(Analysis of Children's Cognitive Abilities Through Web-Based Educational Games at TKN Pembina Gondang)

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Abstract

This research is motivated by the use of games which are inseparable from the world of children, it could even be said to be very important for the growth of children's intelligence, the importance of these games is that wherever they are, both at home and in the school environment, various games are now available for children so that the aim of This research is 1) to analyze children's cognitive abilities through web-based educational games and 2) the impact of these games on children's cognitive abilities. The location of this research is TKN Pembina Gondang which is located in the North Lombok area using research methods, namely using qualitative research with a case study approach and the data obtained is analyzed using data analysis, namely data transcription, data reduction, data validation or triangulation, presentation. data and drawing conclusions. So the research results obtained are: 1) The use of web-based educational games is able to influence the cognitive abilities of young children, especially in the aspects of problem solving, logical thinking and symbolic thinking; 2) The use of web-based educational game media, especially Word wall Net, has a positive impact on children's cognitive abilities, because through this game children behave in a way that shows curiosity, have initiative in choosing games, are able to solve problems creatively, use number symbols to calculate, follow the rules, and be able to use technology correctly.

Keywords: *Cognitive Abilities, Web Based Educational Games.*

INTRODUCTION

Early Childhood Education (PAUD) is a coaching effort provided to children from birth to the age of six. In this process, children are given educational stimulation aimed at supporting their physical and mental growth and development. The goal is for children to be prepared to face further education[1].

According to Suyanto in[2] For children aged 4-6 years, Early Childhood Education (PAUD) is the first step in helping to grow children's potential/abilities such as religious, moral, cognitive and language values. Therefore, PAUD should be a place for children to grow and develop their abilities by providing various activities that can stimulate this development, including stimulating children's cognitive development. In this case, teachers have an important role in the learning process, because children's brains at that age are very sensitive to stimulation.

In [3]The cognitive abilities of children aged 5-6 years consist of several parts, namely 1) learning and problem solving, 2) logical, and 3) symbolic. According to[4]children aged 4-7 years are able to group objects into categories even though they are not yet aware of it, children are able to understand logical relationships that increase complexity and children are able to do tasks that involve the concept of numbers according to their age. At this stage of course students need appropriate stimulation for their development.

In today's digitalized world, web-based educational games have become an option or alternative for developing the cognitive abilities of early childhood. This is because games are an inseparable part of a child's world, it could even be said to be very important for the growth of a child's intelligence, games are so important that wherever they are, both at home and in the school environment, various games are now available for children.(Krishnawan, 2020). Games are digital games designed for educational enrichment (supporting teaching and learning[6]. Games can be used by educators as a fun learning medium in the form of the Efwan Dalam game [2]. The use of web-based educational games in learning is something that is fun for children in the concept of learning while playing.

TKN Pembina Gondang is one of the TKNs that has implemented web-based educational games. This is reinforced by the results of an interview conducted with one of the teachers at the Pembina Gondang Kindergarten who stated:

"It was found that the learning process, especially children's cognitive development, tends to focus on learning to count and ignores understanding the concept of numbers. This results in children's low ability to recognize or understand the concept of numbers and even be able to count without understanding the concept of numbers. Therefore, children cannot find answers when learning mathematics is related to everyday life. This learning is essentially very necessary in living everyday life. Apart from that, the use of manual media in learning mathematics is less interesting for children, but children are more interested in digital media so that learning becomes less fun for children. "This web-based educational game is an interesting solution to hone children's cognitive abilities because web-based educational games are designed to prioritize learning to improve children's cognitive abilities in digital form."

This is what makes researchers interested in raising the title Analysis of Children's Cognitive Abilities through Web-Based Educational Games at TKN Pembina Gondang. Because this research aims to determine the extent to which cognitive abilities are stimulated using web-based educational games and whether there is a significant impact on children's cognitive abilities.

