Papanda Journal of Mathematics and Sciences Research (PJMSR)
e-ISSN: 2580-9709
Volume 4, Nomor 2, September 2025

THE REALISTIC MATHEMATICS EDUCATION APPROACH WITH THE HELP OF LIVEWORKSHEETS ON STUDENTS' CRITICAL THINKING SKILLS

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Informasi Artikel:
Disubmit 10 Juli, 2025
Direvisi 17 Juli, 2025
Diterima 02 September, 2025

ABSTRACT

Critical thinking skills are important for students in mathematics learning, but this ability has not developed optimally in most students. This study aims to determine the achievement and improvement of students' critical thinking skills through the Realistic Mathematics Education (RME) approach assisted by Liveworksheets, as well as to see students' responses to the learning. This study used the Quasi Experimental method with Nonequivalent Comparison Group Design. The study population was students of grades X-1 and X-2 of SMA PGRI Cianjur in the 2024/2025 academic year who were selected by purposive sampling. The experimental class used the RME approach assisted by Liveworksheets, while the control class used conventional learning. Critical thinking ability instruments were found in the SPLTV material and student response questionnaires. Data analysis to see achievement used the difference test of two means while improvement data was analyzed using Mann Whitney and student responses used percentages based on students' positive responses. The results showed that the achievement of students' critical thinking skills with the RME approach assisted by Liveworksheets was better than conventional learning; Meanwhile, the increase in students' critical thinking skills in the experimental class was better than conventional learning and was in the low category and students' attitudes responded positively to learning with the RME approach assisted by Liveworksheets.

Keywords: Critical thinking skills, Liveworksheets, RME approach**.**

How to Cite:
Iskandar, R., Komala, E., & Sugiarni, R. (2025). The realistic mathematics education approach with the help of liveworksheets on students' critical thinking skills. *Papanda Journal of Mathematics and Sciences Research (PJMSR)*, 4(2), 384-396.

PENDAHULUAN

Critical thinking is an important aspect of the learning process, as it allows students to optimize their mental potential to solve various problems encountered in everyday life. (Cahaya Purnama et al., 2024) Students' critical thinking skills in learning, especially mathematics, are still relatively low (Romadhoni et al., 2024). In fact, critical thinking skills play a crucial role in improving students' mathematics numeracy achievement, including in the context of international assessments such as the Programme for International Student Assessment (PISA). This is reflected in the PISA results, where Indonesia's mathematics literacy ranking in 2022 did improve five places compared to 2018, but students' mathematics scores actually decreased

by 12 points to a total score of 365, far below the average score of 472 for participating countries. (Febriana et al., 2024)Based on this statement,This study shows that students' mathematical and critical thinking skills are still relatively low and there is a significant gap with international standards. This fact emphasizes the need for research to identify learning strategies that can improve students' critical thinking skills at the international level.

To address this challenge, the Ministry of Education, Culture, Research, and Technology has implemented a National Assessment that includes a Minimum Competency Assessment (AKM), a Character Survey, and a Learning Environment Survey. AKM measures students' reading and mathematics (numeracy) literacy. Based on the results of the 2024 Education Report, the numeracy achievement of general high school students is below 70%, at 66.3%. This achievement status is still in the "Moderate" category, indicating that there is still a gap in numeracy mastery at the high school level (Indonesian Education Report). During the Introduction to the School Environment (PLP) activity, researchers observed that students had difficulty working on math problems that were different from their usual ones because they were used to memorizing rather than understanding concepts. One of the main causes of this problem is the use of learning methods that do not provide enough space for students to develop critical thinking skills.

