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THE EFFECTIVENESS OF THE KUMON METHOD WITH TAPERTIC MEDIA ON STUDENTS' UNDERSTANDING OF THE MULTIPLE CONCEPT OF AN-NAJAH TAKENGON INTEGRATED ISLAMIC ELEMENTARY SCHOOL

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ABSTRACT

This study aims to determine the effectiveness of the Kumon method with tapertis media in understanding the concept of mathematical multiplication. The use of tapertis media aims to make learning more interesting and students can easily accept lessons at school. This study uses a quantitative approach to the type of experimental research. This research was conducted at SD IT An-Najah, Central Aceh District. The population in this study were all students of SD IT An-Najah. The research sample was the fourth grade students of SD IT An-Najah. The results showed that: There was a difference in the average pretest score of the experimental class which was higher than the control class ($51.91 > 48.17$). There is a difference in the average posttest score for the experimental class which is also higher than the control class ($80.64 > 75.52$). In addition, the n-gain test results for the experimental class were greater than the control class ($0.507 > 0.425$). The results of the t test also show that the average of the experimental class is higher than that of the control class ($80.64 > 72.52$). The results of the t test also showed a significance level of < 0.05, namely $0.000 < 0.05$ and $0.001 < 0.05$. So it can be concluded that the Kumon method with tapertis media is effective in increasing students' understanding of the multiplication concept at SD IT An-Najah.

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1. INTRODUCTION

Mathematics is a branch of science that has an important role in life. Mathematics is used in almost all areas of life whose application is carried out in everyday life in the community which includes buying and selling, calculating the distance of an area, calculating the population, calculating the area and volume of an object. In the world of education, the subject of mathematics is given at all levels of education, namely elementary, secondary and tertiary education. At the basic level, mathematics is useful for developing students' mindsets to think logically, critically and systematically. In learning mathematics, the inculcation of concepts is very important because it is a bridge that connects students' concrete cognitive concepts with new, abstract

concepts. After learning to plant the concept, the next stage is understanding the concept.

According to Maryani & Dewi (2018), conceptual understanding, namely advanced learning from instilling concepts that aim to make students better understand a concept. From this understanding understanding the concept is very important because to apply the concept requires a correct understanding of the concept. One of the materials in grade IV mathematics is multiplication material. In class IV students must understand various forms of arithmetic operations. The arithmetic operations include addition, subtraction, multiplication and division of various numbers. Most students who are weak in mathematics generally cannot count well. This difficulty occurs because teachers are sometimes confused about illustrating learning material (Mohammad Archi Maulyda, Istiningsih, Hidayati, Apsari, & Asian, 2020; Pangestika, Ramli, & Nurmiyati, 2017).

Based on interviews conducted by researchers with class IV teachers regarding the problems of learning mathematics, it is known that in learning mathematics there are problems experienced by students, namely the students' low understanding of the concept of multiplication. Based on the results of these interviews it is known that students' difficulties in understanding concepts are caused by several factors including learning that tends to be teacher-centered, the use of media in the learning process is not optimal, students' concentration is lacking making it difficult to focus on lessons, only a few students actively ask questions and lack of interest students towards mathematics. As one of the solutions, a teacher is required to be more innovative in conveying material, using appropriate learning models and methods so that students can master the basic concepts of mathematics well. One of the effective learning methods is the Kumon method.

According to Targowski (2011), the kumon method is a learning method initiated by Toru Kumon from Japan. The Kumon method is an individual method. Students learn independently according to the ability of students. Study materials are arranged in small steps so that children can acquire strong abilities. The practice questions are divided into several levels with increasing levels of difficulty. Students work on questions independently from easy levels to more difficult levels. The advantages of the Kumon method according to Binti Abu Bakar (2019), adalah bahan pelajaran tersusun atas langkah-langkah kecil, siswa mengerjakan soal secara mandiri dari easy level to difficult level, students work on questions according to their abilities, and invite children to be disciplined. Learning methods will be more effective and efficient if using the right media. According to Nakagawa et al. (2013), In selecting media, there are several criteria that need to be considered, including in accordance with the objectives, properly supporting the content of the lesson, practical, and the teacher's skills in using the media. One of the right media to apply with the Kumon method is tapertis media. Tapestry media makes it easier for students to understand multiplication of numbers. Therefore it is necessary to conduct research with the title "Effectiveness of the Kumon Method with Tapertis Media on Understanding Multiplication Concepts in Mathematics Subjects for Elementary School Students (Courville, 2011; Means, 2010; Tyaningsih, Baidowi, & Maulyda, 2020).

