

Montessori on Mathematics Learning at SDLB *Autisme* River Kids

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Abstract:- Mathematics is very important to learn, not least by survivors of autism. Autism with behavioral disorders, must be able to optimize themselves so they can live independently and empowered. The learning approach offered by researchers is the Montessori approach. A learning approach that educates students on the environment, an approach to self-directed activities in children, and clinical observations from teachers who function as facilitators or assistants. This research is intended to describe mathematics learning that is packaged in the Montessori approach at SDLB Autism River Kids with the main goal being to make autistic students independent. The research method used in this study is qualitative descriptive. This study will illustrate how the Montessori approach is applied in mathematics learning for autistic students. The results showed that the things that need to be considered in applying the Montessori approach are three period lessons. In addition, the concept of following the child and respect the child is very important to be applied to achieve the goals of student independence.

Keywords:- *Montessori, Mathematics, Autism.*

I. INTRODUCTION

Mathematics is a field of science that plays an important role in daily life. Mathematics is one of the fields of science that must be owned by all person. Saying "everyone" means that they are no exception with special needs. In line with Law Number 20 of 2003 concerning the National Education System in Article 5 paragraph 1 which reads, "Every citizen has the same right to obtain quality education." Various types of special needs, including those that are accompanied by intellectual disability, or those who do not have problems with intellectual abilities. Some have physical limitations, but there is also an invisible disability. There are rare diseases, however there are those who don't. They all need to study Mathematics.

The reason for the importance of learning mathematics is because various problems of life can be solved by mathematical thinking. Given, mathematics teaches someone who learns it to be able to think logically, critically, analytically, systematically, and creatively. That is why mathematics is always studied at every level of formal education. The way of thinking of mathematics is

systematic, through regular sequences. So by learning mathematics, our brain will naturally get used to solving life's problems systematically and easier.

Learning mathematics can also train someone to be careful and not careless in acting. The deductive way of thinking of mathematics, conclusions are drawn from things that are general in nature, not from specific things. Mathematics avoids thinking by drawing conclusions by chance. Learning mathematics also teaches us to be people who are patient in facing all things in life. Equally important, the application of mathematics is widely used in real life. Of course in this world, counting money, profits and losses, the problem of marketing goods, in engineering, even almost all science must touch mathematics.

For this reason, it is very important that educators now not only focus on "normal" students, but also develop it in mathematics education for special needs. The hope, by obtaining quality education, children with special needs will have greater opportunities to be able to live independently and work in the community.

In this study, researchers emphasize special needs with autism. Autism is a person who experiences cognitive impairment, behavior and verbal (Dewi, 2016). In line with the statement said Marienzi (2012) states that children with autism are only interested children in their own world, they do not care about the stimulus that comes from others or circumstances around it. Referring to these two meanings, it can be concluded that the behavior of autistic children arises solely because of his inner encouragement. Autistic children have a disorder on social interaction, communication (both verbal and non verbal), and behavior patterns.

Generally the characteristics and symptoms of new autism can be seen clearly after there are significant changes to the daily lives of children and usually this stage will begin to be seen during childhood. General characteristics of autism survivors that need to be understood include unbalanced development, like activities that repeat, communication disorders, hate noise, dislike physical contact, unstable emotions, engrossed in their own world, do not want to make eye contact, stiff when held, and has not been able to walk when he has stepped on 2-3 years.

Autistic children need to learn math because they can help them in their daily lives. According to Setiawani (2017), autistic survivors who have difficulty interacting and socializing with their environment, by learning mathematics can train the brain's work to be able to think logically and be able to develop children's creativity. Next, the child can developing their creativity will be well received by the community. Children become more confident in society and can socialize with well. Students who receive mathematics learning will be accustomed to gain an understanding of the properties possessed and not possessed of a set of objects (abstraction). However, all that must be adjusted to development of student abilities, so that in the end it will be very helpful the smooth learning process of mathematics.

In a previous study conducted by Sandewita (2015) about implementation Mathematical learning carried out by teachers is hard, experiencing several obstacles among them is the reversal of learning activities stopped because of autism students angry and upsetting learning activities.

Montessori approach is a learning approach brought by Maria Montessori. The Montessori concept of the role of the teacher is different from the traditional concept. If before the teacher mastered the main stage of the class as the focus of attention of students, Montessori changes this role by guiding students in their learning activities (Cipta,2018). Montessori believes that mental problems are a problem associated with pedagogic. Montessori thinking related to mentally handicapped children was finally dealt with continue with the establishment of *Casai dei Bambini* or the Children's Houses in the slums of Rome in 1907 (Montessori, 2015).

The characteristics of montessori approach are the emphasis on self-direction activities in children, and clinical observations from teachers who function as facilitators or assistants. This approach also emphasizes the importance of adjusting from the learning environment to the level of child development and the role of physical activity in directly absorbing academic subjects and practical skills.

This student approach or student centered approach is the main characteristic of learning using the Montessori method (Wulandari, 2018). Montessori approach emphasizes talents and interests in children, teaches children concepts, and learns according to the stages of age, in this method also children are taught compassion and work together. In a student centered approach, children are more active in the classroom so that children are more confident, feel valued, and have a positive self-image.

Not only that, this approach also uses auto correction tools to help children learn well. The use of these equipment is intended so that the child understands the right or wrong questions about the actions taken, so that the child can correct himself. Well, this unwittingly makes the child become more aware of the mistakes made, without the need to be told by the educator. That is why, schools with this method do not recognize the existence of reward and punishment.

