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The Influence of Rubik Picture Game Media on Body Parts Recognition of Students With Intellectual Disabilities in Grade III SLB C Setyadarma

Muhammad Abiyu Nuryadewa, Dewi Sri Rejeki

Universitas Sebelas Maret

muhammadabiyu@student.uns.ac.id, dewi@fkip.uns.ac.id

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ABSTRAK
Peneltian ini bertujuan untuk mengetahui pengunaan media rubik gambar terhadap pemahaman mengenai anggota tubuh pada anak tunagrahita ringan kelas III SLB C Setyadarma Surakarta. Pada penelitian ini menggunakan pendekatan eksperimen dengan desain penelitiannya *one group pretest-posttest design*. Subjek yang digunakan dalam penelitian ini sebanyak 5 orang siswa tunagrahita ringan kelas III SLB C Setyadarma Surakarta. Dalam pengumpulan data menggunakan soal tes objektif dengan memasangkan gambar dengan tepat. Teknik analisis data yang digunakan dalam penelitian ini menggunakan *Wilcoxon Sign Rank Test*. Hasil penelitian menunjukkan rata-rata nilai *pretest* sebesar 30, kemudian setelah diberikan *treatment* nilai rata-rata menjadi 50. Pada analisis data menggunakan *wilcoxon sign rank test* diperoleh nilai statistik Z sebesar -2,060 dengan nilai signifikansi (*Asymp. Sig. 2-tailed*) sebesar 0,039 yang berada di bawah taraf signifkan 0,05. Pada pennelitian ini dapat ditarik kesimpulan bahwa rubik gambar dapat meningkatkan pemahaman mengenai anggota tubuh pada anak tunagrahita ringan kelas III SLB C Setyadarma Surakarta.

Kata kunci: *Anggota Tubuh, Media Pembelajaran, Rubik Gambar, Siswa Tunagrahita*

ABSTRACT
This study aims to determine the use of picture rubik media on understanding body parts in mild mentally retarded children in class III SLB C Setyadarma Surakarta. This study used an experimental approach with a one group pretest-posttest design. The subjects used in this study were 5 mild mentally retarded students in class III SLB C Setyadarma Surakarta. In collecting data, objective test questions were used by pairing images correctly. The data analysis technique used in this study used the Wilcoxon Sign Rank Test. The results of the study showed an average pretest score of 30, then after being given treatment, the average score became 50. In data analysis using the Wilcoxon Sign Rank Test, the Z statistic value was obtained at -2.060 with a significance value (Asymp. Sig. 2-tailed) of 0.039 which is below the significance level of 0.05. In this study, it can be concluded that the Rubik's cube can improve understanding of body parts in mildly mentally retarded children of class III SLB C Setyadarma Surakarta.

Keywords: *Body Parts, Learning Media, Rubik's Cube, Mentally Retarded Students*

INTRODUCTION

Education is a basic need that every human being has the right to possess. The National Education System Law Article 1 of Law No. 20 of 2003 states that "Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation and state." Teaching in education is a long process carried out in various ways as an effort to shape, develop, or influence humans to be able to adapt well to their surrounding environment. Based on this explanation, it shows that education is an important thing that every human being has the right to have, including persons with disabilities who are classified as children with special needs.

According to Law No. 8 of 2016 on disability in article 1, it explains that persons with disabilities are everyone who experiences or has physical, intellectual, mental and/or sensory limitations for a long period of time who, in interacting with the environment, may experience barriers and difficulties to participate fully and effectively with other citizens based on equal rights. Related to education, Law No. 20 of 2003 article 5 paragraph (2) states that "Citizens who have physical, emotional, mental intellectual and/or social abnormalities have the right to obtain special education." Children with special needs who receive special education include children with intellectual disabilities or intellectual disabilities.

In general, intellectual disability is defined as a condition of a person who has intellectual, physical, social-emotional barriers, who requires special attention and treatment to be able to develop their abilities optimally. Various definitions have been proposed by several experts. According to the *Diagnostic and Statistical Manual* (DSM-5-TR, 2022), intellectual disability is a condition or disorder of intellectual and adaptive functioning that occurs during the developmental period, resulting in a lack of understanding of conceptual and social aspects, so that children with intellectual disabilities experience barriers in the learning process. According to Yusuf (2020), it is stated that a person's level of intelligence can be identified through the results of Intelligence Quotient (IQ) test measurements. Children with intellectual disabilities are described as individuals who have problems in adaptive behavior (Desiningrum, 2016). adaptive behavioral disorders that occur during the developmental period. Intellectual disabilities can be caused by external as well as internal factors (Atmaja, 2018). Based on these criteria, one of the problems arising from intellectual barriers is the lack of ability in abstract thinking and reasoning.

