Schrödinger:Journal of Physics Education
Vol. 4, No.4, December 2023, pp. 92~97
ISSN: 2716-1587, DOI: 10.37251/sjpe.v4i4.786

The Effect of Implementing the Contextual Teaching Learning (CTL) Approach on the Formation of Students' Physics Behavior

Ilyas[1], Lorenell Ella[2], Aminu Salisu[3]
[1]Faculty of Tarbiyah and Teacher Training, Universitas Islam Negeri Alauddin Makassar, Indonesia
[2] Department of Science Education, De La Salle University, Manila, Philippines
[3]Department of Science an Vocational Education, Umaru Musa Yar'adua University Katsina, Nigeria

Article Info

Article history:

Received Oct 3, 2023
Revised Oct 24, 2023
Accepted Dec 13, 2023
OnlineFirst Dec 21 , 2023

Keywords:

Behavior
Contextual Teaching Learning
Learning approaches

ABSTRACT

Purpose of the study: This research aims to determine the effect of implementing the Contextual Teaching Learning (CTL) approach on the formation of junior high school students' physics behavior.

Methodology: This research is quantitative research with associative causal type. The total research sample was 69 students with a sampling technique using purposive sampling. The instruments used in this research were questionnaires and interviews. The data analysis techniques used in this research are descriptive statistics and inferential statistics.

Main Findings: Based on the results of statistical analysis using SPSS 21, it was found that there was an influence of the application of Contextual Teaching (CTL) on the formation of physics behavior in class VIII SMP students with an influence percentage of 42%. With the regression equation Y = 45.508 + 0.363X. This means that if the CTL approach is not used in the physics learning process, the student's physics behavior score will be 45.508. Then, for every 1% increase in the level of the CTL approach, the physics behavior of class VII middle school students will increase by 0.363.

Novelty/Originality of this study: The findings of this research indicate that this approach in the teaching process is important to use as a means to increase the nuances of learning in the classroom to be more meaningful. The novelty of this research is that it is useful as a means of improving physics teaching and learning strategies in the classroom in order to shape students' positive behavior.

Corresponding Author:
Ilyas,
Faculty of Tarbiyah and Teacher Training, Universitas Islam Negeri Alauddin Makassar, Jl. Sultan Alauddin No. 63, Kota Makassar, Sulawesi Selatan, Indonesia
Email: ilyasssss87@gmail.com

1. INTRODUCTION

The very rapid development of technology and science today is proof that the Indonesian nation is in the era of modern globalization, this is a big capital for achieving the ideals of a nation, however, it is also a big challenge for the formation of people's behavior, especially in relation to the world of education [1]. The emergence of this challenge demands innovation that is in line with development. Development carried out in all sectors including education is directed at building quality human resources [2]–[4]. Education can help equip us to face challenges and also plan for recovery without falling into practices that cause harm [5]–[7].

The rapid development of science and technology must be balanced with noble behavior or morals. Humans learn about nature in their habitat from the moment they are born. Babies who can already hold

something will immediately put their head down if the toy falls, it's that easy for them to interpret gravity. In science, especially physics, if we look closely at the relationship between concepts/principles/theories and practical application, attitudes and values can be developed through application in everyday life. This is very appropriate to the world of science education, especially physics subjects. In the world of education, science education is an important part of educational activities in schools [8], [9]. Because in essence, science education has very big differences from other domains of human knowledge [10]–[12].

One of science education is physics learning. Physics is a collection of knowledge, ways of thinking, and research in the form of facts, concepts, principles, theories and models [13]–[15]. Physics is a basic science that must be mastered first in order to master technology in this era [16], [17]. The task of a teacher is not just to teach students but to teach students, namely to condition students to learn actively and creatively so that their potential can develop to the maximum. Therefore, practical skills are needed as an application of physics [18]. Providing practical skills is an important effort to obtain optimal student learning success.

However, physics lessons in every school generally become a problem for students. The problem now is how to find the best way to convey the various concepts being taught so that students can use and remember the concepts longer. How teachers can communicate well with their students. How teachers can open up diverse thinking insights from all students, so they can learn various concepts and how to relate them to real life. How as a good and wise teacher is able to use learning models related to solving problems. So that students' conceptions about the subject of physics can change from being a frightening prospect to becoming an easy and enjoyable subject.

Previous research found that the results of descriptive statistical analysis showed that the participation percentage before treatment was 39.6% and during treatment was 72.3%. From the results of the hypothesis test, a significance value of 0.00 <0.05 was obtained [19]. Thus, it is concluded that there is a positive influence of implementing the CTL approach on student learning participation [19]. However, the results of this research were conducted at high schools in Sulawesi, Indonesia, and previous research only focused on biology learning. So as a generalization of previous research, this research was conducted at Nagpayong High School and Muhammadiyah 12 Makassar Junior High School and focused on physics learning material in junior high schools.

