The Effect Of Providing Play Therapy (Pictorial Number Card Media) On Increasing Understanding Of Simple Counting In School-Age Children With Intellectual Disabilities

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Abstract. Children with intellectual disabilities are individuals who have limitations in intellectual and adaptive functioning, including difficulties in understanding basic numeracy concepts. Numeracy skills are fundamental and essential for daily life; however, children with intellectual impairments often struggle to recognize numerical symbols and associate them with actual quantities. This issue demands a learning method that is not only enjoyable but also tailored to their learning style through a more effective visual and concrete approach. One approach considered to meet these needs is play therapy using pictured number card media. This media presents numbers accompanied by engaging illustrations, making it easier for children to understand numerical concepts through direct experience and interaction. This study aims to determine the effect of play therapy on improving basic numeracy understanding in school-aged children with intellectual disabilities at SDLB Negeri Pati. The method was quantitative with a pre-experimental design of the one-group pre-test and post-test type. The sample consisted of 49 elementary school-aged students with intellectual disabilities, selected using purposive sampling. The instruments were pictured number card media and a basic numeracy questionnaire administered before and after the intervention. The results showed a significant increase in post-test scores compared to pre-test scores. Most respondents experienced improvement in recognizing and understanding number symbols from 1 to 10 after participating in play therapy. Therefore, it can be concluded that play therapy using pictured number card media is effective in improving basic numeracy understanding in school-aged children with intellectual disabilities and can serve as an alternative learning method in special education settings.
Keywords: play therapy, pictured number cards, intellectual disabilities, basic numeracy, special education.

INTRODUCTION

Every individual, including children with special needs, has an equal right to access education that supports their optimal development. For them, education is not only an obligation, but also a necessity that is important for their future. Many children with special needs are able to develop their potential through appropriate education and care (Suharsiwi, 2017). Inclusive and adaptive education is the bridge to enable them to contribute to society.

Primary school-age children go through an important developmental period, physically, intellectually and emotionally. However, for children with intellectual disabilities, this process is often hampered. They experience limitations in abstract thinking, problem solving, and social and communication skills (Lubis et al., 2024). Based on the American Association on Mental Deficiency (AAMD) classification, children with intellectual disability are grouped into four

categories based on IQ, namely mild, moderate, severe and very severe (Suharsiwi, 2017). Each category has different learning challenges and requires a customised approach.

Cognitive limitations in children with intellectual disabilities result in a slow ability to understand simple counting concepts. They often have difficulty recognising numbers, remembering number sequences and applying basic arithmetic operations. To overcome this challenge, a more concrete and interesting learning approach is needed. One of them is the use of visual media such as picture number cards, which can connect between number symbols and real objects, thus helping children's understanding more effectively (Lubadah et al., 2022).

Play therapy with picture number cards is a learning method that has been proven effective in improving the understanding of number concepts in children with disabilities. This media serves as an interesting visual aid, facilitates the learning process, and creates a pleasant learning atmosphere (Jannah, 2021). Some studies such as those conducted by Yuliyana et al, (2022) and Istiqamah et al,. (2022) show that the use of number cards can significantly improve the ability to recognise numbers, especially in children with mild impairment.

According to the World Health Organization (WHO, 2023), approximately 1.3 billion people or 16% of the global population have significant disabilities, and mentally impaired people make up approximately 1-3% of the world's population. In Indonesia, the Central Bureau of Statistics (BPS, 2023) recorded the number of people with disabilities at 22.97 million or 8.5% of the total population, with an estimated 6 million children with intellectual disability. The Ministry of Health (2023) also reported that 3.5% of children were classified as mildly mentally impaired, 2.8% as severe, 2.6% as moderately severe, and 2.5% as very severe.

Data from Dapodik (2024) shows that in the 2023/2024 school year there were 158,792 special education students across Indonesia, with the largest number located in Java. Students with intellectual disabilities are the largest group, including in Central Java. In Pati District, Sekolah Luar Biasa (SLB) Negeri Pati has 360 students, and 242 of them are mentally disabled. Based on the initial observation conducted by the researcher in January 2025, it shows that out of 21 students in grades I, V, and VI of SDLB Negeri Pati, 13 students have not been able to recognise the number symbols 1-10 correctly. This shows that the learning methods used are not optimal.

METHODS

This type of research is quantitative research with a pre-experiment design using a one group pretest-posttest design. The population in this study were all mentally disabled students at SDLB Negeri Pati, totalling 97 students. The research sample consisted of 49 students selected using purposive sampling technique based on inclusion and exclusion criteria. The inclusion criteria included school-age children studying at SDLB Negeri Pati, willing to participate in the study and get permission from parents or guardians. The exclusion criteria included students with other significant barriers (such as severe disabilities or total deafness) that could affect the research process and students who were not cooperative in learning.

The study was conducted on 49 children, with the intervention implemented every day in one class divided into two sessions. Each session was attended by a maximum of 5 students with a duration of 1 hour per session, which consisted of 15 minutes for pre-test, 30 minutes of play therapy, and 15 minutes post-test. Data were collected through pre-post tests and analysed

using the Wilcoxon Signed Rank Test to determine any significant differences before and after the intervention.

