The Influence of Digital Story Media-Based Quantum Learning on Mathematical Problem Solving Skills

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Abstract. These problems include (1) the lack of students' understanding of how to solve math problems and (2) the lack of mathematics learning media. This study examines how fifth-grade students of SD Muhammadiyah 16 Karangasem can solve mathematical problems using a quantum learning paradigm based on digital narrative media. This study uses an experimental technique with a quantitative approach. The research sample consisted of classes V.1 as exsperimen class and V.2 as control class, each of which consisted of 32 students. The technique of collecting data is through a questionnaire in the form of a multiple-choice instrument using a google form link. Based on the study's results, the average score of students in the experimental class increased by 16.875%, while it increased by 7.9695% in the control class. The experimental class students who applied the quantum learning model based on digital story media and the control class who did not get treatment showed different problem-solving abilities, as indicated by the Paired Sample t-test, which had a significance of $0.000 < 0.005$. It means that Ho is rejected and Ha is accepted, which means that the quantum learning model based on digital story media can improve the ability of fifth-grade students at SD Muhammadiyah 16 Karangasem to solve math problems involving cubes and blocks.

Keywords: Quantum Learning · Digital Story · Problem Solving Skills

1 Introduction

Efforts to educate the life of the nation are the national ideals of Education which are implied and expressed in the fourth paragraph of the Preamble to the 1945 Constitution. This is confirmed in Article 31(3) of the 1945 Constitution, which stipulates that the government organizes the national education system to educate people. According to Article 1 of Law No. 20 of 2003, education is a purposeful and organized effort to create a learning environment and learning process that allows students to actively develop their potential to have religious, spiritual power, self-control, personality, wisdom, good character, as well as the required skills for themselves, society, nation, and state [1]. Children's character education is an important aspect in the development of a nation [2]. The character is not formed by itself, it must be instilled and formed in order to become a dignified nation to modernize the character of students by way of education [3].

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Mathematics education is the practice of teaching and learning mathematics and scientific research that is relevant today. Mathematics is one of the subjects that can support the achievement of educational goals [4]. The requirement for elementary- through middle-school pupils to complete mathematical classes is emphasized in National Education System Law No. 20 of 2003, Article 37.

The general goals of mathematics learning are outlined in the Minister of National Education's Regulation No. 22 of 2006 on Content Standards. (1) for students to research mathematical theory, analyze theoretical relationships, and apply theories effectively, carefully, and accurately, (2) enables students to reason about patterns and features, generalise, and write or express mathematical ideas and statements; (3) enables students to develop problem-solving abilities, such as understanding problems, designing and working on mathematical models, and explaining solutions from a framework; (4) permits pupils to communicate their ideas and depict the issue using symbols, diagrams, tables, and other media. (5) So that students have a respectful attitude towards the application of mathematics, especially curiosity, interest, attention, consistency, and tenacity in problem solving.

Critical thinking, related to mathematical skills such as problem-solving, questioning and analysis is an essential part of Mathematics education [5]. According to the National Council of Teachers of Mathematics (NCTM) 2000, mathematics is essential for improving problem-solving skills, logic and evidence, mathematical affiliation, communication and mathematical representation [6]. This is in line with the research of [7] that one of the potentials of students that must be developed is problem-solving skills. The Trends in International Mathematics and Science Study (TIMSS), which has been administered to children in grades 4 and 8 typically once every four years since 1995, is one of the examinations of mathematics and science conducted throughout the world.

Times problem solving requires students to solve problems with a high level of reasoning. The TIMSS survey showed that in mathematics, in 2003, the average international score was 467. 46 countries participated in this event, including Indonesia, which was ranked 35th with a score of 411. In 2007 the international average was 500. 49 countries participated in this event, including Indonesia, which was ranked 36th with a score of 397. The average worldwide scores in 2011 was 500. 42 countries participated in this event, including Indonesia, and got the 38th rank with a score of 386. In 2015 the average international score was 500. 49 countries participated in this event, including Indonesia, which was ranked 44th with a score of 397. Based on the survey, it can be underlined that the skills of Indonesian students in understanding mathematical problems are relatively low [8].

