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Strategies to Improve Children's Ability to Recognize Shapes through Geometry Games

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ABSTRACT

Difficulty in recognizing geometric shapes in early childhood at YPPK Bintang Kecil Kindergarten, Abepura, Jayapura City, can hinder children's cognitive development and readiness for future mathematics learning. This study aims to improve children's ability to recognize, differentiate, and classify geometric shapes through a game-based learning approach. Involving 12 children aged 5–6 years, this study followed the Kemmis and McTaggart model for classroom action research, which was carried out for two cycles, each consisting of three actions. Data were collected through observation and testing, then analyzed using descriptive qualitative methods. The results showed a significant increase in children's shape recognition skills, with an average score increasing from 49.30% in the pre-cycle to 91.67% at the end of the second cycle. This increase was supported by the use of intriguing and concrete media, varied learning methods adjusted to children's learning styles, and the integration of games into learning activities. We conclude that the geometry game-based learning approach effectively enhances geometric shape recognition in early childhood. Further research is recommended to apply similar strategies in various educational settings and explore the use of digital educational games to further improve learning outcomes.

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1. INTRODUCTION

The ability to recognize shapes for early childhood is an important foundation in the development of children's early skills, especially in the context of mathematics education (Papadakis et al., 2021). This ability involves mathematical reasoning that includes recognizing, classifying, and identifying various geometric shapes in the environment around the child. Research conducted by Farida et al. (2023) shows that the ability to recognize geometric shapes in children aged 5-6 years is also likely to develop through a more complex concept hierarchy structure, as part of their mathematical reasoning. Children's ability to recognize geometric shapes is also closely related to their cognitive development. A study by Widiana et al (2023). revealed that

introducing geometric shapes to children initiates broader cognitive abilities and is associated with more advanced math learning at a later stage.

Introduction to geometric shapes in childhood is not only an introduction to shapes, but also an important first step in preparing children to welcome more complex concepts, such as numbers and other mathematical operations (Pasiningsih, 2022). This process is related to relevant learning experiences that allow children to interact and understand their environment better. The implementation of interactive and fun learning methods is key in developing the ability to recognize shapes, which will have a major effect on children's cognitive skills (Evivani & Oktaria, 2020; Lasmini et al., 2022; Fitri, 2023). In addition, a strong understanding of shapes also impacts the development of children's visual-spatial skills, which are important in various aspects of future learning (Rahmatia et al., 2021). Therefore, to support holistic cognitive, motoric, and emotional development, the introduction of geometric shapes should be emphasized in the early childhood education curriculum (Ayu et al., 2024). This is evidenced by research showing that a fun approach, such as games and direct experiences in recognizing shapes, can significantly improve children's learning outcomes (Savira et al., 2022). The use of well-designed tools and methods, especially in the context of mathematics education, can help children apply geometry learning in their daily lives (Jaelani & Hasbi, 2022), which in turn increases their interest in more difficult mathematical concepts in the future (Papadakis et al., 2021).

Based on the results of preliminary observations conducted by researchers at Bintang Kecil Kindergarten, Abepura, Jayapura City, it is known that the ability to recognize geometric shapes is still low. The low ability to recognize geometric shapes in Group B5 children at YPPK Bintang Kecil Abepura Kindergarten, Jayapura City, is caused by several things, namely, the use of limited learning media. Teachers only use whiteboard media and pictures of geometric shapes, making it less interesting for children. In addition, teachers use more lecture and storytelling methods. Many children are busy playing alone; as a result, the process of teaching and learning activities is less than optimal. The activity of introducing geometric shapes with games has never been done. In addition, the teacher only repeats the learning activities by doing the children's worksheet without interspersing them with play activities. Therefore, we need learning methods that can engage students actively, such as using geometry games.

