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Stamp Game Media to Improve Addition Skills in Students with Intellectual Disability

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ABSTRACT

This research is based on the assumption that the use of learning media can help students' understanding at the concrete operational development stage. Among them is the stamp game media which is one of the mathematics learning media. In this research, an experimental design was used with a quasi-experimental time series design. The research results show that students' initial abilities are still quite low. After intervention was carried out through the use of the stamp game learning media, there was a difference in the average student test results. The results of the Wilcoxon signed ranks test obtained a z value of -2.271 and an asymp value of sig. smaller than the alpha level of 5% (0.05) so it rejects Ho. The conclusion of this research is that the use of the stamp game as an intervention medium provides an increase in the multilevel addition ability of children with mild intellectual disabilities in Malang City Special Schools.

Keywords: Intellectual Disability; Sequential Addition Ability; Stamp Games

INTRODUCTION

Mentally retarded children are children who experience impaired intellectual function and adaptive abilities during development. A person is said to be mentally retarded if they have a low IQ score and have adaptive behavior such as low daily living skills (Hallahan, et al, 2020). According to the Diagnostic and Statistical Manual of Mental Disorders-V (DSM V), a person can be said to be mentally retarded if they meet 3 criteria. First, deficits in intellectual functions such as problem solving, abstract thinking, academics, and reasoning. The above can be proven by carrying out assessments and intelligence tests. Second, deficit in adaptive function. This results in mentally retarded children having difficulty developing and achieving social standards. They experience obstacles in daily activities such as communication, social participation and independence. Third, symptoms of intellectual and adaptation deficits occur during the developmental period (APA, 2013).

The basic difference between mentally retarded children and normal children is in the level of development achieved. Children with mild intellectual disabilities can reach the concrete operational development stage. Meanwhile, moderately mentally retarded children are no more than pre-operational level. Finally, children with severe and very severe mental retardation may not be able to reach all levels of development (Rahmatrisilvia, 2013). Learning for children at the concrete operational stage of development requires contextualization with real life. Contextualization in lessons can be realized by presenting examples (modeling) and carrying out direct practice (experimentation). Modeling can be

done with the help of learning media. So it can be said that learning media can be used to help the learning process of students with intellectual disabilities.

Mathematics, especially arithmetic, is a basic science that is very important in everyday life. Mathematics has an important role in many scientific disciplines. Numeracy skills are basic skills that should be mastered by everyone, including children with special needs. By learning to count, it is hoped that children with special needs will be able to use it in everyday life, at work and even in social life.

Based on observations made by the author in class VII at a special school in Malang, the problem that the researchers found was that children experienced problems with their counting skills, one of which was with the addition material. This low understanding is thought to be caused by less than optimal classroom learning, where students only study for 2 days a week due to the pandemic.

Several researchers have made efforts to solve numeracy problems among the mentally retarded with the help of learning media. For example, Khoiriyah and Pradipta (2017) used counting board media and Fadlia's research (2020) used number roads media. The results of this research stated that there was an increase in students' abilities after being given intervention through learning media.

The author chose one of the Montessori media which allows it to be used to teach sequential addition, this media is known as the stamp game. The stamp game is a teaching aid that is conceptualized to teach arithmetic operations, one of which is addition. Stamp games can also be used by teachers to teach place value to students (Irving, 2017). The stamp game media was chosen because it has an interesting, educational and contextual form. The characteristics of stamp games are interesting, graded, auto-correction, auto-education, and contextual. Stamp game media has several advantages, such as it can be used repeatedly, can be used to improve numeracy skills, is concrete and can be used as learning support media (Mariyah et al, 2017).

METHOD

To test existing hypotheses, this research uses a quantitative approach with experimental research methods. The experimental research method is research that aims to see the effect of a treatment under controlled conditions (Sugiyono, 2012). In this research, an experimental design was used with a quasi-experimental time series design. The researcher chose a quasi-experimental time series design because it was difficult to get a control group in the research. Time series design refers to a series of sequential observations on the same variable.

This research was carried out by giving a pre-test and post-test in one group that was treated with the use of stamp game media. The pre-test was given four times to determine students' initial abilities. This was then continued with providing intervention or treatment using stamp game media. In this study, the intervention was provided three times. Finally, the researcher gave post-tests four times to determine students' abilities after being given the intervention. The research design can be seen in Figure 1.

The subjects in this research were class VII students at the Malang Special School. The subjects consisted of 3 class VII students with mild intellectual disabilities. Subjects were selected using purposive sampling technique. With this technique, researchers can choose research subjects according to the researcher's wishes (Latipun, 2015). The subjects were chosen because they met several criteria, namely, (1) sitting in class VII (2) having low

addition skills (3) indicating mild mental retardation based on the results of interviews and classroom observations.