In the TIMSS assessment, Indonesia always gets the top 10 rankings from the bottom. Thus, the revitalization of the four pillars of education in the learning process needs to be planned, matured, and implemented appropriately and integrated so that learning can achieve mathematical goals. Based on the results of observations made at SD Muhammadiyah 16 Karangasem class V.I. and V.II, there are several findings, including students have difficulty in understanding mathematics subjects, especially in the type of problem-solving ability, decreased motivation to learn mathematics, low mathematics learning outcome scores, and lack of mathematics teaching media.

Based on the results of the researcher's interview with the homeroom teacher of class V.II SD Muhammadiyah 16 Karangasem, it was obtained findings that class V students experienced decreased motivation and difficulties in dealing with problem-solving-type materials during online and offline learning. Teachers have done various ways to simplify and grow students' problem-solving skills, namely by making learning videos independently or through Youtube and making summaries of the subject matter, but the results are still the same.

The teaching and learning process is a two-way activity, meaning that the involvement of teachers and students is equally important. Evaluation of the design and implementation of the learning process periodically needs to be carried out by teachers to minimize and restore the decline in students' mathematical problem-solving ability in Indonesia [9]. The teaching and learning process is not only about teachers as educators but also about students as learners. Flexible learning is a learner-centered educational strategy that provides various alternative dimensions of learning, such as location and time of learning, teaching and learning resources, approaches, activities, and assistance for both teachers and students [10]. Understanding the gap in student skills is something that teachers must realize that freedom in learning in the sense of not being fixated on one learning style is vital for students. Learning style is one of the keys to achieving successful learning. An Education accommodate many forms of artistic aspects that could pose as facilitator to the learning of science [11]. Gazali [12] explains that learning success is obtained from 20% of information through the sense of hearing, 10% of information through the sense of sight, 30% of information through the sense of sight, 70% of information through speech, and 90% through speech and action.

Learning media can be used to meet differences in students' learning preferences. Research by Sekartanjung [13] and Hernacki [14] explains two crucial elements that must be present in the learning process, namely models and learning media. This is reinforced by P.P. No. 19 of 2007 concerning School Management Standards, which contains the need for a learning activity model that refers to active, democratic, educational, motivating, and communicative student participation. Collaboration of learning models with suitable media, able to collect three types of student learning styles, namely visual, auditory and kinesthetic, affects the improvement of students' problem-solving skills [15]. Modifying learning through planning, maturity, and accuracy of execution from the use of media and learning models can support learning interests to be able to increase students' skills in solving problems.

The quantum learning model is an innovation of educational experts to develop students' problem-solving skills. The quantum learning model optimizes the components that exist in students and the environment to create an effective learning environment [14]. Bobbi Deporter, a teacher from the United States, promoted the idea of TANDUR, which stands for growth, natural, name, demonstration, repeat and celebrate, a framework of quantum learning models [1]. The quantum learning models help pupils improve mathematical problem-solving skills.

The advantages of the quantum learning model include (1) increasing student learning motivation, (2) the learning process becomes more directed and able to develop student talents and initiatives, (3) developing students' critical and global mindsets, and (4) makes learning more comfortable and joyful [16]. Meanwhile, the disadvantages of

Table 1. Study Design

Initial Condition	Group	Taking	Treatment	Final Conditions
Pretest	Experiment Class	I	Quantum Learning Model Based on Digital Story Media	Post Test
Pretest	Control	I	Conventional	Post Test

the Quantum learning model are that (1) it takes a long time to cultivate understanding in learning, (2) difficulty in identifying student skills, and (3) it requires real experience. Learning media is needed to help present abstract concepts into concrete concepts so that students easily understand them [17]. IT-based learning media can unite learning to be more efficient and effective, according to Permendikbud No. 22 the Year 2016.