Geometry games play an important role in improving early childhood's ability to recognize shapes. In the context of early childhood education, games involving geometry provide significant stimulation for children's cognitive and visual-spatial development. This is in line with findings showing that learning activities through games can attract children's attention and help them understand complex concepts more easily. According to Ajat et al., (2024) the use of educational mathematics game media, especially in the form of simple geometry, allows children to learn while playing, which is very effective in developing their visual-spatial intelligence. In addition, traditional games such as congklak can introduce children to geometric concepts in a fun and interactive way. Research conducted by Trisnadewi et al. (2024) shows that congklak games not only help children recognize shapes and numbers but also contribute to their

social and emotional development (Trisnadewi et al., 2024). Games involving geometric elements, such as shapes and sizes, facilitate discussion and interaction between children, which at the same time improves their ability to speak and communicate with their peers (Setyaningsih, 2023).

Educational forms that can be used to introduce children to various geometric shapes include puzzles and other educational play tools. According to Ahmadin et al., (2023) the use of puzzle games shows an increase in the recognition of shapes and spaces among children, which is effective in developing their fine motor skills. By playing puzzles, children learn to match the appropriate pieces, an activity that trains cognitive abilities and strengthens their understanding of geometric shapes and sizes (Juniah & Arianti, 2023). In addition, educational games designed to introduce the concept of flat shapes can also improve shape recognition in early childhood. In practice, it is very important to provide educational play tools that are supportive and interesting, so that children can learn optimally. Susilowati et al. (2020) emphasized that the use of educational play tools to introduce flat shapes, such as triangles and circles, plays a role in improving children's understanding of numbers and shapes. In this way, children not only learn to recognize shapes but also understand their relationship to basic mathematical concepts (Riefya & Bahalwan, 2022). To optimize learning through games, the development of interactive educational game methods and tools is very crucial. The right play media can help children not only improve their ability to recognize shapes, but also foster creativity, memory, and critical thinking skills (Nabila et al., 2023; Hidayah et al., 2021). In this context, it is important for educators to facilitate interesting and diverse learning experiences, so that children can be actively involved in the fun learning process. In the context of early childhood education, it is important to create a learning environment that encourages active exploration and learning through play.

Building upon the above background, this study aims to improve the shape recognition ability of children in Group B5 at YPPK Bintang Kecil Kindergarten, Abepura, through a geometry game-based learning model. The expected result of this research is a significant increase in children's ability to recognize, differentiate, and classify geometric shapes through interactive and engaging learning activities. We also expect this study to provide practical implications for teachers, enabling them to design more effective and meaningful learning strategies in early childhood education.

2. METHOD

This research is classroom action research, which aims to improve the ability of early childhood to recognize shapes through a geometry game approach. We chose classroom action research because it aims to enhance the learning process directly in the classroom through planned actions and systematic reflection. The subjects in this study were children in Group B5 at YPPK Bintang Kecil Abepura Kindergarten, Jayapura City, with an age range of 5-6 years. The number of research subjects was 12 children, consisting of 7 boys and 5 girls. We conducted research at YPPK Bintang Kecil

Kindergarten in Abepura, Jayapura City, Papua. This location was chosen based on the results of initial observations that showed the low ability of children to recognize geometric shapes and the limited use of varied learning media.

This study utilized the Classroom Action Research model developed by Kemmis and McTaggart, which includes four cyclical stages, the first of which is planning. At this stage, researchers and class teachers collaborated to develop lesson plans using geometry games that were adjusted to the children's developmental level. The planning included preparing geometry game tools, developing learning scenarios, and preparing observation sheets and shape recognition test instruments. We also determined the learning objectives, time allocation, and assessment indicators before acting. The classroom carried out the planned learning activities. The teacher guided the children through a series of geometry games designed to introduce and reinforce the recognition of basic shapes such as circles, squares, triangles, and rectangles. The activities included playing puzzles, games involving matching objects based on shape, and singing songs related to shapes. Learning was delivered in a fun and interactive way to maintain children's enthusiasm and participation; 3) observation. During the learning process, researchers and observers recorded children's responses and levels of participation using observation sheets. The focus of observation was on children's ability to recognize, name, differentiate, and classify geometric shapes, as well as their involvement and enthusiasm during learning activities. Supporting documentation such as photos and children's work results were also collected to enrich the data; and 4) reflection. After each cycle, researchers and collaborators analyze observation data and test results to evaluate the effectiveness of the actions taken. Reflection focuses on identifying aspects of the learning process that are going well and those that need improvement. Researchers revise the learning strategy, media used, or teacher approach based on reflection before moving on to the next cycle.

