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IMPROVING NUMBER RECOGNITION 1–5 THROUGH INTERACTIVE DIGITAL LEARNING MEDIA FOR GROUP A KINDERGARTEN CHILDREN LIUNGGUNUNG

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Abstract :

This classroom action research aimed to improve the ability of group A kindergarten children to recognize numbers 1–5 through interactive digital learning media. The study was conducted due to the low level of children's skills in identifying numerical symbols correctly. The subjects were 11 children in group A at UPTD TK Pembina Liunggunung during the second semester of the 2025/2026 academic year. The research method applied was Classroom Action Research (CAR), carried out in two cycles, each consisting of planning, implementation, observation, and reflection. Data collection instruments included observation sheets and field notes. The results showed a significant improvement in children's cognitive abilities in number recognition. In the initial condition, only 36% of the children were able to recognize numbers 1–10 correctly. After the first cycle, this figure increased to 64%, and by the second cycle, it reached 91%. These findings indicate that interactive digital learning media are effective in enhancing early childhood cognitive skills, especially number recognition. Therefore, interactive digital media can be considered a relevant alternative for teachers in supporting cognitive learning in kindergarten group A.

Keywords: *interactive digital learning, cognitive ability, number recognition, early childhood, classroom action research*

Abstrak :

Penelitian tindakan kelas ini bertujuan untuk meningkatkan kemampuan mengenal angka 1–5 pada anak kelompok A melalui media pembelajaran digital interaktif. Latar belakang penelitian adalah masih rendahnya keterampilan anak dalam mengenal simbol angka secara tepat. Subjek penelitian berjumlah 11 anak kelompok A di UPTD TK Pembina Liunggunung pada semester genap tahun ajaran 2025/2026. Metode penelitian menggunakan Penelitian Tindakan Kelas (PTK) yang dilaksanakan dalam dua siklus, dengan setiap siklus meliputi tahap perencanaan, pelaksanaan, observasi, dan refleksi. Instrumen penelitian berupa lembar observasi dan catatan lapangan. Hasil penelitian menunjukkan adanya peningkatan kemampuan kognitif anak dalam mengenal angka. Pada kondisi awal, hanya 36% anak yang mampu mengenal angka 1–10 dengan benar. Setelah pelaksanaan siklus I meningkat menjadi 64%, dan pada siklus II mencapai 91%. Temuan ini membuktikan bahwa penggunaan media pembelajaran digital interaktif efektif dalam meningkatkan kemampuan mengenal angka 1–10 pada anak kelompok A. Dengan demikian, media digital interaktif dapat menjadi alternatif yang relevan bagi guru dalam mendukung pembelajaran kognitif anak usia dini di TK.

Kata Kunci: *pembelajaran digital interaktif, kemampuan kognitif, angka 1–5, anak usia dini, ptk*

INTRODUCTION

Early childhood is a golden period in an individual's development, during which all aspects of growth—physical, social-emotional, linguistic, and cognitive—develop rapidly. At the age of 4–5 years, children begin to show simple symbolic and logical thinking skills, which form the basis for the development of numeracy and number recognition (Fitriani, Tabroni, Guilin, & Jiao, 2023). The ability to recognize numbers at this stage not only serves as preparation for the next level of academic study, but also fosters rational and structured thinking from an early age. Therefore, teachers need to create enjoyable and meaningful learning experiences so that children can understand the concept of numbers in a concrete and contextual way.

However, the reality in the field shows that the process of learning number recognition in some early childhood education institutions still tends to be conventional. Children are often only asked to copy the writing of numbers or memorize sequences without understanding the meaning behind the symbols. This approach does not foster children's interest in learning and active involvement. According to Juhaevah, Tahmir, and Talib (2025), a passive learning approach makes it easy for children to lose focus, while visual and interactive stimulation can increase attention and strengthen memory of number concepts.