Sutjhati (2018) states that the limitations in intellectual abilities possessed by children with intellectual disabilities result in them experiencing obstacles in following the learning process in regular schools.The low thinking ability of children with intellectual disabilities impacts low academic achievement, which also causes children with intellectual disabilities to have barriers in mastering self-concept including recognizing and identifying body parts. The limitations possessed by individuals with intellectual disabilities in their cognitive abilities impact adaptive behavior, where children with intellectual disorders are unable to achieve independence in daily life (Rosida & Sudrajat, 2015).

Recognition of body parts needs to be given as early as possible, because providing understanding of self-concept will help children's independence in carrying out

daily activities. Rachmawati (2016) states that learning about body parts is very important for children, because it is the closest part and directly related to oneself. In addition, recognizing body parts can teach children to be responsible for using their bodies according to their function when living daily life. There are many parts of the human body from the tip of the hair to the tip of the toes, with various functions as well as advantages and disadvantages (Anggraini, 2018).

Recognizing body parts is not only learned by children in general, children with special needs also need to understand the functions of their body parts. This teaches them to be more responsible for themselves to carry out daily activities independently. The ability to recognize body parts is related to the cognitive abilities of children with intellectual disabilities. These cognitive abilities influence the way to be able to know the names of body parts and their functions correctly. According to Rachmawati (2016), the inability of children with intellectual disabilities to recognize body parts or distinguish body parts and their functions that occurs for a long time causes children to experience disrupted learning processes and difficulty in receiving lessons well, so gradual and repeated guidance is needed, and it needs to be linked to daily activities (Damastuti, 2020, p. 109).

Based on observation results, there are children with intellectual disabilities in grade III at SLB C SETYADARMA Surakarta who are not yet able to recognize body parts. This has an impact on students' ability to achieve the learning objectives of Natural and Social Sciences (IPAS) on body parts recognition material, which is low. Furthermore, based on interviews with classroom teachers, it was explained that students with intellectual disabilities in grade III experience difficulties in understanding verbal instructions, so media that can bridge the delivery of material is needed.

One effort that can be made to overcome the impact of intellectual disability inability is through special modifications in learning media, simplified materials, and the learning models used. Therefore, in this research, a solution is designed in the form of learning media that can be given to children with intellectual disabilities to instill understanding about recognizing human body parts. This solution is expected to attract children's interest to pay attention and provide stimulus so they are able to recognize human body parts.

Media plays an important role in the learning process as a medium for conveying information concretely, not only in the form of oral or written theory. Meimulyani & Caryoto (2020, pp. 93-100) argue that children with intellectual disabilities have delays in comprehension and thinking, and need the use of learning media in concrete forms that are very attention-grabbing because children with intellectual disabilities get bored quickly and easily shift their attention. Therefore, there is a need for media that is concrete, interesting, and easily understood by children with intellectual disabilities. One medium that can be used is game media.

Learning media is a tool that is utilized to convey material or information so that efficient and effective learning is created (Mustaqim, 2018). In line with media development, Rubik's cubes can be developed with body parts pictures. The use of Rubik's cubes encourages students to be active and think creatively because it trains them to solve problems independently. In addition, Rubik's cubes are unique media that can trigger students' interest in learning. This is supported by research conducted by Lolita (2019) with the title "Rubik's Media in Science Learning in the Application of Think Pair Share Model" which showed an improvement from the highest pretest result of 92 and lowest of 44 to the highest post-test of 100 and lowest of 60.

Based on the background of the problems above, the researcher will examine more deeply with the title "The Influence of Rubik Picture Game Media on Body Parts Recognition of Students with Intellectual Disabilities in Grade III at SLB C SETYADARMA."