Data collection is done by using observation techniques and instruments and geometry shape recognition tests. The data in this study were analyzed with descriptive qualitative analysis, where the data from observation and documentation were analyzed qualitatively to describe the improvement of the ability to recognize geometric shapes, which includes the ability to recognize, distinguish, and classify geometric shapes.

Based on the agreement with the collaborator, the indicators for the success of the action in this study were determined individually at 80% and classically at 85%. The assessment criteria used refer to the opinion (Arikunto, 2010) which was modified by the researcher.

Table 1. Assessment Criteria

No	Success Rate	Predicate of Success
1	80 - 100%	Very well developed
2	70 - 79 %	Development as expected
3	60 - 69%	Starting to develop
4	25-59%	Not yet developing

The formula used to determine the percentage of success in this study (Arikunto, 2010) is as follows:

$$P = \frac{f}{N} \times 100\%$$

Description:

F = Frequency whose percentage is sought

N = Number of cases

P = Percentage.

3. RESULTS AND DISCUSSION

Results

This study aims to improve the ability to recognize geometric shapes in group B5 children at YPPK Bintang Kecil Abepura Kindergarten, Jayapura City, through a geometry game-based approach. The data from this study are presented based on the stages of action in classroom action research (PTK), which includes initial data, implementation of Cycle I (Actions 1, 2, and 3), and implementation of Cycle II (Actions 1, 2, and 3). We collect initial data before implementing the action to gauge the children's basic ability to recognize geometric shapes. The results can be seen in Table 2.

Table 2. Early Data on the Ability to Recognize Geometric Shapes

No	Child's Initials	Aspects developed			%	Description
		Ability to recognize geometry shapes	Ability to distinguish geometry shapes	Ability to group geometry shapes		
1	AA	☆☆	☆☆☆	☆☆	58,33	BB
2	AV	☆☆☆	☆	☆☆	50	BB
3	AE	☆	☆☆	☆☆☆☆	58,33	BB
4	CA	☆☆☆☆	☆☆☆☆	☆☆	83,33	BSB
5	CE	☆	☆	☆	25	BB
6	DA	☆	☆☆☆	☆	41,67	BB
7	DW	☆☆☆☆	☆☆	☆☆☆	75	BSH
8	ED	☆	☆	☆☆	33,33	BB
9	GD	☆	☆	☆	25	BB
10	HA	☆☆	☆☆☆☆	☆☆	66,67	MB
11	IJ	☆	☆	☆	25	BB
12	MM	☆	☆☆	☆☆☆	50	BB
Average					49,30	

The initial data in table 2 shows that children's ability to recognize geometric shapes is on average 49.30%, which means that in general the children are still in the "Not Developing" category. Of the 12 children who were the subjects of the study, most showed low abilities, with only one child reaching the "Very Well Developing" category and one other child in the "Developing as Expected" category. The rest are in the "Not Developing" and "Starting to Develop" categories. This finding indicates the need for more effective and interesting learning interventions to improve children's ability to recognize geometric shapes.

Further analysis of the assessed aspects shows that most children have difficulty in identifying, distinguishing, and classifying geometric shapes. This condition indicates the need for more structured and fun learning interventions, one of which is through geometry-based games. Table 3 presents the results of implementing cycle 1, which involved up to 3 actions.

