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Analysis of Ability to Understand the Concept of Space Building Volume in Elementary School Students in South Palu District

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Abstract

This research is qualitative research with a research procedure that produces written and oral data about the participant's activity or observed subject behavior. The focus of the analysis in this study is the written work of students and the results of interviews based on the results of work as reinforcement and confirmation of the achievement or acquisition related to the volume of cubes and blocks. The research objective was to describe the understanding of the concept of volume building space in Grade 5st SD Inpres 5 Birobuli through realistic mathematics learning. The results showed that realistic mathematics learning can motivate students to construct their understanding of the concept of volume-building space by carrying out a directed problem-solving process so as to find pleasant mathematical concepts in achieving non-learning goals. This can be seen from the results of the analysis of students' conceptual understanding of the achievement of completing the pre-test questions. Problem-solving in mathematics learning is a form of learning that can create new ideas and use previously learned rules to create problem-solving formulations.

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Introduction

The paradigm that mathematics is a difficult and unattractive science is still actual today. This is indicated by the low average National Examination scores for the field of mathematics studies. This is an indicator of the difficulty of mathematics among students. This condition adds to their ignorance of the material that continues to develop so that over time it creates a sense of indifference and laziness and even saturation with mathematics (Suwastarini, 2015).

Mathematics is a human activity and must be linked to reality with the principles of guided rediscovery and progressive mathematics. Realistic shows a connection with the real world but focuses on placing emphasis on the use of a situation that students can imagine (Atmini Dhoruri, 2008).

Understanding mathematical concepts is a serious problem at all levels of school. The realistic mathematics approach appears as a special method for mathematics. Understanding the concepts in the learning process of mathematics is a very important part. Understanding mathematical concepts is an important foundation for thinking in solving mathematical problems and daily problems. Education emphasizes how to invite students to find and build knowledge so that students can develop life skills and be ready to solve problems faced in life.

Among the motivation for this learning is to instill the concept of understanding that mathematics is not scary but is friendly, fun, and challenging, and can increase student achievement, both in mathematics itself and other scientific concepts because of understanding the good mathematical concepts of the participant students. Related to the effectiveness of learning realistic mathematics on the ability to understand the concept of volume and space, Mashudi (2016) argues that learning volumes for space using realistic mathematical education.

Realistic learning answers these challenges because through a realistic mathematics learning approach students can be interested in learning mathematics. Teachers can implement realistic learning based on local excellence that is unique to each region with the aim of making mathematics preferable and students know the benefits of learning mathematics.

While solving the problem of understanding the concept of building volume material was carried

out by (Ansar, 2019) in a study entitled increasing students' understanding of the concept of block volume using a realistic mathematics approach in class V SD Negeri 212 Bontobangun, Bulukumba Regency, concluding that learning using the Realistic Mathematical Approach can improve students' understanding of the concept of volume blocks. Learning using a realistic mathematical approach has a good enough potential to improve students' understanding of the concept of block volume material. This shows that the use of a realistic mathematical approach in increasing students' understanding of the concept of block volume has increased significantly

Other research states that the development of creative thinking skills of students in mathematics learning with a realistic mathematics approach is due to the principles and characteristics applied in learning activities. The principle of reinventing a mathematical concept, allows students to experience the discovery of these concepts themselves. The modeling characteristics in solving mathematical problems also make it possible to develop students' creative thinking skills. With this principle, it is possible for students to carry out creative activities in solving mathematical problems, especially open math problems (Saefudin, 2012).

The implementation of the approach must be in accordance with the material being taught and can optimize the learning atmosphere. One approach that brings students' minds into learning and involves students actively is realistic mathematical education or realistic mathematics learning. The realistic mathematics approach is an approach that places the reality and experiences of students as the starting point of learning. Students are given the opportunity to construct their own formal mathematical knowledge through real problems. Students can master the concepts and subject matter and remember what they have obtained with this approach. This approach is appropriate to be applied in teaching basic concepts and is expected to be able to improve the thinking skills of students which ultimately leads to increased learning outcomes of students (Evi, 2011). The relevance of the above studies with this research is an effort made to improve students' understanding in learning mathematics. Therefore, these efforts can be made according to the needs of students and the goals to be achieved.

