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Improving Understanding Of Odd And Even Numbers Through Counting With Used Bottle Caps

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Media; Bottle Cap; Odd Even

Abstract

Understanding the concept of numbers is an important foundation in the cognitive development and mathematical abilities of early childhood. One of the basic concepts in numbers is the distinction between odd and even numbers. This ability not only contributes to the understanding of simple arithmetic, but also develops logical thinking and classification skills in children. This study aims to explore the level of understanding of the concept of odd and even numbers in early childhood, identify the strategies they use in distinguishing the two types of numbers, and factors that may influence their understanding. Given the importance of understanding the concept of numbers in preschool age as a foundation for further mathematics learning, this study is expected to provide valuable insights for educators and parents in designing effective learning activities to stimulate understanding of the concept of odd and even numbers in early childhood. This study was conducted as an effort to improve the ability to recognize the concept of odd and even numbers using bottle cap media which was carried out in group B at RAM NU 149 Hidayatul Ulum Benjeng Gresik. This bottle cap media is a media that attracts children's interest in recognizing odd and even numbers because it is a new media for them, and is easy and cheap to obtain. This study was conducted in 2 cycles, each cycle consisting of 4 stages, namely the planning stage, the implementation stage, the observation stage, and the reflection stage in cycle I and cycle II there was a fundamental increase from 48% to 95%. Researchers can conclude that bottle cap media is an effective media for children to introduce the concept of odd and even numbers in Group B.

Kata kunci:
Media; Tutup botol; Ganjil genap.

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Abstrak

Pemahaman konsep bilangan merupakan fondasi penting dalam perkembangan kognitif dan kemampuan matematika anak usia dini. Salah satu konsep dasar dalam bilangan adalah pembedaan antara bilangan ganjil dan genap. Kemampuan ini tidak hanya berkontribusi pada pemahaman aritmatika sederhana, tetapi juga mengembangkan keterampilan berpikir logis dan klasifikasi pada anak. Penelitian ini bertujuan untuk mengeksplorasi tingkat pemahaman konsep bilangan ganjil dan genap pada anak usia dini, mengidentifikasi strategi yang mereka gunakan dalam membedakan kedua jenis bilangan tersebut, serta faktor-faktor yang mungkin memengaruhi pemahaman mereka. Mengingat pentingnya pemahaman konsep bilangan di usia prasekolah sebagai landasan bagi pembelajaran matematika selanjutnya, penelitian ini diharapkan dapat memberikan wawasan berharga bagi pendidik dan orang tua dalam merancang kegiatan pembelajaran yang efektif untuk menstimulasi pemahaman konsep bilangan ganjil dan genap pada anak usia dini. Penelitian ini dilakukan sebagai upaya peningkatan kemampuan mengenal konsep bilangan ganjil dan genap menggunakan media tutup botol yang dilakukan pada kelompok B di RAM NU 149 Hidayatul Ulum Benjeng Gresik. Media tutup botol ini menjadi media yang menarik minat anak untuk mengenal bilangan ganjil dan genap dikarenakan menjadi media yang baru bagi mereka, serta mudah dan murah untuk

didapatkan. Penelitian ini dilakukan dalam 2 sikus yang pada setiap siklusnya terdiri dari 4 tahapan yaitu tahapan perencanaan, tahapan pelaksanaan, tahapan pengamatan, serta tahapan refleksi pada siklus I dan siklus II terjadi peningkatan yang mendasar dari 48% menjadi 95%. Peneliti dapat menyimpulkan bahwa media tutup botol menjadi media yang efektif bagi anak untuk mengenalkan konsep bilangan ganjil dan genap pada Kelompok B.

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INTRODUCTION

Early Childhood Education (PAUD) is an effort to foster children from birth to the age of six through educational stimulation to help the physical and spiritual growth of children so that they are ready to enter the next level of education (Mulyasa, 2022). Aspects of child development that must be developed have been emphasized in the Permendikbud including aspects of religious and moral values, physical-motor, cognitive, language, social-emotional, and art which are reflected in the balance of attitude, knowledge, and skills competencies (M. Arif, 2024).

