

## **The use of Sunda Manda games to stimulate early childhood numerical intelligence**

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### **Abstract**

*The importance of early childhood multiple intelligences lied in the fact that every child possesses unique talents and potential. Various forms of intelligence, including verbal, mathematical reasoning, visual-spatial, musical, interpersonal, intrapersonal, kinesthetic, and naturalistic, enable educators to adapt learning approaches to meet the unique needs of each child. This study aims to enhance the numerical aptitude of children between the ages of 4 and 5 by utilizing the Sunda Manda number game at the Dharma Wanita Nadi II Kindergarten, Bulukerto. This study employs descriptive qualitative methodologies. The data collection process involved triangulation, including interviews with teachers from class A to gather information. Additionally, observations were made while the children were playing Sunda Manda numbers. Documentation was also done while playing Sunda Manda numbers to record relevant information about the children. The participants in the study consisted of teachers and pupils classified as class A, with an age range of 4-5 years. The research findings indicate that the Sunda Manda game numbers can enhance numeracy intelligence in children with auditory processing disorders associated with symbolic thinking, logical thinking, and learning and problem-solving abilities. Then, the game also promotes children's physical development through three stages: education, expansion, and development.*

**Keywords:** Sunda Manda Number Games, Numeracy intelligence, early childhood

### **Abstrak**

*Multiple intelligence bagi AUD sangat penting karena setiap anak memiliki kekuatan dan potensi yang berbeda. Jenis kecerdasan seperti linguistik, logika matematika, visual spatial, musical, interpersonal, intrapersonal, kinestetik, dan*



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naturalistik membantu pendidik untuk menyesuaikan metode pembelajaran agar sesuai dengan kebutuhan individu anak tersebut. Tujuan dari penelitian ini yaitu untuk menstimulasi kecerdasan numerasi anak usia 4-5 tahun melalui permainan sunda manda angka di TK Dharma Wanita Nadi II Bulukerto. Penelitian ini menggunakan metode kualitatif deskriptif. Pengumpulan data dilakukan secara triangulasi, wawancara dilakukan dengan guru kelas A untuk memperoleh data kemudian observasi dilakukan pada saat anak bermain sunda manda angka, sedangkan dokumentasi dilakukan pada anak waktu proses kegiatan bermain sunda manda angka berlangsung. Subjek penelitian adalah guru kelas A dan siswa usia 4-5 tahun. Hasil penelitian menunjukkan bahwa permainan sunda manda angka dapat menstimulasi kecerdasan numerasi pada anak usia dini yang berkaitan dengan berpikir simbolik, berpikir logis serta belajar dan pemecahan masalah pada anak dan melatih perkembangan fisik motorik anak, melalui beberapa tahap yaitu tahap edukasi, tahap ekspansi dan tahap perkembangan pada anak.

**Kata Kunci:** Permainan Angka Sunda Manda, Kecerdasan Numerasi, Anak Usia Dini

## INTRODUCTION

Multiple intelligences in early childhood development activities are very important because each child has different strengths and potential. Recognizing various types of intelligence such as linguistic, mathematical logic, visual spatial, musical, interpersonal, intrapersonal, kinesthetic, and naturalistic helps educators to adapt learning methods to suit the individual needs of the child, helps them develop holistically, and expands opportunities for success in learning and life. Intelligence is a person's ability in knowledge, skills and expertise to solve problems (Gardner, 2006 in simple Psychology). Intelligence is also defined as the human ability to take action, think rationally, and navigate situations around them effectively (in Wiyani: 2020). This is in line with the opinion of (Fadlillah: 2017) who provides the understanding that someone who is able to solve the problems they face well and skillfully can be categorized as an intelligent person. In essence, every human being is born intelligent, bringing their own potential and character which allows them to become intelligent (Kristiana, 2018). Gardner explains that intelligence is the ability to overcome problems and produce thoughts in a variety of ways and situations at hand. Among them is numerical intelligence.

Numerical intelligence is the ability to understand number correlations and solve problems related to basic number concepts. According to Agustin Leoni (in Ismoro: 2016) numerical intelligence is intelligence related to numbers or mathematics. According to Buzan (in Masykur and Fathani: 2008) numerical intelligence can be defined as the brain's ability to play magic with the

"alphabet" of numbers. Meanwhile, Sumada (in Irawan and Kencanawaty: 2017) explains numerical intelligence with the ability to think, organize information to solve problems related to numbers. Children with numeracy intelligence have several characteristics, including: 1). calculate arithmetic problems quickly by rote, 2). Likes asking questions of an analytical nature, 3) Expert in chess, halma, and so on, 4). Able to explain problems logically, 5). Likes designing experiments to prove something, 6). Spend time with logic puzzle games. Numerical intelligence can be trained regularly and try various kinds of calculations. Aspects of numerical intelligence include symbolic thinking, logical thinking, and learning and problem solving.

