

Application of the Contextual Teaching and Learning (CTL) Learning Model with the Help of Quizizz as an Evaluation Media in Improving Problem Solving Ability

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Abstract. Literacy and numeracy in physics are still lacking which is dominated by teachers and is always considered difficult by SMA Negeri 1 Blangkejeren students, The purpose of this study was to determine the Contextual Teaching and Learning (CTL) and Quizizz learning models can improve students' problem solving skills on momentum and impulse material. The method used in this research is the Quasy experiment method with a quantitative approach and the research design is Nonequivalent Control Group Design. This research was carried out by giving a pretest-posttest class. By cluster random sampling techniques, so the samples determined were class X. The number of samples per class is 27 students. The research measurement tools used in the study were RPP and LKPD that had been prepared containing several steps of the CTL learning model that were to be realized in the teaching and learning process as well as test questions to obtain data related to the results of students' problem-solving abilities. The tests that were prepared in the form of questions included 13 questions based on ability indicators based on Bloom's Taxonomy including C1 (understanding) to C5 (evaluating). The test data provided were the average pre-test and post-test scores CTL (Contextual Teaching and Learning) learning with Quizizz evaluation media provides better results than using conventional learning models, with game-shaped questions and scores making SMA Negeri 1 Blangkejeren students compete to get better scores.

Keywords: learning model CTL (Contextual Teaching and Learning); Problem Solving; Quizizz

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INTRODUCTION

Information technology has developed and has penetrated various areas of human life in the world, including education. The Covid-19 pandemic has had an impact on the entire world, both directly and indirectly, including Indonesia, forcing Indonesia to transform the education sector in line with current developments, namely Civil Society 5.0 and the Industrial Revolution 4.0 (Waruwu, , 2022). Nadiem Anwar Makarim in this case explained that there are four priorities in the field of education in Indonesia that will be carried out at the G20, namely digital technologies in education, universal quality education, the future of work after Covid-19, solidarity and partnership. Then, to achieve the four education issues in Indonesia's G20 presidency, the government previously made a new policy to improve the quality of education, namely the implementation of the "Merdeka Belajar"

curriculum and was launched online on February 11, 2022. The government emphasized that the independent curriculum is more flexible, concise, and also simple in supporting the recovery of learning loss caused by the Covid-19 pandemic. This also leads to catching up on Indonesia's educational backwardness (Prastiwi, 2022).

The independent curriculum has a curriculum structure based on: (1) Pancasila character, (2) flexible learning, and (3) competency-based. The independent curriculum carries out independent and periodic learning evaluations known as Minimum Competency Assessment (AKM). This AKM is a competency assessment that is the most basic for students and in knowing the next steps in developing the curriculum of each educational unit. The competencies measured in AKM include numeracy and literacy (Nurzila, 2022).

The use of AKM is intended to assess the quality of physics learning at SMA Negeri 1 Blangkejeren, which is a new and rare concept. Of course, the analysis of numeracy literacy in physics is still lacking, especially since physics learning is dominated by teachers and is always considered difficult by SMA Negeri 1 Blangkejeren students, because it has many formulas and assumes that physics lessons must be memorized because there are many theories. Many students tend to rely on examples given by teachers and quotes from books without expressing their own opinions or analyzing those opinions. This condition shows that students have limited abilities to research, analyze, and formulate problems.

Based on the description above, a technology media and learning model are needed that can support this problem. The model chosen is the Contextual Teaching and Learning (CTL) model, which is a learning approach that involves students actively in the teaching and learning process. According to Sinaga et al., (2023) this model is contextual learning that can help students connect material with real life and make students close to their environment and also make it easy for students to understand the discussion of the material including the problems in it. The advantages of CTL learning are 1) teaching and learning activities are more meaningful and real; 2) the learning process is more creative; 3) students gain knowledge from personal experience; 4) learning is more active because of the formation of cooperation (Melinda, 2020).