Early childhood is the right age to instill basic knowledge that is in accordance with the stages of child development. Early childhood is an individual's experience of a very rapid growth and development process, even said to be a developmental leap. Cognitive is a highly mental activity involving activities to capture, select, manage, and store information from outside and use it when needed (Agus, 2018; Handayani, Mariana, & Juita, 2023). Cognitive development is a process where individuals or someone can improve their ability to use their knowledge.

Children's cognitive development begins early (Adriany, 2024; A.Ghani, 2021), through interactions that occur between children and their views on events in the environment. Cognitive skills are also called mathematical skills, including the ability to mentally process logical problems and equations and to understand numbers and their relationships with each other (Hartati, Suhendri, & Nurhayati, 2021). Mathematical skills need to be introduced from an early age, where in the early stages, children must first be introduced to how to recognize, count, add, subtract, and understand simple number concepts (Abidin, Mulyati, & Yunansah, 2021).

Initial observations made by researchers in early February 2024 at RAM NU 149 Hidayatul Ulum Purworejo, found that children in group B were not yet able to recognize odd and even numbers well. Based on these problems and considering the importance of cognitive abilities for early childhood, teachers can choose various models, methods, and media. Teaching methods that are

appropriate to the characteristics of early childhood include: playing, field trips, talking, storytelling, demonstrations, projects, and assignments (Jesica Dwi Rahmayanti & Muhamad Arif, 2021; Siswanto, Zaelansyah, Susanti, & Fransiska, 2019). The application of these various methods requires a teacher to have strong motivation within himself to increase the knowledge he already has in creating creative learning media for the implementation of the previously planned learning process (Muhamad Arif, Harun, & Aziz, 2022; Sriwahyuni, Asvio, & Nofialdi, 2017)

The teaching media provided must be interesting, varied, and fun. One of the media that is believed to be very effective to use is bottle cap media (Abubakar, Irawaty, & Sahriana, 2018; Zumrotun & Attalina, 2020). Bottlecap media is one of the items that can be used as a learning medium in understanding mathematical concepts for early childhood, especially in terms of recognizing odd and even numbers in a fun and interesting way (Triastuti, Jayadi, Budiningsih, & Primadhita, 2022). Based on the background explanation, the author is interested in improving the ability to recognize odd and even numbers by using bottle cap media, where the media is a concrete object that is easy to find and can be used in the learning process for early childhood. For this reason, the author wants to conduct a study entitled "Improving the Ability to Recognize the Concept of Odd and Even Numbers Through Counting Activities Using Used Bottle Cap Media for Group B Students at RAM NU 149 Hidayatul Ulum Purworejo, Metatu Village, Benjeng District, Gresik Regency, East Java Province".

RESEARCH METHOD

Classroom Action Research (CAR) is the research method chosen by the author in this study. The researcher considers that Classroom Action Research is an action research that combines substantive actions and research procedures; this research is a disciplined action controlled by investigation, in the development and empowerment process, the efforts of someone who is actively involved are needed to understand certain problems that occur during the research process (Rosmawar, Nasriadi, & Hayati, 2021).

This research is participant research, namely the researcher is directly involved in the research process from the beginning to the results of the research in the form of a report (Ananda, Rafida, & Syahrum, 2015; Muhamad Arif, 2023). This study consists of two variables, namely variable X and variable Y. Variable X (application of used bottle cap media) and variable Y (students' numeracy skills). The subjects of this classroom action research (CAR) were students in group B RAM NU 149 Hidayatul Ulum Benjeng Gresik totaling 17 children, consisting of 9 boys and 8 girls. This is because there are still many children in

group B who still have difficulty in recognizing odd and even numbers. The researcher acts as a class teacher with students who are learning, while the object is the implementation of teachers using bottle cap media to improve the ability to understand odd and even numbers in AUD at RAM NU 149 Hidayatul Ulum Benjeng Gresik.