The Kumon learning method is a learning method by linking concepts, skills, individual work and maintaining a comfortable and pleasant atmosphere. The lesson materials are designed so that students can work on their own abilities, even allowing children to learn subject matter above their class level at school (Slater, Davies, & Burgess, 2012). The Kumon method is an individual learning method. Students are required to be active according to their ability level. The Kumon Method is a unique educational method, which does not equalize the abilities of each student. Based on individual guidance and learning at the right level, Kumon aims to develop each student's capabilities and maximize their potential. By exploring the potential of each individual, Kumon encourages students to be the best they can be. The Kumon Method is an individual method with a certain level. The rest are led to work on their own abilities. So the Kumon method is a method that emphasizes individual learning. In this method also guides the teacher's approach in order to know at which level the student is, so that the teacher can provide. Desi Puspita Sari and Martunis (2019), states that Kumon has five steps, namely Serving concept, Exercise, Each student who finishes the task is immediately examined and assessed, If it is wrong, it is immediately returned for repair and re-examination, and Five wrong times, the teacher guides.

The Kumon Method, given individually at the right level and portion, will develop students' math skills. In addition to learning in a short time and regularly every day, students will develop the ability to concentrate, work agility, thinking skills, study habits and self-confidence which are the basis for learning other things. The Kumon Method not only improves students' mastery of mathematics, but also various learning abilities in students, starting from concentration and work agility, spirit of independent study habits, daily study habits. If he can solve math practice questions from school quickly, then he can use the remaining time to study other sciences. As a result, other lessons will definitely increase. Kumon emphasizes student

independence in solving math problems with teacher guidance. The Kumon Method also requires students to be proficient in completing the learning steps, so that students can maturely complete teaching and learning activities according to their abilities. Through individual guidance of learning at the right level, Kumon strives to enhance each child's abilities and maximize their potential. Students start from the part that can be done by themselves easily, without mistakes. Through achieving targets on their own, children will feel joy and satisfaction.

Media is as a graphic tool and a photographer to capture, process or reconstruct visual or verbal information (Satria, 2016). The development of teaching materials with media makes learning more focused and more interesting. So that students feel they have great curiosity and focus on learning. According to Wijaya (2012), Learning media is a tool that can help the teaching and learning process and serves to clarify the meaning of the message conveyed, so that it can achieve better and more perfect learning objectives. Learning media can be grouped into four groups, namely media produced by print technology, media produced by audio-visual technology, media produced by computer-based technology, and media produced by a combination of printing and computer technology. From the opinion of experts, learning media is a tool used to convey learning material so that learning takes place effectively and efficiently. The learning media used in this research is visual learning media. Visual media according Sadiman (2011), namely media that can only be seen, does not contain sound elements. Visual media are media that involve the sense of sight. This media can only convey messages through the sense of sight or can only be seen with the eyes, other senses such as the ear cannot be used for this visual media. The visual media used is "Tapertis" media. Tapestry media stands for practical multiplication table. This media will make it easier for students to learn multiplication material up to thousands.

Research conducted by Suswandari (2019), about improving student learning outcomes through variations of the Kumon method. The purpose of this study was to determine the increase in student learning outcomes through a variation of the Kumon Method. The type of research used is Classroom Action Research. The results of research using variations of the Kumon method show an increase in student learning outcomes. From the results of the pre-test, learning completeness was 31.81% with an average grade of 46.36. After the implementation of Cycle I, learning completeness was obtained at 59.09% with a class average value of 72.72 and teacher competence in teaching at 71.66% (competent enough). In Cycle II, learning completeness increased to 81.81% with an average class score of 85.45 and teacher competency in teaching of 81.66% (competent). The increase in learning outcomes from the initial state (pre-test) to cycle I was 27.28% and from cycle I to cycle II was 22.77%. From the actions and analysis carried out, it can be concluded that using variations of the Kumon method in learning mathematics can improve student learning outcomes.