To respond to this urgency, this study examines the realistic mathematics education (RME) approach as a learning model that can help students develop critical thinking skills more effectively.The RME approach is a learning method that emphasizes the use of meaningful contexts close to students' experiences to help them develop an understanding of mathematical concepts (Mufidah & Machromah, 2023). Consistent with this view (Afsari et al., 2021), the RME approach presents problems that students can recognize and understand, making the learning process more meaningful and encouraging thought engagement. Several previous studies have examined the RME approach to critical thinking skills, as practiced by Agustin Sasmi et al., 2020. There was a significant influence on students' critical thinking skills in learning using the RME approach with the CPS model and learning using the conventional model. Meanwhile, research conducted by Putri et al., 2022 showed that the RME approach had a positive and significant influence on students' mathematical critical thinking skills.

The current generation, often referred to as the digital generation, grew up in a highly connected environment. They are accustomed to digital devices, fast internet access, and various applications that support their daily needs. In education, this generation is more interested in interactive, visual, and technology-based learning, such as the use of applications, digital simulations, or open learning platforms (Ekasani, 2024). To maximize learning using the RME approach, adequate technology-based learning support is required.

One relevant technology medium to support RME learning is Liveworksheets. The use of Liveworksheets is not merely introduced as a digital medium, but is framed as a tool that strengthens the RME approach in the context of the digital generation. Through its interactive features, Liveworksheets can increase student engagement and provide a more personalized learning experience, thus supporting the transition of learning to a direction that is more in line with the characteristics of the current generation...Liveworksheets is a digital platform that allows teachers to create and adapt interactive worksheets for students to use online. According

to Lestari (2022), Liveworksheets is an electronic learning medium equipped with text, images, animations, and videos, making it more effective in supporting the learning process.

Research on live worksheets in mathematics learning has shown positive results. For example, research by Sugiarni et al. (2023) found that live worksheets are effective in learning, particularly in developing understanding, thereby improving students' abilities during the learning process. Consistent with these research findings, Haezer & Rusmawati (2023) demonstrated that live worksheets are effective in improving conceptual understanding and student engagement in mathematics learning. Poor critical thinking skills in mathematics learning remain a problem faced by students at various levels of education. One approach believed to be a solution is Realistic Mathematics Education (RME), which emphasizes the connection between mathematical concepts and real-world situations that are meaningful to students. Numerous studies have demonstrated the effectiveness of RME in improving critical thinking skills.The effectiveness of RME is also in line with global education policy. The National Council of Teachers of Mathematics (NCTM, 2000), in its Principles and Standards for School Mathematics, emphasized that mathematics learning should not focus solely on procedures but should also develop problem-solving skills, communication skills, connections between concepts, and mathematical reasoning. All of these aspects are closely related to the development of critical thinking skills.(Novita Sari & Amin Fauzi, 2025)Similarly, the OECD-PISA study results emphasize the importance of mathematical literacy based on real-world contexts, where students not only calculate but are also able to interpret, analyze, and make decisions based on everyday situations. This aligns with the main principle of RME, which connects mathematics to the realities of life.(Wati, 2023).

Based on the description, there has been no research that explicitly integrates the Realistic Mathematics Education (RME) approach assisted by Liveworksheets in learning the material of the System of Linear Equations of Three Variables (SPLTV). In fact, the application of the RME approach to SPLTV material is believed to provide more contextual and meaningful learning, in accordance with the RME principle which emphasizes the relationship between mathematical concepts and real situations that are relevant to students. Through this approach, students are expected to be able to improve conceptual understanding as well as critical thinking skills in solving mathematical problems, especially in SPLTV material. Based on this background, this study aims to examine the application of the RME approach assisted by Liveworksheets on students' critical thinking skills. The novelty of this study lies in the integration of the RME approach with SPLTV material and the use of Liveworksheets media in the mathematics learning process.

METHOD

The type of research used is quantitative research with a quasi-experimental design by selecting the Nonequivalent comparison group design type. In detail, the Nonequivalent comparison group design that can be used in research (Sugiyono, 2017) is presented in Table 1 as follows: Table 1. Nonequivalent comparison group design. The population in this study were students at one of the high schools in Cianjur Regency. The sample was selected using a purposive sampling technique in the even semester of the 2024/2025 academic year, which took place from April 14 to 23, 2025. The sample consisted of 36 students, with details of 18

students from class X-1 as the experimental class who received learning using the Realistic Mathematics Education (RME) approach assisted by Liveworksheets, and 18 students from class X-2 as the control class who received learning with the conventional model.