Problem-solving ability can be stated as an ability that is oriented towards formulating or solving problems, investigations, and discoveries that help students develop intellectual skills, thinking skills, and solving problems in students' real-life experiences independently (Wirda & Muzana, 2021). Furthermore, Wirda and Muzanna mention the steps teachers take in implementing problem solving to students, namely preparation, introduction, learning, negotiation, and guidance. Momentum and impulse are included in physics material whose phenomena commonly occur in everyday life and require problem solving. Students' problem-solving skills regarding momentum and impulse are not optimal due to the lack of analytical skills in basic calculation concepts and ignoring contextual demonstrations. Momentum and impulse are included in physics material whose phenomena commonly occur in everyday life and require problem solving. Students' problem-solving skills regarding momentum and impulse are not optimal due to the lack of analytical skills in basic calculation concepts and ignoring contextual demonstrations (Simamora et al., 2021).

Referring to the above opinion and previous problems, it turns out that adjusting the model to technological advances is very necessary to attract students' attention both in learning and during the evaluation of its implementation. Therefore, the solution offered is the use of Quizizz media. Quizizz is a web tool and application that can be used as a medium for delivering material and as a fun and interesting evaluation media in the form of flexible and narrative educational games (Setiawan & Degeng, 2022).

In addition, according to research by Ramadhani et al., (2022) Quizizz helps reduce the intensity of cheating by students at SMK Negeri 2 Blitar. This is because the use of Quizizz requires time to complete and the random presentation of questions makes it difficult for students to cheat. Therefore, Quizizz can be declared effective as a means of evaluating learning and helping teachers to check students' answers.

The supporting research listed provides solutions to each problem, what makes this study different is that students' problem-solving abilities are carried out through the CTL learning model which supports the flexibility of the independent curriculum and with the help of Quizizz as a formative assessment media to see students' progress in momentum and impulse material at SMA Negeri 1 Blangkejeren.

METHOD

The quasi-experimental method (Quasy experiment) using a quantitative approach was used in this study by utilizing Nonequivalent Control Group Design. This is a design similar to the pretest-posttest control group design, but the experimental and control groups in this design are not selected randomly (Sugiyono, 2019). The population of the study was the students of class X of SMA Negeri 1 Blangkejeren by utilizing cluster random sampling techniques, so the samples determined were class X. The number of samples per class is 27 students. The research measurement tools used in the study were RPP and LKPD that had been prepared containing several steps of the CTL learning model that were to be realized in the teaching and learning process as well as test questions to obtain data related to the results of students' problem-solving abilities. The tests that were prepared in the form of questions included 13 questions based on ability indicators based on Bloom's Taxonomy including C1 (understanding) to C5 (evaluating). The test data provided were the average pre-test and post-test scores.

The test has been field tested, then its reliability and validity were tested. The results of the field test were then given to students in the experimental and control classes as a pretest and posttest. So, the technique analyzis that use is The One-Sample T-Test. That is a statistical method used to compare the mean of a sample to a known value or a theoretical value, to determine if there is a significant difference between them. This test is typically used when you want to assess whether the sample mean differs significantly from a population mean (or a known value) under certain conditions.

RESULT AND DISCUSSION

Data processing and analysis were taken from the results of the pretest and posttest scores in seeing students' problem-solving abilities in the momentum and impulse material. The implementation of the pretest and posttest used the Quizizz evaluation media with direct assessment of the overall percentage of the number of questions that can be answered by students. The following are the results of students' abilities before and after the CTL model was applied to the experimental class.