Digital story media is an audiovisual-based PowerPoint learning media that can help teachers present abstract cubes and block concepts into concrete ones. The advantages of digital story media in learning are (1) Interactive, (2) covering all kinds of senses, (3) not needing the internet in its use, and (4) being able to cover material in more detail but easy to understand. The disadvantages of digital story media are (1) it requires ideas and creativity in packaging the subject matter, and (2) operating digital story media requires a laptop, LCD, projector, and speakers to produce more optimal images and sounds.

In conclusion, the collaboration of quantum learning models based on digital story media can develop students' problem-solving skills. The difference between this research and previous research is the existence of digital story learning media in implementing the Quantum learning model for students' problem-solving skills. Previous studies have only focused on researching quantum learning models. The purpose of the research was to see how the digital story media-based quantum learning model affects the ability of students of SD Muhammadiyah 16 Karangasem class V to solve mathematical problems.

The authors propose the following hypothesis:

a. H_0: There is no significant effect between the quantum learning model based on digital story media on the math problem-solving ability of fifth-grade students.
b. Ha: there is a significant influence between the quantum learning model based on digital story media on the math problem-solving abilities of fifth-grade students.

2 Method

2.1 Type and Design

The method used in this research is an experimental quantitative approach. The research design is purposive random sampling. In this study, there were two groups with different treatments. The first group was given a quantum learning method based on digital story media, and the second group was not given any treatment. The first group is called the experimental class, and the second group is called the control class (Table 1).

The study steps are:

a. Determine the experimental class and control class
b. Provided pretest
c. Provide treatment for the experimental class, namely class V.1
d. Give posttest
e. Analyze data with statistical tests

2.2 Place and Time of Study

This study was conducted at SD Muhammadiyah 16 Karangasem, which is located on Jl. Srikaya No.5, Karangasem, Kec. Laweyan, Surakarta City, Central Java, Indonesia. The study was conducted on Tuesday, April 12, 2022.

2.3 Population, Samples and Sampling

The population in this study were all fifth-grade students of Muhammadiyah 16 Karangasem Elementary School in the 2021/2022 academic year. The research sample consisted of classes V.1 and V.2, each of which consisted of 32 students. Class V.1 is the experimental class, and class V.2 is the control class.

2.4 Data Collection Techniques and Instruments

The research was conducted through several stages, including planning, implementation, and the final stage. The implementation phase consisted of applying for a research permit at SD Muhammadiyah 16 Karangasem, designing instruments, lesson plans, digital story media, pre-test, and post-test questions, and conducting trials and processing instruments. The implementation stage includes teaching activities in the experimental class (Class V.1), and the last stage consists of processing research data.

The technique of collecting data is through a questionnaire in the form of a multiple-choice instrument using a google form link. Validity and reliability tests will be used to test the research instrument in the form of a test. After that, a normality test will be carried out to check whether the data distribution is normally distributed, the homogeneity test is used to prove that the sample represents the existing population, and the last step is hypothesis testing. All research samples, namely class V.1 and V.II, were given a pre-test of 5 questions for validity and reliability. After the sample is given a quantum learning model based on digital story media in the learning process through the google meet application, students will be given a post-test consisting of five questions similar to the pre-test questions. After the student test results are obtained, the next step will be to test the hypothesis.

It is paired Sample t-test. Before analyzing the data, normality and homogeneity will be carried out first.

2.4.1 Item Validity

To analyzed the item validity, the authors used Correlation Product Moment.

$$\text{Rpbis} = \frac{Mp - Mt}{SDt}\sqrt{\frac{p}{q}} \tag{1}$$

Description:

r_{pbis}: A biserial point correlation coefficient
Mp: The average score for the items answered correctly
Mt: The average score of the total score
SDt: Total score standard deviation
p: The proportion of students who answered
q: the proportion of students who answered

The item is valid if the value of $r_{count} \geq r_{table}$ with $\alpha = 0.05$. Otherwise, if the value of $r_{count} < r_{table}$ then the item is invalid. $df = n-2$, in finding r_{table}.

