Inovasi Kurikulum

https://ejournal.upi.edu/index.php/JIK

Differences in improving learning outcomes and student learning motivation

Sudirman[1], Kms. Muhammad Amin Fauzi[2], Anita Yus[3]
[1,2,3]Universitas Negeri Medan, Medan, Indonesia
irman788@gmail.com[1], aminunimed29@gmail.com[2], anitayus.dikdas@gmail.com[3]

ABSTRACT

The Mathematics Learning Grade IV at SD Negeri 1 Syamtalira Bayu has yet to reach the indicators. Ideally, learning mastery occurs when 76% of students score above the Kriteria Ketuntasan Minimal (KKM). This study aims to determine the differences in students' learning outcomes and motivation through teaching using the Contextual Teaching and Learning (CTL) and discovery learning models. This quasi-experimental study involved two Grade IV-B and IV-A classes as the research sample. The research instruments used were tests and a motivation questionnaire. Data analysis was conducted using t-test and N-Gain analysis. Based on the results of the analysis, it was found that students' learning outcomes using the CTL model were higher than those using the discovery learning model. The learning motivation of students in the CTL model class was higher than in the discovery learning model class. Based on the research, the CTL model can improve students' learning outcomes and motivation.

ABSTRAK

Pembelajaran Matematika di kelas IV di SD Negeri 1 Syamtalira Bayu belum mencapai indikator keberhasilan. Ketuntasan belajar idealnya terjadi apabila 76% dari keseluruhan peserta didik dikatakan tuntas atau mendapatkan nilai di atas KKM. Penelitian ini bertujuan untuk mengetahui perbedaan hasil belajar siswa melalui pengajaran dengan model Contextual Teaching and Learning (CTL) dan model discovery learning. Mengetahui motivasi belajar siswa yang diajarkan dengan model pembelajaran CTL dan model discovery learning. Penelitian ini merupakan penelitian eksperimen semu (quasi eksperiment). Sampel penelitian ini terdiri dari 2 kelas dari siswa kelas IV-B dan IV-A. Instrumen yang digunakan adalah tes dan angket motivasi belajar. Analisis data dilakukan dengan uji statistik uji-t dan N-Gain. Berdasarkan hasil analisis diperoleh hasil belajar siswa dengan model CTL lebih tinggi dari model discovery learning. Motivasi belajar siswa pada kelas model CTL lebih tinggi dari kelas model Discovery Learning. Berdasarkan hasil penelitian, model CTL dapat meningkatkan hasil belajar dan motivasi belajar siswa.

Kata Kunci: Hasil belajar, motivasi belajar, model CTL, model discovery learning

INTRODUCTION

Optimal quality of education will be created if the role of teachers as facilitators in the teaching and learning process can be maximized. Each educational goal has two functions, namely 1) describing the final condition to be achieved; 2) providing direction and methods for all efforts or processes. It can be understood that the purpose of education in elementary schools focuses on learning outcomes achieved at the end of learning (Noor, 2018). Education is an effort to improve the quality of human resources. A person is said to have successfully learned if he can show changes in thinking ability, skills, and attitudes. Changes in learning outcomes can be observed and measured as a result of a learning experience called learning outcomes (Andriani & Rasto, 2019).

Mathematics, as one of the subjects in elementary school/Islamic elementary school, is not only arithmetic but also a support for other sciences. Therefore, mathematics lessons in elementary school/Islamic elementary schools provide students with provisions to apply mathematics in everyday life and to study various sciences at the next level. Mathematics is a fundamental science used to understand other fields of science. In reality, mathematics lessons are often partitioned and taught in several branches. Linking mathematical concepts between mathematical concepts and linking them with other fields is called connection ability. Several elements, including one, influence student learning outcomes) the way the teacher teaches, 2) student background, 3) the school environment, 4) the learning assessment model, and 5) internal and external aspects of students in delivering learning techniques (Ismawati, 2020).

Motivation is one of the dynamic aspects that is very important to motivate students in various things, such as learning. It often happens that underachieving students are not caused by their lack of ability, but because of the lack of motivation to learn, so they do not try to use all their abilities. Children who experience dependence on game activities will affect their learning motivation, reducing their study time and time to socialize with their peers (Rahyuni *et al.*, 2021). Learning motivation plays a crucial role in the learning process. For students, learning motivation can foster enthusiasm for learning so that students are encouraged to participate in the learning process (Arianti, 2018).

The mathematics material studied in the teaching and learning process is abstract, meaning they have not touched it with real life. The learning they have received from the topic or subject matter is only a protrusion that is studied, not followed by a deep understanding that can be applied in real life at this time. The learning process will be better if the teacher relates the learning material to the situation that occurs or the actual conditions in society, which can encourage students to make connections between the knowledge they have learned and its application in life (Mayasari, 2022).

