



Loose Part Learning Media on Natural Materials on Children's Cognitive Development

Ifrochah^{1*}, Mustadji² 

^{1,2} Department of Primary Education, State University of Surabaya, Indonesia

*Corresponding author: ifrochah.19007@mhs.unesa.ac.id

Abstrak

Saat ini banyak anak usia dini yang masih kurang aktif dalam belajar. Salah satu penyebabnya adalah kurangnya penerapan model dan penggunaan media pembelajaran, sehingga anak kurang tertarik dalam belajar. Pemanfaatan Media Bagian Lepas untuk perkembangan anak usia dini sangat penting untuk melatih kreativitas, konsentrasi, keterampilan motorik, keterampilan motorik kasar, sains, pengembangan literasi, seni, berpikir matematis, teknik, dan teknologi. Penelitian ini bertujuan untuk menganalisis pengaruh penggunaan media pembelajaran loose part natural terhadap peningkatan perkembangan kognitif anak. Jenis penelitian ini menggunakan eksperimen dengan pendekatan kuantitatif. Sampel dalam penelitian ini adalah 32 anak. Metode yang digunakan untuk mengumpulkan data adalah observasi, wawancara, dan angket. Instrumen penelitian terdiri atas lembar observasi, dokumentasi, dan bahan ajar lepas. Uji prasyarat analisis terdiri atas uji normalitas, uji homogenitas, dan uji ANOVA satu arah untuk teknik analisis data. Hasil penelitian menunjukkan adanya pengaruh yang signifikan antara penggunaan media pembelajaran loose part natural terhadap perkembangan kognitif pada anak. Secara statistik nilai F -hitung = 7,318, dengan taraf signifikan (sig) kurang dari 5%. Hasil penelitian menjelaskan bahwa media bagian lepas dapat membantu merangsang motorik halus anak sehingga motorik halus anak dapat berkembang secara optimal. Dengan demikian, pembelajaran yang menggunakan media loose part dapat merangsang motorik halus anak.

Kata kunci: Media pembelajaran, Bagian lepas, Kognitif

Abstract

Currently, many young children are still less active in learning. One of them is the lack of learning models and media so that children are less interested in learning. Utilization of Free Media for early childhood development is essential to train creativity, concentration, motor skills, gross motor skills, science, literacy development, art, mathematical thinking, technique, technology. This study aims to analyze the effect of using loose part natural learning media on increasing children's cognitive development. This type of research uses an experiment with a quantitative approach. The sample in this study was 32 children. The method used to collect data is observation, interviews, and questionnaires. The research instrument consisted of observation sheets, documentation, and freelance teaching materials. The analysis prerequisite test consisted of normality test, homogeneity test, and one-way ANOVA test for data analysis techniques. The results showed a significant effect between the use of loose part natural learning media on cognitive development in children, statistically the F -count = 7.318 with a significant level (sig) of less than 5%. The study results explained that the loose part of the media could help stimulate children's fine motor skills so that children's fine motor skills can develop optimally. Thus, learning using loose part media can stimulate children's fine motor skills.

Keywords: Learning media, Loose part, Cognitive

History:

Received : August 02, 2021

Revised : August 10, 2021

Accepted : October 02, 2021

Published : October 25, 2021

Publisher: Undiksha Press

Licensed: This work is licensed under a Creative Commons Attribution 4.0 License



1. INTRODUCTION

Early Childhood Education is a coaching effort aimed at children from an early age which is carried out through the provision of educational stimuli to help physical and spiritual growth and development (Nur et al., 2018; Sutrisno et al., 2021; Yoshikawa et al., 2018). So that children have the readiness to enter further education held on formal, non-formal, and informal. Early Childhood Education is a level of education before primary education that

aims to foster children from birth to the age of six years, which is carried out by providing educational stimuli to help stimulate spiritual and physical development and growth so that children have readiness in entering further education (Allen & Kelly, 2015; Kusumaningrum & Wahyono, 2020; Mustika Sari et al., 2018). Standards for Achievement Levels of Early Childhood Development are criteria for the abilities achieved by children in all aspects of development and growth, including aspects of religious and moral values, physical-motor, cognitive, language, socio-emotional, and artistic (Hasanah, 2016; Musyarofah, 2018). The need to improve education that can hone reasoning, such as in the field of Science and Technology, but in reality, education in Indonesia is still far behind in quality compared to developed countries (Fitria, 2018; Putrawangsa & Hasanah, 2018).

