Problem Solving Ability among Students Aged 3-4 Years in Montessori Approach Schools

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ABSTRACT

Problem solving not only solving problems in everyday life, but also being able to explore children both doing assignments at school and at home. The ability to solve problems or what is usually called problem solving is an important ability that children need to have from an early age, this is because the ability to solve problems is related to how children develop their cognitive abilities. The design of this research uses qualitative research methods in the form of case studies, which use one to one interview and in depth interview. Choosing the case study method is because it aims to understand students in depth regarding the development of abilities problem solving in schools that apply the Montessori approach. In this research the researcher will use 3 informants as subjects or samples in this research, the participats is RR, ES, and AN. Based on the research results, it can be concluded that ability problem solving Children's improves much more after entering a Montessori school, so the Montessori method plays a very important role in improving abilities problem solving children, which can be seen from the child's independence, increased self-confidence, and ability to solve problems alone or together with friends. Parents at home can also contribute to improving their child's ability to use household materials, because Montessori materials at school can be found at home.

Key words: problem solving ability, montessori approach, students

Introduction

Ability of *problem solving* in early childhood which aims to overcome problems and problems in their daily lives. *Problem solving* not only solving problems in everyday life, but also being able to explore children both doing assignments at school and at home. Ability *problem solving* varies with each development and according to age stages (Lestari, 2020).

The Montessori method was introduced by a female doctor named Maria Montessori. The Montessori method emphasizes learning that prioritizes freedom, freedom or *freedom* What is meant here is freedom to choose activities and freedom to play so that children grow and develop according to the child's tempo and speed. The Montessori method does not require children to be smart cognitively, but also smart in other things related to life skills (Yuliastutie, 2022).

According to Sisdiknas (2003), early childhood is vulnerable children aged 0-6 years. Early childhood is a period *golden age* which at this time the child will experience very rapid development. According to Pattiun (2019) each age range of a child has a different level of developmental achievement. So the level of development attainment of children aged 3-4 years will be different from children under and over that age. In measuring the extent of a child's development, the level of developmental attainment

is used as a reference. Therefore, at this age children need more attention stimulating for their development to develop optimally, namely by providing education through educational institutions in kindergartens (Putri, 2020).

To complement this opinion, Anita Yus, (2011) states that children also develop various aspects of basic ability development which include language, cognitive, physical-motor and artistic. One aspect that must be developed in early childhood is the cognitive aspect. The Department of National Education (2002) explains that cognitive development is an ability think logical, critical, solving problems and finding cause and effect relationships. This is in line with Yusuf's (2005) opinion that cognitive abilities is child's ability to think more complex and carry out reasoning and problem solving, the development of these cognitive abilities will make it easier for children to master broader general knowledge. One of the important abilities for children's future is cognitive ability. Cognitive abilities consist of three domains of thinking, namely learning and problem solving, logical thinking, and symbolic thinking (Suminah, et al, 2015)

Saputra (2018), explains that the cognitive aspects of children entering the age of 3 years develop unexpectedly in a relatively short time. Children can easily master various cognitive skills, so now is the most effective time for children to learn many things to develop cognitive skills. Knoblauch & Woolfolk Hoy (in Anjaeni, et al, 2023) explains that cognitive skills are skills that can be used to gain knowledge in solving problems and adapting to the environment.

The ability to solve problems or what is usually called *problem solving* is an important ability that children need to have from an early age, this is because the ability to solve problems is related to how children develop their cognitive abilities (Putri, 2020). Horizons (2018) also explains that children who often ask questions about how and why certain things happen will tend to have better problem-solving abilities. *Problem solving* is a child's way of thinking to gain new knowledge through experience. Children's problem-solving abilities are demonstrated through the growth of children's ability to design, remember, and find solutions to problems (Suwatra, 2019).

Schools that implement a Montessori approach will focus more on skills *problem solving* for students aged 3-4 years. There are ways that can be done intact develop abilities *problem solving* students, namely allowing children to solve problems independently. In a Montessori environment, children are encouraged to solve problems and learn new concepts at their own pace. Teachers and parents can encourage children to do *brainstorming* solution to the problem. This helps children develop critical thinking skills and learn to think creatively. In a Montessori environment, children are also encouraged to organize their thoughts, take turns, follow directions, and build strategies. They are stimulated to recognize and correct their own mistakes, which helps them develop better social and emotional intelligence.

