

IMPLEMENTATION OF THE JARIMATIKA EXTRACURRICULAR PROGRAMME IN DEVELOPING EARLY NUMERACY SKILLS IN EARLY CHILDHOOD

Siti Lailatul Muarifah¹✉, Sofa Muthohar², Nilal Muna Fatmawati³

¹Universitas Islam Negeri Walisongo, Semarang, Indonesia

²Universitas Islam Negeri Walisongo, Semarang, Indonesia

³Universitas Islam Negeri Walisongo, Semarang, Indonesia

✉Correspondence: 23031060047@student.walisongo.ac.id

 **Abstract:** Early numeracy skills serve as a fundamental foundation for young children to master more complex mathematical concepts in the future. However, conventional learning methods are often considered less engaging and less challenging for children, which may hinder their interest and the development of their numeracy skills. This study aims: (1) to describe the planning and implementation process of the Jarimatika extracurricular program, (2) to gain an in-depth understanding of the changes in children's early numeracy skills, and (3) to identify the supporting and inhibiting factors in its implementation. This study employed a descriptive, qualitative case study approach. Data were collected through participant observation, in-depth interviews with teachers, and documentation studies. The findings reveal that the implementation of the Jarimatika extracurricular program, which includes the stages of introduction, habituation, and repetition through songs and games, was carried out systematically and enjoyably. The program proved effective in developing children's early numeracy skills, particularly in understanding number concepts and performing addition and subtraction operations. The children became more enthusiastic, confident, and skilful in solving simple arithmetic problems. In conclusion, the Jarimatika extracurricular program can serve as an innovative approach to creating enjoyable and meaningful numeracy learning while simultaneously strengthening children's numeracy skills from an early age, confident and skilled in solving simple arithmetic problems. The conclusion of

this research affirms that the Jarimatika extracurricular program can serve as a significant, innovative approach to creating enjoyable, meaningful numeracy learning.

Keywords: *Jarimatika, Early Childhood, Extracurricular, Counting, Numeracy*

A. Introduction

Early childhood is a fundamental golden period for laying the foundations of various abilities in children. Early numeracy skills, as the foundation for more complex mathematical mastery, are one important focus (Suniantara et al., 2021). Specifically, the Child Development Achievement Standards (STPPA) for children aged 5–6 state that numeracy skills include recognising numbers 1–10, matching numbers with objects up to 10, and performing simple addition and subtraction using concrete objects. In the Merdeka Curriculum, these skills are integrated into the Learning Outcomes (CP) of the Foundation Phase under the element of mathematical fundamentals. The difference is that the Merdeka Curriculum does not emphasise rote memorisation or technical skills alone; rather, it builds essential numeracy foundations through meaningful play experiences. Thus, simple arithmetic operations are taught contextually and enjoyably, so that children understand mathematics as part of real life, not merely as a target to be achieved (Permendikbud, 2014; Permendikdasmen, 2025). However, in reality, many children still have difficulty understanding number concepts and basic arithmetic operations. These difficulties are often caused by conventional learning methods that are abstract and monotonous. Learning is considered abstract when material is presented as symbols or numbers without corresponding concrete experiences that align with young children's cognitive developmental stage. Meanwhile, monotony refers to repetitive learning methods, a lack of variety, and is dominated by passive activities, such as the continuous use of worksheets, one-way lectures, and the requirement to sit still for long periods without any space for children to move, play, and explore (Aulina, 2018).

In fact, the learning characteristics of early childhood require a concrete, enjoyable, and physically engaging approach (Aulina,

2018). Early numeracy skills go beyond simply memorising numbers and focus on a deep understanding of numerical concepts. These skills include connecting numerical symbols with quantities of objects and performing simple calculations. As an essential foundation, this skill is vital for the development of mathematical logic and problem-solving skills in the future. Without a strong understanding from an early age, children are at risk of experiencing difficulties in learning mathematics. These difficulties can ultimately lead to a decline in their motivation and academic achievement (Fauziyah & Pratiwi, 2020).

However, in many early childhood education institutions, numeracy is still taught using conventional, abstract methods. Many approaches, both classical and contemporary, are applied, such as teacher-centred approaches that rely on drilling and writing techniques (Dewi et al., 2021). This approach is clearly not in line with the learning characteristics of young children, which are active, concrete, and play-based. As a result, it has the potential to cause anxiety and boredom with mathematics (math anxiety) from an early age. This situation, in fact, runs counter to the goals of early childhood education as outlined in Minister of Education and Culture Regulation No. 137 of 2014 and implemented through the Merdeka Curriculum, which aims to foster all aspects of children's development holistically through project-based learning, meaningful play, and a child-centred approach (Permendikbud, 2014; Permendikdasmen, 2025).