The researcher chose the research location at the RA because the researcher's position as a teacher at the RA happened to be. Where, there has been an interaction between the researcher and the research subjects (Creswell, Hanson, Clark Plano, & Morales, 2007), so it does not take too long. In addition, the goal is as an effort to improve the understanding of odd and even numbers by using bottle cap media which has never been done by teachers. Because according to the researcher's observations so far there are still some students who are less interested and less enthusiastic in this learning. The data from this study consists of: a) Student learning data on the ability to recognize odd and even numbers of children before applying used bottle cap media for group B students at RAM NU 149 Hidayatul Ulum Benjeng Gresik. b) Data on student learning about the ability to recognize odd and even numbers after applying used bottle cap media for group B students at RAM NU 149 Hidayatul Ulum Benjeng Gresik. c) Data on increasing the ability to recognize odd and even numbers through used bottle cap media for group B students at RAM NU 149 Hidayatul Ulum Benjeng Gresik. In this study, to facilitate data collection to evaluate learning outcomes, it was carried out in stages that were arranged per cycle. The data source for this study was group B students at RAM NU 149 Hidayatul Ulum Benjeng Gresik

RESEARCH RESULTS AND DISCUSSION

The indicators set by the researcher for students' ability to understand the concept of odd and even numbers are being able to classify numbers, being able to explain differences, and being able to apply them in real contexts. The steps of the activities carried out in the learning process are as follows: First, students are invited to take a picture of a fish at random. Second, ask students to rub the tail of the fish covered in colored paste using the coins provided so that the numbers on the tail of the fish are visible. Third, students are invited to count and arrange bottle caps with the number on the fish's tail by arranging them in pairs of 2-2. Fourth, the teacher reinforces the concept that if there is a bottle cap that is arranged that does not have a pair, it is called an odd number and if it has all pairs, it is called an even number. Fifth, students insert a picture of a fish into the cat's mouth media according to the type of number.

The researcher will explain the presentation of the research results obtained during the activities in Group B at RAM NU 149 Hidayatul Ulum Benjeng Gresik in this section. The researcher conducted classroom action research in this group with 2 cycles and there were 4 stages in each cycle starting from planning, implementing actions, observation, and reflection. The following are the research results obtained in cycle I:

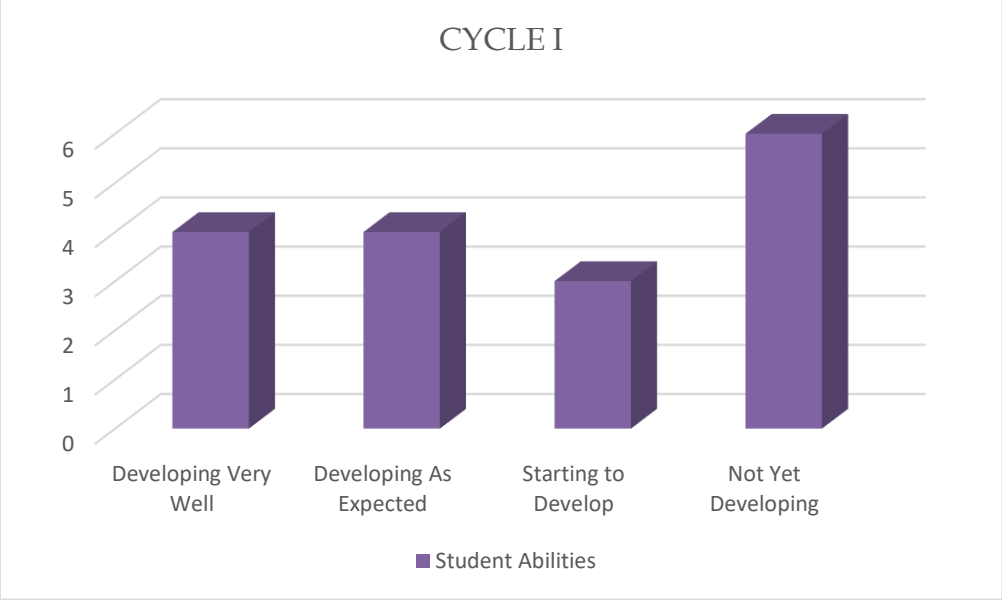

Figure 1. Bar chart of cycle I activity results

The bar chart above shows that children's ability to recognize the concept of odd and even numbers is not good. Of the 17 children, there are still some children who have not developed the ability to recognize the concept of numbers. (34%) namely, 6 children still have not been able to develop the ability to recognize the concept of odd and even numbers. (18%) namely, 3 children are starting to develop, (24%) 4 children are developing as expected, and (24%) 4 children have developed very well. This shows that not all students can recognize the concept of odd and even numbers well so the researcher continues this research with the next cycle, namely cycle II, to be by the success indicators that have been set by the researcher.

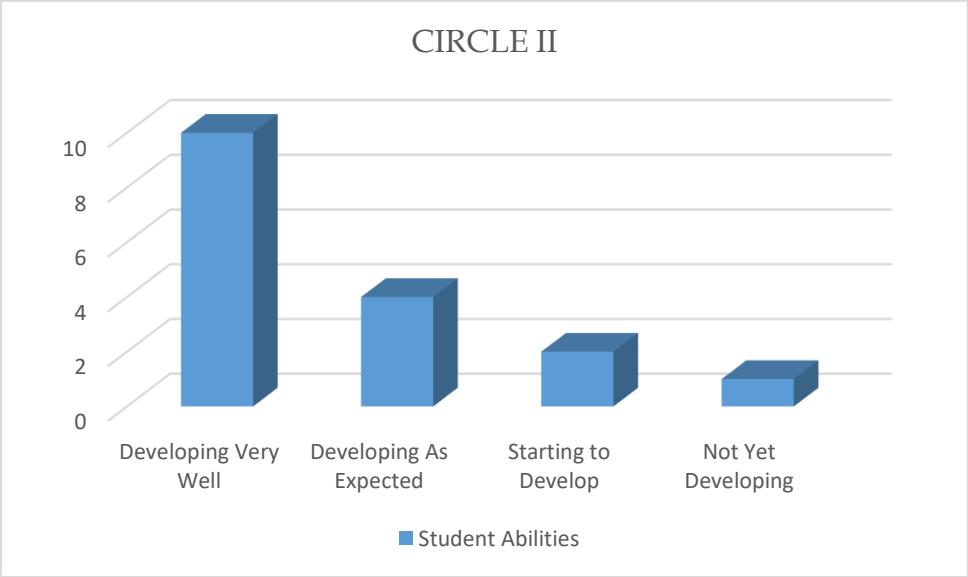

Figure 2. Bar chart of cycle II activity results

Through the results of the bar chart above, it shows an increase in the ability to recognize the concept of numbers as follows: 1 child (5%) has not developed, 2 children (12%) are starting to develop, (24%) 4 children are developing as expected, and (59%) 10 children are developing very well. Through the improvement of activities in cycle II, it was found that in cycle II there was an increase in the introduction of the concept of odd and even numbers exceeding the success indicators set by the researcher. Furthermore, the researcher concluded the results of this study in cycle II. Based on the results of the study, show that the use of bottle cap media on the ability to recognize the concept of odd and even numbers in Group B RAM NU 149 Hidayatul Ulum Benjeng Gresik developed very well. This can be seen from the results of the pre-cycle and cycle obtained in the children's ability to recognize the concept of odd and even numbers. In line with research at TK Meulati Mon Pasong West Aceh (Nurma, 2019), children's cognitive abilities increased through activities with bottle cap media. This is in line with the results of research at RA Muslimat NU 007 Gandu I Mlarak Ponorogo that students' numeracy skills increase when using bottle cap media (Amalia, 2022; Sholihah & Fatimah, 2020).

From several existing studies related to the use of bottle cap media, many have focused on introducing the concept of numbers and counting, but research that focuses on introducing the concept of odd and even numbers has become a new value in this study. So this study can be a reference material for educators in developing the ability to recognize the concept of odd and even numbers in group B children.

Figure 3. Numbering the fish tail image

Figure 4. The process of covering the number section using colored paste.

