases students' interest and motivation in studying Math;	4.00	VHA	4.00	VHA
2. promotes independence, good working habits and attitude towards learning Math;	4.00	VHA	4.00	VHA
3. improve teachers' ability to teach effectively;	4.00	VHA	3.75	VHA
4. prepares students for more advanced activities that measure higher order thinking skills.	3.56	VHA	3.88	VHA
5. promotes a gender-responsive basic education policy. (DO 32, s.2017)	3.67	VHA	3.88	VHA
Overall Weighted Mean	3.84	VHA	3.90	VHA
Standard Deviation	0.17		0.11	

The math teachers had obtained the weighted mean were both 3.94 with standard deviations of 0.13 and 0.19, respectively, which are verbally interpreted as Very Highly Acceptable. It means that the impact of the Quizizz-assisted instructional material for mathematics 8 are increases students' interest and motivation in studying Math, promotes independence, good working habits and attitude towards learning Math, improve teachers' ability to teach effectively, prepares students for more advanced activities that measure higher order thinking skills and promotes a gender-responsive basic education policy.

This supports the study of Tumaque (2018), that the instructional material provides students with enough practice to for higher level of learning, gives students ample time to think and analyze, promotes positive study habits, entertain students while learning, building confidence of students.

Significant Difference Between the Evaluations of the Two Groups of Respondents on the Developed Quizizz-Assisted Instructional Materials for Mathematics 8

Table 8. *Test of Difference in the Evaluation of the Two Groups of Respondents on the Developed Quizizz-Assisted Instructional Materials for Mathematics 8 with respect to Content*

Respondents	*n*	*OWM*	*s*	*Computed t Value*	*Critical t value*	*Decision*	*Interpretation*
Teachers	10	3.91	0.11	0.80	2.10	Fail to reject the H0	Not Significant
Experts	10	3.95	0.09				

The computed t value of 0.80 is less than critical t value of 2.10 with 18 degrees of freedom. As a direct consequence of this, the null hypothesis can't be dismissed using a significance threshold of 5%. This lends credence to the idea that the two groups of respondents did not significantly vary in their assessments of the substance of the developed Quizizz-Assisted Instructional Materials that were prepared for the eighth grade Mathematics course. This indicates that the ratings provided by two separate sets of respondents are identical.

Table 9. *Test of Difference in the Evaluation of the Two Groups of Respondents on the Developed Quizizz-Assisted Instructional Materials for Mathematics 8 with respect to Organization and Presentation*

Respondents	*n*	*OWM*	*s*	*Computed t Value*	*Critical t value*	*Decision*	*Interpretation*
Teachers	10	3.89	0.15	0.15	2.10	Fail to reject the H0	Not Significant
Experts	10	3.90	0.15				

The computed t value of 0.15 is below the critical t value of 2.10. At a significance level of 5%, the statistical conclusion is to retain the null hypothesis. Hence, there exists no noteworthy distinction in the assessment of the two sets of participants concerning the developed Quizizz-Assisted Instructional Materials for Mathematics 8 in terms of its arrangement and delivery. This implies that the assessment of two distinct cohorts of participants is equivalent.

Table 10. *Test of Difference in the Evaluation of the Two Groups of Respondents on the Developed Quizizz-Assisted Instructional Materials for Mathematics 8 with respect to Ease of Use*

Respondents	*n*	*OWM*	*s*	*Computed t Value*	*Critical t value*	*Decision*	*Interpretation*
Teachers	10	3.89	0.13	0.22	2.10	Fail to reject the H0	Not Significant
Experts	10	3.91	0.19				

The computed t value of 0.22 is lesser than critical t value of 2.10. Hence, the statistical decision is not to reject the null hypothesis. At 5% significance level, this concludes that there is no significant difference in the evaluation of the two groups of respondents on the developed Quizizz-Assisted Instructional Materials for Mathematics 8 as to ease of use. This means that the evaluation of two groups of respondents is the same.