2.4.2 Item Reliability

Reliability testing was done internally by analyzing the consistency of items on the instrument with the Rulon technique:

$$\mathbf{R11} = \mathbf{1}\frac{\boldsymbol{Sd}2}{\boldsymbol{St}2} \tag{2}$$

Description:

r_1: Instrument reliability coefficient
1: Number of statement items
S_d^2: A variance of differences between scores achieved by the testee on my cleavage with the score achieved by the testee on cleavage II
S_t^2: Total variance

The item is reliable if the value of $r_{count} \geq r_{table}$ with $\alpha = 0.05$. Otherwise, if the value of $r_{count} < r_{table}$ then the item is not reliable. $df = n-2$ in finding r_{table}.

2.4.3 Level of Difficulty

To find out the level of difficulty for each item, the authors used:

$$\mathbf{P} = \frac{\boldsymbol{b}}{\boldsymbol{js}} \tag{3}$$

Description:

P: Level of difficulty
J: Number of students who answered the question correctly
Js: Total number of students taking the best

2.4.4 Data Analysis Technique

The analysis performed by statistical descriptive.

Table 2. Item Validity Pretest Results

Item No.	R_{count} value	Value of r_{table} $\alpha = 5\%$	Information
1	−0.12	0.632	Invalid/can't be used
2	0.45		Invalid/can't be used
3	0.611		Invalid/can't be used
4	0.45		Invalid/can't be used
5	0.85		Valid/can be used
6	0.67		Valid/can be used
7	0.15		Invalid/can't be used
8	0.45		Invalid/can't be used
9	0.855		Valid/can be used
10	0.34		Invalid/can't be used
11	0.156		Invalid/can't be used
12	0.507		Invalid/can't be used
13	0.765		Valid/can be used
14	0.507		Invalid/can't be used
15	0.88		Valid/can be used

2.4.5 Analysis Prerequisite Test

The normality test used was the Shapiro Wilk test with SPSS 28.0. The data is normal if at a significant value of 0.05. In this study, a homogeneity test was carried out with SPSS 28.0. The following steps can be performed on SPSS: Click Compare Means > One Way ANOVA to find the homogeneity results. Paired Test Sample t-test was used to determine the average difference between two paired or related samples. To answer the hypothesis, the author uses SPSS 28.0 to perform the Paired Sample t-test.

3 Result and Discussion

3.1 Result

3.1.1 Instrument Trial Data Analysis

Item Validity Test The result of item validity test as follows (Tables 2 and 3).

The test of students' ability to solve mathematical problems was carried out using a multiple-choice test consisting of 15 items. After testing the validity using Product Moment Correlation, the results of all items are stated with the criteria r_{count} r_{table}; then the item is valid. Based on Table 2, it can be seen that the calculated r_{value} for several items is higher than the table r_{value} (0.632). It means that the test instrument is valid or can be used.

Table 3. Item Validity Posttest Results

Item No.	R_{count} value	Value of r_{table} $\alpha = 5\%$	Information
1	0.74	0.632	Valid/can be used
2	0.85		Valid/can be used
3	0.94		Valid/can be used
4	0.35		Invalid/can't be used
5	0.38		Invalid/can't be used
6	0.94		Valid/can be used
7	0.31		Invalid/can't be used
8	−0.38		Invalid/can't be used
9	0.52		Invalid/can't be used
10	0.13		Invalid/can't be used
11	0.42		Invalid/can't be used
12	0.94		Valid/can be used
13	0.62		Invalid/can't be used
14	0.24		Invalid/can't be used
15	0.26		Invalid/can't be used

Item Reliability Test The reliability test used the Rulon technique on 15 items. The pretest instrument is said to be reliable because r count (0.984) > r table (0.70). At the same time, the post-test instrument is said to be reliable because r count (0.76) > r table (0.70).

Level of Difficulty According to Robert L. Thorndike and Elizabeth Hagen, the following criteria for difficulty level (P). The level of difficulty of each item are presented in Table 4.