Table 1. Nonequivalent Design

Class	*Pre-exam*	Treatment	*Post-test*
Test	O1	X	O2
Control	O1		O2

Information
O1 = Pretest (initial test)
O2 = Posttest (final test)
X = Treatment with the RME approach assisted by Liveworksheets

The data in this study were obtained through a descriptive test designed to measure mathematical critical thinking skills, which was given to the experimental group and the control group. This test was given twice, namely before learning (pretest) and after learning (posttest), with the main material of the System of Linear Equations of Three Variables (SPLTV). In addition to the test instrument, this study also used a non-test instrument in the form of a questionnaire that aims to collect data on students' critical thinking skills in learning that applies the Realistic Mathematics Education (RME) approach assisted by Liveworksheets.

RESULTS

Analysis of Students' Critical Thinking Skills Achievement

Students' critical thinking ability was measured based on the results of the final test (posttest). The posttest was conducted after students were given treatment. The final ability measured was students' critical thinking ability in mathematics learning with the topic of Three Variable Linear Equation Systems (SPLTV). Based on the results of descriptive analysis using IBM SPSS 30.0.0, it was found that in the experimental class the lowest student score was 16 and the highest score was 68, while in the control class the lowest score was 12 and the highest score was 64. When compared with the Minimum Completion Criteria (KKM) of 70, it can be seen that neither the experimental class nor the control class had students who had reached the KKM. However, the average of the experimental class was 45.17, which was higher than the average of the control class, which was only 30.22. In addition, the standard deviation of the experimental class (13.457) was smaller than that of the control class (15.253), which means that the distribution of scores in the experimental class was more even. A summary of the descriptive statistics is presented in Table 2..

Table1. Descriptive Statistics of Posttest Result Data

Class	amount	Lowest Value	The highest score	Average	Standard Deviation
Test	18	16	68	45.17	13,457
Control	18	12	64	30.22	15,253

The instrument used consisted of three descriptive questions, each covering six indicators of critical thinking skills. Each indicator was assessed based on predetermined assessment

criteria. If all indicators were answered correctly, students could obtain a maximum score of 72. As a benchmark, the Minimum Completion Criteria (KKM) at the school where this study was conducted was 75. Therefore, the posttest results obtained by students were compared with the KKM score to determine whether students had achieved the expected level of learning completion. Before further analysis, the posttest data from both groups were first tested for normality to determine whether the data came from a normally distributed population. The normality test was conducted using IBM SPSS software version 30.00 using the Shapiro-Wilk statistical test. The results of the normality test are presented in Table 3.

Table 3. Posttest Normality Test Results with Shapiro Wilk Test Statistics

Class		*Shapiro Wilk*		
		N	signature	Information
Post-test	Test	18	0.284	Normal
	Control	18	0.096	Normal

Based on the results of the normality test, a significance value of 0.284 was obtained for the experimental class and 0.096 for the control class ($p > 0.05$), indicating that the posttest data from both classes were normally distributed. Therefore, the analysis can be continued with a homogeneity of variance test, which is carried out using the feature*Test of Homogeneity of Variance*on IBM SPSS software version 30. The results of this test are presented in Table 5.

Table 5. Homogeneity Results

Levene Statistics	N	signature	Information
1,009	32	0.322	H0 Accepted

Based on Table 6, the significance value obtained is 0.322 ($p > 0.05$), so H_0 is accepted. This means that the data from both classes have homogeneous variance. Because the data is also normally distributed, parametric tests can be used. Next, a test for the difference in means between the two groups was conducted using a t-test (independent sample t-test assuming equal variance) using IBM SPSS Version 30.00 software. The results of this analysis are presented in Table 6. This test aims to determine whether there is a significant difference between students' critical thinking abilities in the experimental group and the control group after treatment. If the significance value in this test is less than 0.05, it indicates that the RME approach assisted by Liveworksheets has a significant effect on improving students' critical thinking abilities.