With advances in technology, early childhood education has undergone significant changes. Teachers now have many alternative learning media that can combine elements of sound, images, and animation, all of which serve to reinforce basic conceptual understanding. Miller (2018) asserts that interactive digital learning media can foster active engagement in children and accelerate basic numeracy development. Through digital educational games, children can learn to recognize numbers in a more concrete, enjoyable way that is appropriate for their cognitive development characteristics.

Previous studies have also shown consistent results regarding the effectiveness of interactive digital media. In a meta-analysis of various studies on early numeracy learning, Juhaevah et al. (2025) found a strong positive effect ($g = 0.62$) on improving the numeracy skills of young children. These results indicate that digital media is not merely a visual aid, but can serve as an active learning tool that encourages children to interact with the material in greater depth. Thus, the application of interactive digital media has great potential to improve the quality of cognitive learning in early childhood education.

Similar conditions were found at the **Liunggunung Pembina Kindergarten** Technical Implementation Unit, where initial observations showed that most children in group A still had difficulty recognizing numbers 1–5 correctly. Children tend to be confused in distinguishing the shapes of numbers and are not yet able to sequence them correctly. One of the causes is the lack of variety in the learning media used by teachers. Therefore, innovative efforts are needed that utilize digital learning technology to make the process of recognizing numbers more interesting, interactive, and easier for children to understand.

Based on this background, this classroom action research was conducted to improve the ability to recognize numbers 1–10 through the use of interactive digital learning media in group A children at the Liunggunung Pembina UPTD Kindergarten. This study not only aims to improve children's cognitive abilities but also to provide alternative learning models that are relevant to the current era. It is hoped that the results of this study can contribute to early childhood educators in

developing innovative, effective, and enjoyable learning strategies for young children.

RESEARCH METHOD

This study used a **classroom action research (CAR)** approach aimed at improving the ability to recognize numbers 1–5 through the use of **interactive digital learning media**. The study was conducted at the **UPTD TK PEMBINA LIUNGGUNUNG**, Plered District, Purwakarta Regency, in the even semester of the 2025/2026 academic year. The research subjects were **11 children in group A** aged between four and five years old, consisting of six boys and five girls. The subjects were selected based on their similar ages and relatively uniform initial abilities, with pre-action observations showing that most children were not yet able to recognize and distinguish numbers 1–5 consistently.

This study was conducted in **two cycles**, and each cycle followed four stages of action according to Kemmis and McTaggart (2014), namely **planning, implementation, observation, and reflection**. Each cycle was conducted in two meetings with a duration of 30–40 minutes per session. The actions taken were learning activities using interactive digital media such as number recognition games, interactive animations, and simple educational applications that displayed numbers 1–5 accompanied by pictures of objects corresponding to the numbers. Children were invited to observe, count, and match numbers with the number of objects visually and interactively.

During the planning stage, researchers and classroom teachers prepared daily lesson plans (RPPH), selected digital media appropriate for the children's developmental level, and developed observation and assessment instruments. The implementation stage involved facilitating children's interaction with digital media, with teachers acting as mentors and facilitators. The observation stage is carried out simultaneously with the implementation stage to record children's involvement, learning responses, and the level of success in recognizing numbers 1–5. Meanwhile, the reflection stage is used to analyze the results of the activities, assess the effectiveness of the media, and determine improvement measures for the next cycle.

The data collection techniques used include observation, documentation, and performance assessment. Observation is conducted to assess the extent to which children are able to recognize numbers 1–5 through digital activities. Documentation is carried out through photographs of activities and children's digital displays. Performance assessment is used to assess children's ability to recognize, name, and connect numbers with the correct number of objects.