METHODS

His research was conducted at SLB C SETYADARMA with the consideration that there are students with intellectual disabilities who have not yet recognized or distinguished their own body parts, and SLB C SETYADARMA has not yet used picture Rubik's games as IPAS (Natural and Social Sciences) learning media to identify body parts for children with intellectual disabilities in grade III. This research uses quantitative research in the form of a pre-experimental design approach with the *One Group Pretest-Posttest* type. This research consists of two variables, namely independent and dependent variables. Variables are everything determined by researchers to be studied in order to obtain information about it, then conclusions can be drawn from the data that has been studied (Sugiyono, 2015). In this research, the population used is grade III students at SLB C SETYADARMA Surakarta consisting of 5 students with intellectual disabilities. The sampling technique uses *probability sampling* and *nonprobability sampling*. The validity used in this research is content validity. This research applies data analysis techniques using non-parametric statistical techniques (*Wilcoxon Sign Rank Test*). The research procedure consists of preparation, implementation, and report compilation.

RESULT AND DISCUSSION

1. Data Description

This research was conducted at SLB C SETYADARMA Surakarta. This research was conducted at SLB C SETYADARMA Surakarta. It was carried out from June 10-17, 2025. The subjects in this study were all grade III students with intellectual disabilities totaling 5 people, consisting of 4 male students and 1 female student. The following is a list of research subjects.

Table 1. Research Subject Data

No.	Name Initials	Genders	Class
1.	AN	Female	III
2.	AM	Male	III
3.	KE	Male	III
4.	AD	Male	III
5.	IL	Male	III

The data used in this research consisted of pretest and posttest questions, or to determine students' abilities after being given treatment in the form of using Rubik's media. In this research, there are three stages of activities which consist of the preparation stage, implementation stage, and final stage. The following is an explanation of each stage.

a. Preparation Stage
   1) In the preparation stage, it contains research proposal administration, research permit letters, and instrument testing.
   2) Compilation of instruments in the phase B teaching module.
   3) After the compilation of instruments, the instrument are then tested for validity and reliability
      a) Validity Test

         The validity in this research is content validity, which is assessed based on the appropriateness and relevance of test items by three expert lecturers in the fields of special needs and language. The assessment was conducted using a scale of 1 (very irrelevant) to 5 (very relevant) in accordance with Aiken's V guidelines. The validation data from the

experts were then tabulated and calculated using Microsoft Excel. The results of Aiken's V calculations for each test item are presented in the following table.

Table 2. Validity Test Result

Question No	R1	R2	R3	*Aiken's V* Score	Description
1	4,5	4,25	5	4,5	VALID
2	5	4,5	4,67	5	VALID
3	4,25	4,25	5	4,25	VALID
4	4,25	4,5	4,33	4,25	VALID
5	4,5	4,5	4,67	4,5	VALID
6	4,75	4,5	4,67	4,75	VALID
7	4,25	4,5	5	4,25	VALID
8	5	4,75	5	5	VALID
9	4,75	4,25	5	4,75	VALID
10	4,75	4	5	4,75	VALID
11	4,25	4,5	4,67	4,25	VALID
12	4,75	4,5	5	4,75	VALID
13	4,5	4,5	5	4,5	VALID
14	4,5	4,5	4,67	4,5	VALID
15	4,5	4,25	5	4,5	VALID
16	4,75	5	4,67	4,75	VALID
17	4,5	4,5	4,67	4,5	VALID
18	4,5	4,5	5	4,5	VALID
19	4,25	4,25	5	4,25	VALID
20	4,5	4,75	5	4,5	VALID

Based on calculations using the Aiken's V formula, 20 statement items in the instrument were declared valid.

b) Reliability Test

To measure the level of internal consistency of the research instrument, a reliability test was conducted using the **Split-Half** technique which was then corrected with the **Spearman-Brown formula**. If the Guttman Split-Half Coefficient correlation is more than 0.80, then the instrument is declared reliable. The following are the results of the reliability test using SPSS version 26.