Currently, many young children are still less active in learning. One of them is that the teacher's learning model is less innovative, so students feel bored in learning (Iswantiningtyas & Wulansari, 2019; Khadijah et al., 2021; Watini, 2019). Teachers who are only the center of learning will make students feel bored easily when studying in class. In addition, the lack of learning media also causes children to have difficulties in learning (Aisyah et al., 2019; Handayani, 2020; Nurwahidah et al., 2021). Less innovative learning media will make it difficult for students to understand learning materials (Debeturu & Wijayaningsih, 2019; Ningsih & Mahyuddin, 2021). It is what causes learning media to be needed in learning. Lack of motivation and enthusiasm for children's learning will impact children's low ability levels (Mulyani et al., 2020; Nasution et al., 2020; Pebriana, 2017). It will also impact children's lower learning outcomes (Koedoes et al., 2020; Triutami et al., 2014). Teachers must pay attention to the models and learning media used in learning so that children will be facilitated in learning.

The process of building children's creativity is closely related to students' cognition. Children can form symbolic schemes in the cognitive process and make abstractions of letters that are introduced into an image and verbal code (Kaskens et al., 2020; Nurhayati & Rasyid, 2019; Puspitasari et al., 2021). So after the child knows, the child will imitate the pattern to remember and repeat it. Cognitive can also be interpreted as verbal ability, problem-solving ability, and ability to adapt and learn from everyday life experiences. Early childhood cognitive development is in the pre-operational stage (Beazley et al., 2018; Irmansyah et al., 2020; Wijayanti, 2019). In this phase, children begin to express their world through images, words, and pictures. Cognitive development is fantasy, creative and free. Imagination in self will work all the time, and the world's reach will continue to grow (Gottzén & Sandberg, 2017; Hua & Wang, 2021). It means that the child begins to be able to describe the situation in the surrounding environment.

The emergence of the STEAM approach with Loose Part Media is an innovation in the world of modern education in the form of a learning unit to improve scientific thinking skills that can be carried out by all levels of education, including early childhood education and Loose Part-based media are used to stimulate children's creativity (Bayles et al., 2021; Hobri et al., 2021). Existing desires and abilities are stimulated and nurtured so that they get the ability to create something and feel satisfied with the results of their creation. Satisfaction with this result encourages children to want always to create something new that encourages children to be more creative (Nikel, 2020; Wong & Russak, 2020). Furthermore, early childhood requires much stimulation in various aspects of development, one of which is playing (Birhan et al., 2021; Bus et al., 2020; Polat & Aydın, 2020). The game that is still hot in early childhood education that stimulates children's development playing abilities is Loose Part. Loose Part is a game that uses materials that can be moved, carried, combined, redesigned, aligned, separated, and put back together in various ways. These materials are materials that can be used independently or combined with other materials in various ways. Loose parts could be used as STEAM learning materials because they are my children's

characteristics, adapted and manipulated in many ways, and support children's creativity and imagination can develop children's ideas (Perignat & Katz-Buonincontro, 2019; Wahyuni & Reswita, 2020; Wahyuningsih et al., 2020). The main loose parts are made from natural and synthetic materials. Examples: stones, sand, gravel, cloth, twigs, wood, pallets, balls, buckets, baskets, boxes, logs, stones, flowers, ropes, tires, balls, shells, and seed pods.

The process of using Loose Part encourages children to make observations and research the objects that will be used (Mubarokah, 2021; Qomariyah & Qalbi, 2021). Loose Part is an object that is free to play and cannot be predicted what it will become. This media game supports the development of children's different and unique mindsets (Elan et al., 2017; Kristiana et al., 2017). This media does not have bound rules in the game, so that it allows children to create unlimited creations and can continue to be explored by children. The urgency of using Loose Parts in early childhood learning, Due to Loose Parts is a medium of teaching materials whose usefulness in children's education is never-ending. Loose part teaching materials can explore various aspects: Problem-solving, creativity, concentration, fine motoric, gross motoric, science, literacy development, art, mathematical thinking, logic, engineering, technology. In addition, children will be creative with the principle of using loose parts teaching materials; they are free to be creative in disassembling them according to their imagination (Izzati et al., 2017; Kurnia et al., 2019; Waziri et al., 2010). Children will learn to appreciate materials or objects around them, such as natural loose parts. Children will also be able to participate in caring for the environment when they understand that used goods can be recycled and used as materials for playing, and assembling them into valuable items Will develop a child's economic attitude.