Contextual Teaching and Learning (CTL) is a learning concept that helps teachers relate subject matter to students' real-world situations and encourages students to make connections between their knowledge and its application in their daily lives. The contextual approach to learning is based on the fact that most students cannot relate what they learn to how to use it in real life (Hermino & Arifin, 2020). The *discovery learning* model is expected to enable students to store knowledge longer and more deeply in their memory because they find the answers themselves. It will attract more students' attention in the mathematics learning process, especially in the material on flat shapes (Umihani *et al.*, 2023).

Based on an interview with a teacher of Class IV of SD Negeri 1 Syamtalira Bayu, it was stated that students had difficulty learning and understanding the material on plane shapes. This is because the material on plane shapes uses many formulas that are difficult to remember and quickly forgotten in finding the area and circumference of a plane shape; in addition, students are not ready or lazy to learn, so students' learning outcomes on the material on plane shapes are less than satisfactory. Learning Outcomes are the ability or results achieved from the teaching and learning process that students have

1862

undergone in a certain period, which includes cognitive, practical, and psychomotor skills. To develop student learning outcomes, this can be done by teaching learning materials effectively in the teaching and learning process through the use of learning models.

In studying geometry, students need a mature concept so that they can apply their geometric skills, such as visualizing, recognizing various shapes and spaces, describing drawings, making sketches of shapes, and learning models are needed so that students can understand the material (Muhassanah *et al.*, 2014). This can also be seen from previous research on applying the discovery learning model, which can increase student learning motivation and understanding of the material on flat shapes (Indahwati, 2023). The CTL learning model influences elementary school students' learning motivation (Nursehah *et al.*, 2021). The difference from previous studies is that this study aims to reveal significant differences between the CTL learning model and the discovery learning model in contributing to improving learning outcomes and learning motivation of grade IV students of SD Negeri 1 Syamtalira Bayu, North Aceh. This study helps provide new experiences, encourage students to be actively involved in learning, increase student motivation and learning outcomes in class, and make mathematics teaching more meaningful and valuable.

LITERATURE REVIEW

Learning Outcomes

Learning outcomes are essentially changes in behavior due to the learning process, including cognitive, affective, and psychomotor abilities (Nurrita, 2018). Referring to Bloom's Taxonomy, learning outcomes in the study context are achieved through three domains: cognitive, affective, and psychomotor. The cognitive domain is related to intellectual learning outcomes consisting of 6 aspects: knowledge, understanding, application, analysis, synthesis, and assessment—the affective domain pertains to attitudes and values. The affective domain includes five ability levels: receiving, responding, or reacting, assessing, organization, and characterizing with a value or complex of values. The psychomotor domain includes motor skills, manipulation of objects, and neuromuscular coordination (connecting and observing) (Andriani & Rasto, 2019).

Learning outcomes include cognitive, affective, and psychomotor abilities. Cognitive abilities include 1) Knowledge (knowledge, memory) the ability to identify and mention information; 2) Comprehension (understanding, explaining, summarizing, examples) the ability to explain and comprehend a concept; 3) Application (applying) an action that must be done or practiced for a desired interest; 4) Analysis (describing, determining relationships) efforts to find explanations or answers to everything obtained; 5) Synthesis (organizing, planning, forming new buildings) products are the ability to create a product and divide small tasks in work; 6) Evaluating (assessing) the ability to combine components to form a new concept or rule. Affective abilities include 1) Receiving (attitude of acceptance) is the ability to pay attention to an activity or event; 2) Responding (giving a response) is the ability to respond and participate; 3) Valuing (assessing) is the ability to accept or reject a specific value or norm; 4) Organization is an activity of gathering people who work together in a guided or controlled manner to achieve specific goals; 5) Characterization is an effort to display good character in positive things. Psychomotor skills include 1) Initiatory is making a start in an activity; 2) Pre-routine; 3) Routinezed; 4) Productive, technical, physical, social, managerial, and intellectual skills (Magdalena *et al.*, 2021).

Learning Motivation

Learning motivation is one factor that determines the learning process's effectiveness. Learning motivation is an internal and external drive in students who are learning. Several indicators support it,

including the desire to succeed, the drive and need for learning, hopes and ideals for the future, appreciation of learning, and a conducive learning environment (Novianti *et al.*, 2020). Motivation is a conscious effort to maintain a person's behavior so that they are encouraged to act to do something to achieve specific results or goals (Julyanti *et al.*, 2021). Motivation will cause a change in human energy. Motivation is the most essential thing that must be developed in the teaching and learning process. Motivation has a primary function and role in implementing teaching and learning activities to achieve learning goals (Dauyah & Yulinar, 2018).

Learning motivation has two influencing factors, namely intrinsic factors: the desire to succeed and the drive for learning needs and hopes for ideals. Intrinsic motivation contains 1) Adjustment of tasks with interests, 2) planning that is full of variation, 3) feedback on student responses, 4) opportunities for active student responses, and 5) opportunities for students to adjust their work tasks. Next are extrinsic factors, awards, a conducive learning environment, and exciting learning activities. Extrinsic motivation contains 1) adjustment of tasks with interests; 2) planning that is full of variation; 3) student responses; 4) opportunities for active students; 5) opportunities for students to adjust their work tasks; and 6) the existence of exciting activities in learning (Abroto *et al.*, 2021).