Figure 3: Cat head media

Innovations made by educators in utilizing objects around students, including bottle caps, become something interesting so that students' learning motivation increases when they are involved in interesting and creative activities.

The results can be seen from the increase in students' cognitive abilities (Kinasih, 2023). The use of bottle cap media that is easily found by students in everyday life will provide a bridge of knowledge to understand the concepts that have been received and build them through the learning process according to Piaget's cognitive constructivism theory (Abdullah, 2019; Piaget, 1999).

Figure 5; The process of attaching the bottle cap

The results of the research that has been conducted are also in line with other studies that also have a major contribution in the use of used goods as learning media in introducing early mathematics to early childhood students, especially at preschool age, easily and without endangering students (Akçay, 2016; Aprilliani et al., 2022; Melly, 2021). When in this activity students are encouraged to be active in activities that require conceptual understanding and gain learning experience and find conceptual understanding for themselves (Jacoby & Edlefsen, 2019; Keyhan, 2020; Nurhayati, 2024), then learning will be more meaningful.

CONCLUSION

Based on the results of the research and the discussion that has been presented, the researcher can conclude that the use of bottle cap media is effective in improving children's cognitive abilities in recognizing the concept of odd and even numbers in Group B. The activity of recognizing the concept of odd and even numbers through bottle cap media can be interesting for children to develop their cognitive abilities in recognizing and understanding the concept of odd and even numbers more creatively and interestingly.

The advantage of this study lies in the use of simple, easily obtained, and environmentally friendly learning media, namely used bottle caps, which can attract children's interest in learning and increase their active involvement in the learning process. However, this study also has limitations, including the scope of subjects which is limited to only one age group (Group B) and is carried out in a relatively short time, so that the results cannot necessarily be generalized to other age groups or learning contexts. Therefore, it is recommended that further research be carried out with a wider reach, both in terms of the number of students, age levels, and variations in learning media used, to strengthen the findings and produce more effective learning strategies in introducing basic mathematical concepts for early childhood.

REFERENCES

Abdullah, S. M. (2019). Social Cognitive Theory: A Bandura Thought Review published in 1982-2012. *PSIKODIMENSIA*, *18*(1), 85. https://doi.org/10.24167/psidim.v18i1.1708

Abidin, Y., Mulyati, T., & Yunansah, H. (2021). *Pembelajaran Literasi: Strategi Meningkatkan Kemampuan Literasi Matematika, Sains, Membaca, dan Menulis*. books.google.com. Retrieved from https://books.google.com/books?hl=en&lr=&id=M_UrEAAAQBAJ&oi=fnd&pg=PA1&dq=literasi+menulis&ots=_L963R0M2l&sig=CxCAjVHzdOaJecPhmS_VOzq52Ic

Abubakar, S. R., Irawaty, I., & Sahriana, N. (2018). Mass Media in Perspective of Parents Preschoolers in Kendari. *Proceedings of the 4th International Conference on Early Childhood Education. Semarang Early Childhood Research and Education Talks (SECRET 2018)*, (Query date: 2025-02-08 11:33:58). https://doi.org/10.2991/secret-18.2018.23

Adriany, V. (2024). Early Childhood Education in Indonesia. In L. P. Symaco & M. Hayden (Eds.), *International Handbook on Education in Southeast Asia* (pp. 303–326). Singapore: Springer Nature. https://doi.org/10.1007/978-981-16-8136-3_28-1

A.Ghani, S. H. (2021). Understanding the Basic Concepts Of Early Childhood Education in Islamic Education. *Jurnal Paradigma*, *13*(2), 124–151. https://doi.org/10.53961/paradigma.v13i2.84

Agus, Z. (2018). Konsep Pendidikan Islam Terhadap Pendidikan Anak Usia Dini (PAUD). *Raudhah Proud To Be Professionals: Jurnal Tarbiyah Islamiyah*, *3*(1), 39–56.

Akçay, N. O. (2016). Implementation of Cooperative Learning Model in Preschool. *Journal of Education and Learning*, *5*(3), 83–93.