Table 6. Test of Difference of Two Means of Posttest Results

	Independent Sample t Test **Asym.Sig(2tailed)**	**Keterangan**
Posttest	0,04	H_0 ditolak

Based on the calculation results in Table 6, the results achieved in this study are a significance value of Sig. (2-tailed) = 0.04. Because the hypothesis test is one-sided, the value of Sig. (1-tailed) = ½ Sig. (2-tailed), which means Sig. (1-tailed) = ½ Sig. (0.04) = 0.02. Thus, this value is smaller than the significance level of 0.05.(Muhid and Si, 2019)

Analysis of Students' Critical Thinking Skills Improvement

The data used to analyze the improvement of students' critical thinking skills are the results obtained from the strengthening index of the experimental class and the control class.Table 7 again presents the descriptive statistical data for the index.

Table 7. Descriptive Profit Index

Class	Many samples	Lowest Score	Highest score	Average
Test	18	59	92	0.6231
Control	18	18	85	0.4599

Based on Table 4.6, it appears that the average value of the experimental class gain index is 0.6231. While the average value of the control class gain index is 0.4599 with the difference in the average gain index of the two classes being 0.1632 which is included in the low category. The lowest gain index value of the experimental class is 59 and the highest value is 92. And the lowest gain index value of the control class is 18 and the highest value is 85. Based on table 4.6, it appears that the two classes have different increases in mathematical critical thinking abilities, statistically it must be proven that the increase in the critical thinking abilities of the two classes is different. Therefore, statistical tests are carried out, namely the normality test, the homogeneity test, and the difference test of two means.The results of the normality test for the gain index data are presented in Table 8.

Table 8. Normality Test Results of Gain Index Data

Class	Shapiro-Wilk	
	Signature.	Information
Test	0.054	Normal
Control	0.015	Abnormal

Based on Table 8, the Sig. value for the experimental class is 0.054, which means the significance value is more than 0.05, while the Sig. value for the control class is 0.015, which means the significance value is less than 0.05. Since one of the sample data from the gain index is not normally distributed, a homogeneity test is not required, but a non-parametric statistical test, namely Mann Whitney, is performed. The results of the Mann Whitney test are presented in Table 9.

Table 9.
Gain Index Data Mann Whitney Test Results

Profit Index Data	
Sig. Assimilation (2-tailed)	Information
0.006	H_0 rejected

Based on the results of the N-Gain score test calculation in Table 4.8, the results achieved in this study are a significance value of Sig. (2-tailed) = 0.006 because the hypothesis test is one-sided, the value of Sig. (1-tailed) = ½ Sig. (2-tailed), meaning Sig. (1-tailed) = ½ Sig.

(0.006) = 0.003. so that the value is smaller than the significance level of 0.05 (Muhid & Si, 2019). Because the significance value of 0.003 is smaller than 0.05, H0 is rejected and Ha is accepted. So it can be concluded that the final critical thinking ability of class X-1 students is different from the final mathematical critical thinking ability of class X-2 students. HaThis result shows that students who learned with the LiveWorksheet-assisted RME approach experienced a better improvement in critical thinking skills compared to students who learned with the conventional approach. This is important because it proves that learning with RME combined with interactive media can be more effective in encouraging students to analyze, evaluate, and solve problems critically. Thus, the results of this study support the use of LiveWorksheet-assisted RME as an alternative mathematics learning strategy that can improve the quality of the process and student learning outcomes.

Student Attitude Response

A response scale questionnaire was administered to students in the experimental class after the treatment was completed. The goal was to determine students' responses to learning using the Realistic Mathematics Education (RME) approach using Liveworksheets. For more details, see Table 10.