Model Pembelajaran *Contextual Teaching and Learning* (CTL)

Contextual Teaching and Learning (CTL) is a learning strategy that emphasizes the process of student involvement as a whole to find material and connect it with real everyday situations, namely their environment, so that it encourages students to apply it in their lives (Abidin *et al.*, 2022). The contextual approach is not just listening and taking notes but is a process of seeking experience directly. CTL, commonly called contextual learning, is a holistic learning concept where learning materials are linked to the surrounding environment or the context of everyday life, both social, cultural, and personal life of students, so that it will produce meaningful learning and students can knowledge and skills that can be applied to various problems, according to the statement from Shoimin in his book titled "*Model Pembelajaran Inovatif dalam Kurikulum 2013*".

Implementing the CTL model requires a learning plan that reflects CTL's concept and characteristic components. According to the Ministry of National Education, seven components show the characteristics of CTL learning, namely 1) Constructivism, 2) Inquiry, 3) Questioning, 4) Learning Community, 5) Modeling, 6) Reflection, and 7) Authentic Assessment (Nurfidiya *et al.*, 2019).

Discovery Learning Learning Model

Discovery learning is a learning model that trains students to learn independently to improve cognitive skills and processes. It involves active participation from students in activities such as observing, formulating, classifying, making assumptions, explaining, and drawing conclusions that encourage independent discovery of concepts in the learning process (Anugraheni *et al.*, 2018). In the discovery learning model, students develop knowledge and skills and organize problem-solving methods.

Discovery learning also means a cognitive learning model emphasizing teacher creativity to create learning situations where students actively learn to discover their knowledge (Annisa *et al.*, 2023; Moko *et al.*, 2022). The Syntax of the discovery model is stimulation (giving stimulation), problem statement (problem statement/identification), data collecting (data collection), and data processing (data processing). At the data processing stage, each student is assigned to be able to process the information that has been collected, either through interviews, observations, and so on, verification (proof), generalization (drawing conclusions/generalizations) (Ruhana *et al.*, 2023).

METHODS

The type of research used is quasi-experimental research. Quasi-experiments provide treatments, outcome measures, and experimental units but do not use random placement (Sutono *et al.*, 2020). This type of research aims to see the differences in improving student learning outcomes and learning motivation taught with the CTL learning model. Students are taught with the discovery learning model. The sample in this study were fourth-grade students of SD Negeri 1 Syamtalira Bayu Aceh Utara with class IV-a as the experimental class I with 22 students taught using the CTL learning model and class IV-b as the experimental class II with 22 students taught using the discovery learning model. This study was conducted to determine the differences in motivation and student learning outcomes between students taught with the CTL learning model and students taught with the discovery learning model. This study took two random sample classes representative of the Population by implementing different learning as experimental classes.

The research design used in this study was a two-group pretest and post-test. Both classes were given treatment by implementing different learning, namely CTL learning and discovery learning. The first step must be to determine experimental groups 1 and 2. The second step is to provide the same pretest (initial test) to experimental groups 1 and 2. A motivation questionnaire is given to students to determine their willingness to learn possessed by students. Then, the two experimental classes were given different treatments: the CTL learning model and discovery learning. After that, the two groups of experimental courses were given the identical posttest (final test) and motivation questionnaire to see the differences in motivation and learning outcomes in the two classes. Quoting from Riduwan and Sunarto in their book entitled "Introduction to Statistics for Educational, Social, Economic, Communication and Business Research," the design of the two-group pretest-posttest experiment in this study can be seen in **Table 1**.

Table 1. Desain Penelitian

Classes	Pretest		Treatment	*Postest*		Learning Model
IV-A Eksperimen I	T_1	M_1	X_1	T_2	M_2	*CTL*
IV-B Eksperimen II	T_1	M_1	X_2	T_2	M_2	*DL*

Sumber: Riduwan dan Sunarto dalam buku "Pengantar Statistika Untuk Penelitian Pendidikan, Sosial, Ekonomi, Komunikasi dan bisnis"

Keterangan:

T_1 : *Pretest Student learning outcomes*

M_1: Motivation Questionnaire at the first meeting

T_2 : *Posttest Student learning outcomes*

M_2: Motivation Questionnaire at the last meeting

X_1 : Treatment of the learning model Contextual Teaching and Learning (CTL)

X_2 : Discovery Learning learning model treatment

In this study, the quantitative data that will be analyzed are the pretest and posttest results of motivation and students' mathematics learning outcomes. The data from the student's final test results are analyzed to see how the process is carried out by students in completing the motivation test questions and student learning outcomes. Processing the research data begins with testing the statistical requirements for hypothesis testing, namely the data normality and variance homogeneity tests. The data obtained from the pretest and posttest results are analyzed to determine the differences in the increase in student learning outcomes. The scores obtained from the student test results before and after being given the CTL learning model and the discovery learning model are analyzed by comparing the scores obtained from the student test results before and after the treatment. Quoting Sukarelawan et al. in their book entitled "*N-Gain VS Stacking (Analisis Perubahan, Abilitas Peserta Didik dalam Desain, One Group Pretest-posttest),*" To calculate gain, use the following formula:

$$N_{gain}(g) = \frac{skor\ post\ test - skor\ pre\ test}{skor\ ideal - skor\ pre\ test}$$

The n-gain score value obtained from this calculation is then interpreted in **Table 2**.