METHOD

This research is qualitative research using a descriptive approach, which was carried out at TKN Pembina Gondang. There are two instruments used, namely: 1) Main Instrument, the researcher himself, and 2) supporting instrument, namely a) a test from a web-based educational game tool, namely Word wall Net, which is used to collect data about children's cognitive abilities.

The data obtained was analyzed using data analysis according to[7]namely data transcription, data reduction, data validation or triangulation, data presentation and drawing conclusions. Data obtained from tests of students' cognitive abilities through web-based educational games are also assessed using child development assessment guidelines such as, Not Yet Developing (BB), Starting to Develop (MB), Developing According to Expectations (BSH) and Developing Very Well (BSB).

RESULTS AND DISCUSSION

RESULTS

There are two types of data in this research, namely observation data of subjects playing the web-based educational games provided, and interview data obtained when observations were made. The data acquisition process went through two stages, namely observation I and interviews, then observation II and interviews. After the data is obtained, the next step is data transcription, data reduction, data validation or triangulation through second observations, presenting the data and conclusions.

Based on the exposure and triangulation of data, students' cognitive abilities, both in terms of problem-solving abilities, logical thinking and symbolic thinking, received different scores from the 2 treatments given.

The first treatment was observation I of students only given LKS paper in general and students are welcome to work on the LKS.

Figure 01. An example of a worksheet for students

The students' responses seemed normal and still lots of students who work carelessly. This is reinforced by the results of an interview from Mrs. Sari, the teacher of class A, who stated:

> "If children's worksheets are like this, children are bored and reluctant to do them, children are no longer enthusiastic, so we are sometimes confused about how to design learning every day."

This explanation certainly gives us an idea that the use of LKS or student worksheets is

no longer effective at this time. Therefore, researchers analyzed children's cognitive abilities through different activities, namely through web-based educational games. The results are as follows:

Based on the results of the second observation, children were shown a form of web-based educational game, namely word wall net, which contains interesting pictures and questions designed with a timer and sound to arouse children's motivation and quick-thinking ability.

Figure 02. One example of a web-based educational game (word wall net)

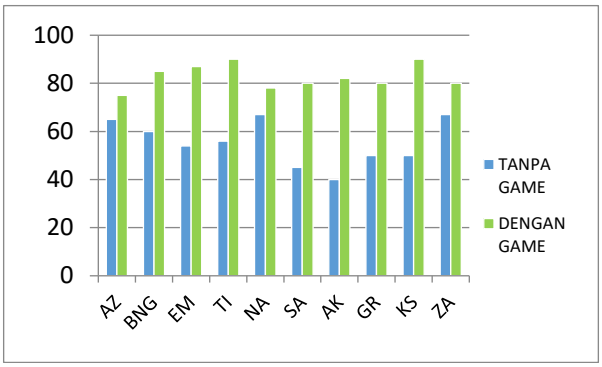
The response found was that children looked more enthusiastic and active when playing the game, children found it easier to answer questions and understood the questions given more quickly, besides that children were quicker to differentiate simple concepts and knew how to solve the problems given.

This is reinforced by the results of interviews conducted with the homeroom teacher of class A who stated:

"Students look more active and find it easier to answer questions with this game, the class becomes more exciting and interactive, the children are no longer passive, everyone is competing to think of a solution to each question given, this certainly makes it easier for us teachers to find appropriate learning. interesting and useful for children's cognitive abilities.

Analysis Using Child Development Assessment Guidelines

Based on analysis of student observation data, it is known that early childhood cognitive abilities related to problem solving abilities, logical thinking and symbolic thinking are at the level of Developing According to Expectations (BSH), meaning that students can already carry out activities related to their cognitive abilities even though they are not yet too fluent and still need help from the teacher to help them find the correct answer for each activity carried out.



Graph 01. Data on differences in cognitive ability results of children use web-based educational games.