Early numeracy is the foundation of mathematics introduced to young children, encompassing the ability to recognise and memorise numbers (Clements & Sarama, 2020). According to Susanto in Lily et al, early numeracy is the fundamental ability every child possesses to develop their potential in understanding number concepts. The development of these numeracy skills begins in the child's immediate environment, such as interactions with parents at home or with teachers and peers at early childhood education centres. Through interactions and concrete experiences in these environments, children's numeracy skills gradually improve, leading to an understanding of quantity concepts related to addition, subtraction, and division (Lily et al., 2023). At this stage, children are also responsive to various stimuli provided to support the development of their numeracy

skills (Marifuddin et al., 2024). Through educational stimulation to assist physical and spiritual growth and development, so that children are prepared to enter further education (Rakhmawati, 2019). More than just memorising facts or sequences of numbers, numeracy involves a deep conceptual understanding. This understanding includes grasping the meaning of quantities represented by numerical symbols. Essentially, this skill is the foundation for mathematical thinking (Purpura & Lonigan, 2013). Given the importance of early numeracy skills for children's readiness to progress to further education, various efforts are needed to develop these skills to the fullest. One such effort is through extracurricular activities.

According to Wiyani in Yanti et al, extracurricular activities are educational activities outside of school hours that are designed to support the development of students in accordance with their needs, potential, talents, and interests through activities specifically organised by students and qualified and authorised educational personnel at the school (Yanti et al., 2016). These extracurricular activities are intended to develop students' interests and talents while also nurturing their talents and interests (Karunia et al., 2022). Student participation in extracurricular activities is positively correlated with various aspects of development, both academic and non-academic. Several studies have revealed that involvement in extracurricular activities is linked to improved academic performance; this is because students are allowed to gain additional learning experiences, thereby strengthening their understanding (Hanline & Cuevas, 2020). In addition, extracurricular activities also play a key role in developing social skills, such as the ability to work together and communicate, as well as in shaping one's sense of identity through interaction with peers (Acar & Yigit, 2023). Extracurricular activities contribute to balanced cognitive, motor, social and emotional development, although their effectiveness may vary depending on the type of activity, the level of participation, and the support provided by the learning environment (Safira et al., 2025).

In this case, an innovative, enjoyable learning approach that is appropriate for children is needed. One alternative offered is the Jarimatika method. Jarimatika is a method of calculating (multiplication, division, addition, and subtraction) using the

fingers (Afriani et al., 2019). According to Khusnul, finger math is an easy and fun way to calculate using our own fingers (Himmah et al., 2021). This extracurricular activity aims to improve children's basic mathematical skills, concentration, and thinking speed (Rahayu, 2015). The Jarimatika extracurricular activity has both advantages and disadvantages. The advantages of Jarimatika are: it provides a visualisation of how to calculate, increases children's interest, is relatively easy for children, and the tools used do not need to be purchased (Afriani et al., 2019). Meanwhile, the disadvantages of the finger counting method are: the number of calculations that children can solve is limited because it uses the number of fingers on their hands, and a lack of practice will slow down their counting speed (Ariyanti & Muslimin, 2015).

Several previous empirical studies have proven the positive impact of the Jarimatika method. Research by Sumargiyani shows that the Jarimatika method can be an effective alternative in teaching mathematics to children (Sumargiyani et al., 2025). Latipah Hasanah showed that the mathematical method effectively improved the abilities of children with learning difficulties, especially their ability to solve addition and subtraction problems (Hasanah et al., 2022). Similar findings revealed by Fauziah prove that Jarimatika is effective in improving children's numeracy skills (Fauziyah & Pratiwi, 2020). However, research by Ani Fitriani states that the Jarimatika extracurricular activity is less effective in developing numeracy skills in children in group A (Fitriati & Mustakimah, 2024).

Previous studies only discussed the effectiveness of the Jarimatika method in arithmetic operations and cognitive abilities. What distinguishes my research is that the Jarimatika method is more enjoyable with singing, and children are given space for colouring activities.

Based on the above description, this article aims to analyse the implementation of the Jarimatika programme in developing early numeracy skills in young children. The analysis is conducted in depth, focusing on the programme's planning and implementation. In addition, the study focuses on supporting and inhibiting factors in its implementation. This study also analyses the results of the children's numeracy skill development. The findings of this study are expected to serve as a reference for early childhood education

practitioners to create innovative, enjoyable, and meaningful numeracy learning experiences.