Table 2. Kriteria n-gain score

Value	Criteria
$0,70 \leq g \leq 0,7$	Tinggi
$0,30 \leq g < 0,7$	Sedang
$0,00 < g \leq 0,30$	Rendah
$g = 0,00$	Tidak terjadi peningkatan
$-1,00 \leq g < 0,00$	Terjadi penurunan

Sumber: Sukarelawan et al dalam buku "N-Gain VS Stacking (Analisis Perubahan, Abilitas Peserta Didik dalam Desain, One Group Pretest-posttest)"

Hypothesis testing using independent sample t-test. According to Nuryadi et al., in their book Basics of Research Statistics, this test determines the difference in the average of two independent data populations/groups that are given different treatments. To see the difference, the results of the t-test calculation will be compared with the t table. If the t-count> t-table, then it means it is significantly different (Ho = rejected); if the t-count < t-table, it means it is not considerably different (Ho = accepted).

Hypothesis 1:
$H_0 : \alpha_1 = \alpha_2$
$H_1 : \alpha_1 \neq \alpha_2$
Information:
α_1 : Average learning outcomes of students taught using the CTL learning model.
α_2 : Average learning outcomes of students taught using the Discovery Learning model.

Hypothesis 2:
$H_0 : \alpha_1 = \alpha_2$
$H_1 : \alpha_1 \neq \alpha_2$
Information:
α_1 : The average learning motivation of students taught using the CTL learning model.
α_2 : The average learning motivation of students taught using the discovery learning model*.*

RESULTS AND DISCUSSION

Improving Learning Outcomes

The cognitive domain learning outcome test provides information about students' abilities in experimental classes I and II before and after the learning process. The information includes initial test results, final test, normalized gain, and interaction. The cognitive domain learning outcome ability test was conducted twice: the initial test (pretest) and the final test (posttest) with equivalent questions. Twenty-two students for each class followed the initial and final tests, so in the data analysis, the subjects of this study were 22 people, namely those who took the initial test (pretest) and the final test (posttest) in both experimental classes. Experimental class I was taught using the CTL learning model, and experimental class II was taught using the discovery learning model.
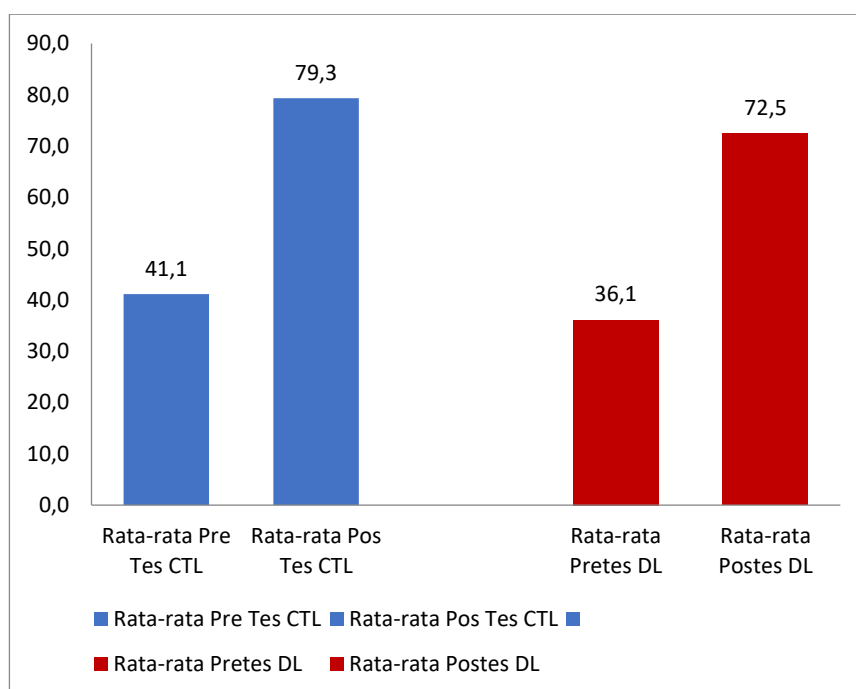
Image 1. Average Pretest and Posttest Ability Learning Outcomes in the Cognitive Domain
Sumber: Penelitian 2024

Image 1 shows the average pretest and posttest scores of students' cognitive learning outcomes in the experimental class I group with the CTL model are 41.1 pretest average and 79.3 posttest average. Students' cognitive learning outcomes in the experimental class II group with the discovery learning model are 36.1 pretest average and 72.9 posttest average. Based on these data, students' cognitive learning outcomes in the experimental class I group are better than those in the experimental class II group. The CTL learning model is an effective learning method for improving learning outcomes compared to direct learning methods (Kasmawati *et al*., 2017). The CTL learning model can also influence mathematics learning outcomes in the cognitive domain (Kistian, 2018).