O_1 O_2 O_3 O_4	X	O_5 O_6 O_7 O_8
Pre-Test	Intervention	Post-Test

Figure 1. Research Design

The method of collecting data in this research is through tests and observations. In this study, tests were used to determine children's ability to solve addition problems before and after intervention. Apart from tests, the author uses observations as additional data. In the observation activity, the researcher observed the self-talk activities carried out by students while answering questions. Self-talk is a dialogue between students and themselves consciously. The researcher instructed students to say step by step from reading the questions to writing down the results.

RESULT

Data on students' initial abilities was obtained from carrying out pre-tests and observations made before giving intervention to students. The pre-test was carried out by providing description questions consisting of ten questions. There are 4 test packages, each containing 10 questions with different numbers but with equal difficulty. The pre-test was carried out 4 times with the aim of obtaining stability in student scores. The pre-test was carried out for four days. with the results obtained which can be seen in table 1.

Table 1. Pre-test Score

Initials	**Average value**	**Criteria**
A	50	Not enough
I	40	Not enough
M	65	Enough
Mean Score	52	

The pre-test began with greetings, attendance and prayer. After the students are ready to receive the lesson, the teacher gives a short introduction and then the students are given pre-test questions. After carrying out the pre-test, data was obtained on the students' initial abilities regarding the compound addition material. Based on table 4.1, it can be seen from the pretest results of the ability to add in layers before using the stamp game media, namely 1 student got an average score of 50, one student got an average score of 40 and another person got an average score of 65.

After the pre-test is carried out, it continues with providing intervention to students. The intervention was carried out by carrying out learning activities using stamp game media for 3 meetings. In implementing the intervention, researchers were guided by the Learning Implementation Plan (RPP). Intervention activities in the form of media use are integrated with other learning. In one meeting there are 2-3 subjects including mathematics.

Learning begins with greetings, presence and prayer. Next, the researcher acting as a teacher explains the learning objectives and apperception. At the first meeting the teacher first explained the first material related to production technology in the agricultural sector. The learning is carried out using interactive PPTs and quizzes. Next, the teacher relates it to the problem of calculating harvest yields which requires a method of adding up in layers. It turned out that 2 out of 3 students still answered the question wrong. Next, the teacher introduces the stamp game media to students.

In the 2nd meeting, the material presented was addition using the number 0. Learning began with greetings, prayers, presence and apperception activities about pets. Through material about animal care, the teacher relates it to the addition operation of calculating the amount of animal food. From here the teacher explains again the material on sequential addition with the help of the stamp game media. At the second meeting, students were more active in participating in learning. Even student M, who initially had difficulty mingling, became the most active in participating in the learning process and got the best results when working on questions on the media.

At the 3rd meeting, learning continued with addition material using saving techniques. Here the previous material is reviewed, then continued with a discussion of the next material. At the 3rd meeting, the material discussed was the rainy and dry seasons, then learning was linked to the material of sequential addition. When it is felt that students understand the concept of place value and the operation of addition, then the author teaches the material of addition in layers using saving techniques.

After the intervention was carried out through the use of stamp game media, the next step was a post-test. Post-test activities were carried out on students working on the four question packages again, can see in table 2. The addition ability of students with mild mental retardation after using the stamp game media became better, with an average score of 87. The results of the students' addition ability during the post-test were as follows. Based on the post-test results of the addition ability of mildly mentally retarded students after the intervention, 2 children got scores in the range 80 - 100 and one child in the range 66-79.

Table 2. Post-test Score

Initials	Average value	Criteria
A	88	Very good
I	78	Good
M	95	Very good
Mean Score	87	

After knowing the calculation of the pre-test and post-test scores, a recapitulation was then carried out to see the effect of using stamp game media on the ability to add in layers. Presented in table 3 is a recapitulation of the results of the pre-test and post-test scores.

Table 3. Recapitulation of the results of the pre-test and post-test scores

Initials	Pre-test value	Post-test value	Change information
A	50	88	+
I	40	78	+

M	65	95	+
Total score	155	261	
Average	52	87	

Based on table 3, it can be seen that all students experienced changes compared to before they were treated with the stamp game media. The difference in students' addition abilities can be observed from the post-test average score (87) which is higher than the pretest score (52). All students got significant improvements in post-test results. Based on the results of the pre-test and post-test. The difference in average values shows that the stamp game media has an influence on the ability to add in layers of mildly mentally retarded students in class VII SLBN Pembina National Level Part C Malang. This data is also supported by the results of the Wilcoxon signed ranks test which obtained a z value of -2.271 and an asymp value of sig. smaller than the alpha level of 5% (0.05) so it rejects Ho. So the conclusion is that there is a difference in the average student test results after being given intervention in the form of stamp game media.