This research is in line with previous research where it is known that a contextual teaching and learning (CTL) approach can help improve student learning outcomes and benefits for teachers in gaining insight into the CTL learning process [20], [21]. Then in previous research it was discovered that through contextual teaching and learning, learning becomes more meaningful and real [20], [22]. The results of subsequent research also found that the CTL approach was useful for increasing competence (psychomotor) in learning [23]. The CTL approach can also increase students' motivation and enthusiasm in participating in learning activities [24]. Based on the results of previous studies, as a generalization of previous research, this research was conducted to find out how the application of the CTL approach affects student behavior, especially in learning physics material.

To help students understand concepts and make it easier for teachers to teach these concepts, a learning approach is needed that directly connects lesson context material with real experiences in everyday life. The learning approach used is contextual learning. In this way, these skills become the driving force for the discovery and development of facts and concepts as well as the growth and development of attitudes and values. The urgency of conducting this research is so that students can understand the concepts of physics in life so that in their behavior students will better understand the impact of physics and the causes of events that occur. Through this CTL approach, students are expected to understand the physics concepts taught and be able to relate them to events occurring around them. So that students can behave by thinking about the impact that will occur if students face a condition scientifically.

Researching the impact of implementing the Contextual Teaching Learning approach in physics education is very urgent because it has the potential to revolutionize the way physics is taught and learned. This can increase student engagement, improve learning outcomes, and better prepare students for future careers in science technology engineering and mathematics. That is the importance of this research being carried out to measure the effect of implementing the contextual teaching and learning (CTL) approach on the formation of physics behavior in class VIII junior high school students. The novelty of this research is that it can be used as input in implementing the teaching and learning process in the classroom so that it can improve students' own physics behavior. This research aims to determine the effect of implementing the Contextual Teaching Learning (CTL) approach on the formation of junior high school students' physics behavior.

2. RESEARCH METHOD

This research is quantitative research with a causal associative type. This research aims to determine the effect of variable X on variable Y. In this research variable X is a contextual learning approach and variable Y is student behavior in learning physics.

The population in this study were all class VIII junior high school students at Nagpayong High School and Muhammadiyah 12 Makassar Middle School. The sampling technique used purposive sampling with the criteria of class VIII students who were taking science lessons on physics material. So the research sample was 69 students.

The instrument used in this research was a questionnaire. In this research, a questionnaire was used to collect data about the application of the Contextual Teaching Learning (CTL) approach and the physics behavior of class VIII junior high school students. The questionnaire used in this research uses four alternative answers for each question. Questionnaires related to student responses to the application of the CTL approach in physics learning and student behavior questionnaires in physics learning, in table 1 the following indicators are presented:

Table 1. Questionnaire indicators for student responses to the application of the CTL approach and questionnaire indicators for student behavior in physics learning

Student response questionnaire regarding the application of the CTL approach	Student behavior questionnaire
Modeling	Observation
Questioning	Classification
Learning Community	Inference
Inquiry	Forecasting
Contructivisme	Communication
Reflection and authentic assessment	

After data is collected from data collection, data analysis continues. In this research, researchers used inferential statistics. Inferential statistics are statistics used to test proposed research hypotheses. The formula used is a simple linear regression formula. With the decision making criteria, namely if the significance value of the curve is 0.05 then there is an influence of the application of the contextual learning approach on the formation of student behavior in learning physics material in junior high school.

The formulated hypothesis will be tested with parametric statistics. The use of parametric statistics requires that the data for each variable to be analyzed must be normally distributed. To be able to carry out a simple linear regression test, the data must be linear, so a linearity test is carried out. Therefore, before testing the hypothesis, a data normality test is first carried out. This research procedure begins with observing, collecting data, processing and analyzing data, obtaining results (data interpretation) and drawing conclusions.

3. RESULTS AND DISCUSSION

To see the influence of variable X on Y, simple linear regression statistics are used. The prerequisite tests that must be carried out are normality and linearity tests. The results of the normality test using Kolmogorov Smirnov obtained a significance value for contextual teaching learning data and the formation of physical behavior of 0.200, which is more than 0.05 so that the data is normally distributed. Based on the results of the linearity test, the Deviation from linearity Sig value is obtained. namely 0.199, namely the sig value obtained from the linear test is greater than 0.05 so that there is a significant linear relationship between the implementation variable of contextual teaching learning (CTL) (X) and the formation of physical behavior (Y). So the data meets the requirements for hypothesis testing, namely simple linear regression.

