

Improving The Ability To Recognize The Concept Of Numbers Through The Utilization Of Dinucard Media (Digital Numeral Card) In Children In Group B2 Ta Hidayatul Mubtadi-in Sawojajar, Kota Malang

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Abstract

Number concepts are very important for children to learn basic math concepts that will help avoid failure in the future. This research aims to find out how children aged 5-6 years know the concept of number at Hidayatil Mubtadi-in Sawojajar Kindergarten, Malang City. This research was conducted using the Kemmis and Mc. Taggart followed by 15 children. Data collection techniques include observation, interviews, and documentation used in this study. The results showed that children at Hidayatul Mubtadi-in Sawojajar, Malang City aged 5 to 6 years did not know the concept of number.

Keywords: Early Childhood; Number Concept; Media; Digital Numeral Card

1. Introduction

Education is the process of acquiring, improving and changing children's life knowledge through learning activities (Iriyanto et al., 2021). Early childhood education is preschool education to be given to children from birth to six years during children's development (Shofia & Dadan, 2021). Early childhood is a child who experiences rapid growth and development (Rompas & Wijayanti, 2023).

Development is a qualitative change in psychological or spiritual. Cognitive is everything related to reason and brain ability (Nasution, 2016). Cognitive development is a development that includes the development of the senses and brain abilities (Anggriani & Eliza, 2023). Cognitive development of the ability to understand number concepts of five year old children can count objects by hand, connect numbers with objects, and write their own numbers (Retnaningrum, 2016). Cognitive development is very important for children to process information, learn to evaluate, analyze, remember, compare and understand cause and effect. Factor that affect early childhood cognitive development are divided into four factors, namely: (a) is the factor of heredity or heredity brought from birth, (b) is an environmental factor brought from after birth obtained from the family and schiil environment, (c) is the organ factor brought from the physical and psychological child, and (d) the formation factor brought outside the child (Purnamasari & Nurhayati, 2019). Factors that affect children's cognitive development are divided into seven. First is the hereditary factor or heredity is a factor that children are born already carrying certain potentials that are not obtained from the environment but obtained from both parents. Secon is the environmental factor obtained from the experience and knowledge gained from the child's living environment. Third is the maturity factor is a are relatively permanent change factor that occurs as a result of biological processes that are independent of the environmental factors that affect it. Fourth, organ factor are

physical and psychological factors that can be said to be mature if they have reached the ability to carry out their respective functions which are closely related to chronological age or calendar age. Fifth is the formation factor is the factor of the child's condition outside of himself which can affect the development of intelligence. The sixth is the factor of interest and talent is an innate ability as a potential that needs to be developed and trained to be realized. Seventh is the freedom factor is a factor of children's freedom in thinking spread which means that children can choose certain methods in solving a problem and can also choose problems according to their needs (Zega & Suprihati 2021). The following seven factors can be concluded that the factors that greatly influence the cognitive development of children are environmental factors. Because there are so many successful children from the background of parents who are not highly educated and also several factors from the seven factors above, educational psychology has a role to complement a child in having the ability in cognitive development.

Sodjatmoko (1994) explains that a number is a unit that can be subtracted, added, and multiplied to represent a quantity, such as objects, people, etc., while a number symbol is a symbol that can be used to indicate a number (Haryani, 2014). Triharso (2013) explains that the concept of number is very important for children in recognizing basic math concepts. Delphie (2009), also explains that the concept of number includes some basic abilities of certain objects (Hayati & Fitri, 2016). The concept of number can be achieved by children aged 5-6 years in the following ways: (a) counting or mentioning numbers 1-15, (b) counting by pointing to objects in the concept of numbers with a sequence of numbers 1-15, (c) making a sequence of numbers 1-15, with objects, and (d) connecting or pairing number symbols with a sequence of numbers 1-15 (Reswita & Wahyuni, 2018). Susanto (2011), states that the level of achievement of number concepts for children aged 5-6 year or group B kindergarten children is as follows: (a) counting up to ten, (b) mentioning the order of numbers, (c) making a sequence of numbers 1-15 with objects, (d) connecting number symbols with objects, and (e) distinguishing and making two groups of objects that are the same in number, which are not the same, more or less (Rahman et al., 2017).