After all data from observations and documentation has been collected, the next step is to compile it into a comprehensive overview of the child's ability development during the learning process. The analysis is carried out by comparing the child's achievements with the expected cognitive development indicators for age group A. This process also involves observing the extent to which the child's ability to recognize numbers 1–5 has improved, as well as any changes in learning behavior that arise during the activities. In addition to skill improvement, the children's attention and interest in digital learning are also important parts of this analysis. To facilitate interpretation, the children's development is categorized into four levels of achievement: not yet developed (BB), beginning to develop (MB), developing as expected (BSH), and developing very well (BSB)

In addition to qualitative analysis, this study also utilized a descriptive

quantitative approach to reinforce the findings. Data from observations in each cycle were analyzed using percentage techniques to determine the direction of improvement in children's ability to recognize numbers 1–5. The results were then described in a coherent and easy-to-understand narrative, providing a clear picture of the changes that occurred at each stage of the intervention. Through this process, it is possible to determine the extent to which interactive digital learning media is effective in helping children recognize number symbols better and gradually improve their cognitive abilities.

Each cycle in this study consists of four main stages that are interrelated. The first stage is planning, in which researchers and teachers develop learning strategies using interactive digital media and determine the success indicators to be achieved, namely improving children's ability to recognize numbers 1–5. Next, the action/implementation stage is carried out by applying the learning plan that has been developed to classroom learning activities. Teachers act as facilitators who guide children in using digital media in accordance with the planned activity flow.

The next stage is observation, in which researchers observe children's engagement during activities. All developments and responses of children, both in recognizing numbers and interacting with digital media, are systematically recorded using observation sheets and field notes. After that, the results of the observation are analyzed in the reflection stage. At this stage, researchers and teachers evaluate the success of the action based on the data obtained and review whether the predetermined targets have been achieved. If the results of the reflection in the first cycle do not meet the criteria for success, then the strategy is revised and the next cycle is continued until optimal results are obtained. Through this repetitive process, it is hoped that children's ability to recognize numbers 1–5 will improve gradually and continuously.

Table 1: Criteria for Assessing Ability to Recognize Numbers 1 – 5

No	Indicators	Activity	Category			
			BB (1)	MB (2)	BSH (3)	BSB (4)
1	Recognizing number symbols 1–5	The child listens to a voice saying the numbers one by one, then points to or selects the corresponding number on the screen.				
2	Distinguishing the shapes of numbers 1–5	Children pay attention to the display of numbers on digital media, then match the numbers mentioned with the correct number image.				
3	Saying numbers in the correct order	Children follow instructions from a				

		digital game to say the numbers 1–5 in sequence while pressing the numbers that appear on the screen.	
4	Show interest and concentration while studying	Children appear focused, enthusiastic, and try to answer correctly during activities using digital media.	
5	Using digital media independently	Children are able to play learning games (select numbers, press the answer button, continue to the next question) without much help from the teacher.	

After all the research data has been collected, the next step is to conduct an analysis to determine the average achievement level of the children. The analysis process begins by reviewing the observation results and development scores that have been recorded for each child, then calculating their achievement level based on predetermined indicators.

Table 2: Child Achievement Score Categories

Child Achievement Score	Category
86 - 100	Berkembang Sangat Baik (BSB)
71 – 85	Berkembang Sesuai Harapan (BSH)
55 – 70	Mulai Berkembang (MB)
>55	Belum Berkembang (BB)

After all the observation data from the two cycles had been collected, the next step was to compile the results in a diagram showing the percentage of each child's achievement level. The data obtained was then processed to see the extent of each child's success in recognizing the numbers 1–5. To determine the percentage of achievement, calculations were made using the following formula.

$$\frac{F}{N} \text{ x } 100 = \text{Final score}$$

Keterangan :
F = Acquisition Score
N = Maximum Score of Indicator (16)
100 = Fixed Numbers
To find out the percentage of student success classically, using the formula :

$$\text{Presentase keberhasilan Klasikal} = \frac{\textit{Jumlah Anak yang memperoleh nilai BSB dan BSH"}}{\textit{Jumlah Anak}} \text{x } 100\%$$

This study adapts the classroom action research model developed by Kemmis and McTaggart, which consists of four main stages in each cycle, namely planning, implementation of action, observation, and reflection (Solehan Arif & Shinta Oktafiana, 2023). These four stages are carried out sequentially and are interrelated to improve the learning process over time. After all stages are completed, the results of the activities are analyzed and evaluated to see the extent of improvement in children's ability to recognize numbers 1–5. If the results in the first cycle do not show significant progress, the next cycle is carried out with improvements in the learning strategy until the research objectives are achieved.