The regression equation is used to predict how high the value of the dependent variable (Y) will be if the value of the independent variable is manipulated (changed). The influence of implementing contextual teaching learning (CTL) on the formation of physics behavior in class VIII middle school students can be seen as follows:

Table 2. The results of the simple linear regression test are in the form of a model summary table of the CTL approach variables towards the formation of students' physics behavior

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.649[a]	.421	.417	4.78960
a. Predictors: (Constant), CTL				

Based on the test results above, a decision can be made that there is an influence of the contextual teaching learning (CTL) approach on the physics learning process in the classroom on the formation of student behavior, namely an R Square value of 0.421, which means that 42% of the CTL approach influences the formation of student behavior. Next, table 3 Anova is presented to determine the significant influence of the CTL approach variables on the formation of student behavior:

Table 3. The results of the simple linear regression test are in the form of an ANOVA table for the CTL approach variables on the formation of students' physics behavior

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2306.560	1	2306.560	100.546	.000[b]
	Residual	3165.760	67	22.940		
	Total	5472.320	68			

a. Dependent Variable: B
b. Predictors: (Constant), CTL

Based on the significance value obtained, namely 0.000, namely <0.05, the application of the CTL approach has a significant effect on students' physics behavior. So H_1 is accepted, H_0 is rejected. Next, table 4 Coefficients is presented to find out the equation of the influence of the CTL approach variables on the formation of student behavior:

Table 4. The results of the simple linear regression test are in the form of a Coefficients table for the CTL approach variables on the formation of students' physics behavior

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	45.508	2.256		20.176	.000
	CTL	.363	.036	.649	10.027	.000

a. Dependent Variable: B

Based on table 4, the regression equation is obtained, namely Y = 45.508 + 0.363X. This means that if there is no CTL approach in the physics learning process, the student's physics behavior score is 45.508. Then, with every 1% increase in the level of the CTL approach, the physics behavior of students in junior high school class VII will increase by 0.363.

Based on the description of the results of the inferential analysis, it shows that the application of the Contextual Teaching Learning (CTL) approach has an influence on the formation of physics behavior. These results support various theories that have been described in the literature review, namely that teaching and learning Contextual Teaching Learning (CTL) is a conception that helps teachers relate subject content to real situations and motivates students to make connections between knowledge and its application in their lives as family members. , and citizens. Where this approach assumes that the mind naturally looks for meaning in context according to the real situation of one's environment, and that can happen through searching for relationships that make sense and are useful. Combining subject matter with students' daily context in contextual learning will produce in-depth knowledge bases where students have a rich understanding of problems and ways to solve them. Students are able to independently use their knowledge to solve new and previously unencountered problems, and have more responsibility for their learning as their experience and knowledge increases. Thus, indirectly the application of Contextual Teaching Learning (CTL) has a great influence on the formation of students' own physics behavior.

So the application of Contextual Teaching Learning (CTL) influences the formation of physics behavior in class VIII junior high school students. Based on the description of the results of the inferential analysis, it shows that the application of the Contextual Teaching Learning (CTL) approach has an influence on the formation of physics behavior. These results support various theories that have been described in the literature review, namely that teaching and learning Contextual Teaching Learning (CTL) is a conception that helps teachers relate subject content to real situations and motivates students to make connections between knowledge and its application in their lives as family members. , and citizens. Where this approach assumes that the mind naturally looks for meaning in context according to the real situation of one's environment, and that can happen through searching for relationships that make sense and are useful. Combining subject matter with students' daily context in contextual learning will produce in-depth knowledge bases where students have a rich understanding of problems and ways to solve them. Students are able to independently use their knowledge to solve new and previously unencountered problems, and have more responsibility for their learning as their experience and knowledge increases.

Based on the results of previous research, it was found that there was a significant influence of the contextual teaching and learning model on the biology learning outcomes of class [25]. The difference is that in previous research, the influence of CTL on students' biology learning outcomes was examined. So the results of this research are a form of generalization of previous research, namely by conducting research on different topics and samples. Then the results of previous research also found that by applying the Contextual Teaching and

Learning (CTL) learning approach there was an increase in student learning outcomes in physics learning, compared to applying a conventional learning approach. The results of this research support the results of this research which the researchers found after analyzing the data, it was found that through the application of CTL in physics learning, it will form students' positive physics behavior which then has an impact on student learning outcomes [26].