Based on the level of difficulty classification, it can be concluded that the pretest questions numbered 1, 2, 4, 6, 8 were easy, the item number 5, 7, 9, 10, 11, 12, 13, 14, 15 were medium and number 3 were hard. While the posttest the item number 3, 6, 12, 13 were easy, the item number 1, 2, 4, 8, 9, 10, 11, 14 were medium and the item number 5, 7, 15 were hard.

3.1.2 Pretest Data Analysis

A pretest was carried out to determine whether the two groups originated from the same initial ability. The pretest was conducted before applying the quantum learning model based on digital story media.

Normality Test The normality test was conducted to determine whether the distribution of the experimental class data was normally distributed or not. The Saphiro Wilk test was

Table 4. Level of Difficulty of Items

Item No	Level of Difficulty Pretest/Interpretation	Level of Difficulty Posttest/Interpretation
1	0.8/Easy	0.5/Medium
2	0.9/Easy	0.6/Medium
3	0.3/Hard	0.8/Easy
4	0.9/Easy	0.7/Medium
5	0.7/Medium	0.3/Hard
6	0.8/Easy	0.8/Easy
7	0.5/Medium	0.2/Hard
8	0.9/Easy	0.7/Medium
9	0.7/Medium	0.4/Medium
10	0.4/Medium	0.7/Medium
11	0.6/Medium	0.7/Medium
12	0.6/Medium	0.8/Easy
13	0.7/Medium	0.9/Easy
14	0.6/Medium	0.4/Medium
15	0.5/Medium	0.1/Hard

Table 5. Pretest Data Normality Test

Class	Shapiro-Wilk		
	Statistic	df	Sig
Eksperimen	.935	32	.054
Control	.935	32	.056
	Normal		

used to test the normality of the data. The data is said to be normal, if the significance value is 0.05. The results of the Saphiro Wilk test are shown in Table 5 as follows.

Table 5 shows that the values obtained from the Shapiro Wilk test for the experimental and control classes are Sig. 0.054 and 0.056 at the 95% confidence level. Based on these data, it can be concluded that the classes were normally distributed.

Variance Homogeneity Test Table 6 interprets the results of the pre-test of students' mathematics in both classes of homogeneous samples. This is indicated by obtaining a value of Sig. $0.779 > 0.005$. The conclusion is that Ho is accepted, meaning that the research sample, namely students of SD Muhammadiyah 16 Karangasem classes V.1 and V.2, is declared homogeneous or represents the entire population used.

Table 6. Pretest Data Homogeneity Test

Levene Statistic	df1	df2	Sig
.079	1	62	.779

Table 7. Posttest Data Normality Test

Class	Shapiro-Wilk		
	Statistic	df	Sig
Eksperimen	.910	32	.011
Control	.930	32	.040
	Normal		

Table 8. Post-test Data Homogeineity Test

Levene Statistic	df1	df2	Sig
.009	1	60	.923

3.1.3 Posttest Data Analysis

Normality Test The results of the *posttest* data normality of the experiment class are shown in Table 7.

Table 7 is regarded as normally distributed since the post-test findings of the experimental and control classes, respectively, are sig. $0.011 > 0.05$ and sig. $0.040 > 0.05$. As previously stated, if the sig is greater than 0.05, the data is said to have a normal distribution.

After the normality test has been carried out, Homogeneity tests with the One-way Anova technique are used to determine the mathematical problem-solving skills of the sample representing the population. Data is considered homogeneous when the value is sig. > 0.05. The homogeneity test was performed using SPSS 28.

Variance Homogeneity Test Table 8 explains the outcomes of the post-test in math for both types of homogenous samples. This is indicated by obtaining a value of Sig. $0.923 > 0.005$. The conclusion is that the research sample, namely the research sample, namely students of SD Muhammadiyah 16 Karangasem class V.1 and V.2, was declared homogeneous or represented the entire population used.

