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EFFECTIVENESS OF COMICS WITH DRILLS IN TEACHING MATH CONCEPTS TO GRADE 7 LEARNERS

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Abstract: *This explanatory mixed-method research study assessed how well comics with some drills teach mathematical concepts to learners in Grade 7. It employed experimental pre-post tests and survey questionnaires. The respondents were 70 Grade 7 students in Morong National High School, Morong, Bataan, Philippines, with comparative numeracy levels and grouped using random sampling. The experimental group was taught three different math topics using comics while the control group was taught using the conventional method. After the experiment, the quantitative and qualitative results proved that teaching math concepts using comics is effective. The respondents in the experimental group also agreed on the perceived effectiveness of using comics material in teaching mathematics concepts. They also shared their experiences using three comics to teach three different math concepts. The group agreed that comics' color, humor, pictures, and characters help them visualize problems and motivate them to learn independently. The presence of different situations that the characters in the comics faced and solved and the addition of various drills helped them learn math quickly. This study shows that comics can effectively teach mathematics and offers suggestions for creating Math Concept Comics to tackle the global issues of poor performance and lack of interest in the subject.*

Keywords: *Mathematics, comics, teaching strategy, drills, math performance, math concepts, mix-method research, Morong, Bataan, Philippines*

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INTRODUCTION

According to the recently finished Program for International Student Assessment (PISA) 2022 findings, the Philippines was in the bottom six of the list of 81 countries in mathematics. This subject has high failure rates and little student engagement in many countries (Menezes & Costa, 2020). It happens due to the students' attitudes and perceptions of math which were found to be negative, according to the study by Chand et al. (2021). The student's performance was significantly predicted by the student's attitude and pleasure in mathematics (Mazana et al., 2019). Unfortunately, the socioeconomic growth of individuals and the nation at large is hindered by poor arithmetic performance (Mazana et al., 2020). Therefore, scholars consider it crucial for teachers to create instructional materials or teaching resources to encourage and foster interest in mathematics among students (Chu & Toh, 2020). Teaching will be more effective if learning settings include instructional strategies that engage various senses (Erdem & Soylu, 2020) and media that adapts to the needs of the audience or message recipient (Septialti et al., 2022). One of these strategies that this research wants to explore is the usefulness of comics with drills in teaching math concepts. Since it is appealing and motivates students to work harder on their studies, mathematics comics have the right qualities and benefit student progress (Lestari et al., 2021). It provides students with an enjoyable environment (Erdem & Soylu, 2020), boosting student engagement in learning (Khotimah & Hidayat, 2022). In addition, Laleye and Ogunboyede (2023) and Burns et al. (2019) concluded favorably on the positive effects of drills in teaching mathematics.

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Numerous studies in Asia described comics as visual materials that are pictorial in form (Hidayah & Fathimatuzzahra, 2019), comprise photographic material that can enhance the quality of learning, can spark a student's interest in reading (Maghfiroh & Kuswanto, 2022; and Yuniarti & Radia, 2020) and comprehension (Rengur & Sugirin, 2019), and a medium that pupils find appealing, non-threatening, motivating, and entertaining (Layla, 2020; and Gokbulut & Kus, 2019). The potential for using comics in the classroom is enormous (Batrisyia et al., 2020), specifically for Grade 7 students, who are now transitioning from the solid to the abstract stage of cognitive growth. An approach to mathematics that is practical and based on comic books can significantly enhance student's conceptual understanding (Sipayung et al., 2023) to solve the issue of students who tend to memorize formulas instead of presenting ideas via symbols, tables, charts, or other types of representations to illustrate the topic or situation.

Although some researchers have paid attention to using comics as a teaching tool, more is needed to know how effective this material is if used in teaching mathematics to Grade 7 students. Other studies have yet to focus on its effectiveness as a learning media. Therefore, this study examines comics' impact on learners' mathematics performance. How the respondents performed between the pre-and post-tests with or without using comics will be tested and compared. The solution this study offers to the issue of poor math performance is its main contribution, which will benefit the students, teachers, schools, the education system, and the country.