To find out whether the difference in the initial test mean score and the final test mean score between experimental class I and experimental class II is significant or not, the data was tested using the two-mean difference test, previously a normality and homogeneity of variance test must be carried out on the pretest and posttest score data for students' cognitive learning outcomes. This normality test was carried out using the Liliefors statistical test on both data classes. The output of the calculation of the normality test for the pretest data for students' cognitive learning outcomes who will study in the experimental class and experimental class II can be seen in **Table 3**.

Table 3. Normality Test Results of Cognitive Ability Learning Results

Tests of Normality						
	Kolmogorov-Smirnov[a]			**Shapiro-Wilk**		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Pretest **CTL**	,157	22	,166	,920	22	,075
Pretest **DL**	,160	22	,150	,923	22	,086
Postest **DL**	,164	22	,129	,948	22	,283
Postest **CTL**	,179	22	,064	,890	22	,019

Sumber: Penelitian 2024

The homogeneity test was conducted using the Homogeneity of Variances test (Levene Statistic), which is intended to test the homogeneity of variance of the two classes of pretest data on students' learning outcomes in the cognitive domain between experimental class I and experimental class II. Table 4

shows the results of the calculation of the homogeneity test of pretest data on students' learning outcomes in the cognitive domain.

Table 4. Results of Homogeneity Test of Variance of Learning Outcome Ability

Test of Homogeneity of Variances			
Nilai *Pretest*			
Levene Statistic	df1	df2	Sig.
,515	1	42	,477
Test of Homogeneity of Variances			
Nilai *Postest*			
Levene Statistic	df1	df2	Sig.
,613	1	42	,438

Sumber: Penelitian 2024

Based on the results of the normality and homogeneity test of the posttest scores of both classes, the data on students' learning outcomes in the cognitive domain stated that the data of both classes were normally distributed, and the variances of both classes were homogeneous. Furthermore, a statistical analysis was carried out to test the difference in the average of the two samples using the t-test to determine whether the difference in the average post-test scores between experimental classes I and II was significant. The calculation process was carried out with the help of SPSS 25, and the output results are shown in **Table 5**.

Tabel 5. Hasil Uji-t *Postest* Kemapuan Hasil Belajar Ranah Kognitif

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Hasil belajar *postest*	*Equal variances assumed*	,613	,438	2,770	42	,004	6,818	3,851	-,954	14,590
	Equal variances are not assumed.			2,770	41,252	,004	6,818	3,851	-,958	14,594

Sumber: Penelitian 2024

Based on the calculation results on **Table 5**. by using the t-test at the significance level $\alpha = 0,05$ (two sided test, $\frac{1}{2} \alpha = 0, 025$) obtained t_{count} as big as 2,770 with significance value 0,084 meanwhile t_{table} as big as 2,085. Because $t_{hitung} > t_{tabell}$ (2,770 > 2,085) and significance < 0,05 (0,04< 0,05), so H_0 is rejected. and H$_1$ is accepted, which means there is a difference in the increase in learning outcomes of

students taught with the CTL learning model, which is higher than students taught with the discovery learning model. So, the CTL learning model influences student learning outcomes (Setiawan, 2020).

Calculating the gain of both classes allows us to compare students' cognitive domain learning outcomes between students who receive learning with the CTL learning model and students who receive learning with the discovery learning model. The data from the normalized gain test results can be seen in **Table 6**.

Tabel 6. Data Hasil Peningkatan Kemampuan Hasil Belajar Siswa Ranah Kognitif

Groups	*N-Gain* Score Data				
	x_{min}	x_{maks}	$\bar{x}$	*s*	Categories
CTL Class	0,10	0,90	0,60	0,20	Medium
DL Class	0,10	0,70	0,50	0,27	Medium

Sumber: Penelitian 2024

From **Table 6**, it was determined that the minimum score and maximum score of the experimental group I data were higher than the minimum score and maximum score of the experimental group II data. The standard deviation of the N-Gain score of the cognitive domain students' learning outcomes in the experimental group I was higher than that of the experimental group II, meaning that the N-Gain score of the cognitive domain students' learning outcomes in the experimental group I was more spread out than the N-Gain score of the cognitive domain students' learning outcomes in the experimental group II. The average gain of the cognitive domain students' learning outcomes in the experimental class I (0.60) was higher than that of the cognitive domain students' learning outcomes in the experimental class II (0.50). Meanwhile, the standard deviation of the N-Gain score of experimental group I and the N-Gain score of experimental group II were similar, 0.6 and 0.5, respectively. Both data are included in the moderate category based on the gain value. The CTL model is the right solution to develop learning that can optimize learning outcomes (Yesya *et al.*, 2018). Learning using the CTL model shows a difference in students' average scores before and after using the CTL model (Ahrisya *et al.*, 2019). The CTL model is a learning model that can actively involve students in learning and stimulate students to develop their opinions to improve student learning outcomes (Manurung, 2020).