Actual representation does not show results or products that are embodied in new and different configurations or constructs, but a process of thinking done to be able to reveal and understand the concepts, operations, and mathematical relationships of a configuration. That is, the process of mathematical representation of mathematics, representation is the basis or takes place in two stages, namely internally and externally (Tari, 2018). Learners need to observe and find special patterns that exist in the problem. Students need to formulate problems into abstract mathematical problems or mathematical models.

This shows that the understanding of the peseta students is quite evenly distributed with a relatively high level of achievement as well. Based on the results of testing the action hypothesis, it is concluded that the use of realistic mathematics education can improve student learning outcomes in mathematics especially learning volumes of space building in class V SD. Another statement was put forward by Ansar (2019) that learning using a realistic mathematical approach can improve students' understanding of the block volume concept in class V SD Negeri 212 Bontobangun, Bulukumba Regency.

Concept understanding consists of two words, namely the understanding and concepts of students who are directed to discover various facts themselves, build new concepts and values for their lives that focus on developing skills in processing knowledge, finding and developing the facts, concepts and values needed (Ministry of Education and Culture, in (Fadlilah, 2014).

Realistic mathematics is an innovation in mathematics education which is also called an innovative mathematics learning approach that is in line with constructivist theory. Realistic mathematics pays more attention to the potential of students to be developed, therefore, this innovation in mathematics learning does not only allow changing the concept map of mathematical material and its relationships and is able to change culture to a more dynamic direction while remaining in the corridor of social ethics. Students are expected to be brave in expressing their opinions, accepting the opinions of others, and also knowing the need for negotiations in life, and teachers are sufficient to become facilitators (Soedjadi, 2014).

Students are said to understand the procedure if they are able to recognize the procedure

(a number of steps from the activities carried out) which include the correct algorithm rules or calculating process (Mulyono & Hapizah, 2018). Development is a change that is progressive and continuous or continuous in an individual from birth to death. Another definition is the changes experienced by individuals or organisms towards maturity levels that take place systematically, progressively, and continuously involving both physical and psychological issues (Xing & Isaacowitz, 2006).

Other components that are very important in the learning process are media or props. The use of props is absolutely necessary, in order to facilitate and clarify a concept so that it is easily understood by students. Teachers must be good at choosing teaching aids or learning media that can help students build understanding of a concept.

This fact if left unchecked can have an impact on the quality of the process and learning outcomes and have a negative impact on the mindset of students because mathematics is as important as other subjects for students to master. Among the sub-topics of mathematics that seem difficult for students are story problems that are often given to every planting of mathematical concepts for all subjects. In order to be able to solve story problems correctly, students must have the ability to add, subtract, divide, complete calculating operations, and have the ability to read understanding/interpret abstract objects into concrete so that they can solve the problems contained in each problem.

It is important for teachers to achieve realistic mathematical goal standards that are relevant to the involvement of higher-order thinking skills or critical thinking skills as the demands of 21st century education which are focused on habituating students to apply 4C in their daily lives, to achieve ideal learning conditions through the quality of teaching organized with an organizational model. Right 4C in question is critical thinking, communication, collaboration, and creativity (Sugiyarti & Arif, 2018).

Story questions related to daily life were correlated with teaching materials to help achieve 4C. This situation indicates that the story problem is very important, because it trains students' understanding of what is known, what is asked, and what arithmetic operations are needed to solve the problem. The reasoning power of students is trained to respond to various problems faced and find problem-solving solutions to prepare their abilities to solve problems in everyday life.

The reluctance of students in learning mathematics can occur because students experience difficulties in the learning process and always think that mathematics is a difficult subject because it relates to arithmetic and formulas. Therefore the teacher must understand and help the students' difficulties through an appropriate stimulus, so that in the learning process students can enter into a learning atmosphere that arouses their learning motivation, does not get bored with learning and does not think that mathematics is not important and mathematics is a difficult subject. Because the process of calculating using formulas, including clarifying the understanding of students through things that are real and real around them. So that they remain motivated and enthusiastic in completing their tasks in learning mathematics and the difficulty in solving math problems is a fun challenge for them.