Table 11. *Test of Difference in the Evaluation of the Two Groups of Respondents on the Developed Quizizz-Assisted Instructional Materials for Mathematics 8 with respect to Usefulness*

Respondents	*n*	*OWM*	*s*	*Computed t Value*	*Critical t value*	*Decision*	*Interpretation*
Teachers	10	3.94	0.11	0.22	2.10	Fail to reject the H0	Not Significant
Experts	10	3.94	0.18				

The computed t value of 0.00 is lower than the critical t value of 2.10. Based on a significance level of 5%, it can be concluded that the null hypothesis cannot be rejected. The findings indicate that there is no statistically significant distinction between the assessments of the two cohorts of participants regarding the efficacy of the developed Quizizz-Assisted Instructional Materials for Mathematics 8. This implies that the assessment of two cohorts of participants is equivalent.

Table 12. *Test of Difference in the Evaluation of the Two Groups of Respondents on the Developed Quizizz-Assisted Instructional Materials for Mathematics 8 with respect to Impact*

Respondents	*n*	*OWM*	*s*	*Computed t Value*	*Critical t value*	*Decision*	*Interpretation*
Teachers	10	3.84	0.17	0.81	2.10	Fail to reject the H0	Not Significant
Experts	10	3.90	0.11				

The computed t value of 0.81 is smaller than the critical t value of 2.10. So, the conclusion that can be drawn from this is that the null hypothesis cannot be rejected with a significance level of 5%. This would imply that there is not a significant difference in how the two groups of respondents evaluated the usefulness of the Quizizz-Assisted Instructional Materials that were prepared for Mathematics 8. This is supported by the fact that. This indicates that the ratings provided by two separate sets of respondents are identical.

Level of Performance of Grade 8 Student Participants Based on Their Pretest and Posttest Scores in Mathematics 8

Table 13. *Performance of the Control and Experimental Groups in Mathematics 8*

Score	*Descriptor*	*Control group*						*Experimental group*					
		Pretest			*Posttest*			*Pretest*			*Posttest*		
		f	*%*	*R*	*f*	*%*	*R*	*f*	*%*	*R*	*f*	*%*	*R*
27 – 30	Highly Proficient	0	0	3	0	0	4.5	0	0	3	10	33	2
22 – 26	Proficient	0	0	3	8	27	3	0	0	3	8	27	3
15 – 21	Nearly Proficient	0	0	3	12	40	1	0	0	3	12	40	1
08 – 14	Low Proficient	15	50	1.5	10	33	2	15	50	1	0	0	4.5
00 – 70	Not Proficient	15	50	1.5	0	0	4.5	15	50	2	0	0	4.5
	Total	30	100		30	100		30	100		30	100	
	Mean		7.87			16.83			7.67			23.20	
	Standard Deviation		2.97			5.14			3.10			4.73	
	Interpretation		Not Proficient			Nearly Proficient			Not Proficient			Proficient	

It can be gleaned in the table that all of the of students from control group and experimental group participants attained score under low and not proficient on the pretest. On the posttest, 8 or 27% of the Grade 8 students got a score under proficient, 12 or 40% under nearly proficient, and 10 or 33% under low proficient from control group. For experimental group, 10 or 33% of the Grade 8 students got a score under highly proficient, 8 or 27% under proficient, and 12 or 40% under nearly proficient.

Furthermore, the pretest performance of the control and experimental groups has mean scores of 7.87 and 7.67, respectively, and

standard deviations of 2.97 and 3.10, with both interpreted as Not Proficient, On the other hand, the posttest performance of two groups of students-participants, the control group has the mean score of 16.83 and standard deviation of 5.14 with verbal interpretations of Nearly Proficient. And the experimental group has the mean score of 23.20 and standard deviation of 4.73 with verbal interpretation of Proficient. It can be concluded that performance of both groups of student-participants increased.

Table 14. *Test of Difference in the Pretest and Posttest Mean Scores of the Control Group*

Tests	*Mean Score*	*s*	*Computed t Value*	*Critical t Value*	*Decision*	*Interpretation*
Pretest	7.87	2.97	19.34	2.05	Reject the H0	Significant
Posttest	16.83	5.14				

According to the table, the calculated t-value of 19.34 exceeds the critical t-value of 2.05 at a significance level of 0.05 with 29 degrees of freedom. Given that the calculated t-value exceeds the critical t-value, the appropriate statistical conclusion is to reject the null hypothesis at a significance level of 5%. The available evidence suggests that a notable distinction exists between the mean scores of the control group in Mathematics 8 during the pretest and posttest phases. Consequently, conventional proves to be effective enough in enhancing students' academic achievement.