The importance of numeracy intelligence for early childhood is to help children understand basic mathematical concepts, such as counting, patterns and number relationships. Numeracy intelligence to help with everyday problem solving, prepare children for further mathematics learning, and support the development of children's cognitive skills. This cognitive development is closely related to the child's ability to understand a problem, Khadijah (in Maulana and Muttaqin: 2022).

In improving early childhood ' numeracy intelligence, it is necessary to carry out learning innovations that are fun and enjoyable. One of the innovations carried out was using the Sunda Manda game. Sunda Manda is a traditional game that can stimulate the improvement of logical, strategic and creative thinking abilities. Apart from that, Sunda Manda also provides time for early childhood to have fun and enjoy their childhood. Thus, traditional games play an important role in the development of early childhood. Traditional games can help train and improve motor skills with fun games (in Utsman et al., 2018)

The Sunda Manda game is a traditional Indonesian game that has existed since the Dutch colonial era. According to Helvana & Hidayat (in Rahmawati, et. al: 2022) early childhood character can be developed by using traditional games.

According to (Permana and Irawan: 2019) the importance of traditional games for early childhood is 1) to develop their motor skills, both fine motor skills such as drawing and gross motor skills such as running or jumping, 2) teaching children about social interaction, sharing and working together. friends, 3) traditional games also contain elements of culture and tradition, which help children understand and appreciate their cultural heritage, 4) can stimulate children's creativity in creating new rules or ways of playing, 5) some traditional games involve cognitive aspects such as solving puzzles or calculating scores, which helps children's cognitive development, 6) practicing

physical activity is good for children's health and helps reduce the risk of obesity, 7) reducing children's dependence on electronic devices and screens, such as cell phones, television, 8) can be an opportunity to learn rules, strategies and simple mathematical concepts, 9) provide time for early childhood to have fun and enjoy their childhood. Traditional games do not only provide recreational or fun value. However, traditional games also have physical education value, even social value (in Hariastuti, (2016). Thus, traditional games have a very important role in the development of early childhood, not only in terms of education but provide a good stimulant for numeracy development. Sunda Manda game according to Sukirman Dharmamulya (2008) is a game involving jumping using one foot which is usually played by two or more people taking turns.

Stages of the Sunda Manda game: 1) Players do hom pim pa or suit to determine who has the right to throw the *gacuk* for the first time. 2) The player who wins starts playing and takes a *gacuk* to throw into the first square. 3) Then jumps into small squares using one foot until the very edge of the square. 4) When you have jumped to the end, and then turn around by jumping one foot towards the starting box and picking up the *gacuk* that was thrown earlier. 5) The place where the stone falls must not be stepped on, if the footsteps on the line and the *gacuk* leaves the square then the player may not continue the game and is deemed to have lost and is replaced by another player. 6) The game is continued by the second player with the same steps. Then, if all stages of the game have been carried out, the player throws the *gacuk* with his back to his ankle. If it fits on the desired box, that box will become the house or rice field and the player can stop at that box. Meanwhile, other players may not step on that square during the game, and so on until the squares from numbers 1 to 10 belong to the player. If all the boxes are owned by the player, the game is declared finished.

Dharma Wanita Nadi II Bulukerto Kindergarten has implemented the Sundanese manda game by modifying the Sunda Manda game number with each plot given a number and color. So that when children play without realizing it, they can learn to recognize and name number symbols correctly. By modifying the Sunda Manda game, children look happy and enthusiastic in playing (Ahvan and Hossein: 2016). So that children understand number symbols more quickly and happily, children can also recognize the concept of color more quickly, children can solve problems, children can interact with friends, and according to (Wijayanti: 2018) this Sundanese manda game also improves children's social and emotional emotions. This Sundanese manda number game aims to 1) stimulate children's numeracy intelligence, 2) enrich

their insight numeracy, 3) improve communication and socialization skills, 3) train children's logical intelligence, 4) train children's gross motor skills, 5) train body balance, 6) make children feel happy.