3.1.4 Hypothesis Test

The study data were normally distributed and homogeneous based on tables. Furthermore, the validity of the hypothesis "How does the digital story media-based quantum

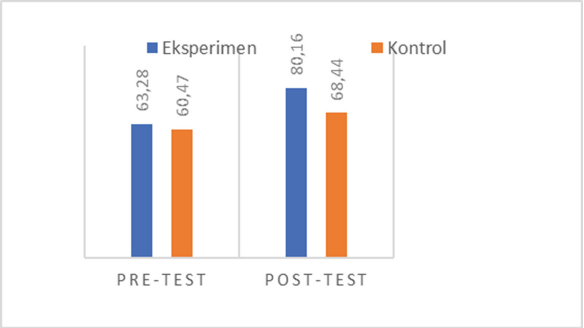

Fig. 1. Pre-test and Post-test Score Diagram.

learning model affect mathematical problem-solving skills" will be tested using the Paired Sample T-Test shown in Table 9.

Obtained Sig value. (2-tailed) 0.000 < 0.005 presented in Table 6, meaning H_0 is rejected. So, it can be interpreted that there are differences in mathematical problem-solving skills in both sample classes. The data-average pre-test of the experimental and control classes was 63.28 and 60.47. In comparison, the post-test is 80.16 and 68.44.

The ability of the research sample to solve mathematical puzzles is shown in Fig. 1. The experimental class's average test score was 80.16, whereas the control group scored 68.44. The use of the digital story-based quantum learning model paradigm so affects the students' capacity to answer mathematical problems in SD Muhammadiyah 16 Karangasem class V.

3.2 Discussion

The results of the experimental class research interpreted that there were differences in the average score of the mathematical problem-solving ability of grade V students of SD Muhammadiyah 16 Karangasem. The experimental class research sample got an average posttest of 80.16, while the average pretest score was 63.28. The results of this study are in line with those of Agusnanto's (2013) study, "Application of Quantum Learning Learning Models and Problem-Based Learning Models to Improve Student Learning Outcomes in the Eyes of Programmable Logic Controller Training at SMK Muhammadiyah 3 Yogyakarta." This study demonstrates that the quantum learning model may significantly increase student learning results, improving the average score from 65 to 8.72.

Effective quantum learning models could enhance class VIII students' understanding of biology concepts, according to Nabila [1], who discussed this in her study titled "The Influence of Quantum Learning Models on Understanding Biology Concepts of Students of Madrasah Tsanawiyah Swasta Jauharul Islam Penyengat Olak Muaro Jambi." The average score increased to 71.56 as a result, compared to 62.08 for students in the control group who did not get the quantum learning model treatment.

Table 9. Paired Sample T-Test test results

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig (2-tailed)
					Lower	Upper			
Pair1	Pre-test and Post-test Eksperimen	−16.875	5.040	.891	−18.692	−15.058	−18.940	31	.000
Pair 2	Pre-test and Post-test Kontrol	−7.969	6.703	1.185	−10.386	−5.552	−6.725	31	.000

In their 2017 study titled "The Influence of Quantum Learning Learning Models on Mathematics Problem Solving Ability of Class VIII Students of SMP PGRI 02 Ngajum," Riati & Farida [19] explained how the quantum learning model could significantly enhance class VIII students' problem-solving skills. The average score increased to 81.05 as a result, while students in the control class who did not receive the quantum learning model treatment received an average score of 68.29. Referring to relevant studies, research conducted by collaborating quantum learning models based on digital media is considered very effective in improving the problem-solving abilities of fifth grade students.

Quantum learning is the interactions that convert energy into light. All life is energy, and the goal of learning is to reach for as much light as possible, interactions, relationships, and inspiration in order to produce light energy [14]. The Quantum learning model can be said to be a model that develops students' talented interests in the form of understanding and memory because it combines suggestions, learning acceleration techniques, and NLP with theory, beliefs, and methods.