The addition operation is the activity of adding two numbers to produce a third number as the answer. Stacked addition is an advanced addition which can add units, tens, hundreds or even thousands (Angkotasan, 2020). The abstract form of mathematics, plus having to add numbers from tens to hundreds, creates challenges in the learning process of mentally retarded children. Mild mental retardation has limitations in absorbing information, concentrating, thinking abstractly, and understanding the concept of counting (Yanni et al, 2020).

Before giving intervention in the form of using stamp game media, researchers gave a pre-test to students first. The pre-test consists of 4 question packages, each containing 10 questions. The variables observed were (1) understanding of place value, (2) the ability to add units to ones and tens to tens, (3) addition if 0 was added, (4) addition if the result was more than 9, (5) addition of tens involving stored numbers.

Based on the results of the pre-test carried out by the author, the average score obtained was 52. Of the observed variables, more than 9 errors occurred and the use of the saving method. Students' lack of understanding of sequential addition material is thought to be caused by the low intellectual abilities of mentally retarded children. The factor that causes difficulties in learning mathematics is mental retardation or students' limited intelligence (Nurmalita, 2021). Meanwhile, it is suspected that another factor is due to limited teaching and learning activities (KBM) due to the pandemic. In general, low student learning achievement can be caused by students' lack of understanding of the material, lack of student attention during learning and low student activity (Lestari, 2012).

Based on existing problems, researchers offer solutions through the use of stamp game media in intervention activities. The media used in learning must be adapted to the needs and characteristics of students. For this reason, researchers chose stamp game media that they felt was suitable for mentally retarded students. The highest thinking ability that can be carried out by mild mental retardation is the same as the ability of normal students at the age of 12 years. This is based on Piaget's theory where students at that age, the development that normal children can achieve is the concrete operational stage. It is said to be the concrete operational stage because they think based on objects and events they experience directly (Subanji, 2013).

Learning in intervention activities was quite conducive. One of the students who was previously withdrawn, now wants to participate in learning enthusiastically. Learning

media was chosen because basically students are more enthusiastic when learning using learning media. Students who were initially a little indifferent and less focused became more enthusiastic and willing to pay attention to the teacher's explanation. The use of learning media can foster curiosity, arouse student motivation, stimulate learning activities, and have a good effect on student psychology (Suwastarini et al., 2015).

Learning media helps students to better understand learning. After each intervention, the teacher gives students a few evaluation questions on the blackboard. From this evaluation, it has begun to appear that students better understand place value and the concept of sequential addition. When the teacher asks students to work on questions on the blackboard, the teacher does not need to point because the students are already competing to go first.

The above is in line with previous research where learning media can clarify the presentation of learning so that it is not verbalistic or in the sense that it is only conveyed verbally and in writing (Sadiman, 2003). Moreover, learning media also has a compensatory function, which can help the learning process of students with certain obstacles (Wati, 2016). This is certainly in line with the target subject of this research, namely mentally retarded students who have obstacles to abstract thinking.

Based on the data presented, it is felt that the stamp game media is quite capable of helping in learning structured addition material. This media is conceptualized for learning arithmetic operations, one of which is sequential addition. The advantages of this media are that it is concrete and simple, can be used repeatedly, can be used to count from units to thousands (Latifah, 2021). Apart from that, the Stamp game can also be used by teachers to teach place value to students (Irving, 2017). Other researchers tested this media on students who were slow learners and the research results showed that this media was able to improve students' addition skills (Wulandari, 2018).

Post-test activities are carried out by reworking the entire question package. After being given intervention in the form of learning using stamp game media, students were asked to return to work on the test questions. The questions given are exactly the same as the questions given during the pre-test. Namely, there are 4 question packages with 10 explanation questions in each package. Based on the post-test results, the students' average score rose to 87. If we refer to the score indicator, the score is in the very good category and the intervention activities carried out can be said to have increased. During the post-test, students were also able to do better without asking the researcher again.

This increase certainly cannot be separated from the use of game stamp media. The number of mistakes made by students in post-test activities has been greatly reduced. A common error that still occurs during the post-test is inaccuracy in the calculation process. If the media used is appropriate to needs, more positive results will be seen in student learning outcomes (Diyah, 2018).

Of course, this research was not free from shortcomings during the research implementation process. As we all know, mentally retarded children have obstacles in their social aspects. According to DSM V, mentally retarded children experience deficits in adaptive functioning. This results in mentally retarded children having difficulty developing and socializing. Of course, the writer needs extra time and an extra approach so that students want to interact and be open with the writer.

CONCLUSION

Based on the data obtained, it can be concluded that there was an increase in student scores between before and after the intervention. It can be seen from the increase in the average pre-test and post-test score of 35 points. Then it is supported by the results of the difference test using Wilcoxon with a probability value of 0.046 < 0.05 with the decision that Ho is rejected. This also answers the hypothesis proposed that the use of stamp game media increases the ability to add together in class VII students at the Malang Special School.

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