With this design, it is hoped that interactive digital learning media can provide a fun and meaningful learning experience for children, as well as help teachers improve the cognitive abilities of early childhood, especially in recognizing numbers 1–5.

FINDINGS AND DISCUSSION

Research to improve the ability of children in group A to recognize numbers 1–5 through interactive digital learning media began with a pre-cycle activity, which aimed to obtain an initial picture of the children's ability to recognize numbers, particularly in terms of saying numbers in sequence, recognizing number symbols, and matching the sounds of numbers with their shapes. From the initial observations, it was found that most children still had difficulty recognizing numbers and their sequence, and were not yet able to say numbers correctly; the achievement level of number recognition was only 36% out of 11 children, which was classified as Beginning to Develop (BD). Therefore, the researcher designed improvement measures in cycle 1 by implementing interactive digital learning media, in which children were invited to play by listening to numbers being called out and then matching the corresponding numbers in an interactive and fun way. In cycle 1, the observation results showed an improvement: 3 children (27%) were in the Developing Very Well (DVW) category, 4 children (36%) were in the Developing as Expected (DDE) category, 3 children (27%) were in the Beginning to Develop (BD) category, and 1 child (9%) was still in the Not Yet Developing (NYD) category.

Based on the reflection of the results of cycle 1, improvements were made to the strategy in cycle 2 with a more personalized approach and more intensive guidance, so that the children were more focused and confident when playing while learning numbers. As a result, in cycle 2 there was a significant improvement, with 5 children (45%) in the BSB category, 5 children (45%) in the BSH category, and only 1 child (9%) still in the MB category, with no children in the BB category. The children appeared to be more active in responding to instructions, were able to recognize numbers independently, and showed a high level of interest in learning activities in the form of digital games. This shows that interactive digital learning media, when used appropriately and accompanied by effective teacher guidance, can be an attractive tool that supports the cognitive development of early childhood. These findings are in line with the opinions of Musthafa (2021) and Yuliana & Syahrul (2022), who state that interactive digital media can significantly increase children's interest and understanding of learning.

Cycle I Actions

Cycle 1 was implemented after the researchers conducted the pre-cycle and initial reflection stages. In its implementation, the children were invited to participate in learning activities to recognize numbers through specially designed interactive digital learning media with attractive displays. In this activity, children

are asked to listen to the names of numbers and then match them with the corresponding number symbols on the game screen. The learning process is carried out in a relaxed but focused atmosphere, with direct guidance from the teacher. At the beginning of the implementation, some children still looked confused when operating the device, although others showed enthusiasm because of its colorful and fun appearance.

From the observation results, it is known that most children still need assistance in recognizing number sequences. Some children are beginning to be able to match numbers correctly, but are not yet doing so consistently. Based on the assessment data collected, of the 11 children involved, there were 3 children (27%) who showed results in the Developing Very Well (BSB) category. Four children (36%) fell into the Developing as Expected (DAE) category, 3 children (27%) were in the Beginning to Develop (BD) category, and 1 child (9%) remained in the Not Yet Developing (NYD) category.

Problems that arose in cycle 1 included children's lack of confidence when saying numbers independently and their unfamiliarity with using digital media. In addition, some children still guessed numbers without listening carefully to how they were said. Through this reflection, researchers and teachers realized that a more personalized approach, retraining in the use of media, and strengthening of number concept understanding were needed so that children would be better prepared to participate in the next cycle. Therefore, improvements will focus on providing longer exploration time with games, individual assistance, and emphasizing the connection between the sound and shape of numbers before children are asked to match them independently.