The implication of this research is that it becomes material for teaching staff to design learning activities that are oriented so that students can behave scientifically. By implementing the Contextual Teaching Learning (CTL) approach, students will be formed and directed towards understanding concepts and illustrating their application in life. This is in accordance with the research results that there is an influence of the application of the Contextual Teaching Learning (CTL) approach on the behavior of junior high school students in learning physics.

4. CONCLUSION

From the results of data analysis, it was concluded that the application of Contextual Teaching (CTL) had an influence on the formation of physics behavior in class VIII junior high school students with an influence percentage of 42%. With the regression equation, Y = 45.508 + 0.363X. This means that if there is no CTL approach in the physics learning process, the student's physics behavior score is 45.508. Then, with every 1% increase in the level of the CTL approach, the physics behavior of students in junior high school class VII will increase by 0.363. To implement contextual learning (CTL) which emphasizes the relationship between learned knowledge and daily experience, teachers should be more observant in paying attention to the formation of their students' behavior. Recommendations for further research that wants to examine the application of the Contextual Teaching Learning (CTL) approach can be used as reference material and can be researched by selecting variables that have not been researched.

ACKNOWLEDGEMENTS

The researcher would like to thank all parties involved in this research, so that this research could be carried out well.

REFERENCES

[1] M. Dwi, W. Ernawati, A. Sanova, D. A. Kurniawan, and E. Triani, "Students ' Attitude Towards Science and Its Implications on Science Learning Outcomes of Junior High School Students," *J. Pendidik. Progresif*, vol. 12, no. 2, pp. 898–911, 2022, doi: 10.23960/jpp.v12.i2.20223.

[2] Zurweni, D. A. Kurniawan, and E. Triani, "A Comparative study : Cooperative Learning in Science Learning," *J. Pendidik. dan Pengajaran*, vol. 55, no. 1, pp. 115–126, 2022.

[3] Kamid, D. A. Kurniawan, R. Perdana, B. Widodi, E. Triani, and P. Fadillah, "The Persistence Character and Math Processing Skills of Elementary School Students in Thematic Learning," *J. Ilm. Sekol. Dasar*, vol. 7, no. 2, pp. 363–373, 2023.

[4] E. Triani, Darmaji, and Astalini, "Identifikasi Keterampilan Proses Sains Dan Kemampuan Berargumentasi Siswa," *J. Pendidik. dan Pembelajaran IPA Indones.*, vol. 13, no. 1, pp. 9–16, 2023.

[5] Playfair Eddie, "Education and the socially just recovery," *Forum Fam. Plan. West. Hemisph.*, vol. 64, no. 1, pp. 66–75, 2022, doi: https://doi.org/10.3898/forum.2022.64.1.06.

[6] W. T. Wulandari, "Contextual Learning Approach : Development of Worksheet in Physics Subjects," *Schrödinger J. Phys. Educ.*, vol. 4, no. 2, 2023, doi: 10.37251/sjpe.v4i2.506.

[7] S. Samsidar and T. Windianingsih, "Hubungan Minat Belajar Fisika Siswa SMA terhadap Materi Suhu dan," *Schrödinger J. Phys. Educ.*, vol. 3, no. 3, pp. 66–70, 2023, doi: 10.37251/sjpe.v3i3.508.

[8] E. F. S. Rini and F. T. Aldila, "Practicum Activity: Analysis of Science Process Skills and Students ' Critical Thinking Skills," *Integr. Sci. Educ. J.*, vol. 4, no. 2, pp. 54–61, 2023, doi: 10.37251/isej.v4i2.322.

[9] R. Fitriani, L. Anatri, O. S. Joint, and R. Risnita, "Scope of Learning Evaluation in Science Subject in Junior High School Students: A Systematic Review," *J. Eval. Educ.*, vol. 4, no. 1, pp. 08–16, 2023, doi: 10.37251/jee.v4i1.307.

[10] M. J. Liaghatdar, A. Soltani, R. Shojaei, and A. Siadat, "A study of current and desired state of physics education in iranian female secondary schools," *Int. Educ. Stud.*, vol. 5, no. 1, pp. 50–56, 2012, doi: 10.5539/ies.v5n1p50.

[11] Mirawati and W. Sukarni, "Description of Student Attitudes : Enjoyment in Learning Physics and Interest in More Time Studying Physics," *SchrödingerJournal Phys. Educ.*, vol. 4, no. 1, pp. 1–6, 2023, doi: 10.37251/sjpe.v4i1.490.