According to Sultan & Hajerina's [20] research, studying quantum learning models as a whole can improve memory and make learning enjoyable. This is crucial to the quantum learning theory, which emphasizes simple, enjoyable, and empowering learning to help students extract as much light as possible from the material of constructing cubes and blocks [18]. Agusnanto and I both agree that the quantum learning paradigm creates a pleasant learning environment so that students receive the material with ease and comfort rather than tension [21]. According to ACAT & AY's [22] research, it is important to let students participate, feel comfortable, and enjoy learning.

It has been demonstrated that the quantum learning paradigm enhances students' mathematical aptitude and problem-solving abilities [23]. According to Rahayu, Joyoatmojo, & W [24], the quantum learning paradigm enables students to engage in every learning process actively. This explanation leads to the conclusion that the quantum learning model can help students become more adept at solving mathematical puzzles, particularly those using cube and block construction blocks.

According to research by Siregar [25], kids tend to avoid math lessons the most since they are challenging. For pupils, understanding the value of mathematics is crucial to their future success so that students who are interested in learning mathematics have the option of using IT-based learning resources [26]. According to Sagita [27], using learning media offers a good opportunity for students to comprehend mathematical ideas and principles. Through the use of interesting learning IT media, students may develop, internalize, and get familiar with the concepts and principles of the cubes and blocks in this research. The availability of IT-based learning can also overcome the disparities in students' abilities and intellect during the learning process.

This proves that the collaboration of varied learning models with the right media produces attractive and easy-to-understand learning so that it can develop students' problem-solving skills [23]. Iqbal's [28] research explained that IT-based PowerPoint video learning media could make it easier for students to associate theory with practice so that the material is easier to understand. This follows research by Putra & Anggraini [29], explaining that the use of IT-based learning media helps students look for explicit conceptual relationships in order to find existing patterns and build student knowledge

networks. Needs analysis by Rahmadani et al. [30] showed how IT-based learning media helps students comprehend the content in more depth.

The IT-based media developed in this research is an audiovisual PPT-based "digital story". Digital story media uses the audiovisual PPT feature in providing cubes and blocks. Wahana explained that audiovisual media relies on sight and hearing so that the information received by students is easily understood and maintained in memory [31]. Agreeing with Wahana, mentioning that the advantage of using audiovisual media in learning is that it is easier and more effective [32]. Research conducted by Riduan et al. [33] explained that audiovisual media could increase students' knowledge and attitudes because the information is received through two five senses, namely sight and hearing.

The integration of audiovisual learning media helps students learn and visualize abstract material in concrete so that learning goals can be achieved optimally [34]. Students can learn while observing and listening to the presentation of digital media stories. Problem-solving questions are presented in detail and simply so that students easily understand them. The media showed a video telling a story related to solving the problem of cubes and blocks in everyday life. Visualization of the problems presented makes it easier for students to understand the story in a complex way.

The experimental study approach was used to optimise the findings gained, namely enhancing the mathematics problem-solving skills of grade V pupils at SD Muhamamdiyah 16 Karangasem. However, in its implementation, there are still some limitations. First, the material content used in digital story media is still limited to mathematics in KD 3.5 (build a cube and block spaces) class V semester 2. Second, digital story media can only be operated through a PC or laptop, so to get maximum results, adequate infrastructure or school facilities are needed. Third, research is limited to mathematical problem-solving skills.

4 Conclusion

According to the findings and analysis of the application of a digital story-based quantum learning model to the capacity of class V pupils to solve mathematical problems, it is thought to be extremely successful in the continuity of learning. Sig value was attained. Ho was turned down, while Ha was accepted, according to the two-tailed statistic of $0.000 < 0.005$. Thus, it can be said that class V students' ability to solve problems is significantly impacted by the digital story-based quantum learning model. The experimental class's average pretest score was 63.28, and its average post-test score was 80.16. The average pretest value of 60.47 and the average posttest value of 68.44 show that the experimental class on average outperforms the control class, which is not subjected to a digital story media-based quantum learning model.

There are differences in the ability to solve problems presented in both sample classes. The results of the experimental class given the digital story media-based quantum learning model treatment received a higher average score of 11.72 compared to the control class that did not receive treatment.

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