Table : BIPTAKA Program Management Structure

NO	NAMA	NILAI AKHIR	KATEGORI
1	MGAL	91	BSB
2	ZILA	88	BSB
3	Z	80	BSH
4	SAA	76	BSH
5	HR	74	BSH
6	SB	70	BSH
7	NRR	64	MB
8	MA	62	MB
9	AR	60	MB
10	IM	58	MB
11	MR	50	BB
Jumlah			773
Nilai Rata - rata			70,3

Based on the results of Cycle I assessments of 11 children aged 5–6 years at the Liunggunung Pembina UPTD Kindergarten, the application of Deep Learning-based Wordwall games in early reading activities showed fairly good results, although they did not yet reach the optimal target. In general, the children appeared enthusiastic about matching pictures of fruits with the corresponding words. However, some children still experienced difficulties, particularly in recognizing letters and reading simple words in their entirety.

From the data obtained, the average class score reached 70.3, with the

following details: 3 children were in the Developing Very Well (BSB) category, 4 children were in the Developing as Expected (BSH) category, 3 children were in the Starting to Develop (MB) category, and 2 children were still in the Not Yet Developing (BB) category. These results indicate that most children have begun to show improvement in their abilities, although some still require further guidance.

During the activity, it was apparent that not all children were technically or cognitively ready to use digital media. Some children appeared confused when operating the games and tended to guess the pictures rather than read the words written. On the other hand, some children were already able to recognize letters and words well, and even appeared confident in completing the games without assistance.

The results of the reflection at the end of Cycle I showed several things that needed to be improved. First, there were still children who played the game without fully understanding the instructions, so the reading process was not yet optimal. Second, some children who were not used to reading independently or were not familiar with digital media displays lacked confidence. Third, limited playing time meant that some children did not have enough time to complete the game to the fullest.

Based on these results, researchers designed improvements for Cycle II with several steps, namely providing more flexible play time, adding letter and syllable recognition activities before the game begins, and increasing individual assistance. It is hoped that through this strategy, children will be better prepared, more confident, and able to improve their early reading literacy skills overall.

Cycle 2 Actions

After reflecting on and improving Cycle I, learning activities continued into Cycle II with several adjustments to the strategy. At this stage, the researchers and teachers provided more time for exploration so that the children could better understand how to play and interact with interactive digital learning media. Before the activity began, the children were asked to review numbers 1 to 5 by saying the numbers aloud, counting concrete objects, and connecting the number of objects with number symbols. This was done to better prepare the children for using digital media.

Cycle II was conducted in a more enjoyable and focused atmosphere. The children appeared more enthusiastic and confident in participating in number recognition games. Whereas in the previous cycle some children were still confused or guessed the numbers, now they were able to recognize and name the numbers correctly. The teacher also gave the children more opportunities to try things themselves and provided assistance to those who still needed help.

The assessment results showed a significant improvement compared to Cycle I. Of the 11 children, 5 children (45%) were in the Developing Very Well (BSB) category, 4 children (36%) were in the Developing as Expected (BSH) category, and 2 children (19%) were still in the Starting to Develop (MB) category. No children were classified as Not Yet Developing (BB). This improvement shows that most children are now able to recognize the symbols 1–5 and associate them with the correct number of objects.

The observations also showed that the children appeared more active, focused, and enthusiastic during the activities. The interactive digital media used proved to be effective in capturing the children's attention and providing a more concrete and enjoyable learning experience. Teachers also played an important role

in guiding and providing reinforcement when children successfully answered questions or recognized numbers correctly.