Khadijah (2016) explains that the media can be used to convey information from the person giving the information to the person receiving it, so that the person receiving the information can increase thoughts, feelings, and attention (Zaini & Dewi, 2017). Mansyur (2018) explains that *flashcards* are visual learning media cards that contain written information, such as words or numbers (Azhima et al., 2021). Arif in Susanto (2018), states that *flashcard* media has several uses such as: (a) clarifying the presentation of messages so that they are not too verbal, (b) overcoming the limitations of time, space, and sensory power, (c) causing children's excitement in learning, (d) allowing more direct child interaction between teachers and parents when explaining, and (e) allowing children to learn individually according to their abilities and interests (Utami, 2023).

Dinucard (Digital Numeral Card) media is a learning media in the form of small images such as square and rectangular shapes, such as *flashcard* media but researchers change the name of *flashcard* media. *Dinucard* (Digital Numeral Card) media is used to introduce the concept of numbers, as well as the concept of initial numbers using pictures as symbols and explanations on the barcode *Code Generator* (QR).

2. Method

2.1 Research Methods

This research uses Classroom Action Research (PTK) which has a very important role in improving the quality of learning if implemented properly and correctly (Agus et al., 2022). Suharsimi (2008) states that Classroom Action Research is a planning of learning activities in the form of actions, which appear or occur in class together (Haryani, 2014). Classroom Action Research or PTK (Classroom Action Research) with the Kemmis and Mc. Taggart model is used to describe the results of the ability to recognize the concept of numbers in group B2 children of TA Hidayaul Muftadi-in Sawojajar, Malang City.

2.2 Subjects and Objects of Research

The subjects in the study were children in class B2 TA Hidayatul Muftadi-in Sawojajar, Kota Malang City, totaling 15 children with 5 boys and 10 girls, While the object of this research is the improvement of the ability to recognize number concepts through the use of *Dinucard* (Digital Numeral Card) media.

2.3 Time and Place of Research

The research was conducted on B2 grade children at TA Hidayatul Muftadi-in Sawojajar, Malang City, located at Jl. Selat Bengkalis D9-20, from January to May 2024.

2.4 Data Collection Technique

The data collection techniques used in this research are observation, interviews, and documentation which are described as follow:

- a. Observations used in this study were used to collect the ability to recognize the concept of numbers in group B2 children of TA Hidayatul Muftadi-in Sawojajar, Malang City. The instrument used in this observation activity uses a child activity observation sheet.
- b. Interviews are used to ask questions about children's ability to recognize number concepts that are not yet known during observation and documentation techniques. Researchers obtained the results of interviews by interviewing class B2 teachers at TA Hidayatul Muftadi-in Sawojajar, Malang City.
- c. Documentation is used to collect activities of the ability to recognize the concept of numbers of children aged 5-6 years at TA Hidayatul Muftadi-in Sawojajar, Malang City before using *Dinucard* (Digital Numeral Card) media.

2.5 Data Analysis Techniques

The data analysis technique in this study uses quantitative and qualitative data analysis. The results of this quantitative data analysis. The results of this quantitative data analysis were obtained from observations, interviews, and documentation, while the results of qualitative data analysis in this study were obtained from the use of the following formula.