The application of realistic mathematics learning that has been tested in several previous studies in places, subjects, methods with a focus on outcomes, subject matter, and different approaches can basically provide solutions for achieving the expected learning objectives. Therefore, to understand the understanding of the concept of the volume of space (cubes and blocks) in class V SD Inpres 5 Birobuli students, an analysis of the concept of volume building volume in class V students in class V SD Inpres 5 Birobuli will be carried out through mathematics learning realistic which involves problems in everyday life with the hope of making students learn in pleasant situations and understand that mathematics is closely related to the problems faced in everyday life.

Based on these problems, the authors conducted a study to analyze the ability to understand the concept of volume building space through realistic mathematics learning in fifth grade students of SD Inpres 5 Birobuli, South Palu District, with the aim of this research that is to describe the understanding of the concept of volume building space in class V students. SD Inpres 5 Birobuli in realistic mathematics learning.

As well as new values for life that focus on developing skills in processing knowledge, finding and developing facts, concepts and values that are needed (Kemendikbud, in Fadlilah, 2014).

Realistic mathematics is an innovation in mathematics education which is also called an

innovative mathematics learning approach that is in line with constructivist theory. Realistic mathematics pays more attention to the potential of students to be developed, therefore, this innovation in mathematics learning does not only allow changing the concept map of mathematical material and its relationships and is able to change culture to a more dynamic direction while remaining in the corridor of social ethics. Students are expected to be brave in expressing their opinions, accepting the opinions of others, and also knowing the need for negotiations in life, and teachers are sufficient to become facilitators (Soedjadi 2014).

Students are said to understand the procedure if they are able to recognize the procedure (a number of steps from the activities carried out) which include the correct algorithm rules or calculating process (Mulyono & Hapizah, 2018). Development is a change that is progressive and continuous or continuous in an individual from birth to death. Another definition is the changes experienced by individuals or organisms towards maturity levels that take place systematically, progressively, and continuously involving both physical and psychological issues (Xing & Isaacowitz, 2006).

Other components that are very important in the learning process are media or props. The use of props is absolutely necessary, to make it easier.

Materials and Method

This study uses qualitative research with procedures that can produce written and oral data about the activities of participants or observed subject behavior. The focus of data analysis is the results of written work and the results of interviews based on the work of students as reinforcement and confirmation of achievements or acquisitions related to the volume of cubes and blocks. The research was conducted at SD Inpres 5 Birobuli, South Palu District which was carried out for 3 months, namely July 2020 to August 2020.

The data in this research are data on understanding the concept of volume of space obtained from: (1) the results of assignments; (2) interview results; and (3) documentation of realistic activities in class V SD Inpres 5 Birobuli for the 2020/2021 school year.

The research data were collected through examination of assignments, interviews, pretest, posttest, document study, and field notes. The researcher is the main instrument that makes it easier to extract information from the subject according to the research objectives. Students are said to understand the procedure if they are able to recognize the procedure (a number of steps from the activities carried out) including the correct algorithm rules or calculation process (Mulyono & Hapizah, 2018).

Other supporting instruments are: (1) a written test that is designed with 5 test items in the form of a limited description of the understanding of the concept of space and 5 multiple choice questions each with the concept of real things to explore the ability to calculate the volume of a cuboid and blocks and (2) conducting interviews as a reference for researchers to explore the effectiveness of realistic mathematics after completing the tests given which aim to find information openly and broadly by inviting informants to present ideas, thoughts, and their strengths/weaknesses in completing the given test. The data were analyzed in stages: (1) data reduction; (2) data presentation (data display); and (3) conclusion or verification (conclution /verivication). The validity of the data is obtained through triangulation or data validity checking techniques which are used as something other than the data for data checking purposes or comparisons of the data. Another method in this study was carried out through method triangulation, namely finding the suitability of the data obtained from test data and interview data.