Researchers conducted pre-observations on several children at the Rona Montessori school and there were several problems in some children such as difficulty in fighting over toys with peers, difficulty understanding the rules of playing with peers, not being able to complete puzzles well, logical consequences that did not work, for example running out. eat cakes that come out of plastic, usually children who have them *problem solving* The good ones will immediately throw away the rubbish, but there are some children who can't do that and end up just holding the rubbish, or if there is spilled water, just leave it and won't take a tissue to clean it up.

The researcher then made observations on 2 students aged 3 years 1 month and 3 years 9 months on October 18 2023 at the Rona Montessori school, where the school applies the Montessori approach, there the researcher was only an observer and took videos based on the activities carried out by the children. -the child. Based on the results of ability observations problem solving The student who was 3 years and 1 month old had started to walk, at that time the student was moving the mute from one bowl to another bowl, when the mute fell, the student then looked for it and picked up the mute then returned it to its bowl, apart from that the student Students also arrange the bowls so that they are arranged neatly and do not collide with each other. Meanwhile. the student who was 3 years 9 months old, at that time he was trying to assemble a toy car using bolts and screwdrivers made of plastic and he succeeded in doing it, although in the middle of the work he had time to think for a moment but soon he reworked and finished well. Based on the results of observations on the two students in schools that apply the Montessori approach, the ability problem solving Students will continue to develop because the Montessori approach will teach about giving children confidence to do something and give environment which supports this.

The researcher then conducted more interviews with several teachers at school which applies the Montessori approach to ability *problem solving* learners.

"Tidak semua anak memiliki problem solving yang bagus walaupun sekolah ini sudah menerapkan pendekatan Montessori, ada beberapa anak yang kemampuannya sedikit lambat sehingga kami harus lebih extra perhatian kepada anak-anak tersebut" "Beberapa anak lambat bahkan sulit dalam melakukan problem solving seperti dalam menyusun puzzle dalam bentuk balok, bingung dalam mengambil keputusan seperti memilih dan menentukan permainan, beberapa anak juga cenderung lambat dalam memperbaiki atau menyusun permainan jika jatuh ataupun berantakan"

Based on these answers, it can be seen that there are several children who have abilities *problem solving*He is slower than other children even in schools that apply the Montessori approach. It can be concluded that although there are schools that apply Montessori approach, there are still some children who still have difficulty in overcoming the problems they experience.

Research on Problem Solving

Based on research research on similar studies known to researchers, research on abilities *problem solving* It has been done a lot for students aged 3-4 years. Research conducted by Putri, K (2020) with the title "Identification of Problem Solving Abilities in Kindergarten B Children in Cluster IV, Banguntapan District, Bantul". This research aims to obtain data regarding the problem-solving abilities of group B kindergarten children in Cluster IV, Banguntapan District, Bantul. Furthermore, the results of this research show that the problem-solving abilities of group B kindergarten children in Cluster IV, Banguntapan District, Bantul are included in the criteria for Developing According to Expectations and obtained a percentage of 69.61%. The percentage obtained from the indicator of understanding the problem obtained a percentage of 74.02% with the criteria Developing According to Expectations, the grouping indicator obtained a percentage of 73.37% with the criteria Developing According to Expectations, the comparing indicator obtained a percentage of 67.85% with the criteria Developing According to Expectations, the connecting indicator obtained a percentage of 76.94% with the criteria Developing Very Well, and the indicator of finding a solution to the

problem obtained a percentage of 71.75% with the criteria Developing According to Expectations.

Research conducted by Anjani, R, Novianti N, Nuraeni C, et al (2023) by title "The Influence of Busy Book Media on the Problem Solving Ability of Children Aged 3-4 Years". This research was conducted to prove the results of previous research which stated that media busy book influential to development of problem solving abilities in early childhood. This can be seen from the increasing stage of ability development problem solving in 7 children, namely 3 boys and 4 girls.

So it can be explained that this writing will explore abilities related to abilities *problem solving* on students aged 3-4 using schools that apply the Montessori approach with qualitative methods and the subjects are students aged 3-4 years.

Theory of Problem Solving

According to Beaty and Wortham (in Wahyuti, et al. 2023) explain that ability *problem solving* in early childhood students is the child's ability to use their experience in formulating hypotheses, collecting data, making decisions about hypotheses and formulating conclusions about the information they obtain in the scientific process. Branca and Dahar (in Syaodih. 2018) also stated that technique *problem solving* can be applied to help children use an effective learning process to analyze a particular object or phenomenon that is occurring in their immediate environment.