Table 3. Data on Cycle 1 Results

No	Child's Initials	Cycle 1		
		Action 1	Action 2	Action 3
1	AA	66.67	66,67	75
2	AV	58.33	66,67	75
3	AE	58.33	66,67	75
4	CA	75	83.33	83.33
5	CE	41.46	41.67	58.33
6	DA	41.46	58.33	66.67
7	DW	66.67	75	83.33
8	ED	41.67	50	58.33
9	GD	33.33	41.67	50
10	HA	75	66.67	83.33
11	IJ	33.33	41.46	50
12	MM	58.33	66.67	75
Average		54.13	58.31	75

The implementation of actions in cycle I includes three actions with concrete and interactive activity-based learning methods. The results of actions in cycle I, as in table 2, show an increase in children's ability to recognize geometric shapes. The average child's ability increased from 54.13% in the first action to 58.31% in the second action and reached 75% in the third action. When analyzed based on development indicators, some children began to show changes from the category "Not Developing" to "Starting to Develop," and even some children began to enter the category "Developing According to Expectations." Despite the increase, the average classical result of 75% at the end of Cycle I still did not meet the classical completeness criteria, which is set at 85%. Therefore, the research proceeded to cycle II.

Table 3. Data on Cycle 2 Results

No	Child's Initials	Cycle 2		
		Action 1	Action 2	Action 3
1	AA	83.33	83.33	91.67
2	AV	75	75	83.33
3	AE	75	83.33	91.67
4	CA	83.33	91.67	91.67
5	CE	58.33	66.67	75
6	DA	66.67	75	83.33
7	DW	83.33	83.33	91.67
8	ED	66.67	75	83.33
9	GD	58,33	66.67	75
10	HA	83.33	91.67	91.67
11	IJ	75	83.33	83.33
12	MM	75	83.33	91.67
Average		75.00	79.86	91.67

In cycle II, learning activities were more focused on the use of more varied media and strategies, such as the use of real teaching aids, geometric shape games, and concept reinforcement through small group activities. The results of the activities in cycle II showed a more significant increase compared to cycle I. In the first activity of cycle II, the average child's ability reached 75%, increased to 79.86% in the second activity, and finally reached 91.67% in the third activity. Based on these results, it can be concluded that the learning that was implemented succeeded in improving children's ability to recognize geometric shapes. Individually, at the end of cycle II, most children showed very good development. A total of nine children achieved the predicate "Developing Very Well" (above 80%), while the other three children were in the category "Developing According to Expectations." There were no more children in the categories "Starting to Develop" or "Not Yet Developing," indicating that all students had experienced significant development in their ability to recognize geometric shapes.

Discussion

The increase in children's ability to recognize geometric shapes can be attributed to several factors. First, the use of geometry learning media makes it easier for children to understand the concept of geometric shapes. This is in line with the results of research Hadi & Mulyadin (2022); Yunita & Supriatna (2021); Rahman et al., (2022); and Yanuarsi & Mayar (2022) which states that the use of learning media in teaching geometry has been shown to improve students' understanding of the concept of geometric shapes. The results above are also in line with Sahara & Thohir (2022) who found that students showed a positive attitude towards the use of digital media during learning, which is expected to improve understanding of the subject matter. This study confirms that learning media, regardless of its form, functions as an effective tool in conveying information and building a better understanding of complex mathematical concepts, such as geometry.

Second, variations in learning methods provide opportunities for children to learn through various learning styles, both visual, kinesthetic, and auditory. This is in line with previous research results showing that when teaching is adjusted to students' learning styles, academic outcomes tend to be better. Phavadee (2020) emphasizes the importance of considering students' learning styles in teaching methods to achieve better learning outcomes. Research shows that educational activities that create an inclusive classroom environment can encourage students to actively participate (Dilekli & Tezci, 2016). From a pedagogical perspective, variations in teaching methods also contribute to improving student understanding. In this context, diversity in teaching approaches serves to meet the various individual needs of students and accommodate differences in effective learning styles (Han, 2024). Furthermore, diversity in teaching methods can increase student participation and engagement in the classroom. A study found that diverse teaching styles can significantly increase student engagement, which in turn has a positive impact on their academic achievement (He, 2024). Thus, a multi-stylistic approach to teaching not only enhances students' learning experiences but also plays a role in meeting their unique needs, thus creating a more adaptive and responsive learning atmosphere (Fermín-González, 2019).