Several studies have found that children aged 3-4 years are better after playing loose parts because their activities are tailored to their developmental level and use things in their environment (Nurhayati & Rasyid, 2019; Shabrina & Lestarinigrum, 2020). Then, the previous research found that utilizing the loose part media can boost children's creativity (Prameswari & Lestarinigrum, 2020). The loose part encourages creativity and problem-solving (Rahardjo, 2019). Based on what has been described, the author is interested in studying cognitive development and art development for children at the DWP Wedoro Waru Kindergarten. This study aims to analyze the effect of using loose part natural learning media on improving children's cognitive development at DWP Wedoro Waru Kindergarten. This study is expected to provide reference enrichment in cognitive development through Loose Part learning media based on natural materials to build children's critical thinking power for group B

2. METHOD

This type of research uses an experiment with a quantitative approach (Sugiyono, 2018). The research design uses a quantitative approach with experimental methods. Research variables consist of influence variables and independent variables. The variables in this study consisted of the independent variable, namely the natural material of the media (X), while the variable determined in this study was cognitive development (Y). This study aims to examine the effect of using natural materials loose Part learning media on cognitive development. Research activities on cognitive development and art in children aim to measure the level of Cognitive Development. The next step is to give treatment to the experimental group. Treatment in the form of natural materials Loose Part learning media is given twice a week for four weeks, so the total treatment (treatment) given is eight times.

Meanwhile, the control group continued to follow the routine activities in the classroom as planned by the educators/teachers in each institution. Treatment in the form of natural materials Loose Part learning media is given twice a week for four weeks, so the total

treatment (treatment) given is eight times. Meanwhile, the control group continued to follow the routine activities in the classroom as planned by the educators/teachers in each institution. The second stage in the experimental group was given treatment using natural materials Loose Part learning media. In contrast, the control group was not given treatment using natural materials Loose Part learning media. In the third stage, both groups were observed again to measure Cognitive Development. The fourth stage here is the comparison stage of the mean value of the experimental group and the control group by using a statistical analysis differential test. The sample of this study was group B children aged 5-6 years in TK DWP Wedoro, Waru District, Sidoarjo Regency, which collected 65 children. The methods used to collect data are observation, interviews, and questionnaires. The research instrument consisted of observation sheets, documentation, and freelance teaching materials. The analysis prerequisite test consisted of normality test, homogeneity test, and one-way ANOVA test for data analysis techniques.

3. RESULT AND DISCUSSION

Result

The results of cognitive development (post-test) in the control group have an average value of 3.0606 located in the category of "Developing as expected" Cognitive Development. While the results of post-test Cognitive Development in the experimental group have an average value of 3.5000, including in the assessment of children having Cognitive Development in the "Very Good Development" category after using natural materials Loose Part learning media. Based on this, the increase in the average value of the experimental group in the use of natural materials learning media is more significant than the control group. It is because the experimental group received treatment in the form of the use of natural materials Loose Part learning media that have been designed to stimulate cognitive development in children as measured: (1) counting the number of natural materials (stones) needed to make people according to children's creativity, (2) grouping four types of loose parts from natural ingredients (leaves, seeds, stones, twigs, and nuts), and (3) combining loose part media with other media into facial images.

These findings can inform the policy of playing in an open natural environment for early childhood. The value of this research is that there is a direct developmental influence in the game using Loose Part media for children. The benefits reinforce the importance of children having access to and opportunities to engage in play. Research benefits that loose parts and outdoor play can help reduce barriers to the risk and negative attitudes that adults may have toward playing with loose parts. To support the results of the descriptive analysis, a prerequisite analysis test was carried out. The error rate (significant level) used in this study amounted to 0.05. This analysis requirement test aims to determine whether there are deviations or disturbances to the model's variables. The normality test in this study used a one-sample Kolmogorov-Smirnov. It can be seen from the significance of the calculated p-value for each variable to be studied. The test criteria if the value of *asympt.sig* (2 tailed) > 0.05 , then the data is normally distributed. Conversely, if the value of *asympt.sig* (2 tailed) < 0.05 , then the data is not normally distributed. The normality test results can be seen as the value of *asympt.sig* (2 tailed) of the Cognitive Development variable in the pre-test and post-test groups is 0.284 and 0.088 > 0.05 , and then the data is normally distributed. Meanwhile, the variables of art development in the pre-test and post-test groups were 0.100 and 0.403 > 0.05 , so the data were normally distributed. So we can conclude that the data meets the test of normality for *Asymp. Sig* value (2-tailed) > 0.05 . Next, test for homogeneity. A homogeneity test can be done using Levene's Test. If the Levene F_{count} shows a significance level of more than 0.05, it can be said that there is no difference in variance between sample groups; or in