Results and Discussion

Table 1. Freetest of building space concept understanding

Name (Initials)	Score					Average	Final Score
AKP	1	1	2	2	3	1.8	45
SN	2	2	3	2	3	2.4	60
AD	1	2	2	3	3	2.2	55
NS	2	2	3	2	3	2.4	60
BT	2	2	2	3	3	2.4	60
Total	8	9	12	12	15	11.2	280
Average	1.6	1.8	2.4	2.4	3	2.24	56

%	53.3	45	48	60	75	56	56

Based on Table 1, it can be concluded that the average value obtained by informant A is 45 or categorized as very poor, informant B is 60 (sufficient); informant C 55 (less); informant D 60 (enough); and informant E 60 (enough). These results are the results of the analysis of the students' abilities in: (1) explaining the notion of building space; (2) explain the difference between a spatial shape and a flat shape; (3) describes 5 types of shapes; (4) mentioning each of the 2 objects around you that are cubes and blocks; and (5) describe a cube with sides of 5 cm and a block with a length of = 5 cm; width = 2 cm; and height = 3cm

Table 2. Output test of normality

Concept	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
Understanding	Statistic	df	Sig.	Statistic	Df.	Sig.
	.330	5	.079	.735	5	.021
a. Lilliefors Significance Correction						

Based on the output, the value of "Shapiro Wilk" Sig. amounting to 0.021 > 0.05 so it can be concluded that the data on students' conceptual understanding is normally distributed. Thus the assumption of normality in the one sample t test has been fulfilled.

Table 3. One-sample statistics pretest

Concept Understanding	N	Mean	Std. Deviation	Std. Error Mean
	5	56.0000	6.51920	2.91548

Berdasarkan Tabel One Sample Statistic di atas menunjukkan nilai statistik deskriptif yaitu: N = 5 artinya sampel yang dipakai 5 meas = 65,0000 atau rata-rata hitung 56,0000. St. deviation atau simpangan baku sebesar 6,51920 dan error mean adalah 2,91548.

Tabel 4. Tes value

Concept Understanding	Test Value = 75					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
	-6.517	4	.003	-19.00000	-27.0947	-10.9053

The value of t count = 16.517, df (degree of freedom) 4, Sig (2-tailled) or a significant value of 0.03 two-sided test. With H0 = understanding of the concept = 75 and Ha = understanding the concept is not the same as 75. H0 is rejected if the Sig. (2-tailed) < 0.05 and H0 is accepted if the Sig. (2-tailed) value > 0.05. Thus, it can be concluded that H0 is rejected because the Sig. (2-tailed) value <0.05 or 0.03 <0.05.

Based on the value of t by comparing the value of t with the decision that: H0 = the average value of understanding the concept is equal to 75 and Ha = understanding of the concept is not equal to 75. H0 is rejected if tcount > t table and H0 is accepted if t count < t table thus it is concluded that accepted because 6,517 < 2,776.

Posttest results

Table 5. Block volume understanding posttest

Name (Initials)	Score					Average	Final Score
AKP	2	2	2	2	2	10	2.00
SN	1	2	1	2	2	8	1.60
AD	1	2	1	2	1	7	1.40
NS	2	2	1	2	2	9	1.80
BT	2	1	2	2	2	9	1.80
Total	8	9	7	10	9	43	8.6
Average	1.60	1.80	1.40	2	1.80	8.60	1.72
%	53.3	45	48	60	75	56	56

Based on the results of the analysis, it can be concluded that the average value obtained by the PPA informants is 100 or categorized as very good, informants SN 80 (very good); informant AD 70 (good); informant NS 90 (very good); and the informant BT 90 (very good). These results are the results of the analysis of the students 'ability to understand the concept of block volume through 5 (five) multiple choice (PG) number (working process) which are used as an assessment so that the wrong answer is still given a score of 1 because the answering process still uses the students' ability to calculate .

Understanding of mathematical concepts can be seen from the following indicators: (1) restating a concept; (2) classifying objects according to certain properties (according to the concept); (3) provide examples and nonexamples of concepts; (4) provide concepts in various forms of mathematical representation; (5) developing the necessary and sufficient requirements of a concept; (6) use, utilize, and select certain procedures or operations; and (7) applying the concept of problem solving (Fadlilah, 2014).

The ability to restate a concept can be seen from the ability to explain students to identify the types of shapes they are learning, namely the objects around them in the form of blocks.

The next ability is to classify objects according to certain properties (according to the

concept), indicated by the ability of students to identify the types of shapes they are learning, namely the objects around them in the form of blocks correctly and communicate with the teacher in the form of statements and questions.

The ability to provide examples and non-examples of concepts can be seen from the ability of students to follow the volume calculation procedure through examples. Meanwhile, the ability to provide concepts in various forms of mathematical representation can be seen in the ability of students to answer questions on the questions that were answered correctly and the questions that were answered incorrectly, but students had carried out the procedure well.