B. Method

This study utilised a descriptive, qualitative research design with a case-study approach. This approach was chosen because it was appropriate to the research objective: to gain an in-depth, contextual understanding of the implementation process of the Jarimatika extracurricular programme. Through this approach, the researcher was able to describe in detail and holistically the impact and factors that influenced and hindered the programme (Creswell, 2016).

The research subjects in this study consisted of two main groups. The first group was kindergarten B children (aged 5-6 years) who participated in the Jarimatika extracurricular programme. These subjects were selected because they were in a sensitive period for the development of number concepts. The second group consisted of teachers responsible for planning and implementing the programme. The research was conducted at RA Bina Mutiara Hati Klampisan.

Data collection techniques were carried out using triangulation, namely through (1) Participant observation, where researchers were directly involved in activities to observe the learning process, children's enthusiasm, and interactions in the classroom using observation guidelines; (2) In-depth interviews with teachers using semi-structured interview guidelines to explore information about planning, implementation, challenges, and their perceptions of children's development; and (3) Documentation studies, by analysing documents such as Lesson Plans (RPP), photographs, and children's work as supporting evidence (Sugiyono, 2013).

This study employed a data analysis technique based on Miles and Huberman's interactive model, which includes data collection, data condensation, data display, and conclusion drawing and verification. During the data collection phase, the researcher gathered data through direct observation of the implementation of the Jarimatika extracurricular program, interviews with teachers and children, and documentation of activities related to children's early numeracy skills (Miles et al., 2014).

Next, during the data condensation stage, the researcher selected, simplified, and focused the data relevant to the research objectives, namely the implementation of Jarimatika and the development of early numeracy skills in young children. In this condensation stage, Jarimatika selected, simplified, and focused the data into three categories: cognitive, artistic, and social-emotional

In the data display stage, the sorted data is then presented in the form of descriptive narratives, tables, or matrices to facilitate the researcher's understanding of patterns and relationships among the data, particularly regarding the implementation of Jarimatika and the outcomes of children's developmental progress.

The final stage is conclusion drawing and verification, where the researcher draws conclusions based on the patterns and findings emerging from the presented data, then conducts continuous verification by rechecking the data in the field or comparing data sources (triangulation) to ensure validity and consistency (Miles et al., 2014).

C. Result and Discussion

Implementation of the Jarimatika Extracurricular Programme in Developing the Numeracy Skills of Young Children

The purpose of the Jarimatika extracurricular activity at RA Bina Mutiara Hati Klampisan is to support teachers in helping children count using a fun method, so that children will not get bored. Of course, if students enjoy the Jarimatika method, they will, without realising it, feel as if they are playing, while also learning mathematics in an easy-to-understand way (Kurniawan, 2020). Based on observations in Group B, none of the children fell asleep or cried during the 45-minute lesson; they remained focused despite rapid changes in activities. In an interview, the supervising teacher (Ms Dilla) explained, "If you make the children count over and over again, they'll get bored quickly. That's why I always start with clapping or singing simple songs." This demonstrates that the fun-based method is truly being implemented and its benefits are being felt.

Planning for extracurricular activities in mathematics includes, first, cooperation between parents and teachers. Parental involvement in this process not only provides additional support

for children but also facilitates communication about the learning methods used. Thus, parents can be more effective in guiding their children to practise at home (Muliana et al., 2025)

Secondly, RA Bina Mutiara Hati has provided expert teachers in the field of numeracy. In the section on educational standards and teaching staff, it is stated that early childhood teachers need to have qualifications, competencies, and abilities in managing learning activities, including additional or extracurricular activities that require special expertise (Permendikbud, 2014). Third, RA Bina Mutiara Hati has prepared supporting media for the learning and assessment process. In addition, teachers also have strategies for implementing the Jarimatika extracurricular activity. The strategies applied in the implementation of the Jarimatika extracurricular activity at RA Bina Mutiara Hati Kelampisan include icebreakers at the beginning and in the middle of the lesson, as well as teachers giving children space by having them colour pictures in their books while counting. This is done to rekindle the enthusiasm and focus of the students, to increase their concentration on the material being presented (Sarjono et al., 2023). With this strategy, learning objectives will be achieved as desired, and the learning process will be more meaningful and conducive (Aritonang & Elshap, 2019).