FRAMEWORK

Mathematics is one of the major subjects in the Philippines. Fundamental mathematical abilities in science, technology, and engineering are necessary to produce new creative workers in the sciences and technology industries. Due to its significance, any educational institution has a great responsibility to teach and help students understand mathematics. Researchers from different fields have recommended using learning resources like comic books. According to Widodo et al. (2018), since Grade 7 students are between the transition from formal and concrete operations stages of Piaget's Four Stages of Cognitive Growth, math comic media can help them bridge their cognitive development and boost their math achievement.

The findings of numerous researchers presented the causes of the poor performance in mathematics, wherein most blame it on learners' attitudes toward mathematics, lack of interest in math and reading, lack of ability to connect math to the real world, and the perception that math is a complicated subject. Various researchers suggested that teachers should use teaching strategies and learning tools that will engage the multiple senses of the students and motivate them to learn more because of their attractive, humorous, and enjoyable components. Provide students with learning tools to help them appreciate the subject and change their undesirable attitude toward mathematics. However, although results from several studies appear consistent with the benefit of comics as a teaching tool, most of them focused on the primary level. They used comics to teach other skills like reading, health, science, religion, and integration of values. As respondents in their surveys, only a few scholars also considered Grade 7 students, who are currently experiencing many physical, emotional, and cognitive changes that may affect their attitudes and learning styles. Moreover, most studies have studied the effect of comics on learners but rarely measured how effective this material is when used as a learning tool.

The reviewed literature provided fascinating information that motivated the researcher to investigate further the use of comics in teaching mathematics. However, unlike most related studies, this research focused on evaluating the effectiveness of using comics in teaching mathematics to Grade

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7 students and providing suggestions for creating effective Math Concept Comics that will be helpful to educators around the world.

OBJECTIVES OF THE STUDY

The primary goal of this research is to evaluate the effectiveness of using comics with drills in teaching mathematical concepts to Grade 7 students. To achieve this objective, the researcher aims to answer the following questions: 1) How did the control and experimental groups perform in the pre-test and post-test? 2) Is there a significant difference between the pre-tests of the two groups? 3) Is there a significant difference between the post-tests of the two groups? 4) Is there a significant difference between the pre-test and post-test of the two groups? 5) How effective do the students think comics are in teaching them math? 6) In what ways do students think comics can help them understand math concepts? Finally, 7) What content structure can be suggested to effectively use comics in teaching mathematics?

METHODOLOGY

Research Design

This study is mixed-methods research with two fundamental components: 1) quantitative research, which involves gathering and analyzing numerical data, and 2) qualitative research, which focuses on non-numerical data, including narratives, interviews, and observations (Creswell & Plano Clark, 2018). This approach, which employs an explanatory sequential design and starts with collecting quantitative data, was utilized to develop a more thorough grasp of the subject (Almeida, 2018). For the quantitative research component of the project, a true experimental strategy was used to compare the pre-and post-test outcomes. Random assignment was used in experimental investigations to divide participants into control and experimental or treatment groups (Siedlecki, 2020). For the qualitative aspect, a survey questionnaire was distributed to each student in the experimental group after the experimental phase. The researcher also conducted an oral interview with both groups after each step of the activity.

Research Site

The investigation occurred at Morong National High School, founded in 1965 and now under the Schools Division Office of Bataan (SDO-Bataan). It is the central school in Morong with the largest population. It is situated at Sabang, Morong, Bataan.

Participants

The researcher used the Region 3 Project All Numerates (PAN) Pre-Test Results to determine the two sections that became part of the study and random sampling to decide which class sections became the experimental and control groups. To give students an equal opportunity to become a sample, the researcher used random sampling for students with identical scores to complete the 35 students in each group for a total of 70.