Permata (2020) also states that ability *problem solving* is the ability to use experience in finding solutions to problems faced to find a way out. This is in line with Suryati's opinion (in Sanusi, 2020) about ability *problem solving* Early age students have the ability to utilize their experience and knowledge in formulating hypotheses, collecting data, having the ability to design and make decisions in formulating hypotheses and making conclusions based on information carried out scientifically. Nadila (2020) explains *problem solving* requires children's abilities in the thinking process, schools can develop this problem solving ability and give learning materials so that children can think critically and solve problems. Based on this, it can be concluded that *problem solving* in early age students is the ability to find solutions to problems experienced by using experience and being able to make the right decisions.

Influential Factors in the Process Problem Solving

In developing problem solving abilities, there are 4 factors that influence the internal process *problem solving* namely motivation, wrong beliefs and attitudes, habits and emotions.

- a. Motivation
 - Low motivation will distract attention, while high motivation will limit flexibility.
- b. Wrong Beliefs and Attitudes
 - Wrong assumptions can lead us astray. If we believe that happiness can be obtained with material wealth, we will have difficulty resolving our mental suffering. Imprecise frames of reference hinder effectiveness solution to problem.
- c. Habit
 - The tendency to maintain a particular mindset or see problems from only one side, or excessive and uncritical trust in the opinions of authorities hinders efficient problem solving. This creates rigid thinking (rigid mental set), the opposite of flexible thinking (flexible mental set).
- d. Emotions

- In facing various situations, we are unconsciously involved emotionally. These emotions color our way of thinking as complete humans, we cannot ignore emotions. But when emotions reach such a high intensity that they become stressful, then it becomes difficult for us to think efficiently. (Zimbio: 2011)
- e. Fear may exaggerate the difficulty of the problem and give rise to an anxious attitude that paralyzes action; anger prompts thoughtless actions; anxiety greatly limits our ability to see problems clearly or formulate possible solutions.

Montessori Method Approach

The Montessori method is a learning method used in private or private schools in various states in the United States. The aim of all existing learning methods and educational theories is to help children become independent and productive humans when they grow up. Likewise, the Montessori Method aims to help children become independent humans. The Montessori method emphasizes activities that can stimulate children to be more independent from an early age, develop a sense of discipline and self-confidence in a safe and loving atmosphere. For this reason, the programs implemented are closer to daily life activities.

In all dimensions, students in schools using the Montessori method have relatively good abilities in achieving the educational goals that have been prepared. Like a study that was conducted randomly on children at the end of kindergarten. The child performed better on standard tests, namely reading and arithmetic, as well as positive interactions on the playground and displayed good interactions with his social environment as well as honesty and fairness with his friends. Based on the description and statement above, it can be described that the Montessori Method has several advantages or disadvantages compared to other (traditional) learning methods. For example, a child scattered all the geometric picture cards made of wood, then heard the sound of a procession coming from the street below the classroom window. All the children ran to the window to watch the procession except for one child who couldn't possibly leave his work behind even though he had tears in his eyes because he wanted to see the procession. When his friends saw this, many of them came back to help him put the picture cards back in their original place.

Student approach or *student centered approach* This is the main characteristic of learning using the Montessori Method. The Montessori Method approach emphasizes children's talents and interests, teaches children about concepts, and learns according to age stages, in this method children are also taught love and cooperation. In *student centered approach*, students will be more active inside classes so they are more confident, feel valued, and have a positive self-image. According to Piaget, the introduction of values and action patterns is initially compulsive where children do not yet know their meaning (Fadlillah & Lilif, 2013). The rules and regulations in the family are increasingly widespread, to the rules that apply in society and in the country. Instilling good values and habits in children can be difficult at first. However, as parents, we have to be smart about instilling positive values without making our children feel forced. Aprilian, (2016) revealed that there are five concepts in the Montessori education method, namely the concept of freedom, the concept of learning according to developmental stages, the concept of loving nature and living creatures, the concept of loving beauty and cleanliness, and the concept of the life skills learning process.

Research Questions

To collect research data in order to answer these questions, the following general questions and descending questions are formulated as follows:

- 1. Central Question: What are the dynamics of capabilities *problem solving* students aged 3-4 in schools that apply the Montessori approach?
- 2. Sub Question:
- a. What factors influence ability *problem solving* students aged 3 4 years?
- b. What is the impact of schools that implement the Montessori approach on *problem solving* learners?

