International Summit on Science Technology and Humanity
ISETH 2024
ISSN: 2615-1588 (online)

Introduction of Basic Mathematics Through Traditional Dakon Games in Children Aged 4-5 Years: A Qualitative Study at Pertiwi Ngiyono Kindergarten

Adistya Amelia Nirmala Putri[1,*], Nur Fauziyah[1]

[1] Faculty of Teacher Training and Education, Muhammadiyah University of Surakarta (UMS), Surakarta, Indonesia

[*] Corresponding author: a520210020@student.ums.ac.id

Abstract

Purpose: The purpose of this study is to examine the effectiveness of dakon games in increasing children's enthusiasm and engagement in learning basic mathematical skills through enjoyable play-based activities.
Methodology: This research adopts a qualitative methodology to explore how teachers and students perceive and experience the learning process using dakon games. Data were collected through classroom observations and teacher interviews.
Results: The findings are expected to reveal the benefits of introducing fundamental mathematical concepts through dakon, showing how traditional games can support learning motivation and participation.
Applications/Originality/Value: This study highlights the importance of integrating local cultural elements—such as the traditional dakon game—into the educational process. It offers a culturally responsive approach to teaching mathematics, promoting both engagement and cultural preservation in early education.

Introduction

The first step in increasing the quality of education in Indonesia is to provide chil-dren with the education they need to develop to their full potential. This demands a significant expenditure of resources focused at enhancing the nation's human re-sources in order to achieve its development objectives (Kamid et al., 2022). Educa-tion is a fundamental thing in human life and one of them is education in early childhood that stimulates children in brain intelligence, which includes social-emotional, cognitive, religious, moral, and language that are influential in growth and development for readiness in further education (Lisjayanti et al., 2022).

One type of early childhood education that is crucial to a child's personality de-velopment and readiness for the next educational level is kindergarten (Humairo & Amelia, 2021). Kindergarten (TK) education should follow the characteristics and characteristics of the "garden" or child at play as a stage in his learning. Froebel likened a child to a seed that is planted, begins to grow, sprout, and grow from a weak young plant to a plant that is ready to bear fruit (Ainur Rofi'ah et al., 2023).

Early childhood is a time when children are sensitive to external stimu-li. Therefore, the early childhood phase. Between 0 to 6 years old is called the Gold-en Age or Golden Age (Kulsum & Warih Windasari, 2024). Permendikbud No. 137 of 2014 Article 1 Paragraph 10 is "Early Childhood Education (PAUD) is a coaching effort aimed at children from birth to the age of six years which is carried out by providing educational designs to help physical and spiritual growth and development so that children have readiness to enter further education". Early childhood is the next generation of the country, so it must be fostered, developed and guided from an early age in order to find the way to the gate of a bright future. Proper education is an investment that deserves to be given to early childhood so that it becomes the hope and backbone of the country (Hasiana, 2021).

Numeracy ability is the ability possessed by every child related to simple mathe-matical concepts, which includes the activity of sorting numbers or counting, and recognizing numbers, and aims to grow and develop skills that are indispensable in daily life as the basis for the development of mathematical skills for further educa-tion. able to achieve the specified learning indicators (Dalimunthe, 2024).

Numeracy ability is the ability possessed by every child related to simple mathe-matical concepts, which includes the activity of sorting numbers or counting, and recognizing numbers, and aims to grow and develop skills that are indispensable in daily life as the basis for the development of mathematical skills for further educa-tion. able to achieve the specified learning indicators (Nafiqoh & Alam, 2024).

The introduction to mathematics at this stage is very important because it will be the basis for a more complex understanding later on. However, conventional methods of teaching mathematics are often less appealing to children. Therefore, more creative and fun approaches, such as the use of traditional games, can be an effective solution. One of the games that is rich in educational value is dakon.

Playing is the fun of children. By playing, children will not feel bored with the environment or other things that are full of demands such as learning in the classroom. So a teacher can apply the method of playing while learning. Children will become more active in learning (Purwanti, 2020). And according to (Wahyuni & Azizah, 2020) Play is a child's world and childhood to explore everything that is in children. Games in children are all activities that children do, both in the form of movements, thoughts and words.