Instrumentation

The researcher used researcher-made pre-and post-tests to collect the needed data. The tests include three distinct pre-tests and three distinct post-tests, each with fifteen (15) items covering the following topics: problem-solving involving sets, addition of integers, and subtraction of integers. These topics were chosen after falling under the least learned competencies in previous years. The

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researcher taught each lesson using the researcher-made comics as the learning tool for the experimental group. The researcher also created an attitude survey to find the perceived effectiveness of comics as a teaching aid for mathematics. The researcher based each item in the survey on the reviewed studies of different researchers about the reasons for students' poor performance in mathematics and the effect of using comics, as presented in the introduction and framework of this study. The respondents' profile variable, which includes age and gender, is in Part I. The 15-item evaluation of the effectiveness of comics is in Part II. The researcher rated the assertions using a 4-point Likert scale. The survey also includes an open-ended question (Part III) to confirm how the students learn math concepts using comics.

The mathematics teachers' panel, composed of the Department Head, Master Teacher, and other math and English teachers in Morong National High School, validated the assessment tools (pre-tests and post-tests) and the survey questionnaire. Following the evaluation, the researcher considered the feedback and recommendations and added them to the research tools before pilot testing. One section in Grade 7, not included in the set of respondents, was used in the pilot testing for test reliability. Given all the suggestions and errors identified during the trial, the researcher revised the instruments. The comics were evaluated in content and language by evaluators, composed of the school head, department heads, and teachers in English and mathematics. The researcher also adopted the necessary corrections and suggestions from the panel before utilization.

Data Collection

Upon the approval of the research proposal, the researcher sent a letter to the Bataan Schools Division Superintendent through the school principal of Morong National High School to ask for permission and recommendations for the conduct of this study. Then, after obtaining permission from the authorities, the researcher sent a consent letter to their parents.

After securing permission from authorities and consent from parents, the researcher gathered data following these procedures: The researcher explained the study's objectives to the respondents. Before teaching each topic, the researcher administered pre-test questionnaires to all the respondents. The control group then received instruction using conventional techniques, while the researcher taught the experimental group using researcher-made comics. After each topic, the researcher administered the post-test questionnaires, made observations, and interviewed respondents. Then, survey questionnaires were given to the students under the experimental group only for them to accomplish. After gathering the questionnaires and answer sheets, the researchers tallied, tabulated, and interpreted the data accordingly using Microsoft Excel and the Statistical Package for Social Sciences, version 21 (SPSS v 21).

The researcher determined the respondents' performance in each test from the experimental and control groups using the mean and using the following interpretation: very poor (1.00-3.49), poor (3.50-5.49), satisfactory (6.50-9.49), very satisfactory (9.50-12.49) and outstanding (12.50-15.00). The researcher measured the significant changes in the learners' pre-test and post-test scores from each group in each topic using a t-test for dependent means. The two groups' achievement scores before and after the experiment were compared by the researcher using a t-test for independent means to see if there were any significant differences. Both tests will use a 0.05 level of significance. The perceived effectiveness of utilizing comics to teach Mathematics was analyzed using weighted means. The scale

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used in the interpretation of perceived effectiveness is not effective (1.00-1.74), less effective (1.75-2.49), effective (2.50-3.24), and very effective (3.25-4.00).

RESULTS AND DISCUSSION

1. Pre-test and post-test results. The overall mean score of the two groups in the pre-tests, shown in Table 1, is 3.70, with a descriptive rating of "Poor". Both groups struggled with the pre-test. In the interview, some students were surprised to learn that their answers were incorrect, particularly in pre-test 1. The inaccurate Venn diagrams indicated misconceptions that caused a poor pre-test result. Some students confessed to guessing the answer as they did not know the topic. Their responses aligned with Yang and Sianturi's (2019) findings: nearly 50% of those who could not determine the computational results' reasonability had misconceptions, while others guessed

Table 1
Pre-test Mean results of the control and experimental group.

