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THE EFFECT OF THE CONTEXTUAL TEACHING AND LEARNING (CTL) LEARNING MODEL ON THE SCIENCE LEARNING OUTCOMES OF GRADE IV

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ABSTRAK

Penelitian ini bertujuan untuk mengetahui apakah ada tidaknya pengaruh model pembelajaran Contextual Teaching and Learning (CTL) terhadap hasil belajar Ilmu Pengetahuan Alam dan Sosial (IPAS) siswa kelas IV UPTD SD Negeri 124398 Pematangsiantar. Penelitian ini adalah penelitian kuantitatif jenis eksperimen, yaitu Pre-Experimen Design tipe "one group pretest-posttest design". Sampel dalam penelitian iniyaitu siswa kelas IV UPTD SD Negeri 124398 Pematangsiantar yang berjumlah 22 siswa. Teknik pengumpulan data dilakukan dengan pemberian tes melalui tes pilihan ganda yang diberikan sebelum (pretest) dan sesudah (posttest) perlakuan. Teknik analisis data dilakukan dengan uji N-Gain dan uji hipotesis, N-Gain Score diperoleh adalah 0,57 ini menunjukkan model pembelajaran yang digunakan cukup afektif dalam meningkatkan hasil belajar IPAS siswa. Selanjutnya hasil uji hipotesis menunjukkan bahwa nilai thitung = 15,532 dan ttabel = 1,721 maka diperoleh thitung > ttabel atau 15,532 > 1,721 yang menunjukkan bahwa terdapat pengaruh yang signifikan antara hasil belajar siswa pada pretest dan posttest. Ini berarti nilai thitung > ttabel artinya Ha pada penelitian ini diterima dan H0 ditolak. Maka dapat disimpulkan ada pengaruh model Conextual Teaching and Learning (CTL) terhadap hasil belajar IPAS siswa kelas IV UPTD SD Negeri 124398 Pematangsiantar.

Keywords:
Contextual Teaching and Learning (CTL); Hasil Belajar, IPAS, siswa kelas IV

ABSTRACT

This study aims to determine whether the Contextual Teaching and Learning (CTL) model has an effect on the learning outcomes of Science and Social Studies (IPAS) for Grade IV students at UPTD SD Negeri 124398 Pematangsiantar. This research is a quantitative study with an experimental approach, using a Pre-Experimental Design type "one group pretest-posttest design." The sample of this study consisted of 22 Grade IV students at UPTD SD Negeri 124398 Pematangsiantar. Data were collected through multiple-choice tests administered before (pretest) and after (posttest) the treatment. The data analysis techniques used were the N-Gain test and hypothesis testing. The N-Gain score obtained was 0.57, which indicates that the applied learning model was quite effective in improving students' IPAS learning outcomes. Furthermore, the hypothesis testing results showed that the calculated t-value (tcount) = 15.532 and the t-table value = 1.721, resulting in tcount > ttable (15.532 > 1.721). This demonstrates that there is a significant difference between the students' pretest and posttest results. Thus, Ha in this study is accepted and H0 is rejected. It can be concluded

that the Contextual Teaching and Learning (CTL) model has a significant effect on the IPAS learning outcomes of Grade IV students at UPTD SD Negeri 124398 Pematangsiantar.

1. Introduction

Article 31 paragraph (1) of the 1945 Constitution firmly states that "Every citizen has the right to receive an education." This statement emphasizes that education has a very strategic position in the life of the nation and state. According to Lestari (2019:73), "the right of every citizen to access education has been guaranteed by law which is binding and has legal force, so that no party has the authority to hinder individuals in the process of learning and obtaining an education." (Dewi, 2018) .

Education is a learning process aimed at developing an individual's knowledge, skills, and character, which is passed down from one generation to the next through teaching, training, and research. According to Ki Hajar Dewantara, the Father of National Education, education is defined as a process of guidance in the growth and development of a child's life. (Perdana et al., 2024) . Education, according to him, aims to direct all of the natural potential that children have so that they, as individuals and members of society, can achieve the highest level of safety and happiness. This view is in line with the goals of national education as stated in Law Number 20 of 2003 Article 3 concerning the National Education System, which states that: "Education is a conscious and planned effort to create a learning atmosphere and learning process so that students can actively develop their potential to have spiritual religious strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation, and state." (Marta et al., 2020) .

Elementary school education aims to provide the foundation for life development, both personal and social. It also serves to prepare students for further education by equipping them with basic attitudes, knowledge, and skills. At the elementary school level, students begin to acquire a variety of knowledge that can be applied in everyday life, both within the family and community. Therefore, learning activities in schools should be relevant to real life (Taofek & Agustini, 2020) .

Along with the advancement of technology, the development of information technology is unstoppable and has had a far-reaching impact, enabling every individual to access and utilize technology anytime and anywhere. This rapid technological development has also become a crucial foundation for accessing various information that supports improving the quality of the learning process in education. In the context of education in the digital era, both educators and students are required to integrate technology into the teaching and learning process. The success of the learning process

can be measured by significant changes and improvements in the cognitive, affective, and psychomotor aspects of students. Evaluation of this success is carried out by comparing the condition of students before and after the implementation of learning activities (Takim, 2021) .