3. Results and Discussion

3.1 Result

3.1.1 Pre-Cycle Research

The results of research on children group B2 TA Hidayatul Muhtadi-in Sawojajar, Malang City pre-cycle show that the ability of number concepts using *Dinucard (Digital Numeral Card)* media can be understood by children group B2 at TA Hidayatul Muhtadi-in Sawojajar, Malang City is presented on the following table:

Table 1. Observation Results of Ability to Recognize Number Concepts in Sawojajar, Malang City Pre Cycle

No	Nama	Skor
1.	AAK	3
2.	AM	3
3.	ABR	5
4.	CA	3
5.	FPA	3
6.	GAN	3
7.	HAAB	5
8.	HRAB	3
9.	IA	3
10.	MBP	5
11.	MRR	3
12.	MAA	5
13.	NHA	3
14.	NNH	3
15.	RAAP	3
Skor Perolehan		53
Skor Maksimal (12x15 anak)		180
(Skor Perolehan : Skor Maksimal) x 100%		29,44%

The results of table 1 above pre cycle research on the ability of number concepts in children in group B2 TA Hidayatul Muhtadi-in Sawojajar, Malang City reached 29,44%, this shows that the indicators have not met the targeted indicators. The results are shown in the following diagram:

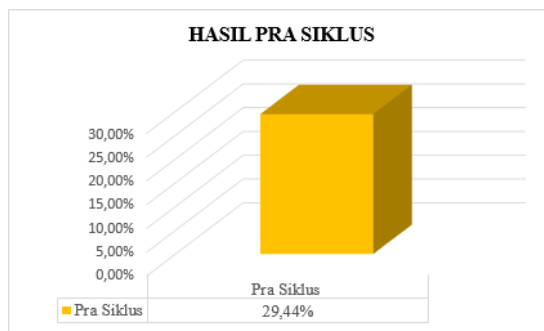


Figure 1. Diagram of Observation Results of Ability to Recognize Number Concepts in Children Group B2 TA Hidayatul Muhtadi-in Sawojajar, Malang City Pre Cycle

The diagram 1 above explains the acquisition of data from the ability of number concepts through the use of pre-cycle *Dinucard* (Digital Numeral Card) media to achieve poor indicator of what is targeted, therefore it is continued to Cycle 1.

3.1.2 Research Cycle I

The results of research conducted on children in group B2 TA Hidayatul Muhtadi-in Sawojajar, Malang City Cycle I showed that by using *Dinucard* (Digital Numeral Card) media, children can understand the concept of numbers, as presented in the following table:

Table 2. Observation Results of Ability to Recognize the Concept of Numbers in Children Group B2 TA Hidayatul Muhtadi-in Sawojajar, Malang City Cycle I First to Third Meeting

No	Nama	Skor
1.	AAK	7
2.	AM	6
3.	ABR	9
4.	CA	6
5.	FPA	7
6.	GAN	6
7.	HAAB	9
8.	HRAB	6
9.	IA	7
10.	MBP	8
11.	MRR	6
12.	MAA	9
13.	Nafiza Hafsah Almahira	7
14.	Nazwa Nurul Hidayah	8
15.	Reva Azzhra Andrea Putri	6
Skor Perolehan		107
Skor Maksimal (12x15 anak)		180
(Skor Perolehan : Skor Maksimal) x 100%		59,44%

The results of table 2 above research on the ability of number concepts in children group B2 TA Hidayatul Muftadi-in Sawojajar, Malang City Cycle I reached 59,44% this shows sufficient indicators of what is targeted as shown in the following diagram:

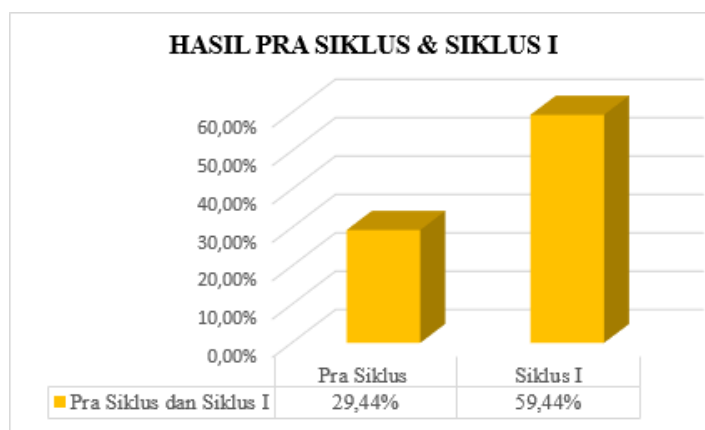


Figure 2. Diagram of Observation Results of Ability to Recognize Number Concepts in Children Group B2 TA Hidayatul Muftadi-in Sawojajar, Malang City Pre Cycle and Cycle I

The diagram 2 above explains the acquisition of data from the ability of number concepts through the use of *Dinucard* (Digital Numeral Card) media Cycle I reached sufficient indicators of what was targeted, so Cycle II was continued because the criteria were still sufficient to meet the expected targets.