The ability to develop the necessary and sufficient requirements of a concept is fulfilled by the ability of students to try to do calculations before making their choice on the obsen as an answer to a question. The ability to use, utilize, and choose certain procedures or operations is fulfilled, students enthusiastically solve the questions even though there are some questions that have not been answered correctly.

The next aspect of assessment is the ability to apply problem solving concepts or algorithms that are fulfilled by working to solve problems / counting by involving counting operations using certain calculation formulations that have been studied and exemplified by the teacher how to use them.

The development of unfulfilled mathematical skills in this posttest is explored in posttest questions during and after students follow a realistic learning process in the hope that the construction of learning experiences can be a stimulus for the development of understanding mathematical concepts that can be actualized in the form of the ability to solve math problems in the posttest well.

The researchers' hope is that the implementation of procedurally realistic learning by the teacher can instill the concepts of realistic knowledge for students, in this case mathematics which is built from the realistic learning process into an understanding of realistic mathematical concepts. The point is that an understanding of mathematics is not only an understanding that is found through the solution obtained from a number of formulas to complete the calculation process but is understood as a realistic experience that builds realistic thinking concepts and leads to a problem that requires precise solutions.

Understanding of mathematical concepts can be seen from the following indicators: (1) restating a concept; (2) classifying objects according to certain properties (according to the concept); (3) provide examples and nonexamples of concepts; (4) provide concepts in various forms of mathematical representation; (5) developing the necessary and sufficient requirements of a concept; (6) use, utilize, and select certain procedures or operations; and (7) applying the concept of problem solving (Fadlilah, 2014).

Table 6. Output of normality

Concept Understanding	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
	.231	5	.200	.881	5	.314
a. Lilliefors Significance Correction						

Based on the output, the value of "Shapiro Wilk" Sig. of 0.3.14 > 0.05, so it can be concluded that the data on students' conceptual understanding is normally distributed. Thus the assumption of normality in the one sample t-test has been fulfilled.

Table 7. One-sample statistics

	N	Mean	Std. Deviation	Std. Error Mean
Concept Understanding	5	84.0000	4.18330	1.87083

Based on the One Sample Statistic table above, it shows the value of descriptive statistics, namely: N = 5, which mean that the sample used is 5 means = 84.0000 or the average count is 84.0000 St deviation or standard deviation is 4.18330 and the mean error is 1.87083.

Table 8. One-sample test

Concept Understanding	Test Value = 75					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of The Difference	
					Lower	Upper
	4.811	4	.009	9.00000	3.8057	14.1943

The value of tcount = 4.60409, df (degree of freedom) 4, Sig (2-tailled) or a two-sided test significant value of 0.009. With H0 = understanding of the concept = 75 and Ha = understanding the concept is not the same as 75. H0 is rejected if the value of Sig. (2-tailed) < 0.05 and H0 is accepted if rejected if the value of Sig. (2-tailed) > 0.05. Thus it can be concluded that H0 is accepted because the Sig. (2-tailed) value is> 0.05 or 0.09 > 0.05.

Based on the value of t by comparing the value of t with the decision that: H_0 is rejected if t count > t table and H_0 is accepted if t count < t table, it can be concluded that H_0 is accepted because 4,811 > 4,776.

Table 9. Cubes volume understanding posttes

Name (Initials)	Score					Average	Final Score
AKP	2	2	2	2	2	10	2.00
SN	2	2	1	2	2	9	1.80
AD	2	2	2	1	2	9	1.80
NS	2	2	2	2	2	10	2.00
BT	2	2	1	1	2	8	1.60
Total	10	10	8	8	10	46	9.2
Average	2.00	2.00	1.67	1.67	2.00	9.33	1.87
%	100	100	80	80	100	46	92

These results are the results of the analysis of the students' ability to calculate the volume of the cube in the posttest about calculating the volume of blocks. The results of descriptive statistical calculations can be seen in the explanation based on the results of the "Test of Normality" output in Table 10.