Traditional games are one of the games that can develop children's numeracy skills, one of which is the dakon game (Santi & Bachtiar, 2020). The game of Dakon is a traditional game that is usually played on a board with stones or grains played by 2 people. Dakon has rules in his game. The game of dakon requires the player to successfully collect as many seeds as possible in this way and the rules of the game. How to play this game is with a wooden board with a minimum of 14 small basins and 2 large basins, as well as a minimum of 98 Dakon seeds, which can come from pebbles, marbles, sacao seeds, or small shells (Wahid & Samta, 2022).

This game not only involves elements of strategy and motor, but can also help children understand basic mathematical concepts, such as addition, subtraction, and problem solving. At Pertiwi Ngiyono Blora Kindergarten, dakon games were introduced as part of basic mathematics learning activities. This study aims to ana-lyze the effectiveness of dakon games in increasing children's interest and involve-ment in learning basic mathematics through fun play activities, find out the role of teachers in facilitating the use of dakon games to teach basic mathematics as well as strategies used to support learning, and identify that traditional dakon games can be used as a medium to introduce basic mathematics concepts in children aged 4-5 years year.

Method

By presenting a thorough and intricate image that may be expressed in words, re-porting in-depth opinions gathered from informant sources, and conducting research in a natural setting, qualitative research aims to comprehend human or societal phe-nomena (Fadli, 2021). Qualitative research is the methodology employed. This study will use a qualitative methodology to investigate how teachers and students perceive and experience the learning process. Teachers were observed and interviewed in order to gather data. Through this research, it is hoped that we can find out the bene-fits of introducing the basics of mathematics through the game of dakon and provide an overview of the importance of local cultural integration in education. In addition, this research also has the potential to contribute to the development of more innova-tive and fun teaching methods for children, so that they can learn more effectively and meaningfully.

Result and Discussion

One of the best ways to teach math to young children is through games. Children's early math experiences, including reflection on their experiences, establishing con-nections between various experiences, investigation, estimation, and comprehension of all those experiences, are based on games (ÖNGÖREN & GÜNDOĞDU, 2021). One of the games that can be used to introduce basic mathematics is tradition-al games such as dakon. Dakon is a very popular local game and has spread almost throughout Indonesia. Dakon is Indonesian, as is the name of the group. This tradi-tional game is known as dakon or congklak (Mellawaty et al., 2023).

Traditional dakon games can be used effectively as a medium to introduce basic mathematical concepts to children aged 4-5 years. In this game, children are taught about numbers, addition and subtraction through the activity of filling and moving grains into the dakon hole. This activity not only develops fine motor skills, but also introduces children to the concept of counting and number rows. Through fun games, children can more easily understand and remember basic mathematical concepts.

From the results of the study, it is known that dakon games are effective in increasing children's interest and participation in learning basic mathemat-ics. Through fun play activities, children are more encouraged to participate active-ly. In this context, dakon games help children understand basic mathematical con-cepts, such as addition and subtraction, interactively. Dakon invites children to think strategically and solve problems which are important skills in learning mathemat-ics. In addition, the game also instills cultural values and traditions, so that children can not only learn math, but also understand its cultural heritage. The use of dakon in learning can develop a love for mathematics and local culture.

How to play dakon is as follows (Amalia Yunia Rahmawati, 2020).

(a) Both players perform a suit to determine who gets the first turn to play,
(b) The player who gets the turn to play takes the dakon seed from the direction of one hole that belongs to him,

(c) Dakon seeds are placed one by one in the hole on the right side of the hole until it runs out, including into the hole belonging to the opponent,
(d) If passing through a large hole that belongs to him, the player puts a dakon seed there. However, if passing through a large hole belonging to the opponent, players must not place dakon seeds in it. If the last dakon seed falls in his hole, the player takes back the dakon seed from his hole and places them one by one in the hole to his right until they are exhausted,
(e) However, if the last dakon seed falls on the opponent's hole, the player takes the dakon seed in the hole where the last dakon seed fell, and so on,
(f) The game continues like that continuously until the small holes are completely empty and all the dakon seeds go into each player's big hole,
(g) The player who gets the most dakon seeds is the player who comes out as the winner, and
(h) After completing one round, the game can be replayed.