3.1.3 Research Cycle II

The results of research on children in group B2 TA Hidayatul Muftadi-in Sawojajar, Malang City Cycle II show that by using *Dinucard* (Digital Numeral Card) media, children can understand the concept of numbers as shown in the following table:

Table 3. Observation Results of Ability to Recognize the Concept of Numbers in Children Group B2 TA Hidayatul Muftadi-in Sawojajar, Malang City Cycle II First to Third Meeting

No	Nama	Skor
1.	AAK	12
2.	AM	9
3.	ABR	12
4.	CA	9
5.	FPA	9
6.	GAN	7
7.	HAAB	19
8.	HRAB	12
9.	IA	10
10.	MBP	11
11.	MRR	9

12. MAA	10
13. NHA	9
14. NNH	12
15. RAAP	7
Skor Perolehan	148
Skor Maksimal (12x15 anak)	180
(Skor Perolehan : Skor Maksimal) x 100	82,22%

The results of table 3 of the above research on the ability to recognize the concept of number in children group B2 TA Hidayatul Muftadi-in Sawojajar, Malang City of criteria indicators are better than what is targeted as shown in the following diagram:

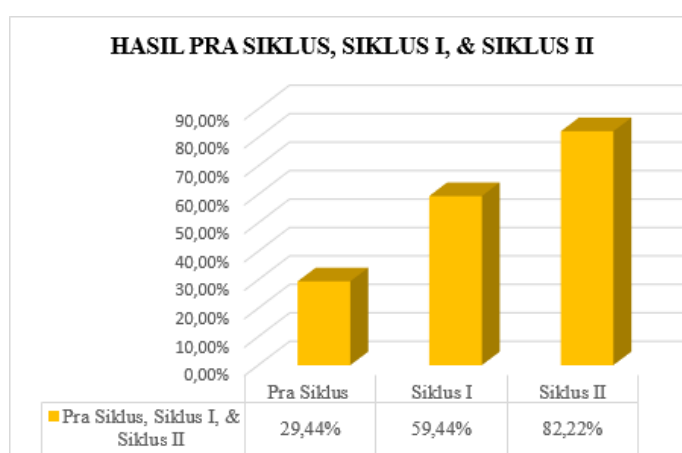


Figure 3. Diagram of Observation Results of Ability to Recognize Number Concepts in Children Group B2 TA Hidayatul Muftadi-in Sawojajar, Malang City Pre Cycle I, and Cycle II

Diagram 3 above explains the acquisition of data from the ability of number concepts through the use of *Dinucard* (Digital Numeral Card) media Cycle II achieved better indicators than what was targeted, so there is no need to continue the next cycle of research.

3.2 Discussion

Before taking action, researchers made observations. Based on observations, the ability to recognize the concept of numbers in group B2 children of Hidayatul Muftadi-in Sawojajar TA, Malang City has not been optimal. Based on pre-cycle research, it is shown that the ability to recognize the concept of number in children of group B2 TA Hidayatul Muftadi-in Sawojajar reached 29.44% in the indicator has not met the targeted indicators. In the implementation of Cycle I, researchers provided explanations and gave examples of how to play in activities to recognize the concept of numbers such as mentioning numbers 1-15, sorting numbers 1-15, and counting the number of pictures on the *Dinucard* (Digital Numeral Card) image reached 59.44% in the indicator sufficient to meet the targeted indicators, but still reached the indicator sufficient to meet the targeted indicators so that the implementation of Cycle II continued. In the implementation of Cycle II, the ability to recognize the concept of numbers in group B2

children of Hidayatul Muftadi-in Sawojajar TA, Malang City reached 82.22%, included in the indicator better than what was targeted. In Cycle II, the ability to recognize the concept of number in children group B2 TA Hidayatul Muftadi-in Sawojajar, Malang City achieved better indicators than what was targeted so that it was considered sufficient to conduct research. Comparison of the results of the ability to recognize the concept of numbers in children group B2 TA Hidayatul Muftadi-in Sawojajar, Malang City in pre-cycle, cycle I, and cycle II can be explained in the table below.

