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THE INFLUENCE OF THE CONTEXTUAL TEACHING AND LEARNING MODEL ON FRACTION LEARNING OUTCOMES AT STATE ELEMENTARY SCHOOL 1 KAMARIAN, WEST SERAM REGENCY, MALUKU PROVINCE, INDONESIA

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Abstract; This research aims to determine the effect of the Contextual Teaching and Learning (CTL) learning model on fraction learning outcomes. The method used is quantitative with a quasi-experimental type of research and is designed using one group pretest-posttest. The research involved fifth-grade students at Kamarian 1 State Elementary School, West Seram Regency. The research results show that there is an influence of the CTL model on fraction learning outcomes. The use of the CTL model can improve fraction learning outcomes, where the average increase in the high category is 71%, medium 48%, and low 29%. The increase is due to the effective use of contextual models, where with contextual learning students can relate the real world to mathematical problems. Contextual learning can facilitate students to see the meaning of the problems they encounter and can relate these problems to the students' real-life context.

Keywords: CTL Model, Learning Outcomes, Fraction Learning

PENGARUH MODEL BELAJAR KONTEKSTUAL TERHADAP HASIL BELAJAR PECAHAN DI SDN 1 KAMARIAN KABUPATEN SERAM BARAT PROVINSI MALUKU INDONESIA

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Abstrak: *Penelitian ini bertujuan untuk mengetahui pengaruh model pembelajaran Contextual Teaching and Learning (CTL) terhadap hasil belajar pecahan. Metode yang digunakan adalah kuantitatif dengan jenis penelitian quasi eksperimen dan dirancang menggunakan one group pretest-posttest. Penelitian ini melibatkan siswa kelas V SD Negeri Kamarian 1 Kabupaten Seram Barat. Hasil penelitian menunjukkan terdapat pengaruh model CTL terhadap hasil belajar pecahan. Penggunaan model CTL dapat meningkatkan hasil belajar pecahan, dimana rata-rata peningkatan pada kategori tinggi sebesar 71%, sedang sebesar 48%, dan rendah sebesar 29%. Peningkatan tersebut disebabkan efektifnya penggunaan model kontekstual, dimana dengan pembelajaran kontekstual siswa dapat menghubungkan dunia nyata dengan permasalahan matematika. Pembelajaran kontekstual dapat memudahkan siswa melihat makna dari permasalahan yang ditemuinya dan dapat menghubungkan permasalahan tersebut dengan konteks kehidupan nyata siswa.*

Kata Kunci: Model CTL, Peningkatan Hasil Belajar, Pembelajaran Pecahan

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INTRODUCTION

It cannot be denied that many students view mathematics as a difficult and unpleasant subject. The reason is that mathematics is often taught in abstract form and does not present contextual problems. An excessive view of the abstractness of the subject matter causes mathematical anxiety. Scarpello (2007; Abdul Gafoor & Kurukkan, 2015; Takaria, 2019) mathematical anxiety causes phobias in students, so they avoid activities with mathematics. This phobia results in a lack of interest in studying mathematics (Verhoeven, 2006; Takaria, 2018).

Referring to the problems faced, teachers need to carry out reforms in learning by presenting meaningful mathematics learning, which is contextual and problem-oriented. Dahar (2011; Gazali, 2016; Takaria, (2019) states that meaningful learning occurs when students can link the information or material studied with the knowledge that students already have.

To eliminate students' views that mathematics is difficult and less fun. Teachers need to change the traditional learning paradigm to a progressive learning paradigm. In the traditional paradigm, mathematics learning in schools tends to be dominated by knowledge transfer. The material is a lot and difficult, as well as the demand to complete learning material has made teachers teach mathematics quickly but not in depth (Gazali, 2016).

The initial research study found that: (1) students still had difficulty in solving unequal denominator fraction problems; (2) teachers have not optimized the use of contextual learning media; and (3) need to optimize the use of creative learning models. This problem has an impact on the results of learning fractions. This is indicated by the minimum completion criteria that have not been achieved.

One alternative for improving fraction learning outcomes is to use the CTL learning model. Mathematics learning needs to present contextual problems related to students' real lives and is supported by the use of concrete media in learning. Presenting contextual learning has an impact on students' understanding of mathematical concepts. Samo, et al (2017) development and implementation of contextual models can intensify high-level thinking abilities in the high category. Saragih & Surya (2017) mathematics learning using the contextual learning model is effective in increasing student learning completeness, student learning activities, the teacher's ability to manage learning, and student responses.

