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WONOSUNYO II SDN STUDENTS' NUMERATING ABILITY IS DEFINED THE EFFECT OF PROBLEM BASED LEARNING

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ABSTRACT

The Numerical Ability of students in elementary schools which is very low can occur because it is caused by choosing learning models and media that are not suitable for students' abilities. This study aims to determine student development under the influence of the Problem Based Learning learning model using learning videos on YouTube. In addition, this study also aims to determine the numeracy skills of elementary school students in the implementation of the learning process by selecting the Problem Based Learning learning model. This study uses a quantitative method with the type of experiment. The population in this study were all grade 5 students at SDN Wonosunyo II Gempol. Students watch learning videos on YouTube and then work together with their peers and look for problems that exist in everyday life. Students get student worksheets which are then worked on and then presented in front of the teacher and their peers. The material used in this research is fractional operations. The results of this study are that students are interested in interesting learning, but there are also some students who are bored when shown YouTube videos that are shown on laptops. Meanwhile, the learning of numeracy is carried out using effective media, so that it can arouse students' enthusiasm for learning and the development of students' numeracy in elementary schools has improved and is running well.

Keywords: author guidelines; mathematics education; article template

1. Introduction

In the 21st century, Science and Technology are developing especially rapidly in terms of information and communication. This has one impact at education field. Education is the most important aspect in improving human resources (HR). Education is the main foundation for the establishment of a society nation. A nation without education will have big problems, Without education, it can be said that it is impossible for a nation to stand ourselves and obtain the things we hope for through education distinguish between what is good and what is bad. There is education somewhere The nation can make the public aware of all the information available around the world. Basically, a developed nation can be reflected in quality its people. If in a country the people have good qualities well, then the country is said to be a developed country. Therefore we as the nation's successors must be able to motivate other nation's successors to pursue it the world of education starting from pre school, kindergarten, elementary school, up to college level. As said the proverb "Pursue Knowledge to the Land of China" with this proverb It is clear that education is very important for a person. Progress civilization is a challenge for the Indonesian people to be able to realize generations who have high intellectuals, by providing education through education units. (Khakima, Az-Zahra, Marlina, & Abdullah, 2021)

Numeracy is a person's (individual) ability to manage various kinds of knowledge and information. Numeration is done in the process count. Numeracy skills are needed in all areas of life (Cahayani, Witono, & Setiawan, 2022). Low numeracy skills Indonesia also proves that education in Indonesia is still not a thing a place for students' cognitive development. Hence the importance of maximizing Numeracy at primary school level is based on the fact that it is still low numeracy development at that level. Numeracy is practically related with life around. In reality, students at SDN Wonosunyo II Gempol still

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lacking in numeracy skills. This is based on interviews carried out by researchers with the principal and one of the teachers at the school UPT SDN Wonosunyo II Gempol. The principal and one of the teachers said that numeracy in schools was running but was still not effective in the learning process. Mathematics is one of the compulsory subjects needs to be taught to students at the elementary school level up to the high school levelnamely college. Mathematics subjects are taught in schools especially at the elementary school level, namely to equip students to become students or Students who are independent and can understand deep mathematical concepts solve problems that occur in everyday life. Therefore, a learning model that is appropriate to cognitive abilities is very necessary student. The learning model is one way for students to think be independent and find your own way to solve mathematical problems happens in everyday life. Competencies generated by lessons Mathematics is also needed by someone to face certain situations experiencing change very quickly (Jamil & Khusna, 2019).

Problem Based Learning is used in this research to improve students' numeracy abilities in elementary schools. In the learning process Using Problem Based Learning there are steps where students discuss with the group and complete the student worksheet given by the researcher. In this case the researcher looks at what is in the model This learning runs effectively and in accordance with the students' conditions. Then Students use their skills and critical reasoning abilities in several ways the knowledge he knows. The next step is for students to collect information together with the group to solve these problems in life every day after that students present information and explain the results discussion with the group in front of the researcher and other friends.

The use of learning models is still not enough, so it is needed learning media that can help and support students in problem based learning This learning uses YouTube media considering the development of science Knowledge and technology in the 21st century are increasingly advanced. To achieve goals learning mathematics, a learning approach is needed mathematics that is able to bring the concept of problem solving closer to itself mathematics that can be applied in everyday life (Maghfiroh, Amin, Ibrahim, & Hartatik, 2021)

2. Research Methods

The method used in this article is quantitative methods with this type of experiment. The population in this research is all class students 5 SDN Wonosunyo II Gempol. The aim of carrying out this research is toprovide and explain an accurate, factual and systematic picture of a population.