other words, the variance between groups is the same. The homogeneity test, it can be seen that the Levene's F_{count} for the child's cognitive development variable shows a significance level of 0.801 and $0.099 > 0.05$, it can be said that there is no difference in variance between the sample groups or in other words the variance between groups of cognitive development variables in the pre-test and post-test is the same. After testing the requirements analysis, the next step is to analyze the data. The data analysis technique used in this study is the one-way ANOVA test. A one-way ANOVA test was used to test the hypothesis, which reads There is a significant effect between the use of natural materials Loose Part learning media on Cognitive Development in DWP Wedoro Kindergarten children. The following are the statistical analysis results of the one-way ANOVA test using SPSS 23.0. The average value of children's cognitive development in the control group is 3.0606 (developing as expected), while the average value of cognitive development in the experimental group is 3.5000 (very well developed). From this average value, it can be said that there is a relative difference in the cognitive development of children from the control group and the experimental group, reinforced by the results of the F test, namely the $F_{\text{count}} = 7,318$ with a significant level (sig) of less than 5%. It proves that there is an effect of using natural materials Loose Part learning media on the cognitive development of DWP Wedoro Kindergarten children. Based on observations in this reserach, it is proven that there is an effect of using loose part natural materials on children's cognitive development. As evidence of whether using natural materials Loose Part learning media affects children's cognitive development, the Anova test (Analysis of Variance) is carried out. In this case, the data analyzed is Post-test data in the experimental group and the control group. Based on the one-way ANOVA test, $F_{\text{count}} = 7.318$ and a significant value of 0.009. It proves a significant influence between the use of natural materials loose parts learning media on cognitive development.

Discussion

The results of the explanation above confirm that playing loose parts is the right solution, which effectively increases children's creativity when they are exploring, experimenting, indirectly, interacting with themselves according to the child's wishes, and interacting with their environment find self-satisfaction. creativity is developed by giving children the opportunity to express themselves freely, find their alternative to solve problems, openness and self-satisfied when playing activities. The use of natural materials Loose Part learning media applied to group B Kindergarten children affects children's language development in terms of Cognitive. In this study, the development of cognitive abilities through the use of natural materials Loose Part learning media, namely: First, Children can calculate the number of natural materials (stones) needed to make people according to children's creativity, Second, children can group 4 kinds of medical loose part materials nature (leaves, seeds, stones, twigs, and nuts), and Third, Children can combine loose part media with other media into facial images. Loose Parts is a game that uses materials that can be moved, carried, combined, redesigned, aligned, separated, and put back together in various ways (Qomariyah & Qalbi, 2021; Shabrina & Lestarinigrum, 2020). These materials are materials that can be used independently or in combination with other materials. These materials can be derived from natural or synthetic materials. In addition, children can build a place or create an activity through their imagination with the available materials (Prameswari & Anik Lestarinigrum, 2020; Wahyuningsih et al., 2020). Early childhood requires much stimulation in various aspects of development so that all aspects of development can develop optimally. One aspect that is important and needs to be developed is the cognitive aspect (Oztop & Gummerum, 2020; Rahmawati & Rukiyati, 2018; Wong & Russak, 2020).

The ability that is including in the cognitive aspect is the ability to play development. Playing development is an activity that uses various existing objects to create a specific work

(Arsyad & Sulfemi, 2018; Fauziddin & Mufarizuddin, 2018; Puspitaningrum et al., 2019). The results of this study are in line with which found solving problems in children aged 4-5 years by using loose parts games as a solution choice for playing activities containing the concept of developing knowledge and direct experience of children as a process of achieving problem-solving abilities (Prameswari & Lestarinigrum, 2020). The following finding is that when children play with playing loose parts, children can explore, choose play strategies to solve problems they face from freely prepared materials (Flannigan & Dietze, 2018; Rahardjo, 2019). From the results of this study, it is recommended that playing loose parts be more developed and continue to provide opportunities for children to freely and widely do and find out for themselves from the materials around them. Children carry out activities according to developmental stages and get meaning through materials available in the surrounding environment (Shabrina & Lestarinigrum, 2020; Wahyuningsih et al., 2020). This research reference provides early childhood educators with professional development on the importance of loose parts and applying this kind of material. This study provides an overview to early childhood educators that loose parts in an outdoor environment are easily affordable and beneficial for children's development. Playing with loose parts will expand their imagination and positively affect their cognitive, social, emotional, and physical development. Loose Parts in an open environment offers children various play opportunities, social interaction, language use, and problem-solving.