Pre-Test	Control Group (n = 35	Experimental Group (n = 35)	Overall Mean Score
Pre-Test 1	2.31 (Very Poor)	2.71 (Very Poor)	**2.51 (Very Poor)**
Pre-Test 2	4.06 (Poor)	3.94 (Poor)	**4.00** (Poor)
Pre-Test 3	4.66 (Poor)	4.49 (Poor)	**4.58 (Poor)**
Overall Mean Score	**3.68 (Poor)**	**3.71 (Poor)**	**3.70 (Poor)**

Table 2
Post-test Mean results of the control and experimental group.

Post-Test	Control Group (n = 35	Experimental Group (n = 35)	Overall Mean Score
Post-Test 1	8.11 (Satisfactory)	10.66 (Very Satisfactory)	**9.39 (Satisfactory)**
Post-Test 2	9.40 (Satisfactory)	11.49 (Very Satisfactory)	**10.45 (Very Satisfactory)**
Post-Test 3	8.49 (Satisfactory)	7.77 (Satisfactory)	**8.13 (Satisfactory)**
Overall Mean Score	**8.67 (Satisfactory)**	**9.97 (Very Satisfactory)**	**9.32 (Satisfactory)**

On the other hand, the overall mean score of the two groups in the post-tests is 9.32, shown in Table 2, with a descriptive rating of "Satisfactory". Both groups increased their performance in post-tests compared to their pre-tests. Some students from each group said they found the post-tests easier because they already knew how to answer most questions. Others pointed out that real-life examples helped them better understand the concepts being taught. These statements confirmed the findings of Chu and Toh (2020) that comics include pupils in real-world applications of mathematical concepts.

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2. Difference between the pre-tests of the control and experimental group. The computed t-values, shown in Table 3, indicated that the two groups had almost equal performance levels before the instruction. This confirms the results of the PAN Regional Project pre-test that the respondents from both groups have comparable numeracy levels.

Table 3
Significant difference between the pre-tests of the control and experimental group

Pre-Test	Control Group (n = 35	Experimental Group (n = 35)	t-value	p-value	Decision at 5% alpha
Pre-Test 1	2.31	2.71	0.745	0.459	Accept Ho (Not Sig)
Pre-Test 2	4.06	3.94	-0.172	0.864	Accept Ho (Not Sig)
Pre-Test 3	4.66	4.49	-0.316	0.753	Accept Ho (Not Sig)
Overall	**3.68**	**3.71**	**0.093**	**0.926**	**Accept Ho (Not Sig)**

Students from both groups shared that the pre-tests were hard. Some students admitted that they just guessed their answers. Some individuals admitted to not reading the questions, particularly the problem-solving ones. According to them, they decided to stop trying since they believed that they couldn't provide correct answers. These statements confirmed Schleicher's (2018) conclusion that students' negative opinions of mathematics education are one of the root causes of students' poor performance.

3. Difference between the post-tests of the control and experimental group. The computed t-value presented in Table 4 suggests that the experimental group significantly outperformed the control group. It can be concluded that using comics results in better performance or increased test scores. This result corroborates the findings of various researchers, such as Rahayu (2023), Johar et al. (2023), Nurfitriyanti & Suhedri (2020), and others, who have determined that comics contribute to improved academic performance in mathematics.

Table 4
Significant difference between the post-tests of the control and experimental group

Post-Test	Control Group (n = 35	Experimental Group (n = 35)	t-value	p-value	Decision at 5% alpha
Post-Test 1	8.11	10.66	3.709	0.000	Reject Ho (Significant)
Post-Test 2	9.40	11.49	3.322	0.001	Reject Ho (Significant)
Post-Test 3	8.49	7.77	-1.440	0.115	Accept Ho (Not Sig)
Overall	**8.67**	**9.97**	**2.833**	**0.006**	**Reject Ho (Significant)**

During the interview, a student from each group provided feedback that some of the activities and the pre-test questions were like those on their post-tests. Moreover, some students from the experimental group specifically recalled the clue words provided by the characters in the comics and

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utilized them to answer questions on their post-tests. They found it easier to remember the clue words and rules by incorporating the concepts from the story.