Methods

The design of this research uses qualitative research methods in the form of case studies. Choosing the case study method is because it aims to understand students in depth regarding the development of abilities *problem solving*in schools that apply the Montessori approach. This is also explained Cresswell in (Assyakurrohim, et al 2023), that a case study is research in which the researcher explores a particular phenomenon (case) in a certain time and activity (program, event, process, institution or social group) and collects detailed and in-depth information using various data collection procedures over a period of 3 months, from October to December 2023. Considering these things, in this research the researcher will use 2-3 informants as subjects or samples in this research. In detail it is explained as follows;

- 1. Teachers at school which applies the Montessori approach
- 2. Parents and guardians of students aged 3-4 years in schools that apply the Montessori approach.
- 3. The indirect subjects in this research were students aged 3-4 years, which is the main characteristic in this research

Further in this research, we will use the concept *anonymity*. So the names of the subjects mentioned in this research are not their real names but pseudonyms. The unit of analysis is a particular unit that is counted as a research participant. The unit of analysis is a sampling procedure which includes sampling and study units. The type of data analysis from the case study method can be holistic analysis, namely the analysis of the entire case or in the form of interwoven analysis, namely an analysis for a specific, unique or extreme case (John in Assyakurrohim, et al. 2023). Furthermore, Yin in (Assyakurrohim, et al. 2023), divides three analysis techniques for case studies, namely: pattern matching, explanation making, and time series analysis. The unit of analysis in this research is teachers at school who apply the Montessori approach, parents and guardians of students aged 3-4 years in schools that apply the Montessori approach, and indirect subjects in this research are students aged 3-4 years who are the main characteristics in this research. To obtain the necessary data, the author conducted research taking place at the Rona Montessori School. The reason for choosing this location was that the researcher had direct contact with the school and had a friendly relationship with the principal of the Rona Montessori School.

Research result

The findings of this research will describe various things regarding the results of interviews in December 2023 which were conducted at schools using approach Montessori is Rona Montessori, which is related to *problem solving* students aged 3-4 years. Data can be categorized in verbatim form, then carried out coding to determine the patterns that emerge according to the data obtained. In this research have code for data, IF for Internal Factors, and EF for external Factors.

Participant RR

a) The background

The first participant is a woman aged 40, with the initials name RR. Participant RR is a school principal who serves in a school with a Montessori approach.

Code	Interview Results	Coding
IF	The curriculum used at the school is the Merdeka curriculum from DIKNAS however customized with the vision and mission of the school Schools that apply the Montessori approach can help with abilities problem solving Children have Montessori characteristics that are different from other public schools The first area to be introduced is area practical life skill because this area is a strong foundation for improvement problem solving learners The teachers there become observers and pay attention to the children's behavior in class which will then be recorded later in children's development books	Independent Curriculum Special features of Montessori schools Area Montessori Teacher as observer
EF	Some parents who are at home also use the Montessori method, so that learning continues after school, and becomes more refined <i>problem solving</i> child Parents understand that the Montessori method actively involves children so that children will feel more free to do so explore and develop abilities <i>problem solvingnya</i>	Application of Montessori At home Parents understand the Montessori method
DK	There is no difference in ability <i>problem solving</i> students with different family backgrounds Of course there are differences in abilities <i>problem solving</i> children in public schools with schools that use the Montessori method	Family background Montessori school differences

1. Participant ES

a) The background

The second participant is a woman aged 26, with the initials ES, who is one of the teaching staff at a school that applies the Montessori approach.

Code	Interview Results	Coding
FI	The Montessori materials referred to in their	Montessori Materials
	school, namely the Montessori apparatus,	The role of the teacher

	play an important role in improving abilities problem solving children because it can be a strong foundation for honing children's abilities. The role of teachers apart from teaching and observation, they prepare several things to support children's learning according to their particular needs problem solving. Children at school Montessori has good relationships such as regularity in play. In Montessori schools there are not many instructions from the teacher, so that children are given the freedom to play, teachers there are also not advised to say directly that the child is wrong	Interaction with friends Creativity
FE	Physical environment such as the classroom environment and School can affect abilities problem solving child	Physical environment
DK	Every child has development problem solvingnya different, there are children who show development is fast and there are children who are a little slower who need repeated play to hone his abilities Montessori implementation can provide contribution in this case an increase problem solving child If you want to see your child's progress regarding their abilities, especially abilities problem solving then it can be seen within a period of 3-4 months. Teachers can measure how far a child has developed other than by recording the child's development in books daily record.	Child development Montessori Implementation Progress problem solving Monitoring and evaluation

2. Participant AN

a) The background

The third participant is a 27-year-old woman with the initials AN, who is one of the parents and guardians of students at a school with a Montessori approach.