Hasil ini sejalan dengan penelitian Shabrina & Lestarinigrum (2020) bahwa kemampuan berpikir logis subjek lebih berkembang melalui kegiatan bermain Loose Part. Anak melakukan aktivitas sesuai tahapan perkembangan dan mendapatkan makna melalui bahan-bahan yang tersedia di lingkungan sekitarnya. Referensi penelitian ini membekali pendidik anak usia dini dengan pengembangan profesional tentang pentingnya bagian yang longgar dan menerapkan materi semacam ini. Kajian ini memberikan gambaran kepada pendidik PAUD bahwa bagian yang lepas di lingkungan luar yang mudah terjangkau dan bermanfaat bagi perkembangan anak. Bermain dengan bagian yang longgar akan memperluas imajinasi mereka dan secara positif mempengaruhi perkembangan kognitif, sosial, emosional, dan fisik mereka. Flannigan & Dietze (2018) melaporkan bahwa Loose Parts di lingkungan terbuka menawarkan berbagai kesempatan bermain, interaksi sosial, penggunaan bahasa, dan pemecahan masalah kepada anak-anak.

4. CONCLUSION

Based on the research carried out and the different test where there is an effect of using Loose Part learning media, natural materials affect Cognitive Development in DWP Wedoro Kindergarten children. In addition, learning media can make children think creatively and imaginatively. Loose parts can be used as STEAM learning materials because they are suitable for children's characteristics, can be adapted and manipulated in many ways, besides that they support children's creativity and imagination, and can develop children's ideas and help children to take risks, explore, investigate while being actively involved in learning sensory play, collaborative.

5. REFERENCES

- 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. <https://doi.org/10.17977/um038v2i32019p174>.
- Allen L, & Kelly B B. (2015). Transforming the Workforce for Children Birth through Age 8. In *Transforming the Workforce for Children Birth Through Age 8*. The National

- Academies of Sciences, Engineering, and Medicine. <https://doi.org/10.17226/19401>.
- Arsyad, A., & Sulfemi, W. B. (2018). Metode Role Playing Berbantu Media Audio Visual Pendidikan dalam Meningkatkan Belajar IPS. *Jurnal PIPSI (Jurnal Pendidikan IPS Indonesia)*, 3(2), 41. <https://doi.org/10.26737/jpipi.v3i2.1012>.
- Bayles, J., Peterson, A. D., Pitts, S. J., Bian, H., Burkholder, S., Hegde, A. V., & Stage, V. C. (2021). Food-Based Science, Technology, Engineering, Arts, and Mathematics (STEAM) Learning Activities May Reduce Decline in Preschoolers' Skin Carotenoid Status. *Journal of Nutrition Education and Behavior*, 53(4). <https://doi.org/10.1016/j.jneb.2020.10.017>.
- Beazley, H., Butt, L., & Ball, J. (2018). 'Like It, Don't Like It, You Have to Like It': Children's Emotional Responses to the Absence of Transnational Migrant Parents in Lombok, Indonesia. *Children's Geographies*, 16(6), 591–603. <https://doi.org/10.1080/14733285.2017.1407405>.
- Birhan, W., Shiferaw, G., & Tiruye, A. A. M. T. H. (2021). Exploring the Context of Teaching Character Education to Children in Preprimary and Primary Schools. *Social Sciences & Humanities Open*, 4(1), 100171. <https://doi.org/10.1016/j.ssaho.2021.100171>.
- Bus, A. G., Neuman, S. B., & Roskos, K. (2020). Screens, Apps, and Digital Books for Young Children: The Promise of Multimedia. *AERA Open*, 6(1), 233285842090149. <https://doi.org/10.1177/2332858420901494>.
- Debeturu, B., & Wijayaningsih, E. L. (2019). Meningkatkan Kreativitas Anak Usia 5-6 Tahun melalui Media Magic Puffer Ball. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 3(1), 233. <https://doi.org/10.31004/obsesi.v3i1.180>.
- Elan, E., Muiz, D. A., & Feranis, F. (2017). Penggunaan Media Puzzle untuk Meningkatkan Kemampuan Mengenal Bentuk Geometri. *Jurnal PAUD Agapedia*, 1(1). <https://doi.org/10.17509/jpa.v1i1.7168>.
- Fauziddin, M., & Mufarizuddin, M. (2018). Useful of Clap Hand Games for Optimize Cognitive Aspects in Early Childhood Education. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 2(2), 162. <https://doi.org/10.31004/obsesi.v2i2.76>.
- Fitria, A. (2018). Pengembangan Media Pembelajaran Berbasis Teknologi Informasi. *Cakrawala Dini: Jurnal Pendidikan Anak Usia Dini*, 5(2). <https://doi.org/10.17509/cd.v5i2.10498>.
- Flannigan, C., & Dietze, B. (2018). Children, Outdoor Play, and Loose Parts. *Journal of Childhood Studies*, 42(4), 53–60. <https://doi.org/10.18357/jcs.v42i4.18103>.
- Gottzén, L., & Sandberg, L. (2017). Creating Safe Atmospheres? Children's Experiences of Grandparents' Affective and Spatial Responses to Domestic Violence. *Children's Geographies*, 3285, 1–13. <https://doi.org/10.1080/14733285.2017.1406896>.
- Handayani, O. D. (2020). Pengembangan Media Pembelajaran PAUD melalui PPG. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 5(1), 93. <https://doi.org/10.31004/obsesi.v5i1.522>.
- Hasanah, U. (2016). Pengembangan Kemampuan Fisik Motorik melalui Permainan Tradisional bagi Anak Usia Dini. *Jurnal Pendidikan Anak*, 5(1), 717–733. <https://doi.org/10.21831/jpa.v5i1.12368>.
- Hobri, Adeliyanti, S., Fatekurrahman, M., Wijaya, H. T., Oktavianingtyas, E., Putri, I. W. S., & Ridlo, Z. R. (2021). E-Comic Mathematics Based on STEAM-CC and its Effect on Students Creative Thinking Ability. *Journal of Physics: Conference Series*, 1839(1). <https://doi.org/10.1088/1742-6596/1839/1/012036>.
- Hua, M., & Wang, L. (2021). Effects of Socioeconomic Status on Children's Vocabulary Brain Development. *Aggression and Violent Behavior*, 7. <https://doi.org/10.1016/j.avb.2021.101670>.