Third, the application of a play approach in learning encourages children's intrinsic motivation to be actively involved in the learning process. Children's activeness in observing, distinguishing, and grouping geometric shapes during the activity shows that geometric games are effective in improving the ability to recognize shapes in early childhood. The above is in accordance with the results research of Tatminingsih (2019), which noted that the application of a game-based learning model was able to improve the cognitive abilities of children at Fithria Kindergarten. This shows that games are not only fun but also stimulate cognitive development. The use of games in learning can increase children's activeness in various aspects of learning. Sumartini highlighted that the room-moving game applied in the context of introducing geometric shapes can improve children's understanding of the shapes, with evidence of a significant increase from two children who initially did not understand to five children who fully understood the material on introducing geometric shapes (Sumartini, 2018). Similar findings are also explained in a study by Nisa & Halifah (2021), which showed that traditional cakes were used to explain geometric concepts among early childhood children, indicating that local contexts can facilitate more meaningful learning for children. In addition, the play approach is also reinforced by research by Yuningsih et al., (2021) which shows that various types of games, such as storytelling and drawing, create a fun learning atmosphere that can increase children's creativity and involvement in learning. Ria & Musyaddad (2019) added that traditional games, such as congklak, can improve children's emotional and social abilities, which are also part of the holistic development needed in early childhood education. This shows that games can create an interactive environment that is very important for children's social and emotional development.

These findings provide important implications for early childhood education practices. Teachers need to optimize the use of concrete media in learning basic mathematical concepts, not only in introducing geometric shapes but also in introducing the concepts of size, patterns, and numbers. Learning must be designed in such a way that children directly experience the learning process through playing, exploring, and interacting with their environment.

The results of this study have both theoretical and applied implications in the context of early childhood education, especially in the development of early mathematics learning based on games. Theoretically, the findings of this study strengthen the theory of constructivism, which emphasizes that children build their knowledge through concrete experiences and meaningful activities. Through geometry games, children are actively involved in the process of exploration, observation, and grouping of geometric shapes, which supports Piaget and Vygotsky's views on the importance of social interaction and direct experience in the learning process of early childhood. In addition, the results of this study also strengthen the theory of multimodal learning, which emphasizes the need to adjust learning methods to various learning styles of children—visual, auditory, and kinesthetic—in order to improve conceptual understanding. Furthermore, the use of a play approach in learning emphasizes that games not only function as a means of entertainment but also as an effective medium in stimulating

children's cognitive development, especially in the aspect of recognizing geometric shapes.

In practice, this study provides a clear picture that the use of concrete learning media and varied learning strategies can improve children's ability to recognize geometric shapes. Therefore, PAUD teachers are advised to be more active in developing intriguing and interactive learning media and methods, such as geometric shape games, real props, and small group activities based on exploration. Fun learning that adapts to children's learning styles and centers on individual developmental needs effectively increases children's participation and learning outcomes. In addition, it is important for teachers to routinely conduct formative assessments and reflections on learning practices that have been carried out, as in the classroom action research (CAR) model used in this study, to ensure continuous improvement. These findings also indicate that we can apply a similar approach to teach other early mathematics concepts like size, patterns, and numbers. Thus, this study provides encouragement for strengthening the professional capacity of PAUD teachers in designing comprehensive and contextual game-based learning in accordance with children's developmental stages.

4. CONCLUSION

This classroom action research has demonstrated that implementing a geometry game-based learning approach effectively improves early childhood abilities in recognizing geometric shapes. The study showed a significant increase in children's recognition skills, with the average score rising from 49.30% in the initial data to 91.67% by the third action of cycle II. This success is attributed to the use of concrete and engaging media, variations in teaching methods tailored to different learning styles, and the application of a play-based learning approach that fostered children's active involvement and motivation. These findings underline the importance of integrating interactive, game-based learning models in early childhood education to support cognitive, motor, and social-emotional development comprehensively.