The Jarimatika extracurricular activity at RA Bina Mutiara Hati Klampisan was carefully planned, with well-defined objectives and strategies. This is evidenced by the standard operating procedures (SOP) for the abacus extracurricular program, which include a fixed schedule every Tuesday from 9:00 to 10:00 a.m. for Group B students (ages 5–6). The SOP also outlines the sequence of activities: icebreakers, core abacus instruction, colouring while counting, and a closing Q&A session. This activity is in line with Lev Vygotsky's Zone of Proximal Development (ZPD) theory, which emphasises that the gap between a child's actual ability to complete a task independently and their potential ability that can be achieved through interaction and assistance from others (Vygotsky, 1978). This theory is also reinforced by Jean Piaget's constructivist theory, which emphasises that individuals actively construct their own knowledge through activities and interactions carried out with conscious awareness of their environment (Piaget, 1952). In the constructivist approach, teachers act as mentors or facilitators

in designing teaching and learning strategies. This reduces the burden on teachers and allows them to play a greater role as mentors (Voon & Amran, 2021).



Figure 1. Extracurricular Jarimatika

The implementation of the Jarimatika extracurricular activity at RA Bina Mutiara Hati Klampisan is held every Tuesday for 60 minutes. This activity is conducted immediately after recess, with a supervising teacher and a guidance teacher present. This extracurricular activity is attended by all 50 students in the TK B class. Based on an interview with Ms Nurul Usnadiyah, the Jarimatika method is used in the opening, main and closing activities. The opening activity of the jarimatika extracurricular begins with positive routines such as praying together, asking how everyone is doing, and singing icebreakers.

Then comes the main activity, in which the teacher invites the children to review the material taught and repeat counting activities using their fingers from 1 to 10. After that, the teacher will continue by explaining and practising the material and giving examples on the blackboard using the finger counting method. Once the children understand the material, the teacher will give them counting problems from the provided workbooks. The finger-counting extracurricular activity at RA Bina Mutiara Hati Klampisan has been combined with several methods, such as singing and colouring, tailored to the children's conditions in the class. The singing and colouring activities in the finger-counting extracurricular activity are intended to prevent it from becoming monotonous, to keep the children from feeling bored,

and to boost their enthusiasm. The closing activity involves the teacher reviewing the material with the children through a question-and-answer session and expressing appreciation for the children. After that, the teacher leads a prayer together.

Table 1. Jarimatika Symbols

Number	Description	Image
1	Symbolised by the position of the index finger of the right hand	
2	Symbolised by the position of the index finger and middle finger of the right hand	
3	Symbolised by the position of the index finger, middle finger, and ring finger of the right hand	
4	Symbolised by the position of the index finger, middle finger, ring finger, and little finger of the right hand	
5	Symbolised by the position of the right thumb	
6	Symbolised by the thumb and index finger of the right hand	

7	Symbolised by the thumb, index finger, and middle finger of the right hand	
8	Symbolised by the thumb, index finger, middle finger, and ring finger of the right hand	
9	Symbolised by the thumb, index finger, middle finger, ring finger, and little finger of the right hand	
10	Symbolised by the index finger of the left hand	
20	Symbolised by the index finger and middle finger of the left hand	
30	Symbolised by the position of the index finger, middle finger, and ring finger of the left hand	
40	Symbolised by the position of the index finger, middle finger, ring finger, and little finger of the left hand	

50	Symbolised by the position of the thumb on the left hand	
60	Symbolised by the position of the thumb and index finger of the left hand	
70	Symbolised by the position of the thumb, index finger, and middle finger of the left hand	
80	Symbolised by the position of the thumb, index finger, middle finger, and ring finger of the left hand	
90	Symbolised by the position of the thumb, index finger, middle finger, ring finger, and little finger of the left hand	

The implementation of the Jarimatika extracurricular activity at RA Bina Mutiara Hati Klampisan is structured and does not only focus on mastering numeracy skills; it also addresses children's psychological needs by creating a varied, non-monotonous, and enjoyable learning process. According to Putri and Rahayu in Syahril Musthopa, learning that emphasises interactive activities can increase student participation while reducing the fear of mathematics lessons (Musthopa et al., 2025).

The Impact of the Jarimatika Extracurricular Programme on the Numeracy Skills of Young Children

The implementation of the Jarimatika extracurricular programme at RA Bina Mutiara Hati Klampisan had an impact in several aspects, namely: cognitive, artistic, and social-emotional. First, in terms of cognitive development in early childhood, it included the children's success in counting using the Jarimatika technique. This method transforms abstract concepts, such as addition and subtraction, into concrete, easily understandable ones. This is in line with Marifuddin's research, which shows that Jarimatika can facilitate counting skills, as children understand the concepts more concretely (Marifuddin et al., 2024). The Jarimatika method encourages children to understand mathematical processes logically, rather than simply relying on rote learning. This progress is evident in the improvement in speed, accuracy, and the children's confidence when solving arithmetic problems. From a cognitive development perspective, these achievements indicate that Jarimatika plays a role in fostering logical-mathematical thinking, as proposed by Jean Piaget. Although young children are theoretically at the pre-operational stage, characterised by concrete and egocentric thinking, the use of fingers as a learning tool helps guide them towards the concrete operational stage—the stage at which children begin to reason logically about numbers. Thus, the Jarimatika extracurricular programme does not merely improve numeracy skills, but also makes a significant contribution to laying the foundations for children's cognitive development, particularly in terms of problem-solving and logical reasoning (Piaget & Inhelder, 1969)