Students are the primary indicator in assessing the success of the learning process, but the role of teachers is fundamental as the foundation for achieving that success. Quality educational and learning outcomes are not determined by a single element, but rather the result of the synergy of various components, such as the learning process, the availability of facilities and infrastructure, funding, the school environment, and the leadership of the principal. While all of these components are important, their existence will not be optimal without the support of professional teachers. Professional teachers are educators who are able to meet predetermined competency standards and requirements and are able to implement them effectively in learning practices (Sari et al., 2017) .

Teacher professionalism is characterized by mastery of the competencies required to carry out their duties as educators. According to Sianturi (Prayunisa & Mahariyanti, 2022), there are four basic competencies that teachers must possess, as stipulated in Law Number 14 of 2005:

a. Pedagogical competence. Pedagogical competence is a teacher's ability to understand students, plan, implement, evaluate, and develop appropriate learning for their students so that they are able to actualize their potential to the maximum.
b. Personality competencies. Personality competence is a teacher's personal ability that reflects a solid, stable, mature, wise, authoritative personality, and is a role model for students and has noble morals.
c. Social competence. Social competence is a teacher's ability to communicate and interact effectively with students, fellow educators, education staff, parents/guardians of students, and the community.
d. Professional competence. Professional competence is a teacher's ability to understand and master the field of study they teach broadly and deeply.

The curriculum is an absolute requirement for the implementation of education in schools. Every implementation of education is directed towards achieving predetermined goals . According to Lasmawan (Handini et al., 2016) states that "the curriculum is interpreted as a planned learning experience as a basis and reference in planning, implementing, evaluating and developing and implementing the curriculum to be able to transform educational materials into learning experiences for students." The curriculum consists of a collection of subjects including science, social studies, Indonesian, and so on Pitnelly (Juhaeni, 2018) . Optimal implementation of the Independent Curriculum in elementary schools will improve the quality of learning in elementary schools. The Independent Curriculum, which emphasizes a learning process that meets the needs and characteristics of students, will certainly provide flexibility for students to continue to develop according to their potential interests and talents, especially in the implementation of the Independent Curriculum in elementary schools referring to the curriculum structure. The Independent Curriculum itself has new

updates from the previous curriculum, namely in science and social studies learning to IPAS (Natural and Social Sciences). The goal of IPAS learning in this curriculum is to develop inquiry skills, understanding oneself and one's environment that develops knowledge and concepts in learning. In IPAS learning, it helps students grow their curiosity about knowledge of phenomena that occur around them (Lestari & Muchlis, 2021) .

The success of a learning process can be identified through the learning outcomes achieved by students, both in the cognitive, affective, and psychomotor domains. Learning outcomes play a crucial role in the educational process and cannot be ignored, as they are the main indicator in assessing the effectiveness of learning. Learning outcomes not only reflect mastery of the subject matter, but also include critical thinking skills, problem-solving skills, and communication skills. The level of learning outcomes achieved by students, whether high or low, reflects the teacher's level of success in delivering the material and managing the learning process. Learning is considered successful if the learning objectives can be fully achieved by students, accompanied by positive changes in the cognitive, affective, and psychomotor aspects when compared to the conditions before the learning took place. (Zuhrie et al., 2018) .

Based on observations conducted by researchers at the UPTD of State Elementary School 124398 Pematangsiantar. Based on the results of observations conducted on May 28, 2025 in grade IV of UPTD of State Elementary School 124398 Pematangsiantar, the author found that students lacked understanding of the concept of social science learning. Some students experienced difficulties in achieving the KKTP in the subject of Natural and Social Sciences (IPAS). Teachers often practiced and relied on lecture methods and used teacher-centered learning approaches, with direct instruction *in* carrying out the learning process. Teachers did not vary the use of learning models, learning media and learning videos that were very numerous and varied according to student learning needs. Teachers immediately gave practice questions to students, even though the students did not understand the learning material being studied. Students who received scores far below the standard indicated a need for improvement in the teaching method or additional support for these students. In addition, the presence of students who repeatedly failed also highlighted the need for a more in-depth evaluation of the learning process and strategies used to improve overall student learning outcomes (Yuris Nasri, 2021) .

To address low student learning outcomes, a learning model is used that can help students avoid getting bored quickly while learning, so that students can understand the material being taught and the teaching and learning process becomes enjoyable. One innovation or effort that can be made in learning is by using the CTL learning model. *Contextual Teaching and Learning* is a learning concept that helps teachers connect material with real situations (Zulfa et al., Ciputra et al., 2020) . The CTL learning model helps students learn more meaningfully because students are required to connect learning with real situations experienced in everyday life (Simajuntak et al., 2022) .

The *Contextual Teaching and Learning (CTL)* learning model links subject content to real-world situations and motivates students to make connections between

knowledge and its application in real life. This allows students to easily remember the material learned, according to Situmorang et al. (Nurmaizura et al., 2024) . According to Susanto, as quoted by Situmorang et al. (Mazidah & Sartika, 2023), By implementing the *Contextual Teaching and Learning* (CTL) learning model, students can help understand the meaning of the material by connecting it to the context of everyday life, so that students have dynamic, flexible knowledge/skills and are active in building what they understand. Meanwhile, according to Aqib, as quoted by Sitorus et al., (Sri Utamaningsih, 2019) *The Contextual Teaching and Learning (CTL)* model is a learning concept that helps teachers connect things. They teach students in various contexts, in the real world, and encourage them to make connections between their knowledge and its application in their lives as members of a community.