Table 15. *Test of Difference in the Pretest and Posttest Mean Scores of the Experimental Group*

Tests	*Mean Score*	*s*	*Computed t Value*	*Critical t Value*	*Decision*	*Interpretation*
Pretest	7.67	3.10	38.25	2.05	Reject the H0	Significant
Posttest	23.20	4.73				

The table demonstrates that the computed t value of 38.25 exceeds the critical t value of 2.05. Consequently, the statistical conclusion is to reject the null hypothesis. At a significance level of 5%, it can be concluded that a statistically significant difference exists between the mean scores of the pretest and posttest of the experimental group in Mathematics 8. The utilization of developed Quizizz-assisted instructional material has been found to be effective in enhancing student performance.

Table 16. *Test of Difference in the Mean Scores of the Control and Experimental Groups in the Posttest*

Groups	*Mean Score*	*s*	*Computed z Value*	*Critical z Value (α=5%)*	*Decision*	*Interpretation*
Control	16.83	5.14	4.99	1.96	Reject the H0	Significant
Experimental	23.20	4.73				

The z value computed, as presented in the table exceeds the critical z value of 1.96. At a significance level of 5%, the statistical conclusion is to reject the null hypothesis. This statement suggests that there exists adequate evidence to indicate a noteworthy distinction between the average scores of the control and experimental groups in the posttest. Therefore, the utilization of Quizizz-supported instructional materials proved to be significantly more effective in enhancing students' academic performance as compared to conventional teaching methods.

Comments and Suggestions Offered by Respondents to Further Improve the Developed Quizizz-Assisted Instructional Materials for Mathematics 8

The comments and suggestions of the two groups of respondents to improve the Quizizz-Assisted Instructional Materials for Mathematics 8 were as follows:

Comments:

(a) The instructional material presented is a great tool in honing, engaging, motivating, active participation of the younger generation of learners to practice self-learning; (b) The Quizizz is very timely relevant to the subject; and (c) Superb ICT integration application.

Suggestions:

(a) Encourage student to think beyond literal questions, include questions such as problem solving and other questions that make students calculate information instead of simply recalling facts; and (b) Have the Quizizz-assisted instructional material be downloadable by the students who do not have strong internet connection to make use of it as convenient as possible.

Conclusions

Based on the results of the study, the following conclusions were obtained:

There is a significant difference between the experimental group's pretest and posttest mean scores in Mathematics 8. As a result, using developed Quizizz-assisted educational material is significantly effective in improving student performance.

The utilization of Quizizz-Assisted Instructional Materials for Mathematics 8 is more effective than the use of conventional method of teaching Mathematics 8 and improving the level of performance of Grade 8 students in San Jose National High School.

The developed Quizizz-Assisted Instructional Material made simple for students to grasp the concepts in Mathematics 8. Students in

the twenty-first century may absorb lessons in a variety of learning styles, especially when teachers incorporate technology aids.

The responses to the developed Quizizz-Assisted Instructional Material for Mathematics 8 are not significantly different in terms of content, organization and presentation, ease of use, usefulness, and impact. E-learning Theory is relevant to the study because the developed Quizizz-assisted instructional material as teaching material will provide respondents and participants with new knowledge through the interactive use of technologies and other multimedia in the learning process. Learners learn not only through plain texts, visuals, and audio, but also through the proper selection and organization of information.

The use of technology by a teacher through organized and skilled planning with various platforms allows students to become more motivated and active participants in the learning environment.

The developed Quizizz-Assisted Instructional Material for Mathematics 8 was more effective than conventional teaching in improving the performance of student-participants in Mathematics 8. Hence, the developed Quizizz-Assisted Instructional Material for Mathematics could aid students' learning processes and is useful as teaching materials.

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