Analysis of Elementary School Students' Understanding of the Fractional Value of Money Concept Using the Project Based Learning Model

Sifa Rizkika Fauzi✉[1] , Rifa Nurhanifah[2], Prana Dwija Iswara[3]

[1,2,3] Elementary Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

✉ sifarizkikafauzi06@upi.edu

Abstract. This research aims to describe and obtain information regarding students' understanding of the concept of fractional value of money when using the Project Based Learning model because it was found that there are still many students who do not understand the concept of currency value. This type of research is descriptive research using a qualitative approach. This method was used because this research describes the results of research in depth regarding the concept of fractional value of students' money. The subjects of this research were 24 2nd grade elementary school students at Bandung City Foundation Elementary School. The data collection technique for this research is using tests, observation and documentation then analyzing the data obtained. The results of this research show that using the Project Based Learning model can help improve the results of 2nd grade elementary school students' understanding of the concept of fractional currency values and get very good results and the expected learning will be realized very well. The use of the Project Based Learning model is suitable for helping children think creatively, one of which is in mathematics subjects regarding the concept of fractions of the value of money.

Keywords: Understanding Concepts, Project Based Learning Model

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INTRODUCTION

Education is the stage of the process through which humans develop their abilities and character in certain activities or activities through continuous teaching and guidance and training.(Zainal Arifin, 2014: 39).Furthermore, education is a conscious effort to prepare students through guidance, teaching and training (Tsaniyatus Sa'diyah, 2022)Furthermore, education is an effort to develop students' abilities which gives hope of being able to support development.(Aminullah, 2017) The teaching and learning process is an activity carried out in terms of doing something regularly so as to make learning more effective, efficient and enjoyable. Therefore, in implementing learning, teachers are required to use learning methods so that learning is more effective and can achieve the expected goals optimally, one of which is mathematics material. Mathematics itself is a subject that can be said to be a subject that many students dislike for complicated reasons, while mathematics is a very important subject that must always be developed. In line with this, according to(Kusmanto & Marliyana, 2014)Mathematics is a basic science that has an important role in the process of human life. Apart from that, mathematics is also useful for life as a basis for other sciences.(Hayati & Asmara, 2021) about understanding the concept of the value of currency fractions.

In preparation for mathematics learning, it must be carried out optimally, various variations of learning activities must be carefully prepared by the teacher, it is hoped that the mathematics learning process will involve students directly and lead to students being active in learning so that students can understand mathematical concepts, especially the value of currency fractions. In line with this, according to(Wardani et al., 2019) that one of the teacher's tasks in class is to provide direction and has an important role in making students understand the material being given and master the material well. In this case, teachers must also be able to provide motivation so that students can enjoy mathematics lessons.(Rahayu, Purmi & Agustito, 2018).In line with this, according to(Sdn et al., 2022)lessonMathematics is an exact science, which uses language and symbol, which.has meaning, and is a mathematical system containing models that can be applied in solving real problems. More math on that(Ministry of National Education, 2006:147)is a

universal science that underlies the development of modern technology, has many benefits so that humans have a high sense of discipline and a great mindset.

Learning mathematics at school has the aim of ensuring that students are competent in conceptspmathematics. According toMinistry of National Education (2006)throughiMinister of National Education RegulationsNo. 22 regarding the stated content standards are the objectives of mathematics lessonsain SD/MI ishso that student participants:

1. Explain and be able to understand various mathematical concepts regarding their interrelationships and be able to implement them through various models, such as being able to do it accurately, efficiently, precisely and flexibly in solving problems.
2. Clarify the situation or problem by communicating ideas in the form of symbols, tables, diagrams, or other media.
3. The existence of mutually tolerant behavior in life means having a sense of self-confidence, a high sense of curiosity, attention and an interest in mastering mathematics carefully and tenaciously.

In line with this(Maure et al., 2020)The aim of learning mathematics at school is to help students be able to do it. 1) understand mathematical concepts, 2) use memory and be able to manipulate mathematics in making generalizations, making proofs, or explaining mathematical ideas and questions, 3) problem solving based on the ability to understand problems, design mathematical models, interpret and solve the solutions obtained, 4) communicate ideas using symbols, tables, diagrams, or other media to clarify problems, 5) motivate students to be curious, and have high interest and self-confidence so they can solve mathematical problems.

Mathematics subjects are aware of the need for a more effective and efficient way of learning mathematics so that it can provide a good understanding in mastering mathematics material in various competencies and is expected to achieve optimal results in accordance with those specified..(Hayati & Asmara, 2021).