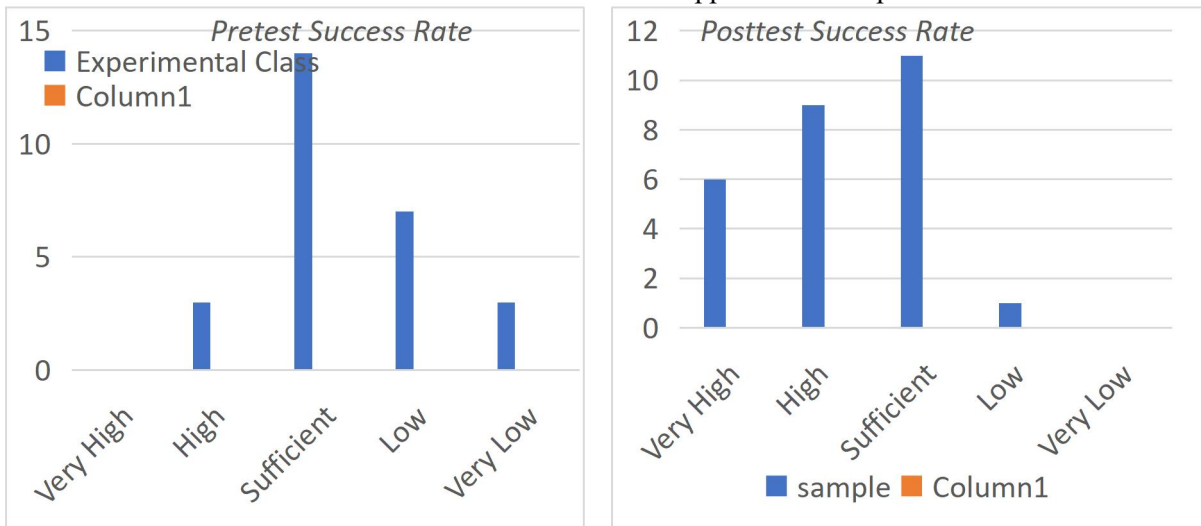


Figure 1. Students' Pretest-Posttest Success Rate

Based on Figure 1, during the pretest, there is no student that got a very high score, 3 student with high category, 14 student with sufficient category, 7 student with low category, and 3 students with very low category. After they have gotten treatment, there is an increasing in very high category. There are 6 student got very high category. And there is no students in very low category.

Based on the result, there is increasing problem solving ability after they have gotten the treatment of CTL. The statistical calculations are presented in Table 1.

Tabel 1. Data on *Pretest* and *Posttest* Result

	Score	
	Pretest	Posttest
Highest Score	75	94
Lowest Score	12	32
Mean	42,32	66
Median	42	65
Mode	51	78
Standar Deviation	15,80	16,20
Variance	249,8	262,5

Furthermore, to understand whether the pretest and posttest data of the two classes are normally distributed or not, a normality test is carried out. In order to conduct a normality test for two data, the K-S (Kolmogorov-Smirnov) formula is used with the help of SPSS 26 software with a significance level (α) = 0.05. It can be concluded based on the normality test criteria, namely if the SPSS significance level > 0.05 means normal data distribution while if the SPSS significance level < 0.05 is the opposite. There is a significance of the pretest data of the control class and the experimental class of 0.200, meaning that both classes produce a normal distribution. Furthermore, the significance of SPSS through the posttest of the control and experimental classes also exceeds 0.05, namely 0.200 and 0.094, meaning that the posttest data of the control and experimental classes have a normal distribution.

Then a homogeneity test was carried out to understand whether the pretest and posttest data in the control and experimental classes had heterogeneous or homogeneous variants. In order to carry out this test, a Statistic test was used using SPSS 26 with a significance level (α) = 0.05. It can be concluded based on the homogeneity test criteria, namely if the SPSS significance level > 0.05 means the data is homogeneous while if the SPSS significance level < 0.05 means the data is not homogeneous. There is a Levene Statistic on sig. Basen On Mean pretest data of 0.665 > 0.05 while posttest data of 0.372 > 0.05 then it can be concluded that the variance of the pretest and posttest data of the experimental and control classes is homogeneous.