RESULTS AND DISCUSSION

RESULTS

1. Univariate Analysis

a. The level of children's simple counting ability before being given play therapy

Table 1
Frequency distribution of pre-test scores before being given simple counting play therapy

Classification of Counting Ability Levels	Frequency	(%)
Less	3	6.1
Enough	28	57.1
Good	18	36.7
Total	**49**	**100**

Table 1 shows that the frequency distribution of pre-test values of simple counting skills in school-age children with intellectual disabilities at SDLB Negeri Pati before therapy. As a result, there were 3 children (6.1%) in the poor category, 28 children (57.1%) in the fair category, and 18 children (36.7%) in the good category. This reflects the considerable variation in the level of mastery of simple arithmetic among the participants prior to the intervention. Most of the 28 children (57.1%) were in the fair category, indicating that they already had a basic understanding, but still needed improvement to achieve better mastery. Meanwhile, 3 children (6.1%) were in the insufficient category, indicating difficulties in understanding simple counting concepts. This condition provides an initial picture of the need for more intensive interventions to improve the counting skills of children with intellectual disabilities at the school.

b. The level of children's simple counting ability before being given play therapy

Table 2
Frequency distribution of pre-test scores before being given simple counting play therapy

Classification of Counting Ability Levels	Frequency	(%)
Less	0	0
Enough	0	0
Good	49	100
Total	**49**	**100**

Based on table 2 shows that after being given a pictorial number card play therapy, the frequency distribution of post-test scores of school-age children with intellectual disabilities in simple counting skills at SDLB Negeri Pati is entirely in the good knowledge category, with a frequency of 49 children (100%).

Table 3
The results of the frequency distribution of pre-test and post-test scores before and after being given simple counting play therapy

Intervention Group	***Mean***	**SD**	***Mean***	**P *Value***
Before	2.31	0.585	0.69	0.000
After	3.00	0.000		

Based on table 3 shows that there is an increase in understanding of simple counting in school-age children with disabilities, from the average value before being given play therapy using illustrated number cards of 2.31 to 3.00 after being given therapy. The average difference - an average increase of 0.69. Based on the results of the Wilcoxon test, the p-value is 0.000 (<0.05), which indicates a significant difference between the level of understanding of simple counting before and after being given play therapy using picture number cards.

DISCUSSION

1. Frequency distribution of pre-test scores of school-age children with intellectual disability before being given play therapy

   The frequency distribution of pre-test scores in school-age children with intellectual disability before being given pictorial number card play therapy shows differences in the level of counting ability. Of the total 49 respondents, there were 3 children (6.1%) in the poor category, 28 children (57.1%) in the moderate category, and 18 children (36.7%) in the good category. The following is a description of the pre-test by category:

   a. Category less (score 1 - 3)

      From the results of the study there were 3 children (6.1%) who fell into the category less. These 3 children show that their simple counting skills are still very low. According to Efendi (2017) children with mild impairment still need learning with an individualised approach due to limitations in processing abstract and logical information. In line with Anggraeni (2023) the lack of early numerical experience can lead to slow development of basic numeracy skills.

   b. Fair category (score 4 - 6)

      Most children are in the fair category, namely 28 children (57.1%). This shows that they have a basic understanding of simple counting, but still show inconsistencies and depend on verbal or visual assistance from the teacher. Amalia & Yuliyati (2022) explained that children with intellectual disabilities tend to be more responsive to learning with a visual approach, but it is not optimal if it is not combined with a repetitive hands-on approach. Children in this category have the potential to develop better if given appropriate therapy or learning methods.

   c. Good category (score 7 - 10)

      A total of 18 children (36.7%) have shown a fairly good mastery in simple counting at the pre-test stage. Children in this category show good understanding in simple counting. Mildly impaired children can still show good basic academic skills if they get the right stimulation and teaching consistently. Support from family and teachers is also a significant supporting factor (Herik et al., 2021).

      The results of this study show that most children have moderate abilities in recognising and processing numbers, but there are also children who still have difficulty in counting activities. The distribution of simple counting skills in children with intellectual disabilities is influenced by various factors, including intellectual limitations, learning methods, and environmental support. The use of appropriate learning media and approaches tailored to individual needs can help improve the numeracy skills of children with intellectual disabilities. This condition shows that learning methods that are visual, concrete and fun are needed by children with intellectual disabilities, who tend to experience obstacles in the abstract thinking process.

      One suitable method is pictorial number card play therapy. This therapy not only presents numbers visually, but also involves play activities that can foster children's

attention, enthusiasm and active involvement. Research by Rosdiana and Kharizmi (2021) explains that picture card games help children understand numbers more easily because of their attractive and recognisable designs. Furthermore, Sugiman and Cahyani (2023) emphasised that concrete visual aids are very useful to support the learning process of children with special needs because they need an approach that is not abstract.