Table 3. Reliability Test Result

Spearman-Brown Coefficient	*Equal Length*		0,924
	Unequal Length		0,924
Guttman Split-Half Coefficient			0,923

Based on table 3 above, the Guttman Split-Half Coefficient correlation value of 0.923 > 0.80, so it can be concluded that the instrument used is reliable and suitable for use in research data collection.

b. Research Implementation Stage

The research implementation conducted at SLB C Setyadarma Surakarta consisted of 5 students with intellectual disabilities in grade III. This research was carried out from June 10, 2025 to June 17, 2025. The research design used was pretest, treatment, and posttest.

c. Final Stage

After the data collection process is completed, the research continues with the following stages:

1) Collecting the data that has been obtained
2) Processing the data results
3) Analyzing and compiling the research results report
4) Making conclusions and recommendations

2. Prerequisite Tests

Prerequisite tests were conducted through tests before and after treatment. This research is an experiment with treatment using picture Rubik's media for body parts recognition, categorized as pre-experimental with a one-group pretest-posttest design. The research began with an initial test (pretest) before treatment, followed by a final test (posttest) after treatment. Data analysis used non-parametric statistics with the Wilcoxon sign rank test, and was conducted with the assistance of SPSS version 26 software. The following is a detailed description of the pretest and posttest statistical data.

a. Descriptive Statistics of Students Initial Ability Data (*Pretest*)
In the initial stage of the research, a pretest was conducted on five grade III students with intellectual disabilities at SLB C Setyadarma Surakarta. This pretest aimed to determine the initial level of student understanding of the material before being given treatment in the form of using the designed learning media. The following is a description of data on students' initial abilities before being given treatment.

Table 4. Pretest Results Data

No.	Name Initial	*Pretest Score*	Category
1.	AN	35	Low
2.	AM	15	Very Low
3.	KE	40	Low
4.	AD	20	Very Low
5.	IL	40	Low

Based on table 4, it can be described that in the pretest implementation, there were two students whose scores were in the very low category with scores of 15 and 20. Meanwhile, there were three students whose scores were in the low category, namely 35, 40, and 40.

Table 5. Descriptive *Pretest* Data

Descriptive Statistics

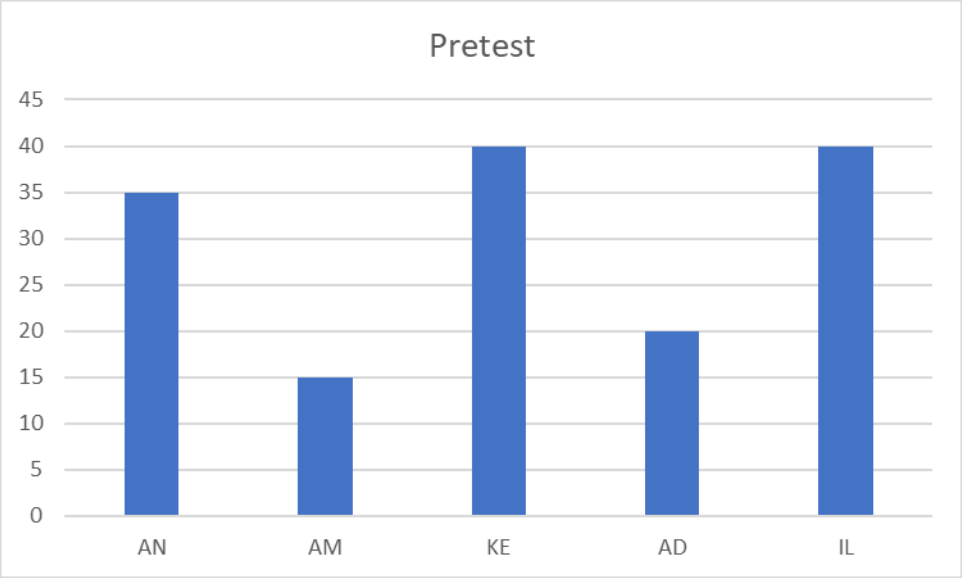
	N	Range	Minimum	Maximum	Sum	Mean	Std. Deviation
PRE TEST	5	25	15	40	150	30.00	11.726
Valid N (listwise)	5						

From the data, it is known that the number of students who became subjects in the pretest was five people with a total score of 150. The lowest score obtained by students was 15, while t highest score was 40, with an average pretest score of 30.00; the standard deviation value was 11.726.

Table 6. Pretest Frequency Distribution Data
PRE TEST

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15	1	20.0	20.0	20.0
	20	1	20.0	20.0	40.0
	35	1	20.0	20.0	60.0
	40	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

The table above contains the frequency distribution of pretest scores which shows from very low to very high, namely there is 1 student who obtained a score of 15; 1 student with a score of 20; 1 student with a score of 35; and 2 students with the highest score of 40.