These findings proved that both quantitative and qualitative data indicate that comics are effective tools for teaching math and improving the problem-solving skills of 7th-grade students.

4. Difference between the pre-test and post-test of the control and experimental group. The computed t-values in Table 5 indicate significant differences between the pre-tests and post-tests of the control group, leading to the rejection of the null hypothesis. These results suggest that, even without using comics, the control group's performance increased significantly. These results also proved that teaching and learning occurred in the control group.

Table 5

Significant difference between the pre-test and post-test of the control group.

Pre-Test and Post-Test	Control Group (n = 35	t-value	p-value	Decision at 5% alpha
Pre-Test 1 Post-Test 1	2.31 8.11	8.727	0.000	Reject Ho (Significant)
Pre-Test 2 Post-Test 2	4.06 9.40	7.789	0.000	Reject Ho (Significant)
Pre-Test 3 Post-Test 3	4.66 8.49	9.410	0.000	Reject Ho (Significant)
Overall Pre-Test Overall Post-Test	**3.68 8.67**	**17.478**	**0.000**	**Reject Ho (Significant)**

Table 6

Significant difference between the pre-test and post-test of the experimental group

Pre-Test and Post-Test	Experimental Group (n = 35	t-value	p-value	Decision at 5% alpha
Pre-Test 1 Post-Test 1	2.71 10.66	14.862	0.000	Reject Ho (Significant)
Pre-Test 2 Post-Test 2	3.94 11.49	14.858	0.000	Reject Ho (Significant)
Pre-Test 3 Post-Test 3	4.49 7.77	6.229	0.000	Reject Ho (Significant)
Overall Pre-Test Overall Post-Test	**3.71 9.97**	**12.690**	**0.000**	**Reject Ho (Significant)**

Students from the control group said that the given examples and drills helped them master the math concepts, especially in adding and subtracting integers. This confirmed the idea of Laleye and Ogunboyede (2023) and Burns et al. (2019) about the positive effect of using drills when teaching Mathematics.

Based on the computed t-values shown in Table 6, there are also significant differences between the experimental group's pre-tests and post-tests. These results show that the student's performance improves using comics. Some students from this group claimed that the conversations and drawings/illustrations in the comics helped them better remember the problem-solving process. This statement confirmed the conclusion of researchers like Maghfiroh and Kuswanto (2022) and Yuniarti and Radia (2020) that comics comprise photographic material that can enhance the quality of learning and spark a student's interest in reading.

5. Perceived effectiveness of using Comics.

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Table 7

Perceived effectiveness of using comics

Perceived Effectiveness	WX	DR
1. I better understand Math lessons using comics.	3.21	Effective
2. Math lessons are more interesting because of comics.	3.17	Effective
3. I love learning Math using comics.	3.00	Effective
4. Comics help me understand Math lessons better than textbooks.	3.00	Effective
5. The humor in comics helps me enjoy learning Math concepts.	3.20	Effective
6. The images and colors in comics help me understand Math concepts easily.	3.24	Effective
7. I can learn Math concepts independently by reading Math comics.	2.88	Effective
8. I am motivated to learn Math concepts using comics.	3.12	Effective
9. Comics help develop students' self-confidence in solving Math problems.	3.12	Effective
10. Comics are an effective way to present real-life mathematical problems.	2.96	Effective
11. Comics help develop my critical thinking and problem-solving skills.	3.08	Effective
12. Comics help reduce my anxiety or fear of Mathematics.	3.00	Effective
13. Comics help gain a positive attitude toward Mathematics.	3.08	Effective
14. Comics help improve my performance in Mathematics.	3.04	Effective
15. I want to read more Math Concept Comics in the future.	3.12	Effective
Overall	**3.08**	**Effective**

Table 7 shows the perceived effectiveness of using comics, with an overall mean of 3.08. The participants in the experimental group agreed with each statement presented in the literature review regarding the effectiveness of comics in teaching mathematics. Some are amazed to learn that comics can teach math concepts. They said that it was their first experience reading Math Concept Comics. Their claims corroborate the findings of a survey conducted by Rohaizati et al. (2020), which showed that there is still a lack of comics available as math teaching resources.