Table 10. Output of normality

Concept Understanding	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
	.473	5	.001	.552	5	.000

a. Lilliefors Significance Correction

Based on the output, the value of "Shapiro Wilk" Sig. equal to 0.000 <0.05, so it can be concluded that the data on students' conceptual understanding is normally distributed. Thus the assumption of normality in the one sample t-test has been fulfilled.

Table 11. One-sample statistics

Concept Understanding	N	Mean	Std. Deviation	Std. Error Mean
	5	91.0000	2.23607	1.00000

Based on the One Sample Statistic table above, it shows the descriptive statistical value, namely: N = 5, which mean that the sample used is 5 mean = 91.0000 or the average count is 91.0000. St. Deviation or standard deviation is 2.23607 and the mean error is 1.00000.

Table 12. One-sample test

Concept Understanding	Test Value = 75					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	*Upper*
	16.000	4	.000	16.0000	13.2236	18.7764

The value of t count = 16,000, df (degree of freedom) 4, Sig (2-tailled) or the two-sided test significance value of 0.00. With H0 = understanding of the concept = 75 and Ha = understanding the concept is not the same as 75. H0 is rejected if the Sig. (2-tailed) < 0.05 and H0 is accepted if the Sig. (2-tailed) value > 0.05. Thus it can be concluded that H0 is accepted because the Sig. (2-tailed) value > 0.05 or 16,000 > 0.05.

Based on the value of t by comparing the value of t count with the decision that: H_0 is rejected if tcount > t table and H_0 is accepted if tcount < t table, it is concluded that H_0 is accepted because 16,000 > 2.776.

The results of the data analysis are the results of the analysis of the students 'ability in understanding the concept of block volume through 5 (five) multiple choice (PG) number (working process) which are used as an assessment so that the wrong answer is still given a score of 1 because the answering process still uses the students' ability to calculate. Understanding of mathematical concepts can be seen from the following indicators: (1) restating a concept; (2) classifying objects according to certain properties (according to the concept); (3) provide examples and nonexamples of concepts; (4) provide concepts in various forms of mathematical representation; (5) developing the necessary and sufficient requirements of a concept; (6) use, utilize, and select certain procedures or operations; and (7) applying the concept of problem solving in (Fadlilah, 2014).

1. The ability to restate a concept can be seen from the ability to explain students to identify the types of shapes they are learning, namely the objects around them in the form of blocks.
2. The ability to classify objects according to certain properties (according to the concept), indicated by the ability of students to identify the types of shapes they are learning, namely the objects around them in the form of blocks correctly and to communicate with the teacher both in the form of statements and questions submitted to the teacher
3. The ability to provide examples and non-examples of concepts can be seen from the ability of students to follow the procedure of calculating volume through examples.
4. The ability to provide concepts in various forms of mathematical representations can be seen in the ability of students to answer

questions on the questions that were answered correctly and the questions that were answered incorrectly, but students had carried out the procedure well.

5. The ability to develop the necessary and sufficient requirements of a concept is fulfilled by the ability of students to try to do calculations before making their choice on the obsen as an answer to a question.
6. The ability to use, utilize, and choose certain procedures or operations is fulfilled, students enthusiastically solve the questions even though there are some questions that have not been answered correctly.
7. The ability to apply problem solving concepts or algorithms is fulfilled by working to solve problems/counting by involving counting operations using certain calculation formulations that have been studied and exemplified by the teacher how to use them.

The development of unfulfilled mathematical skills in this posttest is explored in posttest questions during and after students follow a realistic learning process in the hope that the construction of learning experiences can be a stimulus for the development of understanding mathematical concepts that can be actualized in the form of the ability to solve math problems in the posttest well.

The results of the task of understanding the concept of block volume: (1) the ability to restate a concept can be seen from the ability to explain students to identify the types of shapes they are learning, namely objects around them in the form of blocks; (2) the ability to classify objects according to certain properties (according to the concept), indicated by the ability of students to identify the types of shapes they are learning, namely the objects around them in the form of blocks correctly and to communicate with the teacher both in the form of statements and questions asked of the teacher; (3) the ability to provide examples and non-examples of concepts can be seen from the ability of students to follow the volume calculation procedure through examples; (4) the ability to provide concepts in various forms of mathematical representation can be seen in the ability of students to answer questions on the questions that were answered correctly and the questions that were answered incorrectly, but students had carried out the procedure well; (5) the ability to develop the necessary and sufficient requirements for a concept to be fulfilled with the ability of students to try to do calculations before making their choice on the object as an answer to a question; (6) the ability to use, utilize, and select certain procedures or operations is fulfilled, the students enthusiastically solve the questions even though there are some questions that have not been answered correctly; (7) the ability to apply problem-solving concepts or algorithms is fulfilled by working to solve problems / counting by involving counting operations using certain calculation formulations that have been studied and exemplified by the teacher how to use them.