Researchers should conduct similar studies in varying settings to validate and extend the findings of this study. Future research can also explore the integration of technology-based educational games to enhance early childhood learning experiences.

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REFERENCES

Ahmadin, A., Hendra, H., Lukman, L., Annafi, N., & Muslim, M. (2023). Meningkatkan Keterampilan Motorik Halus Anak Usia Dini Melalui Permainan Eduktif Puzzle. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini*, *7*(6), 8041–8048. https://doi.org/10.31004/obsesi.v7i6.5905

Ajat, A., Zakiyah, L., Sutrismi, S., Sugirasih, L., & Radie, F. H. (2024). Stimulasi Kemampuan Visual Spasial Anak Usia Dini Melalui Program Rencana Kegiatan Harian Bermain Buku Edukatif Papan Peraga Berseri. *Jiip - Jurnal Ilmiah Ilmu Pendidikan*, *7*(2), 1360–1366. https://doi.org/10.54371/jiip.v7i2.3428

Arikunto, S. (2010). *Penelitian Tindakan Kelas*. PT Bumi Aksara.

Ayu, S. M., Dewi, A., & Alvianita, I. (2024). The Project Method and Its Effect on the Ability to Recognize Geometric Shapes in Early Childhood in the Era Of Merdeka Belajar. *E3s Web of Conferences*, *482*, 1–8. https://doi.org/10.1051/e3sconf/202448204007

Dilekli, Y., & Tezci, E. (2016). The Relationship Among Teachers' Classroom Practices for Teaching Thinking Skills, Teachers' Self-Efficacy Towards Teaching Thinking Skills and Teachers' Teaching Styles. *Thinking Skills and Creativity*, *21*, 144–151. https://doi.org/10.1016/j.tsc.2016.06.001

Evivani, M., & Oktaria, R. (2020). Permainan Finger Painting Untuk Pengembangan Kemampuan Motorik Halus Anak Usia Dini. *Jurnal Warna Pendidikan Dan Pembelajaran Anak Usia Dini*, *5*(1), 23–31. https://doi.org/10.24903/jw.v5i1.427

Farida, A., Rasmani, U. E. E., & Hafidah, R. (2023). Profil Kemampuan Mengenal Bentuk Geometri Anak Usia 5-6 Tahun. *Kumara Cendekia*, *11*(4), 361–375. https://doi.org/10.20961/kc.v11i4.61548

Fermín-González, M. (2019). Research on Virtual Education, Inclusion, and Diversity. *The International Review of Research in Open and Distributed Learning*, *20*(5), 146–167. https://doi.org/10.19173/irrodl.v20i5.4349

Fitri, A. W. (2023). Pengembangan Permainan Monopoli Dalam Kemampuan Mengenal Lingkungan Pada Anak Usia 4-5 Tahun. *Jurnal Pendidikan Modern*, *9*(1), 23–29. https://doi.org/10.37471/jpm.v9i1.814

Hadi, A. M., & Mulyadin, E. (2022). Pengaruh Penggunaan Aplikasi Geometer's Sketchpad Pada Pembelajaran Geometri. *Supermat (Jurnal Pendidikan Matematika)*, *6*(2), 228–238. https://doi.org/10.33627/sm.v6i2.959

Han, J. (2024). An Evaluation of the Importance of Teacher Diversity in the Teacher Recruitment Process. *Lecture Notes in Education Psychology and Public Media*, *36*(1), 110–114. https://doi.org/10.54254/2753-7048/36/20240434

He, X. (2024). A Study of the Relationship Between Teaching Styles and Classroom Engagement of Elementary School Teachers. *Journal of Education Humanities and Social Sciences*, *29*, 506–511. https://doi.org/10.54097/3qxp1y40