Code	Interview Results	Coding
FI	The school is very communicative with the	School involves parents
	parents, even at school have a special time	
	each day to discuss each child's development	
FE	At home they are not too monotonous in	Parental involvement at home
	teaching children to continue learning, what	Children's independence
	happens is that instead they encourage	
	children to play	
	When children are at home they tend to be	
	spoiled so sometimes they have to be given	
	stimulus first, but that doesn't mean the child	
	doesn't have initiative.	
DK	Since entering Montessori school, the child	Independent, confident
	has become more confident and wants to try	Problem solving increased
	something on his own, because previously he	Differences from previous methods
	had been accustomed to being more	_

independent at school, so when At home his son can do it a number of matter like clean Bed or bathe yourself, so that your child is much more independent.

Since his child attended a Montessori school, his child was more confident and brave enough to solve his problems rather than having to complain to the teacher or parents.

There are differences with the previous method and the Montessori method at school this, because that previously the child doesn't even know the alphabet yet, now not even 6 months old the child can read and is more independent too

Discussion of research results

This research focuses on students aged 3-4 years regarding ability *problem solving* in schools that apply the Montessori approach. The following is a discussion of the results of interpretation and analysis of research data. Based on the results of research on the three participants, it was found that most children aged 3-4 years already had the ability *problem solving* which is good after entering a Montessori school. Then, as a result of the research results, the researcher identified the themes found, namely, the background participation, what factors influence ability *problem solving* students, and the impact of schools that implement the Montessori approach on *problem solving* learners. Each participant's results had the same result, namely that there was a significant increase in ability *problem solving* children in schools that apply the Montessori approach, only this is seen from a different perspective, namely from RR as the school principal, ES as teaching staff, and AN as the students' parents.

The research had three participants who had different backgrounds. The first participant RR is a 40 year old principal at a Montessori school, the second participant ES is a 26 year old teaching staff member at a Montessori school, and the third participant AN is a parent of a student at a Montessori school.

Results of interviews with participants RR as a school principal who applies the Montessori approach, applies learning using the Montessori method to develop children's abilities, one of which is *problem solving*, this is because the characteristics of the Montessori method prioritize children's freedom and learning with a student center approach, and Montessori schools are also introduced to learning areas, one of which is *practical life skill*, which is the first area that children are introduced to when entering the school. There are also Montessori materials that children use when playing and to practice skills *problem solving* children, Montessori materials have been designed so that children are able to discover the concept of play independently, and will continue to play repeatedly until children find their own mistakes and then correct them.

The results of an interview with AN as one of the teachers at a school that applies the Montessori approach, to support children's learning at the school, there are several things that must be prepared, such as the environment, learning media, and leason fearning with activities that support abilities problem solving child. Teachers at Montessori schools also mostly act as observers to observe children's behavior when playing with Montessori materials. Most children aged 3-4 years are already independent in playing or solving problems. if the child is not yet able to solve the

problem on his own, the child will prefer to solve it with friends in his class, rather than telling the teacher. After observation the teacher will write daily child record for made evaluation materials for parents, and see how far the children have progressed, which then involves parents to support children's learning at home.

The results of interviews with ES as one of the parents of students in schools that apply the Montessori approach, parents in Montessori schools play a very important role in supporting students' abilities. *problem solving* child. Because parents of students at the school will also find out about their children's progress in special sessions every morning and report third monthly whole. Parents will requested take part in the school according to their respective backgrounds, such as ES participants who have visited classes and then become teachers that day in their children's classes. Parents can also apply the Montessori method At home which is because Montessori materials are part of household materials, such as spoons. ES also found significant differences in their children since entering the Montessori school, their children were much more independent, more confident, and able to solve their own problems both at home and at school.

Conclusion

Based on the research results, it can be concluded that ability *problem solvin*Children's g improves much more after entering a Montessori school, so the Montessori method plays a very important role in improving abilities *problem solving* children, which can be seen from the child's independence, increased self-confidence, and ability to solve problems alone or together with friends. Parents at home can also contribute to improving their child's ability to use household materials, because Montessori materials at school can be found at home.

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