From the results of the reflection on Cycle II, it can be concluded that the use of interactive digital learning media has proven to be effective in improving the ability to recognize numbers 1–5 in early childhood. This media not only makes it easier for children to understand the concept of numbers visually and interactively, but also fosters self-confidence and a higher interest in learning when accompanied by active and enjoyable teacher guidance.

Table 3: Results of the Cycle 1

NO	NAME	FINAL SCORE	CATEGORY
1	MGAL	93	BSB
2	ZILA	90	BSB
3	Z	93	BSH
4	SAA	78	BSH
5	HR	88	BSH
6	SB	72	BSH
7	NRR	70	MB
8	MA	66	MB
9	AR	67	MB
10	IM	70	MB
11	MR	86	BB
Amount			873
Average value			79,36

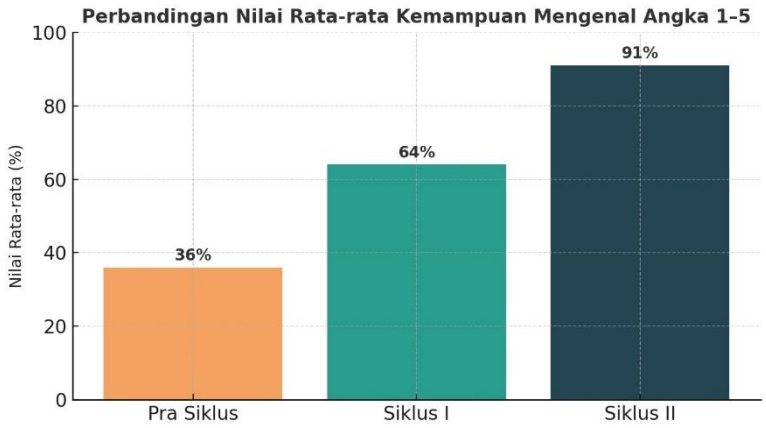
After making improvements based on the reflections from cycle I, the implementation of learning in cycle II showed a significant improvement. The children seemed more accustomed to using interactive digital media to learn numbers 1–5. They no longer had difficulty operating the devices or understanding the instructions in the games. Before the activity began, the teacher first provided a warm-up in the form of repeating the numbers 1–5 together, so that the children could better remember the shapes and sounds of the numbers. During the game, the children seemed enthusiastic about listening to the numbers being called out and matching them with the correct number symbols on the screen. The results showed an increase in the average score from the previous cycle, with no children remaining in the Not Yet Developing (NYD) category and only three children (27%) still in the Beginning to Develop (BBD) stage. Most children showed good cognitive development, especially in recognizing and distinguishing numbers correctly.

The learning atmosphere also became more conducive and enjoyable. The children appear confident when participating in games, and some of them even help friends who still need guidance. This shows that learning with interactive digital media can create a collaborative and enjoyable learning environment. Teachers play an important role in providing appropriate guidance, especially for children who still need repetition and reinforcement. This activity not only improves the children's ability to recognize numbers, but also trains their concentration, accuracy, and independence.

Dari hasil refleksi pada siklus II, peneliti menyimpulkan bahwa penggunaan media pembelajaran digital interaktif sangat efektif untuk meningkatkan kemampuan mengenal angka 1–5 pada anak kelompok A. Kombinasi antara kegiatan bermain, bimbingan guru, serta pengulangan materi yang terencana

memberikan hasil yang optimal. Karena sebagian besar anak telah mencapai kategori Berkembang Sesuai Harapan (BSH) dan Berkembang Sangat Baik (BSB), maka penelitian dihentikan sampai siklus II. Hasil ini memperlihatkan adanya peningkatan nyata dibandingkan dengan kondisi awal dan pelaksanaan pada siklus I. Secara keseluruhan, penerapan media digital interaktif terbukti mampu menumbuhkan minat belajar anak sekaligus memperkuat pemahaman mereka terhadap konsep angka dasar.