Problems that occur in the Mathematics learning process in Bandung City Elementary Schools are based on the results of observations of the learning process, especially on the material Fractions of the Value of Money for Grade II Primary School students, it was found that there were still students who did not understand the concept of fractions of the value of money, so that many students still made mistakes in calculating and subtracting fractional value of money. Even though in everyday life the value of currency and other economic activities cannot be separated and will always be used, therefore in understanding the concept of currency students must be able to understand and carry out transactions such as selling and buying. In line with this, according to(Harahap et al., 2020) There is a need for another way so that learning can be carried out actively, as well as fostering cooperation and communication with classmates so that they can discover mathematical concepts through discussion and can be linked to real life.

Apart from that, in line with previous research, it shows that in the application of mathematics learning for class II elementary school, the learning applied still uses the conventional learning model, namely the lecture method. Learning activities are still teacher-centered, so students only listen. This situation will make students lazy about studying mathematics. The observation results also showed that only a few students had opinions and asked and answered questions with the teacher. Even a lot of homework is not done.(Sukmawati, 2021).

Fun and interesting learning must require a variety of media, and learning that uses models that teachers use in ongoing learning.A learning model is a conceptual or operational framework that describes systematic procedures for organizing learning experiences to achieve certain learning goals and functions as a guide for teachers in planning and implementing learning activities.(Zainal, 2013).ThereforeBased on the problems above, teachers should choose and implement learning models that can foster motivation and improve children's learning achievements. Of the several existing learning models that are in accordance with the current curriculum, this learning model is interesting and fun(Agusta, 2023)Learning that can be used is a cooperative learning model, one of which is ia project-based model. According toSetyowati and Marwadi (2018)in learning that uses a project-based model, it has a good impact on the development of the world of education, especially in mathematics subjects at the elementary

school level, because this can be in accordance with the demands and expectations of the 2013 curriculum. Furthermore, it is in accordance with research conducted by(Setyowati & Mawardi, 2018)Mathematics learning using the Project Based learning model and meaningful learning can provide developments in educational science, especially the content of mathematics learning at the elementary school level in accordance with the curriculum.

In line with the explanation above,Wardani et al (2019)suggests that, 1) the project-based learning model can help the stages in solving mathematical problems. 2) teachers can be more creative in implementing learning so as to create active and fun classes that attract students' attention. 3) teachers can maximize the learning process using the Project Based Learning model so that it becomes a class that is not boring and can increase student motivation in improving learning outcomes. In addition, research conducted by(Perubahannya et al., 2023) explained that the Project Based Learning model is one solution to overcome the problems experienced by class III C students in improving mathematics learning outcomes which is the main problem in class due to students' lack of interest in learning by learning mathematics using counting techniques and memorizing formulas.

The Project Based Learning model is a model that allows students to be directly involved in being able to express their creativity directly and being able to carefully solve problems related to the daily living environment in the classroom.Trianto in Surya (2018).Then obey(Perubahannya et al., 2023)explained that the Project Based Learning model is a project-based learning approach, where students are asked to complete projects that require knowledge and skills obtained through study, research and observation. This model is based on the principle that students learn through doing relevant work and having the opportunity to apply the knowledge learned and make their own assumptions. This model emphasizes active learning, collaboration and constructivism, where students can build knowledge through interaction and exchanging ideas with their classmates. Then obey(Warsono & Hariyanto 2012)is a teaching that tries to link technology with everyday life problems that are familiar to students, or with school projects. Then obey(Natty et al., 2019)explains that in this model students will be faced with a problem or given a project related to the material and then students will be asked to solve or create a project related to the material. Then students will be asked to solve or create a project/activity based on questions and problems. It is then hoped that students will be able to search, investigate and discover for themselves so that students obtain complete knowledge by using ideas, or new ideas obtained either from theories, concepts, information that have been developed into something new and different.(Natty et al., 2019).

So what can be explained is that with a project-based model, it is hoped that teachers will increase students' understanding of mathematical concepts, especially in the material on understanding the concept of currency values for grade 2 elementary school students.