Peningkatan Motivasi Belajar

The student learning motivation questionnaire data were obtained from the provision of a student learning motivation scale consisting of 30 statements consisting of 17 positive statements and 13 negative statements. The scale used represents two aspects of student learning motivation, namely: intrinsic motivation and extrinsic motivation. This student learning motivation scale was given to experimental classes I and II at the first and last learning meetings. The processing and analysis of student learning motivation at the first and last meetings aimed to determine student learning motivation before and after receiving CTL model learning in experimental class I and student learning motivation before and after receiving discovery learning model learning in experimental class II. Based on the data from the first meeting, the lowest score was obtained (X_{min}), highest score (X_{max}), average score $(\bar{X})$ and standard deviation *(s)* for experimental classes I and II, as in **Table 7**.

Tabel 7. Rekapitulasi Hasil Pertemuan Pertama dan Pertemuan Terakhir Motivasi Belajar siswa

Groups	Ideal Score	First meet				Last meet			
		x_{min}	x_{maks}	$\bar{x}$	SD	x_{min}	x_{maks}	$\bar{x}$	SD
CTL	150	80	105	94,50	6,412	102	130	115,59	6,085
DL		77	107	93,32	7,961	97	122	112,50	6,688

Sumber: Penelitian 2024

Based on Table 7, it can be seen that the minimum score at the first meeting of students' learning motivation in experimental group I (80) is higher than that of experimental group II (77), the maximum score of students' learning motivation in experimental group I (105) is lower than the maximum score of students' learning motivation in experimental group II (107). At the last meeting, the minimum score of experimental group I (101) is higher than the minimum score of experimental group II (97), and the maximum score of students' learning motivation for experimental group I (130) is higher than the maximum score of students' learning motivation in experimental group II (122). Furthermore, a statistical analysis was carried out on the difference in the average of the two samples using the t-test to determine whether the difference in the average score of the motivation questionnaire between experimental classes I and II was significant. To determine whether the difference in the average score of the first meeting and the average score of the last meeting between experimental class I and experimental class II was significant or not, the data was tested using the two-average difference test, previously a normality and homogeneity test of variance had to be carried out on the data of the first meeting and the last meeting of students' learning motivation.

Based on the results of the normality and homogeneity test of the questionnaire scale scores of the two classes of student learning motivation data, it is stated that the data of the two classes are typically distributed, and the variance of the two classes is homogeneous. Furthermore, a statistical analysis of the test of the difference in the average of the two samples using the t-test was carried out to determine whether the difference in the average score of the motivation questionnaire between experimental class I and experimental class II was significant. The calculation process was carried out with the help of SPSS 25, and the output results are shown in **Table 8**.

Table 8. Hasil Uji-t Skala Angket Motivasi Hasil Belajar

		Independent Samples Test							
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Last Learning Motivation	Equal variances assumed	,014	,907	2,603	42	,016	3,091	1,928	-,698	.799
	Equal variances are not assumed.			2,603	41,630	,016	3,091	1,928	-,698	.800

Sumber: Penelitian 2024

Based on the calculation results in **Table 8** above using the t-test at the significance level$\alpha = 0,05$ (uji dua sisi, $1/2 \alpha = 0, 025$) diperoleh t_{hitung} sebesar 2,603 dengan nilai signifikansi 0,084 sedangkan t_{tabel} sebesar 2,085. Karena $t_{hitung} > t_{tabel}$ (2,603 > 2,085) dan signifikansi < 0,05 (0,016< 0,05), sehingga H_0 rejected. and H_1 accepted that there is a difference in the increase in learning motivation of students who

are taught with the CTL learning model, which is higher than that of students who are taught with the discovery learning model. So, it can be concluded that there is a difference in the average scale of the student learning outcome motivation questionnaire between experimental groups I and II, thus having a different scale score.

The goal is to see the increase in student learning motivation between students who receive learning with the CTL learning model and students who receive learning with the discovery learning model by calculating the gain of both classes. The descriptive statistics of the N-Gain scores of experimental group I and experimental group II presented are the lowest N-Gain scores (x_{min}), highest N-Gain score (x_{max}), N-Gain average ($\bar{x}$) and the standard deviation of N-Gain (SD), Complete data is presented in **Table 9**.

Tabel 9. Rekapitulasi Data Hasil Skor *N-Gain* Motivasi Belajar Siswa

Kelas	Jumlah Siswa (N)	Rata-rata		*N-gain*	Kategori
		Pertemuan Pertama	Pertemuan Terakhir		
DL	22	93,32	112,5	0,3	Rendah
CTL	22	94,5	115,59	0,4	Sedang

Sumber: Penelitian 2024

Based on Table 9 above, it is obtained that the minimum score and maximum score of experimental class I data are lower than the minimum score and maximum score of experimental class II data. The average N-Gain of learning motivation of students in experimental group I is 0.3 lower than the average N-Gain of learning motivation of students in experimental group II, which is 0.4. The CTL Learning Model is a learning model that allows students to apply and experience what is being taught so that learning will be more meaningful and enjoyable and can increase students' learning motivation (Nursehah *et al.*, 2021). Learning with the CTL model can encourage students to play an active role in learning so that learning is more meaningful and authentic, as seen in the interaction between the CTL model and students' learning motivation in mathematics learning (Harahap, 2021). CTL model learning will take place by linking the contents of the material to everyday life so that students can give more meaning to learning and provide learning encouragement, increasing student motivation in learning (Zhafirah & Utami, 2019).