[12] F. R. Winda and M. Shofiardin, "Describing the Ability of Science Processes in Basic Physics Practicum II Material of Ice Melting Heat Using E-Modules," *SchrödingerJournal Phys. Educ.*, vol. 4, no. 1, pp. 18–23, 2023, doi: 10.37251/sjpe.v4i1.492.

[13] A. Ekasari, "Application of E-Module to Identify Students ' Science Process Skills in the Practicum of Refraction on Prisms," *SchrödingerJournal Phys. Educ.*, vol. 4, no. 2, pp. 30–35, 2023, doi: 10.37251/sjpe.v4i2.502.

[14] M. Ilham and M. Gusrita, "Korelasi Sikap Siswa Kelas XI terhadap Hasil Belajar Fisika," *Schrödinger J. Phys. Educ.*, vol. 3, no. 2, pp. 43–46, 2023, doi: 10.37251/sjpe.v3i2.498.

[15] A. Stender, M. Schwichow, C. Zimmerman, and H. Härtig, "Making inquiry-based science learning visible: the influence of CVS and cognitive skills on content knowledge learning in guided inquiry," *Int. J. Sci. Educ.*, vol. 40, no.

15, pp. 1812–1831, 2018, doi: 10.1080/09500693.2018.1504346.
[16] D. Masniari. S, B. T. Turaqulov, and J. Kigo, "Attitude of Students' Interest in Learning Physics," *Schrödinger J. Phys. Educ.*, vol. 4, no. 3, pp. 59–63, 2023, doi: 10.37251/sjpe.v4i3.697.
[17] Samijo and D. D. Romadona, "A Study of Science Process Skills on Simple Pendulum Materials," *SchrödingerJournal Phys. Educ.*, vol. 4, no. 1, 2023, doi: 10.37251/sjpe.v4i1.494.
[18] A. Asis, C. P. Ching, and W. Suttiwan, "Increasing Students' Cognitive Absorption Through Remedial Learning in Physics," *Schrödinger J. Phys. Educ.*, vol. 4, no. 3, pp. 86–91, 2023, doi: 10.37251/sjpe.v4i3.709.
[19] Alonemarera Alonemarera, S. Kaliu, Irawati, and Syamsul, "Contextual Teaching and Learning Approach: Study of Influence on Biology Study Participation of SMAN 1 Tinondo," *J. Biol. Edukasi*, vol. 15, no. July, pp. 1–23, 2020.
[20] Raimah, S. U. K. M. Siregar, and E. S. Nasution, "Penerapan Model Pembelajaran Contextual Teaching And Learning (Ctl) Dalam Meningkatkan Hasil Belajar Fisika Pada Siswa Kelas VIII MTs NU Sihepeng," *J. Pendidik. ILMU Pengetah. ALAM*, vol. 1, no. 1, pp. 37–47, 2023.
[21] A. Pangemanan, "Application of Contextual Teaching and Learning Approach on Statistics Material Against Student Results," *Int. Educ. Stud.*, vol. 13, no. 4, p. 1, 2020, doi: 10.5539/ies.v13n4p1.
[22] J. Azwar, "The Analysis Of Need Islamic Learning Model To Improve The Effectiveness And Quality Of Islamic Religious Education In Stkip Pgri West Sumatera," *J. Pendidik. dan Pengajaran*, vol. 50, no. 3, pp. 111–116, 2017.
[23] J. C. C. Lorbis, "Utilization of Contextualized Teaching And Learning (CTL) Approach in Grade Two Araling Panlipunan," *Eric*, no. April, p. 10, 2019, [Online]. Available: https://eric.ed.gov/?id=ED603874.
[24] C. K. Ekowati, M. Darwis, H. M. D. P. Upa, and S. Tahmir, "The Application of Contextual Approach in Learning Mathematics to Improve Students Motivation At SMPN 1 Kupang," *Int. Educ. Stud.*, vol. 8, no. 8, pp. 81–86, 2015, doi: 10.5539/ies.v8n8p81.
[25] Z. A. Rahmah and I. R. Ermawati, "Pengaruh Model Pembelajaran Contextual Teaching and Learning terhadap Hasil Belajar Matematika Siswa Sekolah Dasar," *J. Basicedu*, vol. 6, no. 1, pp. 364–371, 2021, doi: 10.31004/basicedu.v6i1.1916.
[26] L. Dewi and D. Dwikoranto, "Analisis Pendekatan Pembelajaran Contextual Teaching and Learning (CTL) Terhadap Peningkatan Hasil Belajar Fisika dengan Metoda Library Research," *PENDIPA J. Sci. Educ.*, vol. 5, no. 2, pp. 237–243, 2021, doi: 10.33369/pendipa.5.2.237-243.