II. METHOD

This research is a qualitative descriptive study. Sugiyono (2016: 15) mentions qualitative research is a research method based on postpositivme philosophy which is used to examine the condition of natural objects, where researchers are key instruments, sampling of data sources was done by purposive and snowball, collection techniques with triangulation (combined), data analysis is inductive / qualitative, and the results of research are more emphasize the meaning rather than generalization. Qualitative descriptive research used in this research is intended to obtain information about mathematics learning with the montessori approach at SDLB Autism River Kids, Malang City, Indonesia.

This study uses two data sources, the source of data in this study is the subject from which data is obtained (Arikunto, 2006: 123). To obtain qualitative data with respect to the problem that the author will examine. These data include: Primary data sources, Primary data sources are data taken directly, in this study are principals, teachers and students. This research was taken from the results of interviews and observations. Secondary data sources, secondary data sources are data obtained indirectly or obtained from second parties, in this study are the school environment, books, and documentation.

Data analysis techniques are critical in the qualitative research process. Analysis is used to understand the relationships and concepts in the data so that hypotheses can be developed and assessed later evaluated. According to Sugiyono (2016: 244), data analysis in qualitative research was carried out before plunging into the field, during the field, and after the field. This study uses the data credibility test for checking the validity of the data, testing the credibility of the data is done by triangulation. Triangulation is an effort to check the correctness of data and information from a variety of different perspectives, checking a single phenomenon from different perspectives will get a higher level of truth.

III. DISCUSSION

Special Elementary School (SDLB) Autism River Kids is a segregation school for survivors of autism and mentally disabled people. This school is located in Joyogrand Atas, Malang City, East Java Province, Indonesia.

Autism, as mentioned before, has problems in social interaction. Autism survivors are categorized as mental disabilities. Until this article was published, none of the drugs could cure autism. The cause of someone becoming autism is unknown. So what can be done is to optimize growth and independence of survivors of autism so that later he can live without depending on others.

Independence. That is what the SDLB Autism River Kids emphasizes as a learning achievement. independence is an attitude that does not depend on others and strives on oneself in work and in solving problems (Wulandari, 2018).

In general, independence can be seen from behavior. However, in reality independence is not only from behavior, but also in its social and emotional form.

The mindset of elementary school students is still concrete. He has not been able to think abstractly, so that he is not trapped in doing mathematics without logic. Mathematics learning must be presented as concretely as possible, according to his thinking patterns. Experience in the real environment is an aspect important in Montessori learning. This is explained by Faryardi (2007) "Education is a natural process spontaneously carried out by the human individual, and is acquired not by listening to words but by experiences upon the environment. The task of the teacher becomes that of preparing a series of motives of cultural activity, spread over a specially prepared environment, and then refraining from obtrusive interference ". The teacher does not need to intervene excessively in the learning process to increase creativity child.

The implementation of mathematics learning using the Montessori method applied by researchers at the SDLB Autism River Kids refers to the Three Period Lessons. One example is learning activities carried out on Monday, June 24, 2019 when students choose activities to learn to use money. Then the Montessori apparatus used is 200, 500, 1000, 2000, and 5000 rupiah denominations. Introducing money to autistic students is very important to do so that someday they can independently use money in their daily lives.

Three Period Lesson including naming period, Recognition and association period, and recall (Susilawati, 2019). Naming period as the first step is for the teacher to show the money fragments to the child students saying "two hundred, five hundred, one thousand," and so on. Students try to recite while holding the fragments of money. Recall that autistic students have difficulty communicating, so in this case it is very important that the student can recite the fractional value of the money he is referring to.

The second step, Recognition and association period is to ask students, which fraction money is worth two thousand rupiah, which is the five hundred rupiah denomination, and so on. The obstacle here is to focus students on money that is currently the Montessori apparatus.

The final step, recall, by asking, "How much is this?" with pointed at one of the money. The key to success in stage three is the passing or not of students in the second stage. For this reason, it is highly expected that teachers will not be too hasty in completing each stage. In this case, the second stage is often skipped.

Some concepts of the Montessori approach to mathematics learning applied at SDLB Autism River Kids include follow the child. However, following students does not mean allowing students to behave as freely as possible. Follow the child in question is understanding the needs of students according to their interests. It can also be referred to as an effort to sharpen our senses as adults to interpret each student's behavior as a way of fulfilling their needs, then we use that to understand their needs. In this Montessori class at SDLB Autism River Kids, the teacher certainly uses the concept of following the child in learning, the teacher facilitates according to the needs and interests of the child. Freedom makes children think creatively, train independence, and make decisions. The teacher follows the wishes of students who choose to learn about money, but sometimes one student actually uses the paper money as an airplane toy.

Freedom with limitation is a Montessori learning concept that is also applied by researchers. The freedom in question is the freedom to choose for themselves the material to be explored, the freedom to determine the duration of exploration, and the freedom to discuss and work together.

The next concept is Respect the child, often adults do not communicate two-way with children, they only make children listen and give one-way orders. In Montessori speaking and treating children politely is a must for Montessori teachers. As in SDLB Autism River Kids, teachers speak politely to children in the classroom. The teacher does not shout in reprimanding the child, the teacher will approach the child, look at the child, then rebuke in a low voice. This makes the child accustomed to being polite and calm in the classroom, and also one way to effectively calm the crowded class.

IV. CONCLUSION

The implementation of the Montessori approach in shaping the character of the independence of autism survivors is quite effective. In addition to forming the character of independence, the Montessori method also stimulates the character of responsibility, self-mastery, extending the concentration range, ability to socialize, and also stimulating intellectual abilities. The Montessori approach teaches concepts to students, follows the needs and interests of students, and focuses on each student.

Factors supporting the success of learning at the SDLB Autism River Kids are an adequate environment, specifically the Montessori Apparatus, school and class support facilities. Then other supporting factors are the participation of all teachers, employees, guardians of students, and the social environment that collaborates to improve the quality and quality of learning.

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