In addition, dakon games can develop cognitive aspects (Fydarliani et al., 2021).

(a) Both players perform a suit to determine who gets the first turn to play,
(b) The player who gets the turn to play takes the dakon seed from the direction of one hole that belongs to him,
(c) Dakon seeds are placed one by one in the hole on the right side of the hole until it runs out, including into the hole belonging to the opponent,
(d) If passing through a large hole that belongs to him, the player puts a dakon seed there. However, if passing through a large hole belonging to the opponent, players must not place dakon seeds in it,
(e) If the last dakon seed falls in his hole, the player takes back the dakon seed from his hole and places them one by one in the hole to his right until they are exhaust-ed,
(f) However, if the last dakon seed falls on the opponent's hole, the player takes the dakon seed in the hole where the last dakon seed fell, and so on,
(g) The game continues like that continuously until the small holes are completely empty and all the dakon seeds go into each player's big hole,
(h) The player who gets the most dakon seeds is the player who comes out as the winner,
(i) After completing one round, the game can be replayed.

In addition, dakon games can develop cognitive aspects (Nafiqoh & Alam, 2024).

In addition, teachers in learning to count using dakon games still find ob-stacles including the lack of tools in the learning process in counting activities using dakon games, so that old children wait for their turn to play. However, in this activi-ty, the teacher gives the rules of the game to the children that, all children will get a turn to play but must take turns with their friends (2 people 1 time to play) if there are children who do not want to apply the teacher's rules then they will not get a champion, as for the children who get the champion in the activity, who in this case want to listen to the rules from the teacher will be given a star. So that in this activi-ty children are motivated and compete to play calmly and want to queue up through playing dakon so that children's numeracy skills improve well.

Figure 1. Dakon tradisional game tool

Figure 2. Children queue to take turns playing dakon

Conclusion

According to the findings of the research and discussion conducted for this study, it can be said that the traditional game of dakon is a good way to introduce young children to basic mathematical concepts because it makes them happier and less likely to get bored while learning to count. Not only that, children are also enthusiastic about learning while playing with the rules given by the teacher. With the teacher's active role in facilitating and directing the game, as well as overcoming existing challenges, this game can be an interesting and effective learning net. In addition, support from schools such as teacher training and the provision of adequate facilities is also needed.

Acknowledgments

The author would like to sincerely thank everyone who helped with the preparation of this post and offered support. First of all, give yourself a pat on the back for persevering this far. The Muhammadiyah University of Surakarta is then acknowledged for supplying the resources and facilities required for this study. We express our gratitude to our colleagues for their invaluable contributions during the article's preparation and review phases. In addition, we would like to express our deep appreciation to the reviewers who have provided constructive comments and helpful suggestions for improving this article. Without their support and input, this article would not have reached its current quality. We also thank our families for their moral support and patience during the research and writing process. Finally, we hope that this article can make a meaningful contribution to the development of science.

References

Ainur Rofi'ah, U., Maemonah, M., & Indah Lestari, P. (2023). Filsafat Pendidikan Anak Usia Dini Menurut Fredwrich Wilhelm Froebel. *Generasi*, *1*(01), 23–47. https://doi.org/10.59784/generasi.v1i01.4"

Amalia Yunia Rahmawati. (2020). "*Pengaruh Permainan Tradisional Dakon Terhadap Kemampuan Penguasaan Konsep Bilangan Pada Anak Kelompok B2 Tk Harapan Bunda Palangka Raya Tahun Ajaran 2018/2019*. *15*(July), 1–23."

Dalimunthe, S. M. (2024). *Keterampilan Berhitung Anak Raudhatul Athfal an-Namir*. *II*, 28–41.