Based on the above background, to determine the extent of the influence of learning models on student learning outcomes at school, it is necessary to do something to measure or see the achievement of student learning outcomes. Therefore, the author is interested in conducting a study entitled " The Effect of *the Contextual Teaching and Learning (CTL)* Learning Model on the Science Learning Outcomes of Grade IV Students at UPTD SD Negeri 124398 Pematangsiantar

2. Method

This type of research is quantitative research using experimental research methods. Experimental research can be defined as a research method used to determine the effect of certain treatments on others under controlled conditions (Sugiyono, 2019:72). The reason researchers used quantitative research is because the research method focuses on collecting and analyzing numerical and statistical data to measure student learning outcomes in science subjects using quantitative research. Quantitative research can provide objective and systematic data measurements of the variables studied.

The research design used is a Pre-Experimental Design using the One Group Pretest-Posttest Design. According to Sugiyono (Rahmi Fitria et al., 2024) , Pre-Experimental is an experimental study with a relationship between independent variables and dependent variables. One Group Pretest-Posttest is a type of research by comparing conditions before being given treatment and conditions after being given treatment. In this study, an initial test (Pretest) was first given to determine the extent of students' initial abilities before being given treatment (Treatment). Next, the sample was given treatment (Treatment) using the Contextual Teaching and Learning (CTL) learning model and then continued with a final test (Posttest) to determine student learning outcomes after the learning process. With this study, the results of the treatment can be known more accurately, because it can compare with the conditions before being given treatment and after being given treatment. This study does not have a control or comparison group but only compares the initial test (Pretest) and the final test (Posttest).

This research was conducted at the UPTD of Public Elementary School 124398 Pematangsiantar, located at Jalan Perwira No. 183 Merdeka, Sian tar Timur District, Pematangsiantar City. This research was conducted in Class IV of UPTD SD Negeri

124398 Pematangsiantar in the Odd Semester of the 2025/2026 Academic Year. According to Sugiyono (Fauziah & Nurita, 2019) Population is a generalization area consisting of objects and subjects that have certain quantities and characteristics that are determined by researchers to be studied and then conclusions drawn.

Based on the description, the subject population in this study is all fourth-grade students of UPTD SD Negeri 124398 Pematangsiantar in the 2025/2026 academic year. The number of fourth-grade students of UPTD SD Negeri 124398 Pematangsiantar is 22 students. The sample in this study was all fourth-grade students of UPTD SD Negeri 124398 Pematangsiantar . According to Sugiyono (Sutarno, 2018) A sample is a portion of the population's size and characteristics. The sampling technique used in this study was saturated total sampling. Saturated sampling is a sampling technique where members of the population are used as samples. This technique is commonly used when the population is relatively small, less than 30 people, or when research aims to generalize with minimal error. Another term for saturated sampling is a census, where the entire population is sampled. Therefore, the sample size in this study was 22 students. According to Sugiyono (Kosassy et al., 2021) Research variables are objects or attributes of a person that vary from one person to another or from one object to another. In this study, two variables were observed: variable X and variable Y. The following is an explanation of the variables in this study:

According to Sugiyono (Series, 2019) Independent variables are variables that influence or cause changes or the emergence of dependent or bound variables. Independent variables are one of the characteristics that are considered to have an influence on understanding. Independent variables are also called causal variables. Therefore, the independent variable (X) in this study is the Contextual Teaching and Learning (CTL) Learning Model. The Contextual Teaching and Learning (CTL) learning model is one model that teachers can use in managing the learning process in the classroom so that students can play an active, creative and collaborative role in following the ongoing learning process and teachers invite students to relate what has been learned to everyday life. Students are required to connect everyday experiences with the material of the state of matter, for example: "drinking water turns into ice cubes in the freezer", "camphor wears off over time". The teacher invites students to share experiences related to changes in the state of matter around them. After that, the teacher stimulates students with questions and students are encouraged to ask questions about the phenomena of changes in the state of matter they encounter. Then, students conduct a simple experiment, from the experiment, students discover the concept that substances can change state due to the influence of temperature. Students work in small groups to conduct experiments, discuss, and record the results of observations. Each group presents their results in front of the class.

The application of the Contextual Teaching and Learning (CTL) model can empower students to become more active, creative, and independent in their learning. Students are able to connect material to real-life experiences, ask questions, discover concepts through experiments, collaborate in groups, and reflect on their learning outcomes. Thus,

learning not only develops theoretical understanding but also fosters skills and a positive attitude toward the learning process.

According to Sugiyono (Hajerina, 2018) The dependent variable is a variable that influences or is caused by the presence of the independent variable. The dependent variable is also called the effect variable. Therefore, the dependent variable (Y) in this study is the Learning Outcomes of Fourth Grade Students in the Science Subject, Chapter 2, State of Matter and Its Changes. Learning outcomes reflect the extent to which students understand the material that has been taught and are usually measured through test scores or evaluations after the learning process has taken place. The application of the Contextual Teaching and Learning (CTL) learning model is expected to have a positive influence on student learning outcomes. This is demonstrated by the increase in test scores in the Science subject after the Contextual Teaching and Learning (CTL) model was applied in the learning process. Students become more active, creative, and independent in learning. Students are able to connect material with real experiences, dare to ask questions, discover concepts through experiments, work together in groups, and reflect on their learning outcomes

3. Results and Discussion

Description of Research Results

This research is a quantitative research with pre-experimental design method using one group pretest posttest design which was conducted in class IV at UPTD SD Negeri 124398 Pematangsiantar with a total of 22 students. The first thing done in this research was giving a pretest to students in order to know the learning outcomes of students before the Contextual Teaching and Learning (CTL) learning model was implemented. Then the researcher provided learning materials namely the form of matter and its changes using the Contextual Teaching and Learning (CTL) learning model. After the learning was carried out, a posttest was conducted to determine the learning outcomes of students after the application of the Contextual Teaching and Learning (CTL) learning model.