Picture 1. Pretest Score Histogram

b. Descriptive Statistics of Students Final Ability Data (*Posttest*)

Data *posttest* merupakan data yang diperoleh dari tes akhir setelah diberikan *treatment.* Data tersebut digunakan untuk mengetahui pengetahuan peserta didik mengenai anggota tubuh. Tujuan *posttest* dalam penelitian ini adalah untuk mengetahui apakah terdapat pengaruh rubik gambar terhadap pengetahuan tentang anggota tubuh pada peserta didik tunagrahita kelas III di

SLB C Setyadarma Surakarta. Berikut merupakan data *posttest* dalam peneltian ini.

Table 7. Posttest Score Data

No.	Name initial	*Posttest*	Category
1.	AN	55	Moderate
2.	AM	30	Low
3.	KE	65	High
4.	AD	40	Low
5.	IL	60	High

Based on table 7, it can be described that in the implementation of the posttest, there were two students whose scores were in the low category with scores of 30 and 40. Then there was a student whose score fell into the medium category with a score of 40, while two others fell into the high category with scores of 60 and 65.

***Table* 8 Descriptive Statistical Data of Posttest Scores**

Descriptive Statistics

	N	*Range*	*Minimum*	*Maximum*	*Sum*	*Mean*	*Std. Deviation*
POST TEST	5	35	30	65	250	50.00	14.577
Valid N (listwise)	5						

From the data, it is known that the number of students who became subjects in the posttest was five people with a total score of 250. The lowest student score was 30, while the highest score was 65, with an average pretest score of 50.00; the standard deviation value was 14.577.

Table 1 Posttest Score Distribution Data

POST TEST

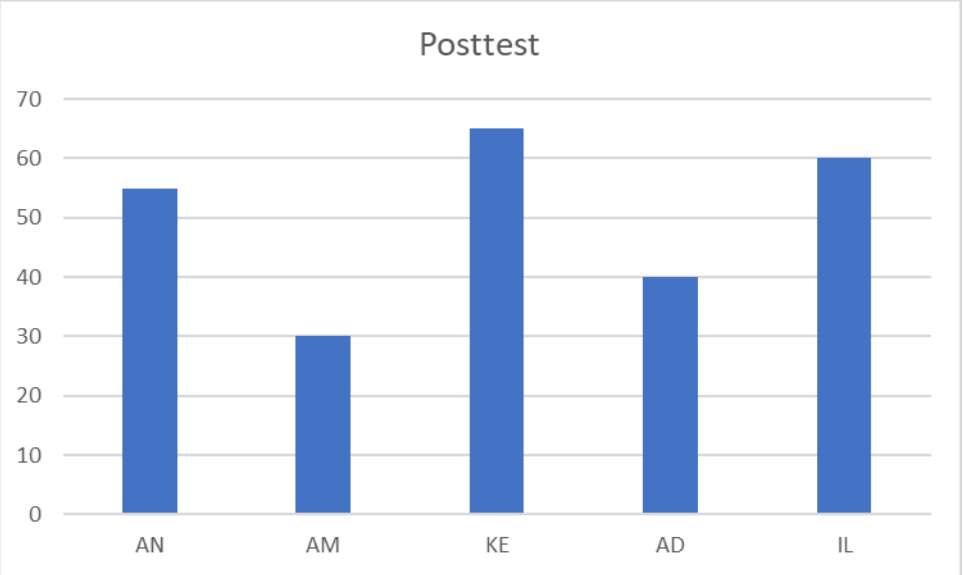
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	30	1	20.0	20.0	20.0
	40	1	20.0	20.0	40.0
	55	1	20.0	20.0	60.0
	60	1	20.0	20.0	80.0
	65	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

Table 9 contains the frequency distribution of *pretest* scores which shows from very low to very high, namely there was 1 student who received a score of

30; 1 student with a score of 40; 1 student with a score of 55; 1 student with a score of 60; and 1 student with the highest score of 65.

Picture 1 *Posttest* Score Histogram

a) Comparison of *pretest* and *posttest*



The effect of picture rubik on the ability to recognize body parts in students with intellectual disabilities in grade III at SLB Setyadarma C Surakarta shows the results of comparison between initial scores (pretest) and final scores (posttest). The following is a table comparing the initial and final scores that have been obtained.