- Irmansyah, J., Lumintuarso, R., Sugiyanto, F. X., & Sukoco, P. (2020). Children's Social Skills through Traditional Sport Games In Primary Schools. *Cakrawala Pendidikan*, 39(1), 39–53. <https://doi.org/http://dx.doi.org/10.21831/cp.v39i1.28210>.
- Iswantiningtyas, V., & Wulansari, W. (2019). Penanaman Pendidikan Karakter pada Model Pembelajaran BCCT (Beyond Centers and Circle Time). *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 3(1), 110. <https://doi.org/10.31004/obsesi.v3i1.106>.
- Izzati, Huda, & Mushafanah. (2017). Keefektifan Model Pembelajaran Word Square Berbantu Media Puzzle pada Mata Pelajaran IPS SD. *Profesi Pendidikan Dasar*, 1(2), 101–109. <https://doi.org/10.23917/ppd.v1i2.5079>.
- Kaskens, J., Segers, E., Goei, S. L., van Luit, J. E. H., & Verhoeven, L. (2020). Impact of Children's Math Self-Concept, Math Self-Efficacy, Math Anxiety, and Teacher Competencies on Math Development. *Teaching and Teacher Education*, 94, 103096. <https://doi.org/10.1016/j.tate.2020.103096>.
- Khadijah, K., Arlina, A., Hardianti, R. W., & Maisarah, M. (2021). Model Pembelajaran Bank Street dan Sentra, serta Pengaruhnya terhadap Sosial Emosional Anak. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 5(2). <https://doi.org/10.31004/obsesi.v5i2.1054>.
- Koedoes, Y. A., Abubakar, S. R., Nadzirin, M., & Nur, A. (2020). Solusi Pembelajaran Anak Usia Dini pada Masa Pandemi Covid-19. *Jurnal Pengabdian Masyarakat Ilmu Terapan*, 2(2).
- Kristiana, Nurwahyunani, & Sulistya. (2017). Pengaruh Model Pembelajaran TGT Menggunakan Media Puzzle terhadap Keaktifan dan Hasil Belajar Kognitif Siswa Pada Materi Sistem Ekskresi. *Bioma*, 6(2), 78–92.
- Kurnia, V. T., Damayani, A. T., & Kiswoyo, K. (2019). Keefektifan Model Pembelajaran Number Head Together (NHT) Berbantu Media Puzzle terhadap Hasil Belajar Matematika. *Jurnal Ilmiah Sekolah Dasar*, 3(2), 192. <https://doi.org/10.23887/jisd.v3i2.17772>.
- Kusumaningrum, & Wahyono. (2020). Developing A Pop-Up Storybook Based on Multicultural Education for Early Childhood Students. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini*, 4(1). <https://doi.org/10.31004/obsesi.v4i1.230>.
- Mubarokah, M. (2021). Upaya Meningkatkan Kemampuan Berhitung Menggunakan Media Loose Parts pada Anak kelompok B TK. *Jurnal Educatio FKIP UNMA*, 7(2). <https://doi.org/10.31949/educatio.v7i2.1124>.
- Mulyani, D., Cahyati, N., & Rahma, A. (2020). Pengembangan Media Permainan Dakon untuk Meningkatkan Kemampuan Berhitung Anak. *Al-Athfaal: Jurnal Ilmiah Pendidikan Anak Usia Dini*, 3(2), 161–172. <https://doi.org/10.31004/obsesi.v4i2.428>.
- Mustika Sari, I. T., Toha, H., & Nurani, Y. (2018). Improving Early Childhood Prosocial Behavior through Activity Storytelling with Puppets. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 2(2), 155. <https://doi.org/10.31004/obsesi.v2i2.75>.
- Musyarofah, M. (2018). Pengembangan Aspek Sosial Anak Usia Dini di Taman Kanak-Kanak Aba IV Mangli Jember Tahun 2016. *INJECT (Interdisciplinary Journal of Communication)*, 2(1), 99. <https://doi.org/10.18326/inject.v2i1.99-122>.
- Nasution, N., Yaswinda, Y., & Maulana, I. (2020). Analisis Pembelajaran Berhitung melalui Media Prisma Pintar pada Anak Usia Dini. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 4(1). <https://doi.org/10.31004/obsesi.v4i1.311>.
- Nikel, L. (2020). Submissiveness, Assertiveness, and Aggressiveness in School-Age Children: The role of self-Efficacy and The Big Five. *Children and Youth Services Review*, 110. <https://doi.org/10.1016/j.childyouth.2020.104746>.
- Ningsih, S. Y., & Mahyuddin, N. (2021). Desain E-Module Tematik Berbasis Kesantunan Berbahasa Anak Usia Dini di Taman Kanak-Kanak. *Jurnal Obsesi : Jurnal*