Based on previous research conducted by Yustanti tahun 2022 entitled Implementation of the Traditional *Engklek* Game in Developing Group A's Numeracy Skills in Dharma Wanita Burno 02 Kindergarten, Senduro District, Lumajang Regency, the results of the implementation of the traditional engklek game can develop the ability to number, recognize and count the number symbols 1- 10). Previous research was conducted by Hanik Nanda Yulianti (2018) entitled Implementation of the Traditional Sundanese Game Manda in Developing Group B in Tut Wuri Handayani Kindergarten, Langka Pura Bandar Lampung District with the result that children's gross motor skills have not developed optimally because children children are too bored waiting for their turn to play. Previous research by (Aziz & Rusmana (2021) entitled numerical and spatial intelligence on children's mathematical abilities, with the results that there was a significant influence between numerical intelligence and spatial intelligence on students' mathematical abilities.

This research aims to stimulate numeracy intelligence through the Sundanese Manda Number game which has been implemented so the researchers are interested in studying it more deeply.

## **METHOD**

This research method uses descriptive qualitative research, this research was conducted at Dharma Wanita Nadi II Bulukerto Kindergarten in the 2023/2024 academic year. The subjects of this research were group A students while the object of this research was the Sunda Manda game. This research uses data collection techniques by observation and interviews. The interview technique uses interview instruments to obtain data from the class teacher. Research is carried out from the start of the game to the end of the game. Interviews were conducted in January 2024. The research was carried out by direct observation of the Sundanese Manda number game activities. Data collection was carried out by triangulation (a combination of observation, interviews and documentation), interviews were conducted with the class A teacher to obtain data, then observations were carried out when the children were playing Sunda Manda game numbers, while documentation was carried out on the children during the process of playing Sunda Manda game numbers. Data comes from interviews; field notes (minutes), photos and other official documents. The official document used by researchers is a report card (in Moleong: 2014).

## FINDING AND DISCUSSION

Intelligence is a tool for learning, solving problems, and creating new creativity that humans can use. Intelligence can develop from outside a person and increase through relationships with other individuals (in Wardani: 2019). The numeracy intelligence applied in the institutions that I observed was through the Sundanese Mandada number game. According to Ulya (2017) to improve early childhood's numeracy intelligence, it is necessary to carry out learning innovations that are interesting and fun. Meanwhile, according to Fadlillah (in Rahmawati: 2022) learning through playing is one of the characteristics of early childhood. This statement is in line with the opinion (in Triharso: 2013) that the way to make the learning atmosphere fun and challenging is to combine play with learning. Playing for them is very effective learning. Playing is something that is very fun, playing is a child's world, playing is an activity which is fun and from this playing activity the child's growth and development will be stimulated (in Matulessy et al., (2022). The class teacher invites his students to play the Sundanese manda numbers game which is held on the school terrace. The teacher invites the students to gather and do hompimpa to determine the first player. After getting the first player, the game of Sundanese manda numbers immediately begins. The stages of the game of Sundanese manda numbers start by giving the child the freedom to throw the precarious shards or gacuk into any square. In the plot there are numbers and colors in the fourth plot and there is the number 4 (pink), then the child is asked to say the number and say the color pink 4 times, and if the child throws a tile in the fifth plot and there is the number 5 (orange), then the child is told to say the number and say the color orange 5 times. After that the child will jump over the fifth square and so on until all the squares have been crossed (up to number 10).

There are many methods used to stimulate children's numeracy intelligence, game methods can use traditional games in learning activities (in Budiman & Dewi: 2022). One of them is the Sunda game Manda numbers, to introduce the concept of numbers the teacher applies the Sunda Manda number game method. The following is a picture of the Sunda Manda game number pattern.

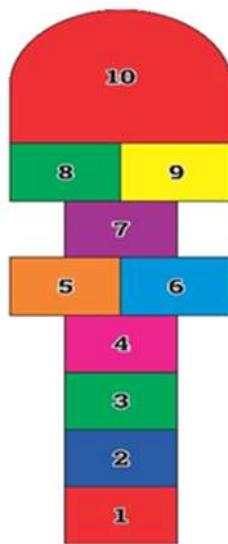


Figure 1.1 Sunda Manda Creation Plot Pattern

The Sundanese game Mandada numbers has been implemented at the institution. Researchers have observed that children look very enthusiastic when playing Sundanese Mandada numbers with friends, and teachers also guide them during the game and give trigger questions related to the concepts of numbers, colors and shapes through guessing numbers before the game starts so that children really respond well about the Sundanese Mandada game. Understanding numbers is closely related to children's ability to match and place objects in sequence (in Plato in Wiyani: 2016). Documentation of children playing Sundanese Mandada numbers.