DISCUSSION

Development of Children's cognitive abilities include 3 important aspects, namely, 1) problem solving abilities; 2) think logically; 3) symbolic thinking. There are three levels in children's cognitive abilities, namely 1) science, 2) shapes, colors, sizes and patterns, and 3) numbers and letters(IH Seviyanti, A Hasyim, 2013). Basically, the abilities of every child, including early childhood, are different, such as children's cognitive abilities. Some children have high, medium and below standard cognitive abilities.

Likewise, the results of the following research illustrate mark Children's cognitive abilities when applying LKS or student worksheets look much lower because in this activity there are no activities that challenge and stimulate the adrenaline of the child's brain to think quickly in making decisions because children are already used to carrying out these activities so children get bored very easily and fed up.

This is different from using educational games based. This website, especially using Word wall Net, makes students look more active, easy to do or answer questions, and able to solve their own problems. This is in line with his research[9]which states that the use of educational game media, especially word wall net, has a positive impact on children's cognitive

abilities, because through this game children behave in a way that shows curiosity, have initiative in choosing games, are able to solve problems creatively, use number symbols to count, follow rules, and able to use technology correctly.

Apart from that, the use of educational game learning media can also increase the enthusiasm for learning in young children

CONCLUSION

Based on the research results above, it can be concluded that:

1. The use of web-based educational games can influence the cognitive abilities of young children, especially in the aspects of problem solving, logical thinking and symbolic thinking.
2. Utilization of Web-based educational game media, especially Word wall Net, has a positive impact on children's cognitive abilities, because through this game children behave in a way that shows curiosity, have initiative in choosing games, are able to solve problems creatively, use number symbols to count, follow rules, and able to use technology correctly.

SUGGESTION

The use of digital-based media like this is not limited to this game, there are many other web-based applications that can be used as learning media for early childhood. The most important thing is that teachers want to upgrade themselves and want to learn more about digital media because the biggest obstacle is that many teachers are still unable to create learning media using digital media.

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BIBLIOGRAPHY

[1] L. (2017). Rosidah, “Pendidikan dan Perkembangan Anak Usia Dini.,” *FKIP UNTIRTA Publ.*, 2017.

[2] E. Rahmadhani and A. H. Surbakti, “Analisis Kemampuan Berpikir Logis Anak Usia Dini melalui Permainan Montessori,” *J. Obs. J. Pendidik. Anak Usia Dini*, vol. 6, no. 5, pp. 5079–5090, 2022, doi: 10.31004/obsesi.v6i5.1894.

[3] Permendikbud, *Lampiran Kompetensi Dasar Kurikulum Paud 2013*. Jakarta, 2014.

[4] S. M. H. Wahyuni, “Peningkatan Kemampuan Berhitung Melalui Permainan Pohin Hitung Usia 4-5 Tahun,” pp. 1–12, 2019.

[5] G. N. A. Krisnawan, “Rancang Bangun Aplikasi Game Edukasi Untuk Pembelajaran Bahasa Inggris Berbasis Android,” *Konf. Nas. Sist. dan Inform. 2015*, no. 86, pp. 9–10, 2020.

[6] A. . (2011). Cahyo, “Game Khusus Penyeimbang Otak Kanan dan Kiri.,” *Flashbooks.*, 2011.

[7] M. B. M. and A. M. Huberman, *Qualitative Data Analysis (terjemahan)*. Jakarta: UI Press, 2014.

[8] N. N. W. S. I.H Seviyanti, A Hasyim, “PENINGKATAN KEMAMPUAN MENGENAL KONSEP BILANGAN MELALUI KEGIATAN BERMAIN DI TAMAN KANAK-KANAK KARTIKA II-30 PUNGGUR LAMPUNG TENGAH,” *J. Teknol. Inf. Komun. Pendidik.*, vol. 1, pp. 1–15, 2013.

[9] U. Hasanah and G. Gudnanto, “Pemanfaatan Game Edukasi Wordwall Untuk Meningkatkan Kemampuan Kognitif Anak Usia Dini,” *Khazanah Pendidik.*, vol. 17, no. 2, p. 73, 2023, doi: 10.30595/jkp.v17i2.17650.