Table 10. Student Response Results

No	Indicator	Average		Information
		Positive Attitude	Negative attitude	
1	Student Responses to Mathematics Learning	83.33%	16.67%	Almost all positive
2	Student Responses to Mathematics Learning with the RME Approach	100%	0%	everything is positive
3	Student Responses to Mathematics Learning Using Liveworksheet Media	95.55%	4.45%	Almost all positive
4	Student Responses to Critical Thinking Skills	93.05%	6.95%	Almost all positive

DISCUSSION

Analysis of Students' Critical Thinking Skills Achievement

At the end of the study, students in the experimental class who participated in the RME approach with Liveworksheets achieved higher average critical thinking skills on the posttest compared to students in the control class. This difference in achievement occurred due to several factors that made the RME approach superior to the conventional approach, namely: (1) The use of problems relevant to everyday life, which facilitates conceptual understanding and enhances critical thinking skills. This is in line with Hans Freudenthal's idea that mathematics is not simply a collection of finished products, but a human activity (mathematics as a human activity) that begins in real life. Freudenthal rejected the approach that teaches mathematics as a finished product—a phenomenon he called anti-didactical inversion—and emphasized the need to start from “real” situations for students. This process involves two types of mathematization: horizontal (connecting reality to mathematical symbols) and vertical

(building more formal symbolic structures).(Marja Van den Heuvel-Panhuizen & Paul Drijvers, 2020). (2) RME provides space for students to find their own solutions through experimentation and exploration, connecting new knowledge with existing ones. This principle is consistent with Gravemeijer's idea of guided reinvention, where students are guided to 'rediscover' mathematical concepts through structured learning experiences. The findings of this study are also in line with constructivism theory, which emphasizes that knowledge is actively constructed by students through meaningful learning experiences. Piaget (1972) stated that the learning process occurs when students assimilate and accommodate new information into their cognitive structures. This is reflected in learning with the RME approach, where students rediscover mathematical concepts through contextual problems and guided reinvention. (3) Interactions between students, peers, and teachers support dynamic learning, where students learn not only from the teacher, but also from their classmates. Van den Heuvel-Panhuizen views that representations and models in RME act as a bridge between students' informal knowledge and formal mathematical concepts. In classroom interactions, these representations enable students to explain, discuss, and argue, a process that is important in building critical thinking skills.(Van den Heuvel- et al., nd)

This is in line with research (Ria Andriani et al., 2016)The reason why learning with the RME approach is better than the conventional approach is because this approach allows students to enjoy mathematics more and shows that mathematics has significant benefits in everyday life. Further research is needed. Fauzana Rahmi, (2022)This study demonstrates that the ethnomathematics-based RME approach impacts the achievement of mathematical representation skills. The results of critical thinking achievement using the RME approach assisted by Liveworksheets can serve as a reference for teachers because this learning connects with real-life contexts and provides opportunities for students to apply mathematical skills to solve everyday problems.

On the other hand, although students in the control class learned the same material, they did not experience significant improvements in their critical thinking skills. This was due to the more passive approach used in the control class, where students simply received material from the teacher without much opportunity to interact with or discuss it. This more structured learning limited the development of students' critical thinking skills. Ultimately, students in the experimental class using the RME approach achieved higher posttest scores, with most students demonstrating deeper understanding and improved problem-solving skills.

The Liveworksheet-assisted RME approach has been proven to be more effective in improving students' critical thinking skills. By using relevant problems, models to facilitate understanding, and providing space for students to construct their own knowledge, RME provides a more interactive and contextual learning experience. This helps students not only understand mathematics but also develop critical thinking skills that are essential for their lives. This is in line with research.Oktaviani et al., (2018) that students' critical thinking skills in mathematics taught using the RME approach were significantly higher using the RME approach compared to conventional learning. In addition, the study Wahyuni & Erna Lira, (2023) showed that the Realistic Mathematics Education (RME) approach had a significant influence on students' critical thinking skills, as seen from the average value of the experimental post-test results which was greater than the average value of the control class. Further research Fauzana Rahmi, (2022) proves that the ethnomathematics-based RME approach has an influence on the achievement of mathematical representation skills.