Based on test, sig. (1-tailed) of 0.000 < 0.05 (accepting H_a or rejecting H_o) is obtained, so it can be concluded that there is a difference in the mean of students for the pretest and posttest o. Thus, it can be concluded that there is an increase or influence of the CTL learning model on students' problem-solving abilities using the Quizizz evaluation media.

CONCLUSION

Problem-solving ability is influenced by the Contextual Teaching and Learning (CTL) learning model applied to the experimental class, which is basically a control class that was given a conventional model before, its students have the same cognitive level as the experimental class.

Based on the description of the problem and the results of the study, it can be concluded that through the application of the Contextual Teaching and Learning (CTL) learning model, there is an increase in the problem-solving ability of momentum and impulse material of students at SMA Negeri 1 Blangkejeren after using Quizizz. The obstacles that researchers felt during the study were network limitations and the need to pay attention to readiness before the study and prepare the network first before using Quizizz.

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REFERENCES

- Eliyunus Waruwu, Ayler Beniah Ndraha, D. L. (2022). Peluang Dan Tantangan G20 Dalam Transformasi Manajemen Pendidikan Di Era Revolusi Industri 4.0 Dan Civil Society 5.0 Pasca Pandemi Covid-19. *Jurnal Ilmiah Maksitek*, 7(3), 26–32.
- Melinda, A. (2020). Application of Contextual Teaching and Learning Method to Improve Student Learning Motivation. *SPEKTRUM: Jurnal Pendidikan Luar Sekolah (PLS)*, 8(3), 360. <https://doi.org/10.24036/spektrumpls.v8i2.108633>
- Nurzila, N. (2022). Dalam Menerapkan Kurikulum Merdeka Belajar Perlu Strategi Tepatguna. *Jurnal Literasiologi*, 8(4), 89–98. <https://doi.org/10.47783/literasiologi.v8i4.397>
- Prastiwi, M. (2022). *Nadiem Luncurkan Kurikulum Merdeka, Pahami 3 Keunggulannya*. Kompas.Com. https://www.kompas.com/edu/read/2022/02/12/070600671/nadiem-luncurkan-kurikulum-merdeka-pahami-3-keunggulannya?page=all&lgn_method=google
- Ramadhani, M., Zulfa, N. F., Pasha, P. R., Fauzan, S., & Ashad. (2022). Efektivitas Penggunaan Media Quizizz sebagai Alat Evaluasi dalam Pembelajaran Akuntansi Dasar. *Prosiding National Seminar on Accounting, Finance, and Economics*, 2(3), 134–144.
- Setiawan, A. B., & Degeng, I. N. S. (2022). Tes Berbasis Web Tool Quiz Pada Mata Pelajaran Bahasa Indonesia SMA Di Masa Pandemi. *JKTP: Jurnal Kajian Teknologi Pendidikan*, 05(03), 284–294. <https://doi.org/10.17977/um038v5i32022p284>
- Simamora, R., Kurniawan, D. A., & Munte, B. (2021). Upaya Peningkatan Kemampuan Berpikir Kritis Siswa Menggunakan Simulasi Virtual Pada Materi Momentum Dan Impuls di SMAN 1 Siempat Nempu Hilir. *Jurnal Usahid solo*, 1(1), 37–45.
- Sinaga, S. J., Hutabarat, G. I. C., Nababan, Y. J., Christian, F., & Hutauruk, A. J. B. (2023). *Peningkatan Motivasi Belajar Siswa Melalui Contextual Teaching and Learning (CTL) pada Pembelajaran Perbandingan di SMP Free Methodist 1 Medan*. 07(1), 681–694.
- Sugiyono. (2019). *Metode Penelitian Kuantitatif dan Kualitatif Dan R&D*. ALFABETA.
- Wirda, W., & Muzana, S. R. (2021). Pengaruh Penerapan Model Problem Solving Terhadap Prestasi Belajar Siswa Pada Konsep Gaya Di Kelas VIII SMP Negeri 2 Makmur. *Prosiding SEMDI-UNAYA (Seminar Nasional Multi ...)*, 101–114.