Research by Anggreni (2020), with the title the effectiveness of combining the Kumon and TGT learning models based on character education on student achievement in class VII statistics material. The analysis was carried out and the results obtained were that students who were given the Kumon learning model and the Character Education-based Teams Games Tournament had achieved complete learning achievement with an average learning achievement of 81.81 with a minimum completeness criterion of 77. The effect test showed that activeness had influence of 0.1%, while process skills have an influence of 0.2% and activeness and process skills have an influence of 0.2%. Different tests show that the problem-based model compared to the Kumon model and Character Education-based Teams Games Tournament has no difference. However, statistically the problem-based model is better than the Character Education-based Kumon and Teams Games Tournament models because it has a score of 84.91 more than 81.81. It can be concluded that this research is less effective. Alfina (2019), in his research entitled increasing understanding of the concept of multiplication and division of fractions through the application of the Kumon method assisted by visual media. The results of this class action research showed an increase in understanding the concept of multiplication and division of fractions seen from the class average score of the test scores for understanding the concept of multiplication and division of fractions, namely in the pre-action the class average value was 63.95 with a classical completeness percentage of 32.4% then increased in cycle I with an average score of 69.86 and classical completeness of 67.56%. Furthermore, it increased again in cycle II with an average value of 74.45 and a classical completeness percentage of 86.48

2. RESEARCH METHOD

The research design used in this research is Quasy Experimental Design (pseudo-experimental). The quasi-experimental design used was the pretest-posttest control group design. The independent variable in this

study was the Kumon method with tapertis media, while the dependent variable in this study was students' understanding of the multiplication concept. This research was carried out by SD IT An-Najah, Central Aceh District. The research is planned for seven months, from March to December 2021. The sampling technique is purposive sampling. There are several identical characteristics of grade 4 students at the SD, namely (1) The students come from the same area, namely Bebesen District, Central Aceh District, (2) The students have the same basic knowledge and are based on the same curriculum. (3) Both students are in classes with heterogeneous student abilities, not superior or accelerated classes, (4) Adequate supporting facilities, having LCD projectors, and (5) Both students have never received Kumon method learning with tapertic medium.

Data collection techniques in this study were tests and non-tests. The tests used were the pretest and posttest at the end of the lesson. The test used several questions arranged on subjects in the form of descriptions to find out student learning outcomes. The non-test method in this study used unstructured interviews, observation, and documentation. The data analysis technique used is the analysis of instrument trials and final analysis. The analysis of the instrument trials included validity, reliability, discriminating power and difficulty level tests. The final analysis includes tests for normality, homogeneity, gain score, and t-test.

3. RESULT AND DISCUSSION

3.1. Differences in the Score of Understanding the Multiplication Concept

The results showed that there were differences in the value of understanding the concept of multiplication after learning between the experimental and control classes. These differences are in table 1 below.

Table 1. Differences in the Score of Understanding the Multiplication Concept

Descriptive Statistics	Control		Experiment	
	Pretest	Posttest	Pretest	Posttest
Sum	1108	1668	1142	1774
Average	48,17	75,52	51,91	80,64
Lowest Score	31	60	31	64
Highest Score	66	86	77	93

Table 1 shows that there are differences in the value of understanding the concept of multiplication, between the experimental class and the control class. The average pretest score for the experimental class was higher than the control class ($51.91 > 48.17$). The average value of the posttest experimental class is the same as the control class ($80.64 > 75.52$). The lowest score for the experimental class and the control class was 31. The highest score for the experimental class was higher than the control class ($93 > 86$). These results indicate that learning using the Kumon method with tapertis media is effective in increasing students' understanding of the concept of multiplication. This is in accordance with research conducted by (M A Maulyda, Annizar, Hidayati, & Mukhlis, 2020; Rosyidah, Wardani, Hidayati, & Maulyda, 2021). The results showed that there was an increase in the understanding of the concept of multiplication and division of fractions seen from the class average score of the test scores for understanding the concept of multiplication and division of fractions.

3.2. The Effectiveness of Learning with the Kumon Method with Tapertis Media

3.2.1. Normality Test Results

The results of the normality test are in table 2 below.