In the results of data analysis in this study, it can be seen from the significant difference between the pretest and posttest scores of students after the application of the Contextual Teaching and Learning (CTL) learning model. This can be seen from the results of the average posttest score (80.909) which is higher than the average pretest score (56.636). It can be seen in the hypothesis test which shows the value of t count = 15.532 and t table = 1.721, then obtained t count > t table or 15.532 > 1.721 which indicates that there is a significant influence between student learning outcomes in the pretest and posttest. So it can be concluded that in this study Ha is accepted and H0 is rejected,

The application of the Contextual Teaching and Learning (CTL) learning model not only helps students achieve the Learning Objective Achievement Criteria (KKTP), the Contextual Teaching and Learning (CTL) learning model can also make students actively learn in class, increase student interest and motivation, make learning more fun and concrete and provide direct learning experiences because the material studied is related to students' daily real lives.

This study used a multiple-choice test consisting of 40 questions, administered to 22 students at Sinaksak Public Elementary School 091608. A pilot test was conducted to ensure that the research instrument was capable of measuring student learning outcomes and producing consistent and reliable results.

The instrument tests used in this study included validity, reliability, difficulty level, and item discrimination. The instrument test results indicated that the 40-item multiple-choice science learning outcome test was of good quality. Validity testing was conducted to determine the extent to which the items accurately measured students' abilities based on the established learning indicators. In other words, validity testing aims to ensure that the research instrument has a high level of accuracy (validity) in measuring the object of study. In this study, the validity of the instrument was tested using Microsoft Excel 2010 and SPSS 26 applications through Pearson Product Moment correlation analysis. The criteria used were if the calculated r value > r table, then the item is declared valid. Conversely, if the calculated r value < r table, then the item is declared invalid. The value of r table was determined based on the number of respondents (N = 22, df = N-2 = 20) at a significance level of 5%, which was 0.422. Based on the validation test, the results showed that 30 of the questions were valid and 10 were invalid.

Data Analysis Test

N-Gain Test

After conducting *the pretest* and *posttest* from the experimental class, the researcher inputted data about the learning outcomes into the SPSS 26 application to obtain the N-Gain value. The results obtained were then used as a benchmark for the effectiveness of the use of the *Contextal Teaching and Learning* (CTL) learning model on student learning outcomes in the fourth grade science subject at the UPTD of SD Negeri 124398 Pematangsiantar.

The level of effectiveness of the treatment that has been implemented on students can be seen from the following N-Gain grouping criteria.

a. If the N-Gain value is > 0.7 then the level of effectiveness of the treatment is high.
b. If the N-Gain value is ≥ 0.3 or ≤ 0.7 then the level of effectiveness of the treatment is moderate.
c. If the N-Gain value is <0.3 then the level of effectiveness of the treatment is low.

The following are the results of the N-Gain test that researchers have conducted in the SPSS 26 application.

Table 1. N-Gain Test Results

Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation
Ngain_Score	22	.08	.77	.5737	.14099
Gain_Percent	22	7.50	76.74	57.3700	14.09868
Valid N (listwise)	22				

In the table above, it is known that the average N-Gain value is 0.57 or 57.37%. This value is in the Medium-High category, which means there is an increase in student

understanding after being given the *Contextual Teaching and Learning* (CTL) learning model on the material of the state of matter and its changes. In the table, information is obtained as the number of samples (N) = 22 students, meaning that all students who took *the pretest* and *posttest* were involved in the N-Gain calculation. Minimum = 0.08 or 7.50%, indicating that the lowest increase value achieved by students after learning is 7.50%, which is classified as a low category. Maximum = 0.77 or 76.74%, indicating that the highest increase value achieved by students is 76.74%, which is included in the high category. Mean = 0.573 or 57.370%, which describes the average increase in student learning outcomes after treatment. Based on Sugiyono's (2019) criteria, this value is in the medium-high category, so it can be concluded that learning using the *Contextual Teaching and Learning* (CTL) learning model on the material of states of matter and their changes is quite effective in improving student learning outcomes. Standard Deviation (Std. Deviation) = 0.14099, indicating a variation or spread of N-Gain values among students. This standard deviation value indicates that although most students experienced quite high improvements, there were differences in the level of improvement between individuals.