The respondents also gave ideas on how they see comics to help them understand math concepts. Student A agreed with Batrisyia et al. (2020), stating that images and colors in comics can aid in understanding math concepts. Student A mentioned, "Comics help to develop students' self-confidence in solving math problems. The images and colors in comics help me understand math concepts quickly."

Student B said, "Comics help us to understand math concepts even without the help of a teacher." This statement confirmed the conclusion of Kusumadewi et al. (2021) that comics promote learning independence.

Thus, comics' visual representations help students understand things more clearly and concretely. They improve learning by offering students multiple modalities of assistance in comprehending the topics aside from all senses developed in the process.

Other respondents said that comics help them understand the lesson "Because of the color and fun problems that the character faces," "By seeing the characters explaining those concepts," "Have a step-by-step procedure, a different story setting, and start from easy to complex," "Stimulate imaginative thinking as students analyze the pictures, story, characters, and concepts to understand the problem," and "It also has exercises to see if we understand what we read." These statements conform to other researchers' ideas of what comics should have as a learning tool to improve performance in Mathematics, like Batrisyia et al. (2020) and Chu & Toh (2020). Students also agreed with Laleye and Ogunboyede (2023) and Burns et al. (2019) that drills or exercises help their math skills improve. These findings may be the basis for making math concept comics in the future.

6. Suggested content structure of Math Concept Comics. The researcher proposed creating localized Math Concept Comics with real-life examples and applications featuring colorful and fun characters. Some students from the experimental group shared that they love seeing the characters helping each other solve word problems by applying the concepts they learned. This procedure also conforms with the findings of Anthony and Walshaw (2023) that students find mathematics more

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engaging when they discover its practical applications in their daily lives, allowing them to solve real-world problems.

The researcher also recommended using illustrations such as number lines, diagrams, and real-life objects, such as stairs used in teaching the addition of integers, to explain mathematical concepts better. Such visuals were proven effective in clarifying concepts, as demonstrated in the comics used in the study. The students from the control group acknowledged the usefulness of these visual aids in understanding mathematical concepts.

Using friendly characters is also a great strategy to convey the necessary ideas. Some students from the experimental group mentioned that they enjoy seeing these characters helping each other solve math problems. This approach minimizes students' stress and fear of mathematics. This idea conforms with St. Clair (2018) that comics help reduce my anxiety or fear of mathematics.

The researcher also proposed to start with basic ideas/examples and progress to complex ones. The researcher also suggested beginning with simple ideas and examples before moving on to more complex ones. Introduce the concepts of the lessons first before going to computations and problem-solving. In the teacher-made comics used in this study to teach solving problems involving the Venn diagram, the discussion started with problems involving two sets before moving on to situations with three sets. On the topic of the addition of integers, the lesson began by presenting the concept using stairs and number lines. After this, the rules were introduced, and students worked on solving simple computations. The lesson then progressed to relating these concepts to real-life situations before moving on to real-life problems. Having a character in comics to explain key concepts, rules, or steps is also helpful. Students can refer to it in case they forget what to do.

Include activities or drills that will evaluate students' understanding and assist them in mastering the necessary abilities. Both Laleye and Ogunboyede (2023) and Burns et al. (2019) came to positive conclusions on the benefits of using drills when teaching mathematics. With the help of these exercises, students can reflect on their undeveloped skills and prepare for the assessment.

Ensuring that the comics are error-free in spelling, grammar, and punctuation is also essential for easy understanding. This approach can also aid in conveying accurate ideas to readers and provide an opportunity to teach students English skills, which is also critical in learning Mathematics.