Mathematics is meaningless if only memorized however in fact, many students are only able to memorize concepts without being able to use them in problem solving (Agustina, 2016).

Six indicators of concept understanding that appear from the work of students, namely: (1) the ability to restate a concept can be seen from the ability to explain the meaning of space, PPA and AD informants provide explanations but the concepts given are wrong, informants SN, NS, and BT provide close to correct explanation. Furthermore, in explaining the difference between spatial and flat shapes, the results of the analysis were obtained, namely the PPA informants answered incompletely with wrong answers and SN, AD, NS, and BT informants answered with incomplete but correct explanations; (2) the ability to classify objects according to certain properties (according to the concept) can be seen in the ability of students to call each of the two objects in the form of blocks and cubes, namely: PPA, SN, and NS informants mention the two correctly and informants SN and BT mentioned 3 correct shapes; (3) the ability to provide examples and nonexamples of concepts. This ability can be seen in the ability of students to mention two objects in the form of blocks and cubes respectively, namely the PPA, SN, and NS informants mentioning two correctly and the SN and BT informants mentioning 3 shapes correctly; (4) the ability to provide concepts in various forms of mathematical representation. This ability can be seen in the ability of students. Draw a cube with a side length of 5 cm and a block with a length = 5 cm; width = 2 cm; and height = 3 cm, namely: the PPA, SN, AD, NS, and BT informants draw a cube and a block using a ruler but the size of one of the shapes does not match; (5) the ability to develop the necessary and sufficient requirements of

a concept (not yet fulfilled) because no student draws the correct size using a ruler; (6) the ability to use, utilize and select certain procedures or operations; (This concept has not been fulfilled, because there are no commands that lead to certain arithmetic operations; and (7) the ability to apply problem solving concepts or algorithms has not been fulfilled because it has not involved counting operations using certain calculation formulations.

The results of the interview show that (1) students know/know about realistic mathematics learning: two people strongly agree, one person agrees and two others are hesitant: (2) realistic mathematics learning is a fun learning model, two people strongly agree, two one person agrees and one person hesitates; (3) realistic mathematics learning improves students' conceptual understanding of the material about the volume of space two people strongly agree, two people agree, and 1 person is doubtful; (4) communicative realistic mathematics learning is applied to understanding the concept of the volume of space in mathematics learning two people strongly agree and three people agree; (5) realistic mathematics learning contributes positively to increasing learning activities and understanding the concept of building space for students' learning, three people strongly agree and two agree; (6) realistic mathematics learning introduces students to the importance of learning mathematics about the volume of a room, three people strongly agree and two people agree; (7) PMR is a learning motivation to find out that three people strongly agree and two people agree; (8) PMR learning fosters character in students, three people strongly agree and two agree; (9) realistic mathematics learning increases the responsibility of students. Four people strongly agree and one person agrees; (10) learning with realistic mathematics fosters the self-confidence of students, five people agree; (11) realistic mathematics learning provides a good understanding of mathematics and its relationship with everyday life, three people strongly agree and two people agree; (12) realistic mathematics learning makes learning more lively, fun, and not boring, two people strongly agree and three people agree; (13) realistic mathematics learning eliminates the notion that mathematics is a difficult and useless subject, two people strongly agree and three people agree; (14) realistic mathematics learning fosters an enthusiastic attitude in participating in the whole series of learning activities, two people strongly agree and three people agree; and (15) realistic mathematics learning provides a meaningful learning experience, three people strongly agree and two people agree.

Based on these results, it can be concluded that the average score is 3.76 with a percentage of 94.09% implementation or it reaches the very good category. Based on these results, it can be concluded that the average score of 3.56 with the percentage of implementation is 89.55% or reaches the good category.