Table 2 *Comparison Data of Pretest and Posttest Scores*

No.	Name Initial	*Pretest* Score	*Posttest* Score	Difference
1.	AN	35	55	20
2.	AM	15	30	15
3.	KE	40	65	25
4.	AD	20	40	20
5.	IL	40	60	20
Average		30	50	

Based on the statistical data in the table above, it shows the difference in scores of grade III students at SLB Setyadarma C Surakarta before and after being given treatment using picture rubik media. It can be seen that there is an effect of picture rubik media on knowledge regarding body part recognition in students with intellectual disabilities in grade III at SLB Setyadarma C Surakarta after the treatment was given.

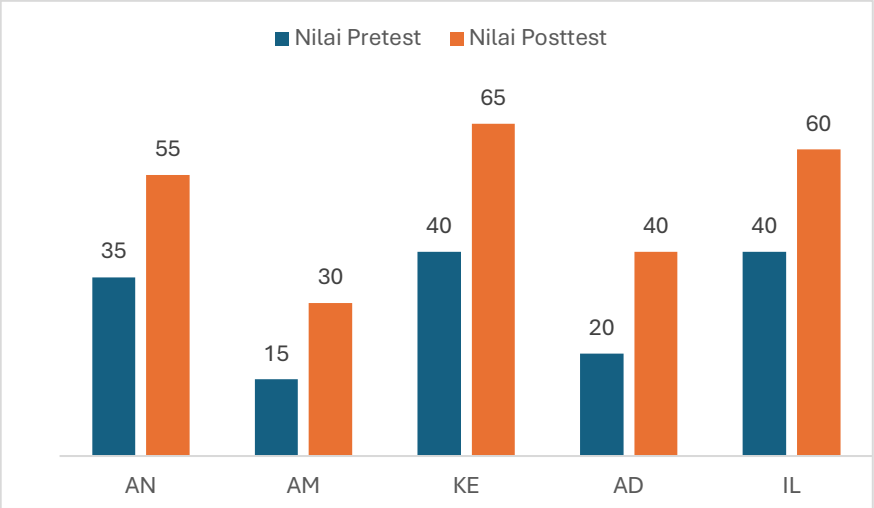
Table 3 Descriptive Statistical Data of Pretest and Posttest

Descriptive Statistics

	N	Range	Minimum	Maximum	Sum	Mean	Std. Deviation
PRE TEST	5	25	15	40	150	30.00	11.726

POST TEST	5	35	30	65	250	50.00	14.577
Valid N (listwise)	5						

Based on table 11, there are differences in the pretest and posttest scores. With the mean value from 30 to 50. The very low score during the pretest experienced an increase from 15 to 30 during the posttest. Then the very high score also experienced an increase from the pretest of 40 to 65 during the posttest. The following is a histogram for the comparison of pretest and posttest scores.



Picture 2 Histogram Comparison of Pretest dan Posttest Scores

1. Hypothesis Test Results

The hypothesis test in this study used non-parametric statistics with Wilcoxon Signed Rank. The Wilcoxon Signed Rank Test aims to determine whether there is a significant difference between two measurements taken from the same subjects, for example before and after being given treatment.

Table 12. Results of Data Analysis Calculation with Wilcoxon Signed Rank Test

Ranks

		N	Mean Rank	Sum of Ranks
POST TEST - PRE TEST	Negative Ranks	0[a]	0.00	0.00
	Positive Ranks	5[b]	3.00	15.00
	Ties	0[c]		
	Total	5		

a. POST TEST < PRE TEST
b. POST TEST > PRE TEST
c. POST TEST = PRE TEST

a. There were no negative differences (negative ranks) between students' learning outcomes before and after being given treatment. This is indicated by the N, Mean Rank, and *Sum of Rank* values which are all zero. This zero value indicates that there was no decrease in learning outcomes from *pretest* to *posttest*, or in other words, the students' scores remained at least stable during the research process.
b. There were 5 data points showing positive differences (*positive ranks*), which means five students experienced improvement in learning outcomes after

receiving treatment. This shows that the picture rubik has an effect on the knowledge of grade III students with intellectual disabilities at SLB C Setyadarma Surakarta regarding body parts. The average score improvement (*Mean Rank*) was 3, while the total sum of positive ranks (*Sum of Ranks*) reached 15.00.

c. There were no identical values between *pretest* and *posttest* (ties), as indicated by the ties value of zero. Therefore, it can be concluded that all students experienced changes in scores, whether improvement or stability, but none had identical values between before and after treatment.