Amalia, M. N. (2022). Pengaruh Pembelajaran Jarak Jauh Melalui Media Radio Terhadap Kreativitas Anak Usia Dini di PAUD Persis Kecamatan Katapang Kabupaten Bandung. *Journal of Islamic Early Childhood Education (JOIECE): PIAUD-Ku*, *1*(1), 34–42. https://doi.org/10.54801/piaudku.v1i1.98

Amma, T., & Rifa'i, M. A. (2022). Knowledge as A Factor That Affects The Validity and Interest in Carrying out Islamic Law. *Nazhruna: Jurnal Pendidikan Islam*, *5*(2), 843–851. https://doi.org/10.31538/nzh.v5i2.2337

Ananda, R., Rafida, T., & Syahrum, S. (2015). *Penelitian tindakan kelas*. Retrieved from http://repository.uinsu.ac.id/2464/1/ISI%20PENELITIAN%20TINDAKAN%20KELAS.pdf

Aprilliani, K., Adibah, L. M., Akyuni, L. Z., Khoerunnisa, S. R., Afifah, J. N., & Maranatha, J. R. (2022). Motion Graphics Video as Learning Media to Improve the Empathy of Preschool Children. *KINDERGARTEN: Journal of Islamic Early Childhood Education*, *5*(2), 227–227. https://doi.org/10.24014/kjiece.v5i2.18857

Arif, M. (2024). The Existence of Madrasah Ibtidaiyah Based on Pesantren: Challenges and Opportunities in The Digital Era. *Munaddhomah*, *5*(4), 367–382. https://doi.org/10.31538/munaddhomah.v5i4.1401

Arif, Muhamad. (2023). *Karya Tulis Ilmiah: Implementasi Chatgpt Dan Manajemen Referensi Menulis*. Jambi: PT. Sonpedia Publishing Indonesia.

Arif, Muhamad, Harun, M., & Aziz, M. K. N. bin A. (2022). A Systematic Review Trend of Learning Methods for Reading the Kitab Kuning at Pesantren (2000-2022). *Journal of Islamic Civilization*, *4*(2), 146–164. https://doi.org/10.33086/jic.v4i2.3578

Badri, K. N. bin Z. (2022). Balanced Education According to Imam Al-Zarnuji. *Tafkir: Interdisciplinary Journal of Islamic Education*, *3*(2), 135–147. https://doi.org/10.31538/tijie.v3i2.177

Creswell, J. W., Hanson, W. E., Clark Plano, V. L., & Morales, A. (2007). Qualitative research designs: Selection and implementation. *The Counseling Psychologist*, *35*(2), 236–264.

Handayani, S., Mariana, M., & Juita, A. K. (2023). Implementasi Pembelajaran Pengembangan Kognitif AUD dengan Mengenal Angka 1-20 pada Anak Kelompok B: Implementation of AUD Cognitive Development Learning by Recognizing Numbers 1-20 in Group B Children. *Absorbent Mind*, *3*(1), 43–52. https://doi.org/10.37680/absorbent_mind.v3i1.2313

Hartati, L., Suhendri, H., & Nurhayati, N. (2021). PENINGKATAN KETERAMPILAN MATEMATIS SISWA MELALUI INOVASI MEDIA PEMBELAJARAN MATEMATIKA. *Jurnal Berdaya Mandiri*, *3*(2), 698–707. https://doi.org/10.31316/jbm.v3i2.1602

Jacoby, J. W., & Edlefsen, K. (2019). "I Love Paw Patrol!": Book Selection and the Allure of Popular Media Characters Among Preschoolers. *Journal of Research in Childhood Education*, *34*(2), 208–222. https://doi.org/10.1080/02568543.2019.1677826

Jesica Dwi Rahmayanti & Muhamad Arif. (2021). Penerapan Full Day School Dalam Mengembangkan Budaya Religius di Sekolah Dasar Muhammadiyah 1 Menganti Gresik. *eL Bidayah: Journal of Islamic Elementary Education*, *3*(1), 11–31. https://doi.org/10.33367/jiee.v3i1.1551

Keyhan, J. (2020). Designing a Model of Religious Education Strategies for Preschool Children in the Family (Mixed Research (. *Applied Issues in Quarterly Journal of Islamic Education*, *5*(1), 61–92. https://doi.org/10.29252/qaiie.5.1.61

Kinasih, A. R. (2023). Meningkatkan Kemampuan Mengenal Lambang Bilangan 1-10 Menggunakan Media Tutup Botol Pada Kelompok B 2. *AUDIENSI: Jurnal Pendidikan Dan Perkembangan Anak*, *2*(2), 139–147.