METHOD

This research is using descriptive with a qualitative approach. The subjects of this research were students in class 2 of elementary school, semester 1 at Foundation Elementary School in Bandung City. The instruments of this research are observation sheets, tests of understanding mathematical concepts, and assessment results. TechniquekanalysissThis observation and documentation is throughianalysis techniquessdescriptive, whereasnfor testssUnderstanding the concept is carried out by analysis based on achievement indicators that have been determined in accordance with the indicators in the RPP that has been created. In addition to the specified indicators, there areunderstandingnconcept is competenceiwhich is demonstrated in understanding concepts in accordance with procedures in a flexible, accurate, efficient and precise manner. In line with this, the indicators of understandingnThe concepts put forward by the 2006 curriculum are, 1) Redescribing ahconcept, 2) clarification of objectskaccording to certain characteristics, 3) examples of concept presentation, 4) presentation of mathematical concepts presented in presentation form, 5) developmentthe condition is understandingndraft,6)the use and benefits of choosing certain procedures or operations, 7) application of problem solving concepts or algorithms.

The method used is descriptive qualitative, therefore data processing and data analysis are descriptive. In processing the data, researchers first collected assessment indicators to assess students' work results. After collecting indicators, researchers create research instruments in the form of test questions that will be given to students. The questions provided are only 5 questions according to the indicators. In the learning process, researchers use the Project Based Learning model, where this model is a model created for students to be able to think creatively to be able to create a work from the results of their understanding.

To implement the learning, researchers used discussion and group methods so that students could work together with their classmates. The implementation carried out by the researcher is also a learning process that is related to everyday life, namely by carrying out buying and selling transactions, because students will not be separated from carrying out buying and selling, the researcher includes learning activities by trading alternately. In this case, researchers also use image media for goods being bought and sold, such as pictures of vegetables, fruit and other foods. After the core activities for the children have been completed, the next stage is that the teacher gives instructions to the students to make a flipcart from the results of the picture, then make a food menu board with the purchase price included, and in the instrument the students make a work and answer the questions provided as material for making the work. and fill in the questions. So in this case there are two assessments carried out, namely assessing the results of the questions given and the results of the work created as a group value and children's creativity.

The following are indicators of students' understanding of the concept of fractional value of money according to(Irene, et al, 2016)

1. Students can name various denominations of money withnself-confident,
2. Students can compare money denominations carefully,
3. Students can sort money fractions in format,
4. Students can calculate money fractions by addition and subtraction,
5. Students can exchange the value of an equivalent bundle of money

RESULTS

a. Planning

In this initial preparation, the preparation carried out by the researcher was preparing the sheetrobserving student activities. Detailing the materialidelivered during the research so that it matches the students' achievements, namely basic competencies, such as preparing a lesson plan, syllabus, and developing strategies for implementing the Project Based Learning model as well as preparing the learning media to be used and student test questions. The media used in this learning is using image media as material for implementing learning and as a means of creating student work.

b. Implementation

Learning activities begin with reading prayers together, taking attendance, singing mandatory songs, and reading short letters. Because the training at this school is that every morning students are accustomed to reading penek letters and can sing the national obligatory kagu. After the familiarization was complete, the researcher carried out an initial assessment which was carried out before each lesson started to see the students' initial knowledge, such as asking students several essential questions. Before this research was carried out, the teacher had previously discussed material related to the introduction of money denominations themselves, but there was still a lot of itkstudents who are still inaccurate in understanding the concept of the value of money fractions, for example 1) students are not precise in writing down the value of money numbers, 2) students have difficulty in ordering and comparing the value of money, 3) students have difficulty in adding and subtracting the value of money, and 4) students have difficulty in adding and subtracting the value of money, and 4) Students still do not understand the concept of using money in making buying and selling transactions.

Based on some of the problems above, the researcher again discussed the material of fractions of the value of money using learning strategies and modelsndifferently, the learning model used in learning is project-based. At the beginning of learning, the teacher forms several

working groups. Because class 2 students consist of 24 students, the teacher divides them into 4 working groups consisting of 6 people in each group consisting of men and women. The division into groups was carried out randomly by the teacher. The way the teacher divides into groups is by playing random number games by singing and going round and round, then after the song stops the students take a collection of papers containing numbers to see who they are in a group with. This group division is done so that students can collaborate with their classmates regardless of anything and this kind of group division will be fair and there will be no sense of favoritism.

After the division of work groups is complete, the next step is the delivery of learning material using the Project Based Learning model. In the implementation of learning in the classroom, it is guided by the teacher and there is an explanation from the teacher in carrying out the learning process that must be carried out by students, in this learning process the teacherumake students interested by creating a classroom atmosphere like a market. Because in this material on the value of money, apart from students being able to understand the concept of value, students are also expected to be able to understand how money is used in everyday life. Therefore, researchers make learning like buying and selling and create a market-like atmosphere. Because here the researcher uses image media, the researcher prepares various kinds of vegetables, fruit, meat and various kinds of spices from printed paper materials as media to support the implementation of learning. The researcher chose one representative student from the 4 groups who would be the seller and the rest would be the buyers. Before the buying and selling transaction, students listen to the explanation first, so that there are no misunderstandings in the learning process. The researcher's aim is to create a market-like atmosphere so that children can have experience of how to make direct transactions and negotiations and understand how to count change and add up the prices of items purchased. The researcher gave money as the main capital to students using play money amounting to Rp. 50,000 to each group. The researchers assigned the money to buy healthy foods and the final results of the materials purchased will be pasted on HVS paper and made into a work called a Flipchart containing a food menu. In the work created by students, they also answer the questions provided.