Table 2. Normality Test Results

	Class	Kolmogorov-Smirnov		
		Statistic	df	Sig.
Score	Pretest Control	.160	22	.070
	Pretest_Experiment	.174	23	.051
	Postest_Control	.185	22	.065
	Postest Experiment	.196	23	.153

Based on Table 2, the results of the pretest data normality test with Kolmogorov-Smirnov obtained a significance level of 0.070 for the control class and 0.051 for the experimental class. The posttest data normality test results obtained a significance of 0.065 for the control class and 0.153 for the experimental class. So it can be concluded that both pretest and posttest data are normally distributed because the significance level is greater than 0.05. Thus the pretest and posttest data in both classes are normally distributed.

3.2.2. Homogeneity Test Results

The results of the homogeneity test are in table 3 below.

Table 3. Homogeneity Test Results

ANOVA						
		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
PRE	Between Groups	143.878	1	143.878	.732	.397
	Within Groups	8.447.233	43	196.447		
	Total	8.591.111	44			
POST	Between Groups	58.081	1	58.081	.545	.465
	Within Groups	4.586.364	43	106.660		
	Total	4.644.444	44			

The results of the homogeneity test showed a significance value of 0.397 for the pretest and 0.465 for the posttest. This figure is more than 0.05 ($0.397 > 0.05$ and $0.465 > 0.05$). So it can be concluded that the two classes have the same or homogeneous variance.

3.2.3. N-Gain Result

The N-gain test was carried out to determine the difference between cognitive scores before and after learning. The N-gain test is carried out after all prerequisite tests are met, both the normality test and the homogeneity test. Based on the normality test and homogeneity test, it is known that the data is normally distributed and homogeneous, so it is continued with the N-gain test. The summary of the results of the N-Gain Test is in Table 4 below.

Table 4. Summary of N-Gain

No	**Class**	**Average**	**Classification**
1	Control	0,425	moderate
2	Experiment	0,507	moderate

Based on the summary table 4 above, it was found that the gain score for the experimental class was 0.507, while the gain score for the control class was 0.425. Based on the classification, the N-gain control and experimental classes are included in the moderate category. We can conclude from the gain test results that the difference in the experimental class is higher than the control class so that it can be concluded that learning in the experimental class is better than the control class. Furthermore, to prove the hypothesis then proceed with the t test.

3.2.4. T-Test Result

The results of the t test are in Table 5 below.

Table 5. T-Test Result

Class	**t**	**df**	**Significance**	**Average**	**Lowest**	**Highest**
Control	-3.819	43	.000	72.52.00	60	86
Experiment	-3.792	38.262	.001	80.64	64	93

Table 5 shows that the average of the experimental class is higher than the control class ($80.64 > 72.52$) and the significance level < 0.05, namely $0.000 < 0.05$ and $0.001 < 0.05$, then H_a is accepted. In other words, the Kumon method with tapertis media is more effective in increasing students' understanding of the concept of multiplication. The Kumon method with tapertis media has advantages. The advantages of the Kumon method are the lesson material is composed of small steps, students work on questions independently from easy to difficult levels, students work on questions according to their abilities, and invite children to be disciplined. Tapestry media makes it easier for students to learn multiplication material up to thousands.

4. CONCLUSION

The Kumon Method with Tapertis Media is effective in increasing elementary students' understanding of the multiplication concept. There is a difference in the average pretest score for the experimental class which is higher than the control class ($51.91 > 48.17$). There is a difference in the average posttest score for

the experimental class which is also higher than the control class (80.64 > 75.52). In addition, the n-gain test results for the experimental class were greater than the control class (0.507 > 0.425). The results of the t test also show that the average experimental class is higher than the control class (80.64 > 72.52). The results of the t test also showed a significance level of < 0.05, namely 0.000 < 0.05 and 0.001 < 0.05. So it can be concluded that the Kumon method with tapertis media is effective in increasing elementary students' understanding of the multiplication concept. Tapertis media needs to be developed for thematic learning in the 2013 curriculum. Teachers should be able to increase students' motivation and enthusiasm in learning, the only way is by presenting tapertis media and according to student characteristics and involving students in the use of media so that student learning outcomes increase.

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