The research tool of this article is the researcher himself who plays the role observer (observer). Students at SDN WONOSUNYO II Gempol as subjects study. Research data was obtained through observation, surveys and experiments. With conducting observations and surveys on learning we can do skills to test the numeracy skills of students at SDN WONOSUNYO II Gempol directly and alternately. After the researchers observed and surveyed Experiments are carried out with students through student worksheets It contains several questions to solve a problem which is real in everyday life. Meanwhile, for capable students With low numeracy, we can already know and can determine what efforts to make which will be carried out by researchers. Indonesia ranks bottom for value literacy and numeracy skills.

Therefore, researchers conducted this research to solve the problem and challenges obtained from the field through observation and skills testing to students and to catch up with students' numeracy skills which is increasingly challenging now a days.

3. Results and Discussion

Elementary School (SD) is a continuation of the learning process from PAUD or kindergarten child. Students at school are not only introduced to real life but also introduced to the theory of education in order to become better at itchanges in students' ideas and behavior. Numeracy is knowledge as well skills in communicating, obtaining and translating with use various kinds of numbers and mathematical symbols in solving a problem. Therefore the numbering is related to student life, fine in the home, school and community environment. Numeracy is knowledge and skills to a) use a variety of symbols and numbers to solve problems that occur in real life b) analyze information into various forms such as tables, graphs, etc.

Numeracy needs to be taught from an early age to students, looking at development literacy and numeracy in our country are very low.

Achievement of skills students not only through school but also through support from parents as the most important role in the success of education in Indonesia.

Research on the numeracy abilities of Wonosunyo II Elementary School students on the influence of Problem Based Learning using YouTube media shows that YouTube can be used as a learning medium mathematics in elementary schools, through YouTube videos containing animated videos. Benefit The use of this video is to show moving images, show objects, events, explain the material briefly and relate it to life everyday, so that it becomes more interesting for students to watch videos.

Videos is also a safe means of learning, through showing videos to Students' learning activities are not only carried out in the classroom, however It can also be done outside of class. Videos as a means to hone knowledge and skills especially regarding fractional material. However, at SDN Wonosunyo II Gempol Students tend to get bored watching YouTube videos about fractions This, boredom arises due to a lack of appreciation from the students themselves, sometimes they want to rest early and what they think is playing can cause boredom and lack of student interest and motivation to take part in learning. Even though the use of video learning media YouTube can reduce boredom and increase participant interest and motivation learn at school.

In facing the 21st century, students need several skills one of which is digital numeracy literacy. What this means is if you want to achieve the target students' numeracy abilities at school require learning numeration using digital media, for example YouTube, in addition to Analyze students' abilities in designing ideas and then solving them problems through what is seen on YouTube, learning to use YouTube can also make students not feel left behind in current developments which is currently all digital. In this research, researchers conducted it once meeting in class, namely in class 5 at SDN Wonosunyo II Gempol. Researcher using the Problem Based Learning learning model Problem Based Learning, which is in the model The learning steps include:

a) Orient students to the problem

Before learning begins, the researcher explains to the students the objectives learning that will be carried out at that time. Then researchers displays fraction material problems and encourages students to do so ask questions related to the problems presented.

b) Organizing student learning

Because there are 12 students in class 5 at SDN Wonosunyo II Gempol 1 students, so the researcher plans to divide the students into 4 groups, where 1 The group contained 3 members, but at that time there were several students who don't go to school. So the researchers divided the groups into 3, Each group consists of 3 students and there are also 2 students. After that The researcher gave directions to each group to communicate with each other Work together to complete the students' worksheets given by the researcher

c) Guiding the investigation

The researcher guides the investigation of each group to search information related to problems with the fraction material provided. So gain clarity in solving the problems that have been given, The researcher asked students to discuss with each other and obtain information as much as possible on YouTube media

d) Develop and present the results of the work

The researcher asked representatives from each group to present the results discussion in front of other friends.

e) Analyze and evaluate the problem solving process

The researcher saw the results of the discussion from each group and helped Students conclude and provide reinforcement of the material discussed that day also for grade 5 students at SDN Wonosunyo II Gempol.

Student	Score	Number of Questions
K1	40	10
K2	60	10
K3	50	10

Table 1. Test results without using YouTube media during learning

Student	Score	Number of Questions
K1	50	10
K2	80	10
K3	70	10

Table 2. Test results using YouTube media during learning

Based on the results of students' numeracy ability tests at SDN Wonosunyo II Gempol on the

fraction calculation operations material that has been done by grade 5 students Wonosunyo II Gempol Elementary School uses student worksheets and is based on themFrom the results of discussions with group friends, the points obtained by students were slightly good and there were still some students who were still unable to think critically in look for problems related to fractions in everyday life. they need a small example first after being given an example by the students can look for problems that exist in their daily lives related to material the fraction.