CONCLUSION

Based on the data analysis and discussion presented in this study, several conclusions related to learning were obtained. First, there is a difference in the increase in student learning outcomes taught with the CTL learning model, which is higher than those trained with the discovery learning model. This can be seen in the calculation of the normalized N-Gain analysis Score 0.6 results. H_0 is rejected and H_1 Is accepted, namely, there is a difference in the increase in learning outcomes of students taught with the CTL learning model, which is higher than students taught with the discovery learning model. Second, there is a difference in the increase in learning motivation of students taught with the CTL learning model, which is higher than that of students taught with the discovery learning model. This can be seen in the calculation of the results of the normalized N-Gain analysis Score of 0.4 so that. H_0 is rejected and H_1 Is accepted, namely, there is a difference in the increase in learning motivation of students who are taught using the CTL learning model, which is higher than that of students who are taught using the discovery learning model.

AUTHOR'S NOTE

The author declares that there is no conflict of interest regarding the publication of this article. The author confirms that the data and content of the article are free from plagiarism.

REFERENCES

Abidin, Z., Nugraha, E., & Wasehudin. (2022). Model pembelajaran Contextual Teaching and Learning (CTL) dalam meningkatkan kualitas pemahaman materi fiqih. *Formosa Journal of Social Sciences (FJSS), 1*(2), 131-150.

Abroto, Maemonah, & Ayu, N. P. (2021). Pengaruh metode blended learning dalam meningkatkan motivasi dan hasil belajar siswa sekolah dasar. *Edukatif: Jurnal Ilmu Pendidikan*, *3*(5), 1993-2000.

Ahrisya, L., Praherdhiono, H., & Adi, E. P. (2019). Pengaruh model pembelajaran CTL terhadap hasil belajar siswa kelas V sekolah dasar. *JKTP: Jurnal Kajian Teknologi Pendidikan*, *2*(4), 306-314.

Andriani, R., & Rasto. (2019). Motivasi belajar sebagai determinan hasil belajar siswa. *Jurnal Pendidikan Manajemen Perkantoran*, *4*(1), 80-86.

Annisa, S. A., Ainy, F. N., Adelia, V. A., Annisa, I., Istiqomah, & Ermawati, D. (2023). Pengaruh model discovery learning terhadap peningkatan pemahaman konsep matematika siswa kelas III sekolah dasar. *Jurnal Ilmiah Matematika Realistik (JI-MR)*, *4*(2), 227-232.

Anugraheni, A. D., Oetomo, D., & Santosa, S. (2018). Pengaruh model discovery learning dengan pendekatan contextual teaching learning terhadap keterampilan argumentasi tertulis ditinjau dari kemampuan akademik siswa SMAN Karangpandan. *Bioedukasi: Jurnal Pendidikan Biologi*, *11*(2), 123-128.

Arianti. (2018). Peranan guru dalam meningkatkan motivasi belajar siswa. *Didaktika: Jurnal Kependidikan*, *12*(2). 117-134.

Dauyah, E., & Yulinar. (2018). Faktor-faktor yang mempengaruhi motivasi belajar bahasa inggris mahasiswa non-pendidikan bahasa inggris. *Jurnal Serambi Ilmu, 19*(2), 196-209.

Harahap, E.H. (2021). Pengaruh pendekatan CTL berbantuan media tiga dimensi terhadap motivasi dan hasil belajar matematika. *Journal of Education, Humaniora and Social Sciences*, *3*(4), 829-835.

Hermino, A., & Arifin, I. (2020). Contextual character education for students in the senior high school. *European Journal of Educational Research, 9*(3), 1009-1023.

Indahwati, E. S. (2023). Penerapan model discovery learning untuk meningkatkan motivasi belajar dan pemahaman konsep luas bangun datar pada siswa kelas IV SDN 02 Kota Batu. *Jurnal Pendidikan Taman Widya Humaniora*, *2*(3), 1514-1537.

Ismawati. (2020). Peningkatan hasil belajar pada pembelajaran tematik terpadu pada muatan bahasa indonesia dengan menggunakan model kooperatif tipe make a match di kelas IV SDN 3/IX Senaung. *Jurnal Literasiologi*, *3*(2), 14-27.

Julyanti, E., Rahma, I. F., Candra, O. D., & Nisah, H. (2021). Pengaruh motivasi terhadap hasil belajar siswa sekolah menengah pertama. *Jurnal Pembelajaran dan Matematika Sigma (JMPS), 7*(1), 7-11.