Secondly, in the development of early childhood art, children participating in extracurricular activities involving numbers do not only count; they are also given special time for colouring activities, often with objects related to the world of numbers and counting, such as pictures of animals, fruit, and geometric shapes. This is consistent with the observations of Ms Rahma, the supervising teacher, who noted, "The children's artistic development in the abacus activities is very evident, particularly in terms of colouring and creativity. For example, after learning the abacus, the children are given the freedom to colour the abacus worksheets according to their imagination. In fact, their choice of colours has become

more diverse, and the children have become creative by adding decorations to their drawings." It is in these activities that children's artistic creativity and imagination emerge, as seen through their choice of colours when colouring. Colouring, therefore, plays a role in stimulating children's artistic development. This is evident from the creativity and variety of colours that children gradually employ, as documented in their artwork. This activity is incorporated into Jarimatika extracurricular activities through the use of number or shape objects, which are coloured as part of counting exercises (Inara et al., 2025).

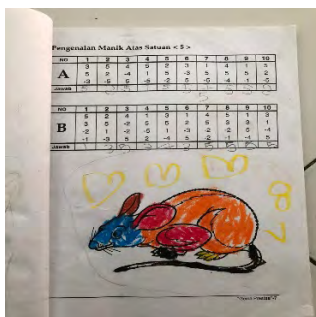


Figure 2. Children's colouring activities

Third, in terms of social and emotional aspects, the Jarimatika extracurricular activity has an impact. For example, when a child successfully masters a technique and answers a question correctly, they feel a sense of pride and confidence. This aligns with the observations of Ms Rahma, the abacus instructor, who noted, "The children's reactions are very obvious. Usually, they raise their hands first before I even point to them. Some shout, 'Ms. Rahma, I can do it! 3 plus 1 equals 4! Others make mistakes, but they stay enthusiastic. Sometimes they even help their friends who are still confused.'" Thus, children's social-emotional development, including self-confidence, social interaction, and emotional management, is greatly influenced by positive experiences through appropriate learning activities and stimulation. Therefore, Jarimatika not only improves numeracy skills but also contributes to children's social-emotional development (Nadlifah et al., 2022). This can be based on the framework of the Child Development Achievement Standards (STPPA), which comprises three key indicators of social-emotional development: self-awareness,

a sense of responsibility, and prosocial behaviour, all of which are incorporated into the 'Jarimatika' activities (Permendikbud, 2014). In addition, the atmosphere in the Jarimatika class is full of a spirit of togetherness, with children helping each other, applauding their friends' successes, and learning to wait patiently for their turn. From this, cooperation, sportsmanship, and empathy also develop. The Jarimatika extracurricular activity at RA Bina Mutiara Hati Klampisan not only has an impact on one aspect, but also encompasses almost all aspects.

Factors Supporting and Hindering the Implementation of the Jarimatika Extracurricular Programme for Early Childhood

The implementation of Jarimatika extracurricular activities at RA Bina Mutiara Hati Klampisan cannot be separated from supporting and inhibiting factors. Supporting factors for Jarimatika extracurricular activities include: First, the presence of competent and interactive teachers. The success of Jarimatika depends on the teacher's ability to convey concrete material using fingers and through interactive activities that are easy for children to understand. Second, adequate facilities. In implementing the Jarimatika extracurricular activity at RA Bina Mutiara Hati, there are adequate facilities, including extracurricular support books, stationery, classrooms, and teachers who are competent in the field of Jarimatika. According to Hasanah in Ani Fitriani, the finger-counting method has several advantages in its application, namely: Firstly, this method is easy to implement as children only need to use their own fingers as counting aids, thus requiring no complicated preparation. Secondly, finger-counting helps to visualise the calculation process, which is highly suited to the characteristics of young children who are still in the concrete thinking stage. Thirdly, this approach does not overburden children's minds as it is presented in a play-based learning environment, so children feel happy and are not stressed during the activity. Fourthly, from an economic perspective, Jarimatika is relatively inexpensive as it does not require expensive specialised counting tools; children use their fingers, which are always readily available (Fitriati & Mustakimah, 2024).