Thus, this pre-test data is an important foundation for designing more appropriate interventions, through structured play activities and in accordance with the needs of children with disabilities.

2. Frequency distribution of post-test scores of school-age children with visual impairment after being given play therapy

After being given play therapy using picture number cards, the simple counting ability of children with visual impairment has increased significantly. The following is a description of the post-test results by category:

a. Categories of Less and Enough (Score 1 - 6)

In the post-test results, there were no children in the less category (score 1 - 3) or the enough category (score 4 - 6). The absence of participants in the bottom two categories indicates a significant improvement in simple counting ability after intervention through play therapy with picture number cards. This shows that the use of attractive visual media can optimise the learning process of children with mild impairment effectively.

b. Good category (score 7 - 10)

All children (100%) fell into the good category after the therapy. Participants are able to recognise numbers, perform simple counting operations correctly and independently. This achievement is an indicator that the play therapy approach with illustrated number cards is very effective in improving the counting skills of children with disabilities. The use of concrete media such as number cards is proven to be able to bridge the abstract concepts of mathematics to be more easily understood. This finding is supported by Hajarwati et al. (2023) who emphasised that educational games can build a pleasant learning atmosphere, increase focus, and accelerate the understanding of children with special needs.

Overall, the post-test results showed a very significant improvement. A total of 49 children (100%) reached the good category, which means that all respondents showed high mastery of simple counting materials after receiving therapy. This achievement confirms that play therapy using picture number cards is an effective approach and relevant to the characteristics of children with intellectual disabilities.

The visual and engaging picture card media helps children recognise number symbols and understand basic maths operations in a fun and easy-to-understand way. This approach not only improves cognitive aspects, but is also able to increase focus, learning motivation, and active participation of children during the learning process. Artika et al. (2024) stated that picture number cards are very helpful for children with

mild impairment in recognising numbers thoroughly through interesting visualisations. This is reinforced by Tai et al. (2021) who emphasised that pictorial media is effective in improving children's cognitive development because it is flexible, easy to use, and can be adapted to individual needs.

Thus, the achievement of optimal post-test results shows that play therapy through interactive visual media not only significantly improves counting skills, but also builds confidence and fosters children's enjoyment in the learning process.

c. The effect of providing play therapy (pictorial number card media) on increasing understanding of simple counting

Based on the results of research conducted on 49 respondents of school-age children with intellectual disabilities at SDLB Negeri Pati, it is known that there is an increase in simple counting ability after being given play therapy using pictorial number card media. The increase is evidenced by the results of statistical tests using the Wilcoxon Signed Rank Test which shows a p-value (Sig. 2-tailed) of 0.000 (<0.05). Thus, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted. That is, there is a significant effect of providing play therapy on improving simple counting skills in children with disabilities.

In this study, the increase in understanding of simple counting was shown significantly. Before being given play therapy, the participants' pre-test scores were scattered in various categories with an average of 2.31 and a standard deviation of 0.585. This data shows that the level of mastery of simple counting material in most children is still in the category of less, enough so that there are variations in ability between individuals. However, after being given play therapy with picture number cards, there was a very striking increase in results. All participants (49 children or 100%) obtained a maximum post-test score of 3.00 with a standard deviation of 0.000, which means that there was an increase in scores from poor to good.

The results of this study indicate an increase in value after being given play therapy using picture number card media. This increase occurs because the media presents numbers and images in an interesting and concrete way, making it easier for children with disabilities to understand the concept of numbers. Children become more focused, motivated, and happy when learning. According to Piaget (quoted from Suharsiwi, 2017), children learn better through real objects. Meanwhile, according to Vygotsky (quoted from Suharsiwi, 2017), play can help children develop through the help of adults. This is in accordance with the characteristics of children with intellectual disabilities who need a visual, simple, and fun approach in the learning process.

This finding is reinforced by previous research, namely Kiptiah et al., (2023) which shows that the provision of picture number card media has an effect on increasing understanding of simple multiplication counting in deaf children in SLB Negeri Tanah Bumbu. The study also noted an increase in the average value of post-test results to 6.00 after the intervention was given.

Based on the overall results obtained, it can be concluded that the provision of play therapy with illustrated number card media has a positive effect on increasing the understanding of simple counting for school-age children with hearing impairments.

This therapy is proven to stimulate cognitive development, especially left brain functions related to logic and numerical abilities. Thus, p

CONCLUSIONS

1. The results showed that the frequency distribution of pre-test values of simple counting skills in school-age children with intellectual disabilities at SDLB Negeri Pati before therapy. As a result, there were 3 children (6.1%) who were in the poor category, 28 children (57.1%) in the moderate category, and 18 children (36.7%) in the good category.
2. The results showed that after being given a pictorial number card playing therapy, the frequency distribution of post-test scores of school-age children with intellectual disabilities in simple counting skills at SDLB Negeri Pati was entirely in the good knowledge category, with a frequency of 49 children (100%).
3. There is a significant effect of giving play therapy on improving simple counting skills in children with intellectual disabilities, with a p-value of 0.000 (<0.05).

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