Understanding of mathematical concepts can be seen from the following indicators: (1) restating a concept; (2) classifying objects according to certain properties (according to the concept); (3) provide examples and nonexamples of concepts; (4) provide concepts in various forms of mathematical representation; (5) developing the necessary and sufficient requirements of a concept; (6) use, utilize, and select certain procedures or operations; and (7) applying the concept of problem solving (Fadlilah, 2014).

According to the teacher who teaches a realistic approach, students are so enthusiastic when asked to identify objects around them in the form of blocks and cubes. Not only blocks and cubes, but they can see parts of the building that are shaped like other spaces such as triangular prisms and others that are part of concept recognition and are formed by realistic activities. From the results of the identification, the concept emerged that a house or building is a building consisting of various kinds of structures. In relation to volume, students directly in their minds there is a space inside which can be calculated the amount / amount of its contents (Kurniawati, 2019).

Based on the analysis that has been carried out, it can be concluded that the understanding of the concept of the volume of a block and a cuboid space, after examining the realistic learning, will have a better understanding of the concept of volume. This can be seen from the ability of students to understand the volume of blocks and cubes which is significantly better than students who learn before using realistic learning.

The development of mathematical problem solving abilities can be seen from: (1) students do not directly operate the numbers, but students first interpret the meaning of the problem then determine the appropriate approach or method used to solve the problem; (2) students are able to solve the problem procedurally. It can be seen from the

variety of methods used by students in solving the problems given (3) students are able to explain the process used to solve the problems; and (d) students have been able to solve problems appropriately.

Understanding the concept of volume building is influenced by teacher activity policies which include: (1) starting learning activities with contextual problems so that students can easily understand problems; (2) ask questions that can develop students' ideas about the concept of the material being studied; (3) habituation of students to freely express ideas and respond to the ideas of other friends; and (4) the teacher's efforts to direct students to find their own solutions to the problems given, while still facilitating and guiding students to find solutions to these problems appropriately.

Benyamin Bloom divides the stages of development into three domains, namely: (1) the cognitive domain with regard to intellectual learning outcomes which consists of six aspects, namely: knowledge or memory, understanding, application, analysis, synthesis, and evaluation; (2) the affective domain with regard to attitudes which consists of five aspects, namely: acceptance, response or reaction, assessment, organization, and internalization; and (3) the psychomotor domain with respect to learning outcomes for skills and the ability to act (Wewe, 2018).

The existence of learning in the form of problem solving is expected that students are motivated to solve questions (questions) that direct students in the problem solving process as an effort to find a way out of a difficulty, achieving a goal that is not easily achieved. Thus, problem solving is a form of learning that can create new ideas by using previously learned rules to create problem-solving formulations.

Like studying cubes and blocks, peseta students cannot explain the abstractness of cubes and blocks if only definitions are explained without knowing the real object. This is in line with what was stated by Hudojo (1988) in (Mutia, 2017) which emphasized that students will easily learn mathematics, if students already know the concept well.

Learning activities that involve students identify the existence of objects in the environment around the school in the form of blocks and cubes in line (Atmini, 2008) regarding the characteristics of PMR learning, namely using real contexts to be explored. Which starts from real problems (real) that are close to students or students often encounter on a daily basis.

Realistic learning helps students solve fulfilled problems through enthusiastic activities every time they follow the learning stages carried out. This is in line with what was stated by (Muchlis, 2012) that students can solve problems by directly using the concepts they already have or students solve the problem by changing it into a mathematical model and then using the concepts they already have to solve the problem.

Conclusions

Based on the results of research on the analysis of the understanding of the concept of volume building volumes for class V SD Inpres 5 Birobuli through realistic mathematics learning, it can be concluded that: (1) realistic mathematics learning can motivate students to construct their understanding of the concept of space volume by carrying out a problem solving process directed so as to find fun mathematical concepts in achieving learning goals. This can be seen from the results of the analysis of students' conceptual understanding of the ability to solve pretest questions and (2) problem solving in mathematics learning is a form of learning that can create new ideas and use previously learned rules to create problem solving formulations.

Based on the results of the research and the discussion outlined in the above conclusions, the authors recommend suggestions, namely: the teacher can use a realistic mathematics learning model as an effort to improve understanding of the concept of space volume.

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