Kasmawati, Latuconsina, N. K., & Abrar, A. I. P. (2017). Pengaruh model pembelajaran CTL terhadap hasil belajar. *Jurnal Pendidikan Fisika*, *5*(2), 70-75.

Kistian, A. (2018). Pengaruh model pembelajaran CTL terhadap hasil belajar matematika siswa kelas IV SD Negeri Langung Kabupaten Aceh Barat. *Bina Gogik*, *5*(2), 13-24.

Magdalena, I., Hidayah, A., & Safitri, T. (2021). Analisis kemampuan peserta didik pada ranah kognitif, afektif, dan psikomotorik siswa kelas II B SDN Kunciran 5 Tangerang. *Nusantara: Jurnal Ilmu Pengetahuan Sosial*, *3*(1), 48-62.

Manurung, A. S. (2020). Pengaruh model pembelajaran CTL terhadap hasil belajar matematika siswa kelas XI IPA SMA Negeri 31 Jakarta. *Guru Kita*, *4*(3), 1-10.

Mayasari, E. (2022). Konsep contextual teaching and learning dalam Upaya menciptakan iklim belajar mengajar menyenangkan dan bermakna. *Jurnal Pendidikan dan Pengajaran, 1*(1), 58-66.

Moko, V. T. H., Chamdani, M., & Salimi, M. (2022). Penerapan model discovery learning untuk meningkatkan hasil belajar matematika. *Inovasi Kurikulum, 19*(2), 131-142.

Muhassanah, N., Sujadi, I., & Riyadi. (2014). Analisis keterampilan geometri siswa dalam memecahkan masalah geometri berdasarkan tingkat berpikir Van Hiele. *Jurnal Elektronik Pembelajaran Matematika, 2*(1), 54-66.

Noor, T. (2018). Rumusan tujuan pendidikan nasional pasal 3 undang-undang sistem pendidikan nasional no 20 tahun 2003. *Wahana Karya Ilmiah Pendidikan*, *2*(1), 123-144.

Novianti, C., Sadipun, B., & Balan, J. M. (2020). Pengaruh motivasi belajar terhadap hasil belajar matematika peserta didik. *SPEJ (Science and Phisics Educational Journal)*, *3*(2), 57-75.

Nurfidiya, Ismaimuza, D., & Hadjar, I. (2019). Penerapan pendekaran contextual teaching and learning (CTL) untuk meningkatkan hasil belajar siswa pada materi perbandingan di kelas VII SMP Negeri 22 Palu. *Aksioma Jurnal Pendidikan Matematika, 8*(1), 84-96.

Nurrita, T. (2018). Pengembangan media pembelajaran untuk meningkatkan hasil belajar siswa. *Jurnal Ilmu-Ilmu Al-Quran, Hadist, Syariah dan Tarbiyah*, *3*(1), 171-187.

Nursehah, U., Wijaya, S., & Sopia. (2021). Penerapan pembelajaran contextual teaching and learning (CTL) dalam meningkatkan motivasi belajar siswa SD pada mata pelajaran IPA. *Jurnal Keilmuan dan Kependidikan Dasar, 13*(2), 181-190.

Rahyuni, Yunus, M., & Hamid, S. (2021). Pengaruh game online terhadap motivasi belajar dan prestasi belajar siswa di SD Kecamatan Pammana Kabupaten Wajo. *Bosowa Journal of Education, 1*(2), 65-70

Ruhana, B. A., Meiliyadi, L. A. D., & Zaini, M. (2023). Pengaruh model discovery learning terhadap keterampilan berpikir kritis siswa pada materi suhu dan kalor. *Relativitas: Jurnal Riset Inovasi Pembelajaran Fisika*, *6*(1), 1-10.

Setiawan, A. (2020). Pengaruh model pembelajaran CTL terhadap hasil belajar siswa pada subtema 1 tema 2 kelas V SDN 1 Nusa Bakti Kecamatan Belitang III Kabupaten Oku Timur. *Jemari: Jurnal Edukasi Madrasah Ibridaiyah*, *2*(2), 108-119.

Sutono, & Pamungkas, A. P. (2020). Penerapan metode eksperimen semu pada sistem informasi persediaan dan penjualan obat di apotek berbasis web-base. *Media Jurnal Informatika*, *12*(2), 44-50.

Umihani, Nurwahidin, M., Pujianti, & Riswandi. (2023). Pengembangan bahan ajar model discovery learning menggunakan media digital di SMA N 1 Terbanggi Besar. *Jurnal Teknologi Pendidikan: Jurnal Penelitian dan Pengembangan Pembelajaran, 8*(1), 164-172.

Yesya, D. P., Desyandri, & Alwi, E. (2018). Pengaruh penggunaan model CTL dalam pembelajaran PKN di sekolah dasar. *E-Jurnal Inovasi Pembelajaran SD*, *6*(1), 1-10.

Zhafirah, T., & Utami, L. (2019). PengSaruh penerapan model pembelajaran CTL dengan media lingkungan terhadap motivasi belajar siswa pada materi koloid. *Journal Education and Chemistry*, *1*(2), 64-71.

1874