Overall, the results of the N-Gain test show that the application of the *Contextual Teaching and Learning* (CTL) learning model on the material of states of matter and their changes has a positive impact on improving student learning outcomes. The majority of students experienced a significant increase from *the pretest* to *the posttest results* , with the average increase being in the effective category. The N-gain interpretation criteria for these values are classified as "Effective". This percentage reflects that the *Contextual Teaching and Learning* (CTL) learning model has an influence on the learning outcomes of fourth-grade students of UPTD SD Negeri 124398 Pematangsiantar.

t-Test (Hypothesis)

After conducting the N-gain test, a hypothesis test was conducted to provide answers to the problem formulation and to prove the stronger influence of the *Contextual Teaching and Learning* (CTL) learning model on the science learning outcomes of fourth-grade students at UPTD SD Negeri 124398 Pematangsiantar. The t-test used by researchers in this study is:

Paired Samples Test using SPSS 26. The hypothesis in this study is:

Ho : There is no influence of the *Contextual Teaching and Learning* (CTL) learning model on the learning outcomes of Science in Chapter 2 of the Forms of Matter and Their Changes for Grade IV Students of UPTD SD Negeri 124398 Pematangsiantar in the 2025/2026 Academic Year.

Ha : There is an influence of the *Contextual Teaching and Learning* (CTL) learning model on the learning outcomes of science in Chapter 2 of the form of matter and its changes for fourth grade students of UPTD SD Negeri 124398 Pematangsiantar in the 2025/2026 academic year.

With the following criteria:

1. If t count < t table then H_o is rejected, with a significance level of 0.05
2. If t count > t table then H_a is accepted with a significance level < 0.05

The following are the results of the Hypothesis Test that was carried out at the UPTD of State Elementary School 124398 Pematangsiantar as follows:

Table 2. t-Test Results (Hypothesis)

Paired Samples Test

	Paired Differences							
				95% Confidence ıterval of the Difference				
	Mean	Standard eviation	Std. rror Mean	Lower	Uppe	t	df	Sig. (2-ıiled)
Posttest - ir retest	24,273	7,330	1,563	21,023	27,523	15,532	2	.000

Based on the table above, it is known that the Sig (2-tailed) value is 0.000 and the value is smaller than 0.005. To find the $t_{table,}$ the researcher uses the t distribution table with a significance level of α = 0.05 and db = N-1 = 22 - 1 = 21. After obtaining t_{count} = 15.532 and t_{table} = 1.721, it is obtained that $t_{count} > t_{table}$ or 15.532> 1.721 which shows that there is a significant influence between student learning outcomes in *the pretest* and *posttest.* So it can be concluded that in this study Ha $_{is}$ accepted and H0 $_{is}$ rejected, which means there is an influence of *the Contextual Teaching and Learning* (CTL) model on the science learning outcomes of grade IV students of UPTD SD Negeri 124398 Pematangsiantar.

Discussion of Research Results

This research was conducted at the UPTD of State Elementary School 124398 Pematangsiantar, Jln. Perwira No. 183, East Siantar District, Pematangsiantar City in the 2025/2026 Academic Year. The population used was all fourth-grade students of UPTD of State Elementary School 124398 Pematangsiantar with a sample of 22 fourth-grade students.

Based on the descriptive data that has been carried out by the researcher through the SPSS Version 26 test, it can be concluded that the average student learning outcomes of 22 students in the pretest and posttest results are with a *pretest learning outcome value of 56.63 and a posttest* learning outcome value of 80.90. Based on the data, the values before and after the treatment were carried out, there was an increase in the number from *a pretest* learning outcome of 56.63 to a *posttest* learning outcome value of 80.90. The increase in learning outcomes in *pretest* and *posttest scores* was 24.27%. This increase in value proves that fourth grade students of UPTD SD Negeri 124398 Pematangsiantar experienced an increase in learning outcomes. After carrying out the descriptive test, the researcher conducted an N-gain Test and a t-Test (Hypothesis).

Researchers used the help *of Microsoft Excel* 2010 and IBM SPSS Version 26. In the N-gain test, the variable of the influence of the *Contextual Teaching and Learning* (CTL) learning model on the learning outcomes of Natural and Social Sciences (IPAS) with a mean Ngain score of 0.57 <0.70 which means its effectiveness is moderate and for the Ngain value percent mean or average value of 57.37 can be interpreted that the use of the *Contextual*

Teaching and Learning (CTL) learning model on the learning outcomes of Natural and Social Sciences (IPAS) is said to be quite effective.

After the N-gain test has been fulfilled, the researcher continues with the t test (hypothesis) namely the Sig value (2-tailed) is 0.000 and the value is smaller than 0.005. To find the t_{table}, the researcher uses the t distribution table with a significance level of α = 0.05 and db = N-1 = 22 - 1 = 21. After obtaining the $_{calculated\ t}$ = 15.532 and the t_{table} = 1.721, the $_{calculated\ t} > t_{table}$ or 15.532> 1.721 is obtained, which shows that there is a significant influence between student learning outcomes in *the pretest* and *posttest.* (Hasan, 2021) . So it can be concluded that in this study Ha $_{is}$ accepted and H0 $_{is}$ rejected, which means that there is an influence of the *Contextual Teaching and Learning* (CTL) learning model on the science learning outcomes of fourth grade students at UPTD SD Negeri 124398 Pematangsiantar. (Adim et al., 2020) .

According to Johnson (Suprayogi et al., 2019) that the *Contextual Teaching and Learning learning model* is an educational process that aims to help students see meaning in the academic material they learn by connecting academic subjects with the context of their daily lives. This opinion is supported by Elaine as quoted by Rajawali Pers (Imamah, 2022) who stated that the *Contextual Teaching and Learning learning model* is a thought that produces meaning by connecting academic content with the context of students' daily lives, contextual learning is also an effort to make students active in pumping their abilities without losing in terms of benefits, because students try to learn concepts while applying and relating them to the real world (Manurung, 2020) .