In addition, the factors hindering the implementation of the Jarimatika extracurricular activity are: First, children's lack of understanding of the concepts of right and left. In applying the

Jarimatika method, the focus is on using the right and left hands. The right hand is used to symbolise single digits, while the left hand symbolises tens. When children do not yet understand the concept of determining which is right and which is left, it can cause confusion and anxiety in children. Second, there is a lack of consistent home practice for children. Extracurricular arithmetic classes are held once a week, and a lack of practice at home will lead to short-term memory loss, causing children to forget and find it difficult to remember in the long term. As a result, teachers always repeat previous material at each learning session.

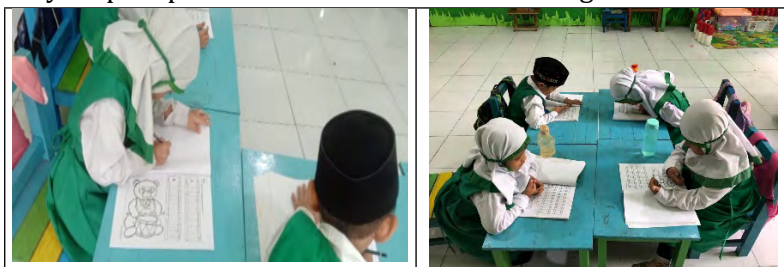


Figure 3. Students Working on Exercise Books

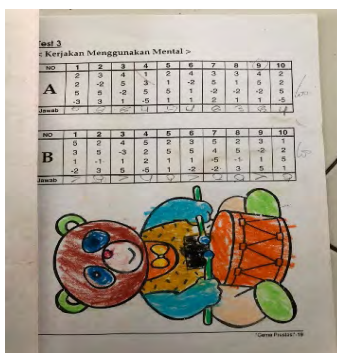


Figure 4. Children's worksheet

D. Conclusion

This study found that the implementation of the Jarimatika extracurricular programme at RA Bina Mutiara Hati Klampisan successfully progressed through the stages of introduction, familiarisation, and repetition, utilising songs and games. The uniqueness of this study's findings lies in the effectiveness of the finger-based 'learning through play' approach as a concrete, easily

accessible medium, which significantly improved young children's understanding of number concepts and simple addition and subtraction operations. Although there were constraints regarding the limited scope of arithmetic operations to tens and the need for consistent practice, all these challenges were overcome.

Based on these findings, it is recommended that teachers continue developing a variety of songs and games to maintain children's enthusiasm. For future researchers, it is recommended to examine the development of the Jarimatika method to broaden the scope of arithmetic operations and to investigate its long-term effectiveness on numeracy skills at subsequent educational levels.

References

- Acar, E., & Yigit, M. F. (2023). Beyond the Classroom: Exploring the Relationship Between Extracurriculars, Social Capital, and Academic Achievement. *Journal of Education and Practice*, 14(15), 101–107. <https://doi.org/10.7176/JEP/14-15-10>
- Afriani, D., Fardila, A., & Septian, G. D. (2019). Penggunaan Metode Jarimatika dalam Meningkatkan Kemampuan Berhitung Perkalian pada Siswa SD. *COLLASE (Creative of Learning Students Elementary Education)*, 2(5), 191–196. <https://doi.org/10.22460/collase.v2i5.3342>
- Aritonang, L. A., & Elshap, D. S. (2019). Meningkatkan Kemampuan Berhitung pada Anak Usia Dini dengan Menggunakan Metode Jarimatika. *CERIA (Cerdas Energik Responsif Inovatif Adaptif)*, 2(6), 363–369. <https://doi.org/10.22460/ceria.v2i6.p363-369>
- Ariyanti, A., & Muslimin, Z. I. (2015). Efektivitas Alat Permainan Edukatif (APE) Berbasis Media dalam Meningkatkan Kemampuan Berhitung pada Anak Kelas 2 di SDN 2 Wonotirto Bulu Temanggung. *Jurnal Psikologi Tabularasa*, 10(1). <https://doi.org/10.26905/jpt.v10i1.243>
- Aulina. (2018). Peningkatan Kemampuan Berhitung Anak Usia Dini melalui Metode Jarimatika. *Obsesi*, 2(2), 238–245. <https://doi.org/10.31004/obsesi.v9i2>
- Clements, D. H., & Sarama, J. (2020). *Learning and Teaching Early*