Melly, Y. (2021). Peningkatan Kemampuan Mengenal Angka Melalui Pemanfaatan Media Barang Bekas Pada Kelompok B Tk Negeri Pembina Kecamatan Melak. *Gawi: Journal of Action Research*, *1*(2), 56–62.

Mulyasa, H. E. (2022). *Manajemen pendidikan karakter*. Bumi Aksara. Retrieved from https://books.google.com/books?hl=en&lr=&id=GT6AEAAAQBAJ&oi=fnd&pg=PP1&dq=pendidikan+karakter&ots=sevHPa_3jc&sig=p7GXAfU4gaD61oVwdXf9f-vH5Po

Nurhayati. (2024). Exploring Online Preschool Programs in children's academic preparation for elementary school: A case study in Indonesia. *Cogent Education*, *11*(1). https://doi.org/10.1080/2331186X.2024.2433818

Nurma, M. (2019). *MELALUI MEDIA TUTUP BOTOL DI TK MEULATI MON PASONG ACEH BARAT Muthmainnah, Nurma Keywords: Melibatkan kegiatan menangkap, menyeleksi, mengelola, menyimpa n seseorang*. V.

Piaget, J. (1999). *The Construction of Reality in the Child*. United States of America: Routledge is an im print o f the Taylor & Francis Group.

Rosmawar, R., Nasriadi, A., & Hayati, F. (2021). MENINGKATKAN KEMAMPUAN MENGENAL KONSEP BILANGAN MELALUI KEGIATAN BERHITUNG MENGGUNAKAN MEDIA TUTUP BOTOL PADA ANAK KELOMPOK B-2 TK KARYAWAN KOTA BARU. *Jurnal Ilmiah Mahasiswa Pendidikan*, *2*(2). Retrieved from https://jim.bbg.ac.id/pendidikan/article/download/539/210

Sholihah, A. M., & Fatimah, S. (2020). Penerapan media tutup botol bekas untuk meningkatkan kemampuan berhitung siswadi ra muslimat nu 007 gandu i mlarak ponorogo. *AL-MIKRAJ Jurnal Studi Islam Dan Humaniora (E-ISSN 2745-4584)*, *1*(1), 19–36.

Siswanto, S., Zaelansyah, Z., Susanti, E., & Fransiska, J. (2019). Metode pembelajaran anak usia dini dalam generasi unggul dan sukses. *Paramurobi: Jurnal Pendidikan Agama Islam*, *2*(2), 35–44.

Sriwahyuni, E., Asvio, N., & Nofialdi, N. (2017). Metode Pembelajaran Yang Digunakan Paud (Pendidikan Anak Usia Dini) Permata Bunda. *ThufuLA: Jurnal Inovasi Pendidikan Guru Raudhatul Athfal*, *4*(1), 44–62.

Terry, G. R. (1977). *Principles of Management*. R. D. Irwin.

Triastuti, Y., Jayadi, J., Budiningsih, S., & Primadhita, Y. (2022). Media Pembelajaran Tutup Botol untuk Pendidikan Anak Usia Dini. *Jurnal Abdimas IPWIJA*, *1*(2), 6–11.

Zumrotun, E., & Attalina, S. N. C. (2020). Media Pembelajaran Tutup Botol Pintar Matematika Meningkatkan Hasil Belajar Matematik. *MIMBAR PGSD Undiksha*, *8*(3), 499–507. https://doi.org/10.23887/jjpgsd.v8i3.29191