Below are the results of calculations using the Wilcoxon Signed Rank Test.

Table 13. Test Statistic Results

Test Statistics[a]

	POST TEST - PRE TEST
Z	-2.060[b]
Asymp. Sig. (2-tailed)	0.039

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Based on the calculation results using the Wilcoxon Signed Rank Test conducted on the *pretest* and *posttest* scores of grade III students with intellectual disabilities at SLB C Setyadarma Surakarta, a Z statistic value of -2.060 was obtained with a significance value (Asymp. Sig. 2-tailed) of 0.039.

Next, a comparison was made between the obtained significance value and the predetermined significance level of α = 0.05. Based on the applicable provisions, if the p value < 0.05, then H_0 is rejected and H_a is accepted. Thus, the analysis results show that the significance value of 0.039 is smaller than 0.05. The following is the conclusion from the research results.

Table 14. Research Hypothesis

Hipotesis	Keputusan
There is no influence of rubik picture game media that can provide an influence on body parts recognition for students with intellectual disabilities in Class III SLB C Setyadarma	H_0 Rejected
There is an influence of rubik picture game media that can provide an influence on body parts recognition for students with intellectual disabilities in Class III SLB C Setyadarma	H_a Accepted

Based on table 4.14, it can be concluded that the research hypothesis "the influence of rubik picture game media can provide an influence on body parts recognition for students with intellectual disabilities in Class III SLB C Setyadarma" can be accepted.

The results of this study show an improvement in learning outcomes for Class III students with intellectual disabilities at SLB C Setyadarma Surakarta after being given treatment in the form of using modified rubik media in learning body parts recognition. This is demonstrated by the increase in the average score from *pretest* of 30.00 to 50.00 in the *posttest*, as well as the results of the Wilcoxon Signed Rank Test which produced

a significance value of 0.039 (< 0.05). Thus, there is a significant difference between learning outcomes before and after the treatment was given.

This improvement shows that the use of rubik picture learning media is able to stimulate the understanding of students with intellectual disabilities regarding body parts concepts. This is in line with the characteristics of students with special needs, especially those with intellectual disabilities, who require learning approaches that are concrete, visual, and manipulative. Students tend to experience difficulties in understanding abstract material, so attractive and interactive learning media is highly needed.

These results are consistent with research conducted by Maulana (2020) which proved that the use of modified rubik media was able to provide a positive impact on improving the ability of students with mild intellectual disabilities in understanding geometric formulas in mathematics, particularly for Class X students at SLB Bhina Putra Surakarta in the 2019/2020 academic year.

Meanwhile, research by Sari et al. (2024) also strengthens these results. They found that the utilization of picture media plays an effective role as a supporting tool in the reading learning process for children with mild intellectual disabilities. This finding demonstrates the importance of using visual media in SLB environments to help teachers improve students' literacy abilities.

Based on the results of this study and reinforced by previous studies, it can be concluded that the use of learning media in the form of picture rubik is proven effective in improving learning outcomes for students with intellectual disabilities, particularly in body parts recognition material. This success opens opportunities to develop various learning strategies that are more adaptive and responsive to the special needs of students.

CONCLUSION

Based on the data analysis results, it can be concluded that the use of picture rubik media significantly improves the knowledge of Class III students with intellectual disabilities at SLB C Setyadarma Surakarta regarding body parts, while simultaneously promoting the development of logical thinking abilities. This research has theoretical implications as a reference for educational science development and practical implications as a learning strategy that emphasizes active student involvement. For teachers, it is recommended to implement this media with varied methods such as songs and movements, while conducting periodic evaluations. Students are expected to play an active role in learning using this media to optimize understanding. For future research, it needs to be expanded with a larger number of subjects, longer duration, and exploration of its application to various types of disabilities and learning materials. These findings indicate that picture rubik is an effective and enjoyable medium for learning among children with special needs.

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