Fadli, M. R. (2021). "Memahami desain metode penelitian kualitatif. *Humanika*, *21*(1), 33–54. https://doi.org/10.21831/hum.v21i1.38075"

Fydarliani, D., Muslihin, H. Y., & Mulyadi, S. (2021). "Permainan Congklak dalam Menstimulasi Perkembangan Kognitif Anak Usia Dini. *JCE (Journal of Childhood Education)*, *5*(1), 214. https://doi.org/10.30736/jce.v5i1.499"

Hasiana, I. (2021). "Pengaruh Permainan Tradisional Dakon Terhadap Kemampuan Berhitung Angka 1-20 Pada Anak Kelompok B. *PERNIK : Jurnal Pendidikan Anak Usia Dini*, *4*(2), 47–60. https://doi.org/10.31851/pernik.v4i2.5425"

Humairo, V. M., & Amelia, Z. (2021). "Peningkatan Kemampuan Berhitung Awal Melalui Modifikasi Bentuk Permainan Congklak. *Jurnal Anak Usia Dini Holistik Integratif (AUDHI)*, *3*(1), 19. https://doi.org/10.36722/jaudhi.v3i1.589"

Kamid, K., Rohati, R., Hobri, H., "Triani, E., Rohana, S., & Pratama, W. A. (2022). Process Skill and Student's Interest for Mathematics Learning: Playing a Traditional Games. *International Journal of Instruction*, *15*(3), 967–988. https://doi.org/10.29333/iji.2022.15352a"

Kulsum, U., & Warih Windasari, I. (2024). "Meningkatkan Konsep Mengenal Bilangan Anak Usia 3-4 Tahun Melalui Permainan Tradisional Dakon Di Paud Al – Firdaus Kabupaten Probolinggo. *Al-ATHFAL: Jurnal Pendidikan Anak*, *5*(1), 62–75. https://doi.org/10.46773/alathfal.v5i1.974"

Lisjayanti, M. F., Khasanah, I., & Rakhmawati, E. (2022). "Pengenalan Konsep Bilangan Melalui Alat Permainan Tradisional Dakon Pada Anak Usia 5-6 Tahun. *Wawasan Pendidikan*, *2*(2), 574–581. https://doi.org/10.26877/wp.v2i2.10048"

Mellawaty, Sukestiyarno, Y. L., Isnarto, I., & Zaenuri, Z. (2023). Learning mathematics through ethnomatematics studies containing character values and cognitive aspects in congklak games for children of the Dayak Losarang Tribe. *International Conference on Science, Education, and Technology (ISET)*, *9*(1), 475–483.

Nafiqoh, H., & Alam, S. K. (2024). *Congklak : Permainan Tradisional dalam Meningkatkan Kemampuan Mengenal Angka 1-10 pada Anak Usia Dini*. *7*(2), 187–195.

ÖNGÖREN, S., & GÜNDOĞDU, S. (2021). Mathematical Skills in Traditional Children's Games in Early Childhood. *Kastamonu Eğitim Dergisi*, *29*(5), 1052–1064. https://doi.org/10.24106/kefdergi.735687

Purwanti, R. (2020). Peningkatan Kemampuan Berhitung Permulaan Melalui Permainan Tradisional Congklak. *Jmece*, *01*(01), 45–54.

Santi, S., & Bachtiar, M. Y. (2020). Peningkatan Kemampuan Berhitung Anak Melalui Permainan Tradisional Congklak Di Taman Kanak-Kanak Yustikarini Kabupaten Bantaeng. *TEMATIK: Jurnal Pemikiran Dan Penelitian Pendidikan Anak Usia Dini*, *6*(1), 21. https://doi.org/10.26858/tematik.v6i1.14436

Wahid, A., & Samta, S. R. (2022). Permainan Tradisional Dakon Sebagai Media Pembelajaran Untuk Meningkatkan Kecerdasan Matematika Anak Usia Dini. *Sentra Cendekia*, *3*(2), 61. https://doi.org/10.31331/sencenivet.v3i2.2148

Wahyuni, F., & Azizah, S. M. (2020). Bermain dan Belajar pada Anak Usia Dini. *Al-Adabiya: Jurnal Kebudayaan Dan Keagamaan*, *15*(01), 161–179. https://doi.org/10.37680/adabiya.v15i01.257