Afni & Hartono's (2020) CTL learning model can be used to connect real-world situations with mathematics so that students can understand and solve problems. Johnson (2008; Hyun et al., 2020; Afni, 2020; Syaifudin, et al., 2021) CTL is a learning process that aims to help students see the meaning in the material they study and how to relate the learning material to the context of their daily lives, namely in the context of the student's personal, social and cultural circumstances. Contextual problem-oriented mathematics learning can improve students' ability to explore creative ideas because it presents problems related to students' real lives in classroom learning.

The CTL model can also improve students' high-level thinking abilities, namely critical and creative thinking abilities. Samosir et al (2019) found a significant increase in creative thinking abilities through the use of contextual learning models. Nopyanti et al (2023) contextual-based learning is superior to conventional learning in terms of learning outcomes. Related to this, researchers want to examine the influence of the CTL model on student learning outcomes on the concept of fractions in elementary school.

METHOD

The approach in this research is a quantitative approach with a quasi-experimental type of research. The research sample involved fifth-grade students at State Elementary School 1 Kamarian, West Seram Regency (SBB). The research design uses a group Pretest Posttest Design. as presented in Figure 1 (Creswell, 2010).

O_1	X	O_2

Figure 1. One Group Pretest Posttest Desain

Figure 1 shows that the initial step taken was to carry out a Pretest (O1) after which treatment (X) was carried out by applying the CTL model and then a Posttest (O2) was carried out. To analyze whether the CTL model has an influence on fraction learning outcomes, it was tested using the Paired Sample t-test. Next, to analyze the increase in fraction learning outcomes, the Normalized-gain formula is used (Meltzer, 2002; Takaria & Talakua, 2018).

$$N - gain = \frac{Posttest\ Score - Pretest\ Score}{Maximum\ Possible\ Score - Pretest\ Score}$$

The calculation results using Normalized-gain are further confirmed in Table 1 (Hake, 1998; Pattimukay, et al, 2023).

Table 1. N-gain Value Criteria

N – gain (<g>)	Classification
g ≥ 0,70	High
0,30 ≤ g < 0,70	Currently
g < 0,30	Low

RESULTS

The purpose of this research is to see whether there is an influence of the Contextual Teaching and Learning Model on fraction learning outcomes in Class V of SD Negeri 1 Kamarian, West Seram Regency. The research results were analyzed using a dependent test with the Paired Sample Test type. Before testing is carried out, the first step is to carry out prerequisite tests related to normality and homogeneity of the data. Table 2 displays the test results.

Table 2. Normality and Homogeneity Test

	Kolmogorov-Smirnov Test	**Decision**	**Levene Test**	**Decision**
	Sig value		Sig value	
Pretest	0,200	Normal	0,408	Homogeneous
Posttest	0,118	Normal		

Table 2 shows that for the normality test using the Kolmogorov-Smirnov test type, significant pretest, and posttest values were obtained at 0.200 and 0.118, greater than $\alpha = 0.05$ (5%), so a decision was made for the data to be normally distributed. To test homogeneity using the Levene test, homogeneous data was obtained, because the Sig value of 0.408 was greater than 0.05.

After the data meets the prerequisite tests for normality and homogeneity, testing is then carried out to see the differences in fraction learning outcomes before and after the CTL learning model is applied. Before testing is carried out, the research hypothesis is first determined.

Hypothesis

Ho:There is no difference in the average value of learning outcomes before and after implementing the CTL model

H1:There is a difference in the average learning outcomes before and after the CTL model is applied

Next, hypothesis testing is carried out. Testing was carried out using the Paired Samples test. The results of data processing are presented in Table 3.

Table 3. Hypothesis test results

Test	Sig. (2-tailed)	Decision
PPretest - Posttest	0,000	Accept H_1

Table 3 shows that the significant value of 0.000 is less than α = 0.05, so a decision is made to reject Ho and accept H1, which means there are differences in learning outcomes after applying the CTL model. These results show that there is an influence of the CTL model on fraction learning outcomes. This was also shown by the ANOVA test which obtained a significant value (0.000) smaller than 0.005.

To see the increase in fraction learning outcomes after applying the CTL model, it was analyzed by looking at the N-gain value. Figure 2 displays the N-gain test results.