After the teacher assigns students to carry out transactions and collect the food purchased, students then make a Flipchart together. After making the Flipchart is complete, this is where the teacher gives a test containing questions on students' understanding of the concept of fractions of the value of money. Test sheets are distributed to each group and must be filled in according to the items and amount of money they have. The questions used in the instrument are 1). Mention the various values of money denominations that you get from the start of the lesson to the end. 2) Please compare the prices of the vegetables and fruit you bought earlier. Compare by looking at the price of the goods, 3) sort the prices of the goods you buy from the most expensive to the cheapest and determine which item is the most expensive and which is the cheapest, 4) please add up the results of your purchases by the amount you bought, and How much money do you have left from your initial capital until after you shop? Is it enough or not? If it's enough, explain how you bought it and if not, explain why, 5) Please learn to exchange one note for another denomination. For question number 5 specifically, students did it directly in front of the researcher.

The indicators used in the RPP according to(Irene, et al 2016)namely 1) students can name various denominations of money withnconfident, 2) students can compare money fractions carefully, 3) students can order money fractions in format, 4) students can calculate money fractions by addition and subtraction, 5) students can exchange the value of a group of equivalent money.

c. Observation

The following is a description of data from learning observations of 2nd grade elementary school students in one of the elementary schools in the city of Bandung. The research results on the concept of understanding students' currency fractions according to the indicators are:

1. Group 1

No	Achievement Indicators	Mark
1.	Students can saynvariousibanknotes with confidencei	20
2.	Students cantcompare money denominationsgcarefullyt	20
3.	Students can sort the money denominations in orderaformat	20
4.	Students can add and subtract money fractions.	20
5.	Students can exchange the value of a group of moneygWhichgequivalent.	20
	Number of Values	100

From the data from group one, it can be seen that all the children worked together well, in the first indicator all group members were able to answer correctly without errors. Furthermore, in the second indicator, all members of this group can answer questions correctly without errors, then in the kegita indicator, students can be correct without errors, up to the fifth indicator, students can answer all questions well and correctly. So in this group students got a perfect score of 100.

2. Group 2

No	Achievement Indicators	Mark
1.	Students can saynvariousibanknotes with confidencei	20
2.	Students cantcompare money denominationsgcarefullyt	20
3.	Students can sort the money denominations in orderaformat	20
4.	Students can add and subtract money fractions.	17
5.	Students can exchange the value of a group of moneygWhichgequivalent.	19
	Number of Values	96

From the data from group two, it can be seen that all the children worked together well, it can be seen from indicators one, two and three that the students were able to answer the questions correctly without any errors, and it can be seen from the fourth indicator that the students were a little mistaken in filling in their entries, in this case the error was that the students were wrong in the process. just subtraction, namely the mistake of subtracting the initial money minus the purchase amount. Next, in the fifth indicator, students are still a little mistaken in exchanging money for various different amounts of money and the possible possibilities. In this case, after adding up the initial indicators to the final indicators, the value obtained is 96 and is still above the minimum completeness criteria (KKM).

3. Group 3

No	Achievement Indicators	Mark
1.	Students can saynvariousibanknotes with confidencei	20
2.	Students cantcompare money denominationsgcarefullyt	20
3.	Students can sort the money denominations in orderaformat	20
4.	Students can add and subtract money fractions.	12
5.	Students can exchange the value of a group of moneygWhichgequivalent.	18
	Number of Values	90

From the data from group three, it can be seen that all the children work together well. In group three, it can be seen from the first indicator to the third indicator that all students can answer all the questions well and correctly. However, in the fourth indicator, the students made a slight error in filling it in. The problems and obstacles they faced in group three were almost the same as the errors made by group two, where the students were still wrong in adding up the results purchased and subtracting the initial money income. And in the fifth indicator, students are mistaken in determining the value of their money, such as students sometimes flipping between the value of Rp. 50,000 and a monetary value of Rp. 5,000. but at this stage the students are already good at implementing it, and if you add up the three groups, they still have a good result, namely 90 and still above the minimum completeness criteria.