Based on the results of the N-gain test and the t-test (hypothesis) that have been conducted, it can be concluded that there is an influence of the *Contextual Teaching and Learning (CTL) Learning Model on the Social Sciences Learning Outcomes of Grade IV Students of UPTD SD Negeri 124398 Pematangsiantar. The results of this study prove that the application of the Contextual Teaching and Learning (CTL)* learning model has an effect on student learning outcomes. This is in line with Julianiway's research (Khasanah, 2019). The Influence of the *Contextual Teaching and* Learning Model on the Learning Outcomes of Fourth Grade Students in the Science Subject at SD Inpres 12 Sorong Regency in the study it was found that, based on the learning outcomes of students, the pretest score had a mean of 67.40 while the control class had a mean of 79.4. From the data above, it can be concluded that the average value of each class is almost the same in the sufficient category. (Widyaiswara et al., 2019) . From the results of the SPSS 20.0 test, it was obtained that $t\ h\ itung$ = 4.662 and $ttabel$ = 6.708. So that $t\ h\ itung > ttabel$ and the significance value is 0.00 < 0.05. Then H0 is rejected so it can be concluded that there is a significant influence of the Influence of the *Contextual Teaching and Learning Model* on the Learning Outcomes of Grade IV Students in the Science Subject at SD Inpres 12 Sorong Regency.

Thus, both previous research and the results of the researcher's research both show that the application of the *Contextual Teaching and Learning* (CTL) learning model is able to create a more active, collaborative, real (real to students' daily lives) and meaningful learning atmosphere so that it has a positive impact on improving student learning outcomes.

4. Conclusion

Based on the results of the data that have been presented in the previous section, the researcher decided that the student learning outcomes before being given treatment still had not reached the KKTP, namely 22 students (100%) and after being given treatment, the student learning outcomes increased, namely there were 21 students (95.45%) having scores above the KKTP and there was 1 student (4.54%) having scores below the KKTP. And based on the results of the N-gain test, the variable of the influence of the *Contextual Teaching and Learning* (CTL) learning model on the learning outcomes of Natural and Social Sciences (IPAS) with a mean Ngain score of 0.57 <0.70 which means that its effectiveness is moderate and for the Ngain value, the mean or average value of 57.37 can be interpreted that the use of the *Contextual Teaching and Learning* (CTL) learning model on the learning outcomes of Natural and Social Sciences (IPAS) is said to be quite effective. Based on the results of the t test (hypothesis), it was found that the Sig (2-tailed) value was 0.000 and the value was smaller than 0.005. To find the $t_{table,}$ the researcher used the t distribution table with a significance level of $\alpha = 0.05$ and db = N-1 = 22 - 1 = 21. After obtaining $t_{count} = 15.532$ and $t_{table} = 1.721$, it was obtained that $t_{count} > t_{table}$ or 15.532> 1.721, which showed that there was a significant influence between student learning outcomes in *the pretest* and *posttest.* So it can be concluded that in this study Ha_{is} accepted and $H0_{is}$ rejected, which means there is an influence of *the Contextual Teaching and Learning* (CTL) model on the science learning outcomes of fourth-grade students of UPTD SD Negeri 124398 Pematangsiantar.

Suggestion

After observing the field data in an analytical and concluding manner, the author provides several suggestions, including:

a. For Schools. This research is expected to have a positive impact on student learning outcomes, and can serve as a new reference in continuously improving the quality of education/learning so that schools can develop rapidly, as well as being a consideration in choosing learning models in the teaching and learning process. If learning activities have been improved, student learning motivation will increase and learning outcomes will also improve.
b. For Teachers . The benefits of this research for teachers are to increase information or insight and knowledge of teachers in applying the *Contextual Teaching and Learning* (CTL) learning model in the learning process and it is hoped that teachers will be able to create meaningful learning for students and be active in the learning process in order to improve student learning outcomes.
c. For Students. The benefits of this research for students are to provide encouragement and motivation to improve student learning outcomes in the material on the Forms of Matter and Their Changes. It is hoped that it will help students understand the learning process to increase student activity and enthusiasm in learning.
d. For Researchers . The benefits for researchers are to increase insight and knowledge regarding the influence of the *Contextual Teaching and Learning* (CTL) learning model

on improving student learning outcomes and to serve as a helpful reference in compiling final assignments.

e. For Other Researchers . The benefits of this research are expected to serve as a reference for further research, so that further research can use similar topics by looking for gaps in previous research that can be developed for further research

References

Adim, M., Herawati, E. S. B., & Nuraya, N. (2020). Pengaruh Model Pembelajaran Contextual Teaching And Learning (Ctl) Menggunakan Media Kartu Terhadap Minat Belajar Ipa Kelas Iv Sd. *Jurnal Pendidikan Fisika Dan Sains (Jpfs)*, *3*(1), 6–12. Https://Doi.Org/Https://Doi.Org/10.52188/Jpfs.V3i1.76

Ciputra, A., Riyanto, Y., & Suhanadji, S. (2020). Pengembangan Media Peta Puzzle Dengan Pendekatan Contextual Teaching And Learning (Ctl) Untuk Meningkatkan Hasil Belajar. *Naturalistic : Jurnal Kajian Penelitian Pendidikan Dan Pembelajaran*, *5*(1), 730–739. Https://Doi.Org/10.35568/Naturalistic.V5i1.832