Hidayah, A. N., Mustar, S. Y., Gadafi, M., & Safiuddin, A. (2021). Pelatihan Pemanfaatan Alat Permainan Edukatif (APE) Bagi Orang Tua Guna Mendukung Gerakan Stay at Home Anak Demi Pencegahan Covid-19. *Amal Ilmiah Jurnal Pengabdian Kepada Masyarakat*, *2*(2), 119–125. https://doi.org/10.36709/amalilmiah.v2i2.15213

Jaelani, A. K., & Hasbi, M. (2022). Development of authentic assessment in geometry learning. *JRPM (Jurnal Review Pembelajaran Matematika)*, *7*(1), 1-19. https://doi.org/10.15642/jrpm.2022.7.1.1-19

Juniah, & Arianti, M. (2023). Therapi Bermain Puzzel Untuk Meningkatkan Perkembangan Motorik Halus Anak Usia Dini Di Tk Al Bara Kedamaian Tanjung Raya Bandar Lampung. *JPMBD*, *2*(2), 20–25. https://doi.org/10.59030/jpmbd.v2i2.34

Lasmini, L., Pingky, L., Sari, N. P., & Wulandari, R. S. (2022). Analisis Peran Pendidik Dalam Mengimplementasikan Metode Pembelajaran Bercerita (Mendongeng) Di Paud Nonformal Kelompok Bermain. *Bharasumba*, *1*(03), 238–246. https://doi.org/10.62668/bharasumba.v1i03.222

Nabila, R., Utami, D. T., Alucyana, A., Yunita, Y., Ramadani, P., Rizka, N., & Novitasari, Y. (2023). Rotating Alfabet Untuk Meningkatkan Kemampuan Membaca Permulaan Anak Usia Dini. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini*, *7*(5), 6453–6462. https://doi.org/10.31004/obsesi.v7i5.5454

Nisa, K., & Halifah, S. (2021). Temu Baur Budaya Dan Matematika : Kue Tradisional Konjo Pada Pengenalan Bentuk Geometri Anak Usia Dini. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini*, *6*(1), 445–456. https://doi.org/10.31004/obsesi.v6i1.936

Papadakis, S., Kalogiannakis, M., & Zaranis, N. (2021). Teaching Mathematics with Mobile Devices and The Realistic Mathematical Education (RME) Approach in Kindergarten. *Advances in Mobile Learning Educational Research*, *1*(1), 5–18. https://doi.org/10.25082/AMLER.2021.01.002

Pasiningsih. (2022). Early Childhood Education Teachers' and Prospective Teachers' Understanding About Geometric Shapes. *Thufula: Jurnal Inovasi Pendidikan Guru Raudhatul Athfal*, *10*(1), 163–180. https://doi.org/10.21043/thufula.v10i1.13665

Phavadee, S. (2020). The Way of Teaching Toward Different Students' Learning Styles / Teaching That Takes Into Account Different Learning Styles. *Opus Et Educatio*, *7*(2), 174–179. https://doi.org/10.3311/ope.380

Rahman, I. H., Kusumah, Y. S., & Hasanah, A. (2022). Penggunaan 3D Grapher dalam Pembelajaran Matematika Geometri. *Jurnal Perspektif*, *6*(1), 52–61. https://doi.org/10.15575/jp.v6i1.165

Rahmatia, R., Pajarianto, H., Kadir, A., Ulpi, W., & Yusuf, M. (2021). Pengembangan Model Bermain Konstruktif Dengan Media Balok Untuk Meningkatkan Visual-Spasial Anak. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini*, *6*(1), 47–57. https://doi.org/10.31004/obsesi.v6i1.1185

Ria, Y., & Musyaddad, K. (2019). Permainan Tradisional Sebagai Model Permainan Edukatif Untuk Meningkatkan Kemampuan Sosial Emosional Anak Usia Dini. *Al-Athfaal Jurnal Ilmiah Pendidikan Anak Usia Dini*, *2*(1), 14–24. https://doi.org/10.24042/ajipaud.v2i1.3995