- Math (The Learning Trajectories Approach)* (3rd ed.). <https://doi.org/10.4324/9781003083528>
- Creswell, J. W. (2016). *Research Design: Pendekatan Metode Kualitatif, Kuantitatif, dan Campuran* (4th ed.). Pustaka Pelajar.
- Dewi, Y. A. S., Munawaroh, D. A., Hayati, R. M., & Arifin, Z. (2021). Metode Teacher Centered Learning (TCL). *Snastep: Seminar Nasional Teknologi Pembelajaran Universitas Negeri Malang*. <http://repository.uin-malang.ac.id/19016/2/19016.pdf>
- Fauziyah, N., & Pratiwi, W. (2020). Jarimatika sebagai Strategi Mengurangi Kecemasan Matematika Anak Usia Dini. *Jurnal Pendidikan Anak*, 10(1), 45–56.
- Fitriati,A.,&Mustakimah,M.(2024).ImplementasiEkstrakurikuler Jarimatika dalam Menumbuhkan Kemampuan Berhitung pada Kelompok A di TK Bunga Harapan Bringin. *As-Sibyan: Jurnal Pendidikan Anak Usia Dini*, 9(1), 155–164. <https://doi.org/10.32678/assibyan.v9i1.10154>
- Hanline, J., & Cuevas, J. (2020). An Examination of the Motivation Factors of Participation in Extracurricular Activities and their Effect on Academic Achievement and the Intention to Pursue Post-Secondary Education. *International Journal of Social Sciences & Educational Studies*, 7(4), 122. <https://doi.org/10.23918/ijsses.v7i4p122>
- Hasanah, L., Sabrina, M. T., Nazmi, S. A., Azzahra, F., & Izzati, N. (2022). Pengembangan Konsep Penjumlahan dan Pengurangan melalui Metode Jarimatika pada Anak Usia Dini. *Incrementapedia: Jurnal Pendidikan Anak Usia Dini*, 04(2), 91–95. <https://doi.org/10.36456/incrementapedia.vol4.no2.a6641>
- Himmah, K., Asmani, J. M., & Nuraini, L. (2021). Efektivitas Metode Jarimatika dalam Meningkatkan Kemampuan Berhitung Perkalian Siswa. *Dawuh Guru Jurnal Pendidikan MI/SD*, 1(1), 57–68. <https://doi.org/10.35878/guru.v1i1.270>
- Inara, Z., Ningsih, D., & Adeeva, K. (2025). Pengaruh Kegiatan Mewarnai terhadap Kreativitas Anak Usia 4-5 Tahun. *PRIMARY: Journal of Multidisciplinary Research*, 1(4), 163–

167. <https://doi.org/10.70716/pjmr.v1i4.270>

- Karunia, Sophia, & Wulandari, R. (2022). Pengelolaan Ekstrakurikuler Kelompok Bermain. *Jurnal Multidisipliner Kapalamada*, 1(3), 289–297. <https://doi.org/10.62668/kapalamada.v1i03.239>
- Kurniawan, C. (2020). Menumbuhkan Rasa Senang Berhitung dengan Metode Jarimatika pada Peserta Didik TK. *Prismatika: Jurnal Pendidikan Dan Riset Matematika*, 2(2), 1–6. <https://doi.org/10.33503/prismatika.v2i2.690>
- Lily, N. M., Khotimah, N., & Maarang, M. (2023). Efektivitas Permainan Tradisional Congklak terhadap Kemampuan Berhitung Anak Usia Dini. *Murhum: Jurnal Pendidikan Anak Usia Dini*, 4(1), 296–308. <https://doi.org/10.37985/murhum.v4i1.214>
- Marifuddin, P. S., Afdal, U., Ilyas, S. N., Rusmayadi, R., & Herlina, H. (2024). Penerapan Metode Jarimatika dalam Meningkatkan Kemampuan Berhitung Anak Usia Dini 5-6 Tahun di TK Kemala Bhayangkari Polewali Mandar. *Edu Sociata (Jurnal Pendidikan Sosiologi)*, 7(1), 490–495. <https://doi.org/10.33627/es.v7i1.2054>
- Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative Data Analysis: A Methods Sourcebook* (3rd ed.). Sage Publications.
- Muliana, M., Nufus, H., Mursalin, M., Ali, M., & Syahputra, A. (2025). Pelatihan Berhitung Cepat dengan Metode Jarimatika bagi Siswa Sekolah Dasar IT Almarkazul Islami. *Jurnal Solusi Masyarakat Dikara*, 5(1), 18–22. <https://jsmd.dikara.org/jsmd/article/view/139/0>
- Musthopa, S., Bisri, C., Merakati, I., Bahiyah, N. N., Nurhaliza, S., & Sari, A. (2025). Meningkatkan Matematika Dasar dengan Metode Interaktif Perkalian dan Pembagian Jepang serta Jarimatika di SDN 1 Kamaranglebak. *Prosiding Seminar Nasional Pengabdian Masyarakat*, 5(1), 195–203. <https://doi.org/10.52188/psnpm.v5i1.1618>
- Nadlifah, N., Kirana, E. R., & Puspawati, D. (2022). Early Childhood's Dynamics of Socio-Emotional Development: COVID-19 Pandemic vs Post COVID-19 Pandemic. *GOLDEN*