4. **Conclusions**

Based on the results of the research that has been carried out, conclusions can be drawn that learning mathematics uses YouTube media with models Problem Based Learning is still not running optimally. Students at SDN Wonosunyo II still cannot find the problem inside daily life related to the subjects at that time. Participant students still need help from teachers so teachers here still use it lecture method to convey material and provide real life examples to students.

It turns out that the use of videos via YouTube still cannot be said went well because students still tend to get bored with videos learning, even though the video shown is in the form of animation, and the images are moving and funny. The cause is a lack of desire within oneself

students, causing learning to become bored. Based on The misconception described above is that the family also has a role in improving students' literacy and numeracy (Meliyanti, Raraswati, Hidayat, & Aryanto, 2021) Families, schools and communities must provide support for improving students' numeracy skills in the form of creating a numerative environment at home, school and village/district (Nadjamuddin & Hulukati, 2022)

The Problem Based Learning learning model aims to develop students' knowledge and ability to solve problems and develop it. how critical students are in finding answers and provide solutions related to these problems. However, elementary school students Wonosunyo II there are several students who still cannot model This learning, by linking subjects that are based on internal problems everyday life.

Understanding Numeracy

Numeracy is knowledge and skills in communicating, obtaining and translating using various kinds of numbers and mathematical symbols in solving a problem. Numeracy is also related to the ability to analyze information displayed in various forms, including graphs, tables and charts. The result of analyzing this information is to predict and make a decision. In fact, good numeracy skills are the best protection against unemployment, low income and poor health. It can be seen that the low numeracy literacy abilities of Indonesian students can be influenced by many things, such as the ability to solve mathematical problems and the literacy abilities of the students themselves (Salvia, Sabrina, & Maula, 2022)

The increase in numeracy is adjusted to student development. Numeration can be done before learning, in the middle of learning, or after learning with a series of numeracy-based activities. Increasing numeracy before learning uses a series of activities such as gathering to tell stories, then in the middle of the lesson you can tell stories or explain in front of the teacher and classmates. Meanwhile, for improvement after learning, a teacher conducts discussions and provides reinforcement to students who have progressed and explains this. Considering the importance of numeracy for the survival and progress of a nation in the future, students need to be equipped to have sensitivity towards numeracy (Hasan, Kurnadi, Syarifuddin, Tafriliyanto, & Nugroho, 2021)

Numeracy can be interpreted as the ability to implement the concept of numbers and arithmetic operations in everyday life. In this numeracy students develop their knowledge and skills in using mathematics with confidence. Numeracy includes knowledge, skills, good behavior and positive behavior. Numeracy does not only have mathematical skills, but in numeracy there are also skills that can be applied in everyday life. In everyday life unstructured problems often occur, even in numeracy there are many ways of solving or there are no solutions that are incomplete or incomplete and are related to non-mathematical factors. For example, a student learns how to operate with fractions and relate them to everyday life. When there is a whole object which is then divided, there will be leftovers. Students are taught to look for problems in daily life related to fractions then explain and write the results. The objectives of numeracy learning for students are:

a. Sharpen students' knowledge and strengthen this knowledge with students' numeracy skills in formulating numbers, data, tables, graphs, diagrams and so on.
b. Apply knowledge and numeracy skills to solve problems and make decisions in everyday life logically.
c. Forming and strengthening natural resources in Indonesia, namely that there is no lagging behind

in numeracy knowledge and being able to compete with other nations.

Apart from having a purpose, studying numeracy also has benefits. The benefits of studying numeracy are:

a. Students have the knowledge and skills to plan and manage activities well
b. Students can calculate all data that occurs in everyday life
c. Students can make the right decisions regarding problems that occur and can solve these problems well.

These schools are schools that still lack facilities, both facilities and infrastructure that support learning at school, so they are prone to monotonous learning with the tools available in the classroom or at school (Ambarwati & Kurniasih, 2021). Therefore, learning is carried out using YouTube video media. Students can explore information in the form of learning videos related to the material, making it easier for students to understand learning material that is considered difficult compared to conventional delivery (Dyah & Kurniasih, 2021).

Understanding YouTube

Youtube is a website used to post videos. On (Nadjamuddin & Hulukati, 2022) YouTube, someone can upload, save, watch and share videos for free to the public. YouTube is the best means for sharing videos throughout the world, ranging from short videos, music, tutorials, vlogs, film trailers, short films, animation, entertainment, and so on.

History of YouTube

YouTube was founded by Chad Hurley, Steve Chen, and Jawed Karim. The three of them developed YouTube in 2005, the idea to create this YouTube application emerged when the three people had difficulty sharing videos of dinner parties at Chen's apartment in San Francisco. They started starting a technology company between November and April 2006 which was assisted by Sequoia Capital to help fund the company.