Table 4. Improved Number Recognition 1- 5



One effort that can be made to improve the ability to recognize numbers in children aged 4–5 years is to use digital learning media that is interesting and easy to understand, such as digital-based interactive learning media. At this age, children are sensitive to symbols and visual forms. They learn through concrete experiences and fun games. Therefore, the use of media that combines elements of play and learning is very important to help children understand the concept of numbers more easily and enjoyably.

Through interactive digital media, children not only see numbers, but can also interact directly with activities such as matching numbers with the number of objects, pressing buttons according to the numbers mentioned, or following simple games involving the recognition of the symbols 1–5. These activities make children more interested in learning because they are carried out in a relaxed and fun atmosphere. In addition, colorful displays and attractive animations help children more easily remember the shapes and sequences of numbers.

The use of interactive digital media in learning also helps teachers create a more lively classroom atmosphere. Children become more active, dare to try, and are not afraid to make mistakes. The interaction between teachers and children also becomes more communicative because teachers can provide direct guidance while children are playing with the media. In this way, learning becomes not only one-way, but fully involves children in the learning process.

In order for learning media to be used effectively in the classroom, it must be tailored to the abilities and characteristics of early childhood. Good media should have a simple but attractive appearance, use bright colors, soft sounds, and be easy for children to operate. In addition, the content of the media must also be appropriate for the child's stage of development, for example, introducing numbers gradually from 1 to 5, before moving on to the concept of counting. In this study, the application of interactive digital learning media proved to be effective in helping children in group A at the Liunggunung Pembina UPTD Kindergarten to recognize and understand the numbers 1–5 more quickly and enjoyably.

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Figure 1. Game Wordwall

The use of learning media plays a very important role in supporting the development of early childhood skills, especially since children learn through direct experience and play activities. In learning numbers, interactive digital media can be used both individually and in groups. When used individually, children are given the opportunity to explore numbers according to their respective abilities and learning speeds. In this way, children learn more independently and feel in control of their learning process. This is in line with the Reggio Emilia approach, which emphasizes that children are active learners who are able to discover knowledge through exploration and real experiences in their environment.

Meanwhile, the use of digital media in groups also yields positive results. Children can work together, help each other, and share their understanding while playing number recognition games. This interaction fosters a spirit of togetherness and mutual learning among friends. This approach is in line with Lev Vygotsky's theory, which explains that children's learning process will be more optimal if it is done through social interaction, especially with the help of adults or more capable peers.

Figure 2. Learning Wordwall

In this study, the use of interactive digital learning media was proven to help children learn numbers 1–5 more quickly. In the second cycle, children appeared more confident when pointing, reading, and saying numbers, and were even able to help their friends who were still experiencing difficulties. This shows that learning activities packaged in the form of digital games can provide meaningful, enjoyable, and effective learning experiences to improve the cognitive abilities of early childhood.

CONCLUSION

The findings from this study indicate that the use of interactive digital learning media can be an effective solution in helping early childhood children learn numbers 1–5 in a more enjoyable and meaningful way. Through play-based learning activities, children can interact directly with numbers, images, and sounds, making the learning process more lively and less boring. The results of this study illustrate that learning in early childhood education should shift from conventional methods to a more interactive approach that is in line with the times, where technology has become a part of children's lives from an early age.

For early childhood teachers, digital media such as interactive games not only serve as entertainment, but can also be a means to help children understand basic mathematical concepts gradually. Teachers can adjust the content of the game according to the abilities and needs of each child, making learning more personalized and effective. However, it is important to remember that the use of digital media still requires the active role of teachers as companions and guides, so that learning activities remain focused and meaningful.

For future research, it is recommended that the development of digital media involve more participants and diverse learning contexts so that the results can be applied more broadly. In addition, further research can also explore the impact of interactive digital media use on other developmental aspects, such as children's social skills, concentration, and memory. Thus, the application of technology in early childhood education can continue to develop and make a real contribution to improving the quality of education in the future.

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