Dewi, D. A. P. H. (2018). Pengaruh Pendekatan Contextual Teaching And Learning Berbasis Penilaian Portofolio Terhadap Kompetensi Pengetahuan Ipa. *Journal For Lesson And Learning Studies*, *1*(3), 237–242. Https://Doi.Org/10.23887/Jlls.V1i3.15387

Fauziah, A. M., & Nurita, T. (2019). Activities Of Students In Using Worksheet Based On Contextual Teaching And Learning. *Journal Of Physics: Conference Series*, *1417*(1), 012088. Https://Doi.Org/10.1088/1742-6596/1417/1/012088

Hajerina, H. (2018). Penerapan Pendekatan Contextual Teaching And Learning (Ctl) Untuk Meningkatkan Hasil Belajar Siswa Smpn 18 Sigi Pada Materi Sistem Persamaan Linear Dua Variabel (Spldv). *Al-Khwarizmi: Jurnal Pendidikan Matematika Dan Ilmu Pengetahuan Alam*, *5*(2), 113–122. Https://Doi.Org/10.24256/Jpmipa.V5i2.270

Handini, D., Gusrayani, D., & Panjaitan, R. L. (2016). Penerapan Model Contextual Teaching And Learning Meningkatkan Hasil Belajar Siswa Kelas Iv Pada Materi Gaya. *Jurnal Pena Ilmiah*, *1*(1), 451–460. Https://Doi.Org/Https://Doi.Org/10.23819/Pi.V1i1.2974

Hasan, H. (2021). Meningkatkan Hasil Belajar Matematika Melalui Penerapan Model Contextual Teaching And Learning Pada Era New Normal. *Indonesian Journal Of Educational Development*, *1*(4), 630–640. Https://Doi.Org/Https://Doi.Org/10.5281/Zenodo.4560726

Imamah, N. (2022). *Efektivitas Penerapan Model Contextual Teaching And Learning (Ctl) Terhadap Pemahaman Konsep Matematis Pada Materi Sistem Persamaan Linear Dua Variabel (Spldv)*. Iain Kudus.

Juhaeni, J. (2018). Upaya Meningkatkan Motivasi Belajar Dan Hasil Belajar Kimia Dengan Materi Sifat Koligatif Larutan Dengan Menerapkan Model Contextual Teaching And Learning (Penelitian Tindakan Di Kelas Xii Ipa1 Sman 2 Pandeglang). *Cakrawala Pedagogik*, *2*(2), 215–221. Https://Doi.Org/Https://Doi.Org/10.51499/Cp.V2i2.89

Khasanah, W. M. (2019). *Pengaruh Penggunaan Model Pembelajaran Contextual Teaching And Learning (Ctl) Terhadap Nilai Kognitif Siswa Kelas Va Sd Negeri 16 Banda Aceh Pada Materi Perpindahan Kalor*. Universitas Bina Bangsa Getsempena.

Kosassy, S. O., Gistituati, N., Jama, J., & Montessori, M. (2021). The Implementation Of Contextual Learning Approach In E-Learning Based On Weblog Toward Students

Learning Achievements. *Journal Of Counseling And Educational Technology*. Https://Doi.Org/10.32698/0151

Lestari, D. D., & Muchlis, M. (2021). Pengembangan E-Lkpd Berorientasi Contextual Teaching And Learning (Ctl) Untuk Melatihkan Keterampilan Berpikir Kritis Siswa Pada Materi Termokimia Kelas Xi Sma. *Jurnal Pendidikan Kimia Indonesia*, *5*(1), 25–33. Https://Doi.Org/10.23887/Jpk.V5i1.30987

Manurung, A. S. (2020). Pengaruh Model Pembelajaran Contextual Teaching Dan Learning (Ctl) Terhadap Hasil Belajar Matematika Siswa Kelas Xi Ipa Sma Negeri 31 Jakarta. *Jgk (Jurnal Guru Kita)*, *4*(3), 1–10. Https://Doi.Org/Https://Doi.Org/10.24114/Jgk.V4i3.19454

Marta, H., Fitria, Y., Hadiyanto, H., & Zikri, A. (2020). Penerapan Pendekatan Contextual Teaching And Learning Pada Pembelajaran Ipa Untuk Meningkatkan Hasil Belajar Dan Motivasi Belajar Siswa Sekolah Dasar. *Jurnal Basicedu*, *4*(1), 149–157. Https://Doi.Org/10.31004/Basicedu.V4i1.334

Mazidah, N. R., & Sartika, S. B. (2023). *Pengaruh Pendekatan Contextual Teaching And Learning (Ctl) Terhadap Hasil Belajar Kognitif Pada Mata Pelajaran Ipa Kelas V Di Sdn Grabagan*. *5*(1).