Table 4. Comparison of the Results of the Ability to Recognize the Concept of Numbers in Children Group B2 TA Hidayatul Muftadi-in Sawojajar, Malang City Pre Cycle, Cycle I, and Cycle II

No	Nama	Skor Pra Siklus	Skor Siklus I	Skor Siklus II
1.	AAK	3	7	12
2.	AM	3	6	9
3.	ABR	4	9	12
4.	CA	3	6	9
5.	FPA	3	7	9
6.	GAN	3	6	7
7.	HBAB	5	9	10
8.	HRAB	3	6	12
9.	IA	3	7	10
10.	MBP	5	8	11
11.	MRR	3	6	9
12.	MAA	5	9	10
13.	NHA	3	7	9
14.	NNH	3	8	12
15.	RAAP	3	6	7
Skor Perolehan		53	107	148
Skor Maksimal (12 x 15 anak)		180	180	180
(Skor Perolehan : Skor Maksimal) x 100%		29,44%	59,44%	82,2%

The recapitulation results of table 4 above show that the ability to recognize the concept of numbers in group B2 children of Hidayatul Muftadi-in Sawojajar TA, Malang City pre-cycle reached 29.44%, this shows that the indicators are less in accordance with what is targeted, but there is an increase in Cycle I with the achievement of 59.44%, which shows that the indicators are quite in accordance with what is targeted, and a higher increase occurred in Cycle II with the achievement of 82.22%, this shows that the indicators are better than what is targeted as shown in the following diagram.

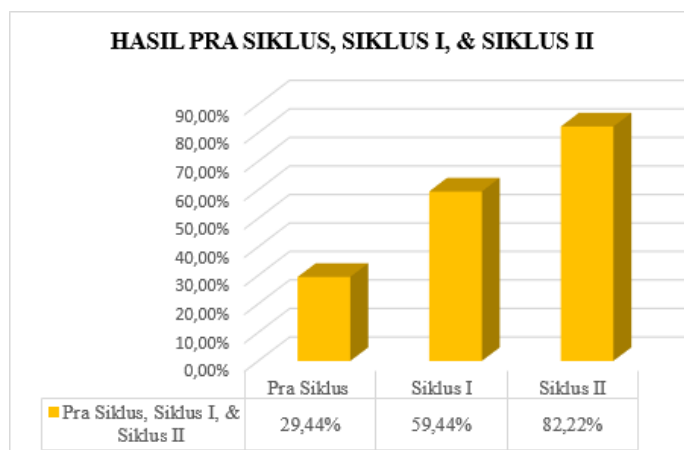


Figure 3. Diagram of Recapitulation of Observation Results of Ability to Recognize Number Concepts in Children Group B2 TA Hidayatul Muftadi-in Sawojajar, Malang City Pre Cycle, Cycle I, dan Cycle II

The diagram above explains the acquisition of the results of the recapitulation of the ability of number concepts through the use of *Dinucard* (Digital Numeral Card) media pre-cycle, Cycle I, and Cycle II has achieved better indicators than what is targeted, so there is no need to continue the next cycle of research.

4. Conclusion

The results of pre-cycle observations showed that the ability to recognize the concept of number in children of group B2 TA Hidayatul Muftadi-in Sawojajar, Malang City reached 29.22% by entering the indicator has not met the targeted indicators. The ability to recognize the concept of number in children group B2 TA Hidayatil Muftadi-in Sawojajar, Malang City has not yet reached the targeted indicators. Therefore, further action is needed in Cycle I to improve the ability to recognize the concept of numbers in group B2 TA Hidayatul Muftadi-in Sawojajar, Malang City, namely by using *Dinucard* (Digital Numeral Card) media.