CONCLUSION

This study aimed to measure the effectiveness of using comics to teach math concepts to Grade 7 students at Morong National High School. It also targeted to assess the comics' perceived effectiveness in solving problems that caused the students' low performance in mathematics. The researcher also sought to record how learners find this material effective in learning mathematics.

The computed mean of the test results in the quantitative phase showed that the two groups performed poorly in all three math topics on the pre-tests and satisfactory or very satisfactory on the post-tests. The qualitative data revealed that some respondents were confused by pre-test results, indicating misconceptions. The computed t-value to compare the performance of the two groups in the pre-tests proved that their prior knowledge about each of the three topics had no significant difference at the start of the experiment. Both groups improved significantly on post-tests compared to pre-tests, indicating successful teaching and learning. The results also show that the experimental group significantly improved its performance on the post-test compared to the control group. The experimental group, comprised 68% females and an average of 12.2 years old, also agreed on all perceived effectiveness of comics in teaching mathematics, as stated on the survey questionnaire.

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The use of comics in teaching math, from simple computations to problem-solving, was proven effective by the significant difference between the two groups' performance from pre-tests to post-tests. The experimental group concluded that the color, humor, images, and characters in comics aid problem visualization and inspire self-directed learning. The various problems the characters encountered and resolved, and the multiple exercises sped up their math learning. Based on the quantitative results, which were validated and deepened by the qualitative data gathered, the researcher proposed making locally relevant math concept comics with lively, entertaining characters, real-world applications, illustrations that can help explain concepts, and friendly characters to reduce math anxiety and inspire students to learn more. The researcher also suggested including activities or drills that will evaluate students' understanding and assist them in mastering the necessary abilities. From the analysis of data collected from personal experiences, respondents, evaluators, and reviewed literature, it is also essential to ensure that the comics materials are error-free in spelling, grammar, and punctuation for easy understanding.

The control and experimental groups in this study comprised members who were about 50% non-numerates or those who performed poorly in mathematics, and others were nearly numerates based on the result of their Project All Numerates (PAN) Pre-test. These outcomes and their poor pre-test performance further demonstrate that they were the primary study participants, making this study more reliable. The results of this study presented dependable facts educators around the world can use to motivate them to create more Math Concept Comics with drills or exercises, which are essential for teaching Mathematics. If properly constructed and utilized, this material can help solve problems in the poor performance of students in mathematics, which in effect can aid in reducing dropouts or failures in this subject and encourage more students to pursue math-related courses in the future and improve our country's economy and average in international assessment.

The qualitative data gathered affirmed the significant effect of comics in teaching mathematics, as evidenced by the quantitative analysis. The positive feedback from students about math concept comics can be used as a basis for creating more comics.

However, the experiment had certain limitations, such as a restricted time frame and a small sample size. Therefore, to investigate all the aspects related to the comic content and the most practical methods to enhance student's performance in mathematics, further research is required.

TRANSLATIONAL RESEARCH

The primary motivation behind this research study was the researcher's intense desire to figure out how to raise students' math proficiency. The data gathered suggests that low achievement in this area is a common problem that needs immediate attention. The researcher came up with the idea of using comics to teach math concepts as inspired by several studies.

In the conduct of this research study, the researcher successfully developed three comics tackling three different math concepts, namely, Solving Problems Involving Sets, Addition of Integers, and Subtracting Integers which all undergone strict evaluation from different educators in both content and language. The researcher attended rigid training in making comics before doing it. All topics used fall under the least learned competencies of Grade 7 learners in previous years. The researcher used two of these comics as intervention material for non-numerates and instructional and independent readers during Catch-up Fridays (a weekly intervention program launched by the Department of Education in January 2024). These comics materials can be in printed or digital form.

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The researcher also presented the results of this research study to a group of math teachers in the school where it took place. This group of teachers was inspired to make more math concept comics that they could use in teaching mathematics.

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