4. Group 4

No	Achievement Indicators	Mark
1.	Students can saynvariousibanknotes with confidencei	20
2.	Students cantcompare money denominationsgcarefullyt	20
3.	Students can sort the money denominations in orderaformat	20
4.	Students can add and subtract money fractions.	18
5.	Students can exchange the value of a group of moneygWhichgequivalent.	20
	Number of Values	98

From the data from group four, it can be seen that all the children still collaborate well. In group four, it can be seen from the first to fifth indicators that they look good and there are no errors, it's just that in the fourth indicator the students have a few errors in counting the change and calculating the remaining money. What was spent earlier, in concept, was correct, only in storing the numbers and calculating them less carefully, therefore there were a few errors. In this group, it can be seen that after adding up the first to last indicators, the students got a score of 98 and this score is still very good.

From the data above, it can be concluded that using the project-based model, group one got a score of 100, group two got a score of 96, group three got a score of 90 and group four got a score of 98. From the results of the assessors it can be seen that all group members were able to do this. learning well. All group members scored above the minimum completeness (KKM).

Post 2

From the data above it can be seen that all group members received very satisfactory scores with an average of almost 95 and were able to exceed the minimum completeness score. Or it could be described that of the 24 students in the class who seemed to still need guidance in the concept of fractional currency values, only 5 students and the other 20 students almost understood the concept of fractional currency values. Errors and obstacles that can be seen based on student indicator assessments can be seen in indicator 4, namelyStudents can add and subtract money fractions and indicator 5, namely students can exchange the value of a group of moneygWhichgequivalent. In this case indicators 4 and 5 students need further guidance with their teacher.

For the overall results of students, according to the results of research and assessment indicators, it can be seen that all students can achieve scores above the minimum completeness and there is an increase in their learning outcomes. This increase was due to the collaboration between teachers and children in the learning process, apart from that learning became more interesting and active, so that all students were motivated by their friends, making learning more meaningful. Apart from that, learning is not boring because students create several works which they make in groups and make decorations to make their work even more beautiful so that they produce perfect Flipchart works.

DISCUSSION

From the results of research conducted by researchers, it can be seen from the results of observations and during research through indicators and assessment instruments that it is clear that grade 2 students at one of the Bandung City Foundation Elementary Schools in understanding the value of currency concepts can see an increase and increase using the Project Based model. In this learning process, students appear active and enjoy their learning, especially in creating Flipchart work assigned by researchers. In making this flipchart, all students looked enthusiastic in making it and produced creative work. By using the Project Based Learning model, apart from students understanding the material, students can also create creative work and students can form characters by working together, such as research carried out by(Sari et al., 2023) states that in learning using Project Based Learning (PJBL), students can be given the opportunity to work in groups to process their knowledge in each project learning activity as a form of strengthening character formation.

In mathematics learning, the use of the Project Based Learning model is very suitable for mathematics learning, because with this PJBL model children become more comfortable and calm in working on questions and learning is more fun and not as scary as previous learning.The benefits that can be taken from using PjBL can stimulate children to have higher abilities than before(Crowley, 2015)and able to improve children's achievement(Fetra Bonita Sari, Risda Amini, 2020). The main goal of PJBL is to get children used to using existing initial knowledge and being able to implement it and link it to learning activities in the classroom. This project model expresses the creativity of their imagination in making projects. Students can also solve problems that exist within themselves or problems that exist in their environment(Sari et al., 2023). Furthermore, previous research explains that the application of the project based learning model in mathematics learning contributes to the development of educational science, especially in elementary school mathematics content which is in accordance with the 2013 curriculum. In mathematics learning using project based learning it includes the five elements of the scientific approach (observing, asking, trying , reason, communicate.(Indri Hapsari & Septian Airlanda, 2019).

CONCLUSION

The Project Based Learning model is a model designed to make students interactive and active in learning so as to produce several works created by students. From the results of the learning activities that have been carried out and based on all the discussions and analyzes that have been

carried out, it can be concluded as follows. The research results show that the Project Based Learning model can help students to provide an understanding of basic mathematical concepts in the material of understanding money fractions for elementary school students. This can be seen from the increasing results obtained by children from the results of tests that have been carried out in the learning process carried out by teachers. The values obtained in the learning process have exceeded the assessment of school drinking completion based on student achievement indicators so that it can be concluded that using a project-based model can help students in learning mathematics, especially in understanding the concept of fractional value of money in elementary school and making learning active and interactive. and not boring.

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