The increase in the ability to recognize the concept of number through the use of *Dinucard* (Digital Numeral Card) media in group B2 children of Hidayatul Muftadi-in Sawojajar TA, Malang City can be proven by the results of research in Cycle I reaching 59.44% with an indicator that has not met the targeted indicators and further increased in Cycle II reaching 82.22% with an indicator better than what was targeted.

References

- Aisyah, H. N. (2021). Identifikasi Kemampuan Berpikir Simbolik Anak Usia 5-6 Tahun. *Jurnal Pendidikan Anak*, 10(1), 42-49. <https://doi.org/10.21831/jpa.v10i1.38741>
- Agus, J., Agusalm, A., & Irwan, I. (2022). Penerapan Model Pembelajaran Problem Based Learning (PBL) untuk Meningkatkan Hasil Belajar Siswa pada Pelajaran IPS Sekolah Dasar. *Edukatif: Jurnal Ilmu Pendidikan*, 4(5), 6963-6972. <https://doi.org/10.31004/edukatif.v4i5.3845>
- Aisyah, E. N., Iriyanto, T., Astuti, W., & Yafie, E. (2019). Peliharaan Sebagai Media Stimulasi Kemampuan Kognitif Anak Usia Dini. *Jurnal Kajian Teknologi Pendidikan*, 2(3), 174-180. file:///D:/0. KULIAH S3/SEMESTER 4/DISERTASI/1/Mendeley/Aisyah.pdf
- Anggriani, D., & Eliza, D. (2023). Pengaruh Pendekatan STEAM Terhadap Kemampuan Berpikir Kritis Anak Usia 5-6 Tahun. *PAUDIA: Jurnal Penelitian Dalam Bidang Pendidikan Anak Usia Dini*, 13(1), 12-27. <https://doi.org/10.26877/paudia.v13i1.17241>
- Arikunto, S. (2011). Prosedur Penelitian Tindakan Kelas. *Angewandte Chemie International Edition*, 6(11), 951-952., 5-24. <http://repo.iain-tulungagung.ac.id/5510/5/BAB 2.pdf>