- Pendidikan Anak Usia Dini*, 6(1), 137–149. <https://doi.org/10.31004/obsesi.v6i1.1217>.
- Nur, I. R. D., Herman, T., & Mariyana, R. (2018). Logical-Mathematics Intellegence in Early Childhood Students. *International Journal of Social Science and Humanity*, 8(4), 105–109. <https://doi.org/10.18178/ijssh.2018.V8.944>.
- Nurhayati, F., & Rasyid, H. (2019). Implementation of Outdoor Games to Improve 4-5 Year Old Childrens Number Sense. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 3(1), 10. <https://doi.org/10.31004/obsesi.v3i1.133>.
- Nurwahidah, Maryati, S., Nurlaela, W., & Cahyana. (2021). Permainan Tradisional sebagai Sarana Mengembangkan Kemampuan Fisik Motorik Anak Usia Dini. *PAUD Lectura: Jurnal Pendidikan Anak Usia Dini*, 4(02), 49–61. <https://doi.org/10.31849/paud-lectura.v4i02.6422>.
- Oztop, P., & Gummerum, M. (2020). Group Creativity in Children and Adolescents. *Cognitive Development*, 56. <https://doi.org/10.1016/j.cogdev.2020.100923>.
- Pebriana, P. H. (2017). Analisis Penggunaan Gadget terhadap Kemampuan Interaksi Sosial Anak Usia Dini. *Jurnal Obsesi : Journal of Early Childhood Education*, 1(1). <https://doi.org/10.31004/obsesi.v1i1.26>.
- Perignat, E., & Katz-Buonincontro, J. (2019). STEAM in Practice And Research: An Integrative Literature Review. *Thinking Skills and Creativity*, 31, 31–43. <https://doi.org/10.1016/j.tsc.2018.10.002>.
- Polat, Ö., & Aydın, E. (2020). The Effect of Mind Mapping on Young Children’s Critical Thinking Skills. *Thinking Skills and Creativity*, 38. <https://doi.org/10.1016/j.tsc.2020.100743>.
- Prameswari, T., & Anik Lestarinigrum. (2020). Strategi Pembelajaran Berbasis STEAM dengan Bermain Loose Parts untuk Pencapaian Keterampilan 4C pada Anak Usia 4-5 Tahun. *Efektor*, 7(1), 24–34. <https://doi.org/10.29407/e.v7i2.14387>.
- Puspitaningrum, J. I., Untari, M. F. A., & Listyarini, U. (2019). Keefektifan Model Pembelajaran Role Playing terhadap Kemampuan Berbicara. *MIMBAR PGSD Undiksha*, 2(1), 296–304. <https://doi.org/10.23887/jlls.v2i1.17324>.
- Puspitasari, I. P., Rachmawati, Y., Romadona, N. F., & Purnamasari, I. (2021). Bengkulu’s Traditional Games for Young Children. *Proceedings of the 5th International Conference on Early Childhood Education (ICECE 2020)*, 538(Icece 2020), 27–32. <https://doi.org/10.2991/assehr.k.210322.007>.
- Putrawangsa, S., & Hasanah, U. (2018). Integrasi Teknologi Digital dalam Pembelajaran di Era Industri 4.0. *Jurnal Tatsqif*, 16(1), 42–54. <https://doi.org/10.20414/jtq.v16i1.203>.
- Qomariyah, N., & Qalbi, Z. (2021). Pemahaman Guru PAUD tentang Pembelajaran Berbasis STEAM dengan Penggunaan Media Loose Parts di Desa Bukit Harapan. *JECED : Journal of Early Childhood Education and Development*, 3(1), 47–52. <https://doi.org/10.15642/jeced.v3i1.995>.
- Rahardjo, M. M. (2019). How to Use Loose-Parts in STEAM? Early Childhood Educators Focus Group Discussion in Indonesia. *JPUD - Jurnal Pendidikan Usia Dini*, 13(2), 310–326. <https://doi.org/10.21009/jpud.132.08>.
- Rahmawati, D. I., & Rukiyati, R. (2018). Developing Pop-Up Book Learning Media to Improve Cognitive Ability of Children. *4th International Conference on Early Childhood Education*, 249(Secret), 60–69. <https://doi.org/10.2991/secret-18.2018.10>.
- Shabrina, E., & Lestarinigrum, A. (2020). The Role of Loose Parts Play in Logical Thinking Skill in KB Lab school. *Journal of Early Childhood Care and Education*, 3(1), 36–48. <https://doi.org/10.26555/jecce.v3i1.1679>.
- Sugiyono, D. (2018). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.