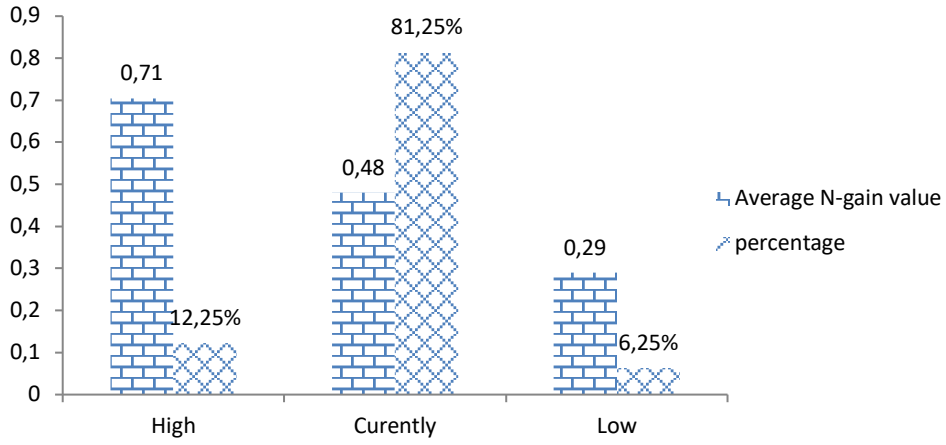

Figure 2 Average N-gain Value

Figure 2 shows that the average N-gain in the high category is 0.71 (71%), with a presentation of 12.25% (2 students) and the medium category is 0.48 (48%) with a presentation of 81.25% (13 students) and low 0.29 (29%) with a student achievement percentage of 6.26% (1 student). It can be explained that on average the results of learning fractions increased in the medium category with an N-gain of 0.50.

DISCUSSIONS

The CTL learning model is effective in improving fraction learning outcomes because the CTL model requires students to relate the real world to mathematical problems. Contextual learning can facilitate students to see the meaning of the problems they encounter and can relate

mathematical problems to the context of their daily lives. Saputra, et al (2022) mathematics becomes more meaningful when it is relevant to real life and students are active in learning mathematics when it relates to their real life.

Contextual problem-oriented mathematics learning can trigger students to explore creative ideas, resulting in increased mathematics learning outcomes on the concept of fractions. On average, the increase in fraction learning outcomes increased in the medium category with an N-gain value of 0.50. The increase was due to the effective use of the CTL model in facilitating students' thinking processes. Samo, et al (2017) development and implementation of contextual models can intensify students' high-level thinking abilities and increase them in the high category.

Fraction material can be understood by students well and in-depth because students are facilitated with the use of concrete media and contextual learning models so that students can construct ideas in solving mathematical problems. CTL is constructivist learning where knowledge must be contextualized and relevant to students (Johnson, 2002; Saputra, et al, 2022).

It was observed that there was the construction of mathematical ideas in contextual learning in fifth-grade elementary school with fraction material as follows: (1) Students actively exchange ideas in learning, where they can think critically and creatively in solving fraction problems; (2) the contextual media used makes learning fun because it is related to their real lives so that students can understand the concept of fractions more easily; and (3) presenting contextual problems can create an effective and enjoyable learning atmosphere. This atmosphere encourages students to be more active and enthusiastic in constructing creative ideas.

The results of the research carried out showed that learning using CTL influenced fraction learning outcomes in class V of Kamarian State Elementary School. Bahri (2017) found the influence of the inquiry-type CTL learning model on students' critical thinking abilities. Factors that cause the contextual model can improve fraction learning outcomes because this model can facilitate students to understand the concept well so that students can relate it to everyday life. The contextual model can also encourage students to think critically and creatively. The CTL approach can improve critical thinking. Shanti, et al (2018) the CTL approach can improve mathematical critical thinking skills on indicators: interpretation, analysis, evaluation, and decision making.

CONCLUSION

Regarding the research results obtained, several things can be concluded:

1. There is an influence of the CTL learning model on student learning outcomes on the concept of fractions in class V of SD Negeri 1 Kamarian West Seram
2. The CTL model can improve fraction learning outcomes and encourage students to think critically and creatively.
3. The average increase in fraction learning outcomes in the high category was 71%, in the medium category 48%, and in the low category 29% with an average increase in class of 50% in the medium category.

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