- Azhima, I., Meilanie, R. S. M., & Purwanto, A. (2021). Penggunaan Media Flashcard untuk Mengenalkan Matematika Permulaan Pada Anak Usia Dini. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 5(2), 2008–2016. <https://doi.org/10.31004/obsesi.v5i2.1091>
- Haryani, C. (2014). Penerapan Metode Bermain Dengan Media Playdough dalam Meningkatkan Kemampuan Mengenal Konsep Bilangan dan Lambang Bilangan Pada Anak Usia Dini. *Doctoral Dissertation*.
- Hayati, N., & Fitri, R. (2016). Meningkatkan Kemampuan Mengenal Konsep Bilangan Melalui Bermain Bombik Modifikasi pada Anak Kelompok Bermain. *Jurnal PAUD Teratai*, 05(03), 1–5.
- Idham Maulana Yusuf. (2018). Implementasi Modifikasi Permainan Bolabasket Terhadap Hasil Belajar Siswa. *Universitas Pendidikan Indonesia*, 32.
- Iriyanto, T., Aisyah, E. N., & Anisa, N. (2021). Studi Kasus Perilaku Temper Tantrum Anak Usia 5 Tahun Di Tk Laboratorium Universitas Negeri Malang. *Seminar Nasional Jurusan* http://plb.fip.um.ac.id/wp-content/uploads/2021/11/16_Tomas-Iriyanto_81-86-1.pdf
- Mawardi, M. (2018). Designing the Implementation of Model and Instructional Media. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, 8(1), 26–40. <https://doi.org/10.24246/j.js.2018.v8.i1.p26-40>
- Meytawati, A. (2023). Implementasi Model Pembelajaran Mind Mapping Untuk Perbaikan Hasil Belajar Pada Pembelajaran IPAS. *Universitas Pendidikan Indonesia*, 9.
- Nasution, R. A. (2016). Pembelajaran Seni Musik bagi Pengembangan Kognitif Anak Usia Dini. *Jurnal Keguruan UIN Sumatera Utara*, 4(1), 11–20. <http://dx.doi.org/10.30829/raudhah.v4i1.60>
- Purnamasari, A., & Nurhayati, N. (2019). Faktor-Faktor Yang Mempengaruhi Kemampuan Kognitif Anak Usia 5-6 Tahun Di Taman Kanak-Kanak. *KINDERGARTEN: Journal of Islamic Early Childhood Education*, 1(2), 124. <https://doi.org/10.24014/kjiece.v1i2.6657>
- Rahman, T., Sumardi, S., & Fuadatun, F. (2017). Peningkatan Kemampuan Anak Usia Dini Mengenal Konsep Bilangan melalui Media Flashcard. *Jurnal Paud Agapedia*, 1(1), 118–128. <https://doi.org/10.17509/jpa.v1i1.7167>
- Reswita, R., & Wahyuni, S. (2018). Efektivitas Media Pasir dalam Meningkatkan Kemampuan Konsep Bilangan pada Anak Usia 5-6 Tahun di Tk Aisyiyah Bengkalis. *Lectura : Jurnal Pendidikan*, 9(1), 43–51. <https://doi.org/10.31849/lectura.v9i1.927>
- Retnaningrum, W. (2016). Peningkatan perkembangan kognitif anak usia dini melalui media bermain memancing. *Jurnal Pendidikan Dan Pemberdayaan Masyarakat*, 3(2), 207. <https://doi.org/10.21831/jppm.v3i2.11284>
- Rompas, C. A., & Wijayanti, T. D. (2023). Pengembangan Media Treasure Sensory Cube Untuk Meningkatkan Pengalaman Bermain Sensori Bagi Anak Usia 3-4 Tahun. *PAUDIA : Jurnal Penelitian Dalam Bidang Pendidikan Anak Usia Dini*, 13(1), 1–11. <https://doi.org/10.26877/paudia.v13i1.17050>
- Shofia, M., & Dadan, S. (2021). Pembelajaran di Pendidikan Anak Usia Dini. *Jurnal Pendidikan Tambusai*, 05(01), 1561.
- Teologi dan Pendidikan Kristen, J., Perkembangan Kognitif Pada Anak Berkat Karunia Zega Mahasiswa Prodi PAK Sekolah Tinggi Teologi Kanaan Nusantara, P., & suprihati Sekolah Tinggi Teologi Kanaan Nusantara, W. (2021). Veritas Lux Mea (print) Diterbitkan oleh: Sekolah Tinggi Teologi Kanaan Nusantara. *Jurnal Teologi Dan Pendidikan Kristen*, 3(1), 17–24.
- Utami, N. T. (2023). Meningkatkan Kognitif Anak Usia Dini melalui Media Flashcard. *Mitra Ash-Shibyan: Jurnal Pendidikan Dan Konseling*, 6(01), 43–52. <https://doi.org/10.46963/mash.v6i01.692>
- Wijaya, A., & Irianto, T. (2012). Melalui Pemanfaatan Media Kartu Doremi Pada Siswa.
- Zaini, H., & Dewi, K. (2017). Pentingnya Media Pembelajaran Untuk Anak Usia Dini. *Raudhatul Athfal: Jurnal Pendidikan Islam Anak Usia Dini*, 1(1), 81–96. <https://doi.org/10.19109/ra.v1i1.1489>
- Zaman, B., Pd, M., & Eliyawati, H. C. (2010). Media Pembelajaran Anak Usia Dini. *Media Pembelajaran Anak Usia Dini*, 6(1), 34. http://file.upi.edu/Direktori/FIP/JUR._PGTK/197010221998022-CUCU_ELİYAWATI/MEDIA_PEMBELAJARAN_ANAK_USIA_DINI-PPG_UPI.pdf