Figure 1.2 Photo of children playing

Based on the results of observations, documentation and interviews with class teachers, in the symbolic aspect, children are able to recognize the symbols for the numbers 1-10 correctly, say the symbols for the numbers 1-10 correctly, and children are able to recognize the concept of numbers when

playing guessing numbers. Apart from that, it can also train motoric development in children. When implementing the Sunda Manda numbers game, the teacher gives trigger questions and the children are able to answer the questions asked by the teacher, for example the children are able to name and recognize various forms of numbers and order the number symbols 1-10 correctly. The logical thinking aspect of early childhood involves their ability to recognize the concepts of color, shape and size, cause and effect relationships related to themselves, as well as identifying patterns or relationships between events or objects. Through the game Sunda Manda numbers, children can recognize colors, shapes and sizes.

In this case, children can differentiate the shapes of the plots in the Sunda Manda game, including square shapes (called *petakan*) and semi-circles (called *gunungan*), children can name the colors correctly by guessing the color before the game starts. Children also understand that in Sunda Manda game, when they throw a *gacuk*/trag shard, if it doesn't fit in the square or crosses the square line, the game is dead. So children can also think and be careful when throwing tiles/fragments. Meanwhile, in the learning and problem solving aspects, children at an early age are able to recognize objects based on their use, use various play objects with symbols, and recognize the concept of more and less, recognize activity patterns and understand the importance of time. In the *Sundanese game Mandada* Numbers, children are able to understand objects based on their function (children can use a *gacuk* to throw it in one of the squares correctly), use objects as a symbolic game (*gacuk*/tile shards, ceramic shards), recognize the concept of many and few (getting lots of pieces) rice fields), recognize activity patterns and realize the importance of time. In games, children can follow the rules of the game; children can also use tools to play (*gacuk*).

At the educational stage, teachers apply apperception activities, namely by giving children trigger questions by guessing numbers, introducing playing strategies and how to play. The teacher's expansion stage stimulates children's intelligence by giving children the freedom to throw *gacuk* into the desired plot; children follow the rules of the game correctly, giving children freedom to play. Then the development stage assesses the child's development by paying attention to time and making an assessment at the end of the lesson and the teacher assesses development using a checklist, making observations or making observations in the game. Evaluation is carried out after the game is finished by asking the child's feelings after playing and learning activities, asking the child what has been done so that the teacher knows the extent of understanding in stimulating the child's numeracy intelligence.

Based on research observations that have been made, it can be seen that this Sundanese number game can stimulate numeracy intelligence in early childhood which is related to symbolic thinking, logical thinking as well as learning and problem solving through several stages, namely the education stage, expansion stage and development stage as well as training physical motor development in children.

This Sundanese Manda game can be a good alternative. The Sundanese Manda game is played together with the concept of Sunda Mandada numbers which are made with a variety of colors with number symbols, so they are easy for children to understand. Children responded positively to the Sunda Manda game given by the teacher because the concept was interesting. To increase good numeracy intelligence, educational games are needed. The Sundanese Manda numbers game can stimulate children's numeracy intelligence, that is, children can recognize number symbols and say the number symbols 1-10, apart from that, the Sundanese Manda numbers game can improve physical motor skills for children, especially the development of gross motor skills in children. According to Fitriani, (2018) explained that children's growth and development can often be measured using motor development as a benchmark.

## CONCLUSION

Based on the research that has been carried out, it can be concluded that this Sundanese number game can stimulate numeracy intelligence in early childhood which is related to symbolic thinking, logical thinking as well as learning and problem solving at the Dharma Wanita Nadi II Bulukerto Kindergarten through several stages, namely the education stage, expansion stage and developmental stage. At the educational stage the teacher applies apperception activities, introducing playing strategies and how to play. In the expansion stage, teachers stimulate children's intelligence, follow the rules of the game correctly, give children freedom to play and implement the habit of cleaning up after playing. At the developmental stage, teachers assess and evaluate children's learning well.

The results of observations on children regarding the Sundanese Manda numbers game show that in the Sundanese Manda numbers game it can stimulate numeracy intelligence, children can recognize the symbols for numbers 1-10, say the symbols for numbers 1-10 and children are able to recognize the concept of numbers and children are able to jump on each square accordingly with the rules of the game. Children are also enthusiastic about playing, so the Sundanese game is very good for stimulating children's numeracy intelligence and training their physical motor development.

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