- AGE: Jurnal Ilmiah Tumbuh Kembang Anak Usia Dini*, 7(2), 77–88. <https://doi.org/10.14421/jga.2022.72-03>
- Permendikbud. (2014). *Peraturan Menteri Pendidikan dan Kebudayaan Republik Indonesia Nomor 137 Tahun 2014 tentang Standar Nasional Pendidikan Anak Usia Dini*. <https://luk.staff.ugm.ac.id/atur/bsnp/Permendikbud137-2014StandarNasionalPAUD.pdf>
- Permendikdasmen. (2025). *Peraturan Menteri Pendidikan Dasar dan Menengah Nomor 13 Tahun 2025*. <https://share.google/1QIpxcr8Cd5vtxxh0>
- Piaget, J. (1952). *The Origins of Intelligence in Children*. International Universities Press. <https://doi.org/10.1037/11494-000>
- Piaget, J., & Inhelder, B. (1969). *The Psychology of the Child*. Basic Books. <https://www.alohabdonline.com/wp-content/uploads/2020/05/The-Psychology-Of-The-Child.pdf>
- Purpura, D. J., & Lonigan, C. J. (2013). Informal Numeracy Skills: The Structure and Relations Among Numbering, Relations, and Arithmetic Operations in Preschool. *American Educational Research Journal*, 50(1), 178–209. <https://doi.org/10.3102/0002831212465332>
- Rahayu, S. (2015). *Jarimatika: Cara Cepat Berhitung dengan Jari*. Pustaka Pelajar. <https://doi.org/10.5678/jpm.v3i2.2015.045>
- Rakhmawati, E. (2019). Manajemen Ekstrakurikuler Pendidikan Anak Usia Dini (PAUD) dalam Meningkatkan Multiple Intelegensi. *La-Tahzan: Jurnal Pendidikan Islam*, XI(2). <https://doi.org/10.62490/latahzan.v11i2.50>
- Safira, A. S., Juhadi, J., & Aarsal, T. (2025). Implementation of Extracurricular Activities and Additional Season Olympiad Class to Enhance Learning Achievement. *JESS: Journal of Educational Social Studies*, 14(2). <https://doi.org/10.15294/jess.v14i2.19451>
- Sarjono, A., Septiani, E. A. A., Muslichah, E. N., & Sari, N. T. (2023). Implementasi Metode Jarimatika dalam Meningkatkan Kemampuan Berhitung pada Operasi Katabaku. *Jurnal Syntax*

Admiration, 4(12), 2335–2349. <https://doi.org/10.46799/jsa.v4i12.926>

Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.

Sumargiyani, S., Setyorini, F., & Damayanti, A. F. (2025). Pelatihan Kemampuan Penjumlahan Anak Usia Dini Dengan Menggunakan Jarimatika. *Kurvamas*, 1(2), 59–66. <https://doi.org/10.33579/krvms.v1i2.5733>

Suniantara, I. K. P., Hendayanti, N. P. N., Suwardika, G., Pramayasa, I. M. H. M., Pratiwi, L. P. S., Masakazu, K., Rudita, I. M., & Suardika, I. G. (2021). Meningkatkan Kemampuan Berhitung Anak Menggunakan Metode Jarimatika di TK Mekar Kumara Desa Kesiut. *Widyabhakti*, 4(1), 59–64. <https://doi.org/10.30864/widyabhakti.v4i1.288>

Voon, S. ., & Amran, M. . (2021). Pengaplikasian Teori Pembelajaran Konstruktivisme dalam Pembelajaran Matematik. *Sains Insani*, 06(2), 73–82. <https://doi.org/10.33102/sainsinsani.vol6no2.285>

Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes*. <https://doi.org/10.2307/j.ctvjf9vz4>

Yanti, N., Adawiah, R., & Matnuh, H. (2016). Pelaksanaan Kegiatan Ekstrakurikuler dalam Rangka Pengembangan Nilai-Nilai Karakter Siswa untuk Menjadi Warga Negara yang Baik di SMA KORPRI Banjarmasin. *Jurnal Pendidikan Kewarganegaraan*, 6(11), 963–970. <https://doi.org/10.20527/kewarganegaraan.v6i11.746>

This page intentionally left blank