Benefits of YouTube

YouTube is not only a means of uploading, saving, watching and sharing videos, but YouTube can also be used as a medium for learning, business, popularity and income. Here are other benefits of YouTube, namely:

a. Earn income

Users and content creators have the opportunity to earn income from YouTube through Google Adsense. Users can create unique, creative and entertaining videos.

b. Unlimited entertainment

Someone can get unlimited entertainment and can access to their heart's content various kinds of exciting, interesting and entertaining content already available on YouTube such as learning videos, animations, tutorials, music, vlogs, short films, FTV, etc.

c. As promotional media

Apart from being entertainment, YouTube can be used as promotional media. In the 21st century, the use of digital is stronger than traditional media in general. Many small and large companies use YouTube as a promotional medium to promote their goods or businesses on YouTube

d. As a free learning medium

Not only that, YouTube is also a free learning medium. Users can get knowledge on YouTube, including cooking, business, video editing and others. Even on YouTube there are also school learning videos ranging from preschool, kindergarten, elementary school, middle school, high school, to university.

e. Resources

We can all get information from YouTube such as information about film releases, products, celebrity lives, information about world wonders and so on.

Apart from having benefits, YouTube also has advantages and disadvantages including:

Advantages of YouTube

• Become a complete source of information
• Become a source of income
• Media to channel unlimited creativity
• The best and most promotional media
• Media for learning skills, etc

Disadvantages of Youtube:

• There is a lot of content that is not suitable for children to watch
• A lot of hoax news is being spread
• There are some countries that block YouTube
• Can reduce a person's productivity, etc

Understanding Problem Based Learning

Problem Based Learning is a problem-based learning model. The point is that in this learning model, students can compile their own knowledge and develop the skills they have. The problem-based learning model in everyday life is something that students must learn to train, improve critical thinking skills, solve problems and add new knowledge where the task of an

educator must focus on helping students achieve their skills. How students can think critically in problem-oriented situations. In this problem-based learning model, assessment is not enough with tests, but teachers also assess the work produced by students as a result of their work and discuss the results of that work together.

Objectives of Problem Based Learning

Problem Based Learning has the aim of developing critical thinking skills and problem solving abilities as well as developing students to acquire their own knowledge. This learning model also aims to develop students' independence and social skills. Independence and social skills grow when students work together with friends or groups to discuss solutions to problems that exist in everyday life.

Principles of Problem Based Learning

The principle in this learning model is to use problems that exist in everyday life as a tool to develop knowledge, critical thinking skills and solve problems. The problems that occur are problems that exist in our daily lives and can be solved. Problems have many answers and ways of solving them that can encourage students' curiosity to find answers and solutions to problems that occur.

Problem Based Learning Steps

Problem Based Learning has steps, including:

a. Student orientation to the problem.
The teacher conveys the learning objectives and explains the material to be studied.
b. Organizing students to learn
The teacher forms several groups so that students can have discussions with their friends
c.Guide individual and group investigations
Teachers help students to collect information correctly both individually and in groups.
d. Develop and present work results
The teacher encourages students to convey the results of their work to other friends and in front of the teacher
e. Analyze and evaluate the problem solving process

The teacher reflects and strengthens students regarding the learning being carried out while taking place.

5. References

Khakima, L. N., Az-Zahra, S. F., Marlina, L., & Abdullah, Z. (2021). Application of Numeracy Literacy in MI/SD Student Learning. PGMI National Seminar, 777.

Cahayani, N. N., Witono, A. H., & Setiawan, H. (2022). Numeracy Ability Profile of Class III Students at SDN 2 Kuta for the 2021/2022 Academic Year. Scientific Journal of the Education Profession, 534.

Jamil, A. F., & Khusna, A. H. (2019). Developing contextually oriented assessments to improve students' mathematical literacy and numeracy skills. Mandala Education Scientific Journal, 7, 78.

Maghfiroh, F. L., Amin, S. M., Ibrahim, M., & Hartatik, S. (2021). The Effectiveness of the Indonesian Realistic Mathematics Education Approach on Students' Numeracy Literacy Ability in Elementary Schools. BASICEDU JOURNAL, 5, 3343.

Meliyanti, Raraswati, P., Hidayat, D. N., & Aryanto, S. (2021). Literature Review: Development of Literacy and Numeracy in the Family Environment. Tambusai Education Journal, 5, 6509.

Nadjamuddin, A., & Hulukati, E. (2022). Students' Numeracy Literacy Ability in Solving Mathematical Problems. BASICEDU JOURNAL, 6, 989.