- Sutrisno, Zar'in, F., & Salehcah, S. (2021). Local Content Curriculum Model for Early Childhood Scientific Learning. *Jurnal Pendidikan Usia Dini*, 15(1). <https://doi.org/10.21009/JPUD.151.05>.
- Triutami, I. G. A. A. D., Sudhita, I. W. R., & Tegeh, I. M. (2014). Penerapan Metode Bercerita Berbantuan Media Boneka Tangan untuk Meningkatkan Perkembangan Bahasa pada Anak. *Jurnal Pendidikan Anak Usia Dini*, 2(1). <https://doi.org/10.23887/paud.v2i1.3239>.
- Wahyuni, S., & Reswita, R. (2020). Pemahaman Guru mengenai Pendidikan Sosial Finansial pada Anak Usia Dini menggunakan Media Loose Parts. *Jurnal Obsesi*, 4(2). <https://doi.org/10.31004/obsesi.v4i2.493>.
- Wahyuningsih, S., Pudyaningtyas, A. R., Nurjanah, N. E., Dewi, N. K., Hafidah, R., Syamsuddin, M. M., & Sholeha, V. (2020). The Utilization of Loose Parts Media in Steam Learning for Early Childhood. *Early Childhood Education and Development Journal*, 2(2), 1. <https://doi.org/10.20961/ecedj.v2i2.46326>.
- Watini, S. (2019). Implementasi Model Pembelajaran Sentra pada TK Labschool STAI Bani Saleh Bekasi. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 4(1), 110. <https://doi.org/10.31004/obsesi.v4i1.190>.
- Waziri, M. ., Saidu, I., & Musa, H. (2010). A Mathematical Approach on Solving Hausa Puzzles in Northern Nigeria. *Procedia - Social and Behavioral Sciences*, 8. <https://doi.org/10.1016/j.sbspro.2010.12.096>.
- Wijayanti, D. N. (2019). Effective Learning of English through Children's Songs for Madrasah Ibtidaiyah (MI) Students. *Elementary*, 4(1), 124–148. <https://doi.org/10.21043/elementary.v4i1.1931>.
- Wong, K. S. R., & Russak, S. (2020). Hong Kong Cantonese L1 Preschool Children's Name Writing in English L2. *Cognitive Development*, 56. <https://doi.org/10.1016/j.cogdev.2020.100957>.
- Yoshikawa, H., Wuermli, A. J., Raikes, A., Kim, S., & Kabay, S. B. (2018). Toward High-Quality Early Childhood Development Programs and Policies at National Scale: Directions for Research in Global Contexts. *Social Policy Report*, 31(1), 1–36. <https://doi.org/10.1002/j.2379-3988.2018.tb00091.x>.