Nurmaizura, D., Munawarah, D. R., Putri, M., Asparini, L., Jaelani, H., & Herianto, E. (2024). Implementasi Model Pembelajaran Contextual Teaching And Learning Berbantuan Media Educaplay Pada Mata Pelajaran Ppkn. *Jurnal Pendidikan, Sains, Geologi, Dan Geofisika (Geoscienceed Journal)*, *5*(2), 173–179. Https://Doi.Org/Https://Doi.Org/10.29303/Goescienceed.V5i2.321

Perdana, D. R., Izzati, A., & Sabila, A. N. (2024). Pengaruh Model Contextual Teaching And Learning (Ctl) Berbantuan Media Realia Terhadap Hasil Belajar Ipa Peserta Didik Kelas V Sekolah Dasar. *Biochephy: Journal Of Science Education*, *4*(2), 814–828. Https://Doi.Org/Https://Doi.Org/10.29303/Jipp.V9i2.2230

Prayunisa, F., & Mahariyanti, E. (2022). Analisa Kesulitan Siswa Sma Kelas X Dalam Pembelajaran Kimia Pada Pendekatan Contextual Teaching And Learning Berbasis Two Tier Multiple Choice Instrument. *Jurnal Ilmiah Global Education*, *3*(1), 24–30. Https://Doi.Org/10.55681/Jige.V3i1.167

Rahmi Fitria, Zulhendri, Z., & Kasman Ediputra. (2024). Pengaruh Pendekatan Contextual Teaching And Learning Terhadap Kemampuan Pemahaman Konsep Matematis Peserta Didik Sma. *Jurnal Pendidikan Mipa*, *14*(1), 99–107. Https://Doi.Org/10.37630/Jpm.V14i1.1478

Sari, I. P., Yenni, Y., & Raditya, A. (2017). Pengaruh Pendekatan Pembelajaran Contextual Teaching And Learning (Ctl) Terhadap Kemampuan Penalaran Matematis Siswa Smp. *Prima: Jurnal Pendidikan Matematika*, *1*(1), 19. Https://Doi.Org/10.31000/Prima.V1i1.251

Seri, E. (2019). Penerapan Strategi Pembelajaran Contextual Teaching And Learning Untuk Peningkatkan Hasil Belajar Siswa Pada Materi Virus Di Kelas X Mia1 Sma Negeri 1 Bubon Aceh Barat. *Bionatural: Jurnal Ilmiah Pendidikan Biologi*, *6*(2).

Simajuntak, F. E. S., Sinaga, C. V., & Thesalonika, E. (2022). Pengaruh Model Pembelajaran Contextual Teaching And Learning Terhadap Hasil Belajar Siswa Pada Subtema 1 Cara Tubuh Mengolah Udara Bersih Di Kelas V Sd Negeri 122368 Jln Sibatu-Batu Pematang

Siantar. *Jurnal Pendidikan Dan Konseling (Jpdk)*, *4*(6), 4704–4715. Https://Doi.Org/Https://Doi.Org/10.31004/Jpdk.V4i6.9015

Sri Utamaningsih, N. K. F. S. (2019). Model Contextual Teaching And Learning Berbasis Kearifan Loka Kudus. *Upt Perpustakaan Universitas Muria Kudus*.

Suprayogi, I. H., Sarjana, K., & Kurniati, N. (2019). Penerapan Pendekatan Contextual Teaching And Learning (Ctl) Pada Materi Sistem Persamaan Linear Dua Variabel Untuk Meningkatkan Aktivitas Dan Prestasi Belajar Siswa Kelas Viii-G Smp Negeri 5 Mataram Tahun Pelajaran 2016/2017. *Jurnal Ilmiah Pendidikan Indonesia*, *1*(2), 124–130.

Sutarno, S. (2018). Pembelajaran Menulis Puisi Bebas Dengan Pendekatan Contextual Teaching And Learning (Ctl) Pada Siswa Smp. *Stilistika: Kajian Bahasa, Sastra, Dan Pembelajarannya*, *4*(2). Https://Doi.Org/Https://Doi.Org/10.32585/.V4i2.326

Takim, R. R. (2021). Pengembangan Modul Ikatan Kimia Berbasis Contextual Teaching And Learning (Ctl) Melalui Metode Eksperimen. *Journal Of Tropical Chemistry Research And Education*, *3*(2), 53–62. Https://Doi.Org/10.14421/Jtcre.2021.32-01

Taofek, I., & Agustini, R. (2020). Pengembangan Lembar Kerja Siswa Berbasis Contextual Teaching And Learning Untuk Meningkatkan Keterampilan Berpikir Kritis Siswa Pada Materi Laju Reaksi Kimia Kelas Xi Sma. *Unesa Journal Of Chemical Education*, *9*(1), 121–126. Https://Doi.Org/Https://Doi.Org/10.26740/Ujced.V9n1.P121-126

Widyaiswara, G. P., Parmiti, D. P., & Suarjana, I. M. (2019). Pengaruh Model Pembelajaran Contextual Teaching And Learning Terhadap Hasil Belajar Ipa. *International Journal Of Elementary Education*, *3*(4), 389. Https://Doi.Org/10.23887/Ijee.V3i4.21311

Yuris Nasri. (2021). Pengaruh Model Pembelajaran Contextual Teaching And Learning (Ctl) Terhadap Hasil Belajar Ipa Siswa Kelas V Sdn 27 Limau Asam. *Inventa*, *5*(2), 302–308. Https://Doi.Org/10.36456/Inventa.5.1.A3187

Zuhrie, M. S., Basuki, I., Asto, B., & Anifah, L. (2018). Design Of Smart Educational Robot As A Tool For Teaching Media Based On Contextual Teaching And Learning To Improve The Skill Of Electrical Engineering Student. *Iop Conference Series: Materials Science And Engineering*, *336*(1), 12047.