Riefya, A. F., & Bahalwan, H. (2022). Desain Permainan Berbasis Karpet Sensoris Untuk Menstimulasi Perkembangan Motorik Halus Pada Balita. *Narada Jurnal Desain Dan Seni*, *9*(1), 87–94. https://doi.org/10.22441/narada.2022.v9.i1.007

Sahara, Y. K., & Thohir, M. A. (2022). Analisis Sikap Siswa Saat Pembelajaran Menggunakan Media Digital Pada Masa Pandemi Covid-19. *Anterior Jurnal*, *21*(3), 62–67. https://doi.org/10.33084/anterior.v21i3.3540

Savira, S., Khosiah, S., & Kusumawardhani, R. (2022). Geometry Fun Circuit Play for Children's Geometric Shapes Recognition. *Journal of Early Childhood Care and Education*, *4*(2), 92–99. https://doi.org/10.26555/jecce.v4i2.5369

Setyaningsih, R. (2023). Peran Permainan Edukatif Dalam Mengembangkan Keterampilan Berbicara Bahasa Inggris Pada Anak Usia Dini. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini*, *7*(6), 7299–7307. https://doi.org/10.31004/obsesi.v7i6.5773

Sumartini, S. (2018). Penerapan Permainan Pindah Kamar Dalam Menumbuh Kembangkan Kemampuan Mengenal Bentuk Geometri Pada Anak Usia Dini. *Comm-Edu (Community Education Journal)*, *1*(2), 88–93. https://doi.org/10.22460/comm-edu.v1i2.640

Susilowati, E., Fathonah, N., Astutik, E. P., Hadi, S., & Prayitno, L. L. (2020). Pendampingan Bunda PAUD Dalam Pembuatan Alat Permainan Edukatif (APE)

Sederhana Untuk Pengenalan Konsep Bangun Datar. *Jurnal Solma*, *9*(1), 131–142. https://doi.org/10.29405/solma.v9i1.4714

Tatminingsih, S. (2019). Alternatif Stimulasi Kemampuan Kognitif Melalui Penerapan Model Pembelajaran Berbasis Permainan Komprehensif. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini*, *3*(1), 183–190. https://doi.org/10.31004/obsesi.v3i1.130

Trisnadewi, B. A. P., Kumalasari, E., & Tobing, E. R. (2024). Meningkatkan Aspek-Aspek Perkembangan Anak Usia Dini Melalui Permainan Congklak: Studi Literatur. *Jurnal Jendela Pendidikan*, *4*(01), 48–57. https://doi.org/10.57008/jjp.v4i01.688

Widiana, Y. W., Kania, G., & Sumarti, S. S. (2023). Meningkatkan Kemampuan Kognitif Anak Dalam Mengenal Bidang Geometri Dan Angka Melalui Media Geoboard. *Jurnal Tahsinia*, *4*(1), 61–70. https://doi.org/10.57171/jt.v4i1.346

Yanuarsi, Y., & Mayar, F. (2022). Pengembangan Video Pembelajaran Berbagai Bentuk Geometri Untuk Meningkatkan Kemampuan Kreativitas. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini*, *6*(4), 3629–3647. https://doi.org/10.31004/obsesi.v6i4.1715

Yuningsih, T. I., Muslihin, H. Y., & Mulyadi, S. (2021). Boy-Boyan Dan Perkembangan Anak Usia Dini. *Jurnal Riset Golden Age Paud Uho*, *4*(2), 96–101. https://doi.org/10.36709/jrga.v4i2.17844

Yunita, S., & Supriatna, U. (2021). Pengaruh Penggunaan Media Puzzle Terhadap Hasil Belajar Siswa. *Syntax Idea*, *3*(8), 1999–2006. https://doi.org/10.46799/syntax-idea.v3i8.1451