The results of critical thinking achievement with the Liveworksheet-assisted RME approach can be a reference for teachers because this learning is connected to real-life contexts and provides opportunities for students to use mathematical skills in solving everyday

problems. This connection to context makes learning more meaningful and can improve students' achievement of critical thinking skills. Meanwhile, conventional learning that focuses on theory without practical context often does not motivate students to use their knowledge in the real world. Thus, this Liveworksheet-assisted RME learning model can be an effective learning alternative in achieving students' critical thinking skills, especially in materials that require strong conceptual understanding and analytical skills such as SPLTV.

Analysis of Students' Critical Thinking Skills Improvement

Therefore, it can be concluded that there is a significant difference in the improvement of critical thinking skills of students who use the RME approach with the help of Liveworksheets compared to students who use conventional learning. The group given the RME approach with the help of Liveworksheets showed a higher increase in learning outcomes compared to the group using conventional learning. The improvement in students' critical thinking skills can be seen from the gain index, which shows the difference between the initial (pretest) and final (posttest) conditions. This gain index illustrates the extent of change experienced by students after participating in learning with the RME approach assisted by Liveworksheet.

This study not only looked at the final learning outcomes but also observed the process of change in students' critical thinking skills from the initial (pretest) to the final (posttest) conditions. In the initial stage, both the experimental class group using the RME approach assisted by Liveworksheet and the control class using conventional learninghave equal critical thinking skills. The results of the statistical test showed no significant difference between the two groups in the pretest, thus confirming that the difference in improvement was caused by the treatment given. After the treatment was given, both groups were retested using the same post-test. The results of the analysis showed that the experimental group experienced a significant increase in critical thinking skills. The gain score for the experimental class showed an increase, indicating that students in this group were able to develop their critical thinking skills better.

The analysis results showed that the experimental group experienced significant improvements in critical thinking skills. The experimental group's gain score showed a higher increase, indicating that students in this group were able to develop their critical thinking skills quickly and effectively. In contrast, the control group showed lower improvements. The higher improvement in the experimental group can be explained by the implementation of a more interactive and contextual learning approach. The use of Liveworksheet as a learning medium provides opportunities for students to interact directly with the material and find solutions to problems independently. This approach allows students to think more critically, rather than simply receiving knowledge passively. The improvements that occurred in the experimental class were also influenced by the active role of students in the learning process. RME-based learning assisted by Liveworksheet not only relies on the material provided by the teacher but also involves students in the process of problem analysis, model application, utilization of student construction results, and interaction between students. This process provides opportunities for students to discuss in small groups, share ideas, and deepen their understanding of the mathematics material. Collaboration between students enriches their learning experience, ultimately encouraging improved critical thinking skills.

The results of this study are consistent with previous findings. Research conducted by (Herlina & Casnan, 2023) showed a significant increase in students' mathematical problem-solving abilities in the experimental group with the Realistic Mathematics Education (RME) approach compared to students' mathematical problem-solving abilities in the control class. (Maryam & Fauzi, 2024) who developed E-LKPD based on the Realistic Mathematics Education (RME) approach using the Liveworksheet platform can improve students'

mathematical understanding. This research is also supported by (AP Lestari et al., 2025) who showed an increase in students' mathematical problem-solving abilities with the RME approach assisted by interactive technology better than conventional learning. Significant improvements in critical thinking skills were observed in both the experimental and control classes after treatment.

The advantage of using Realistic Mathematics Education (RME) is that it provides learning materials that are easy for students to master because they are oriented towards things close to their lives. This means that the learning materials are no longer abstract. This certainly allows students to more easily understand learning objectives. Learning becomes more varied, because classroom activities are not solely verbal communication, so students do not get bored easily (Silvia et al., 2022). It can be said that the Realistic Mathematics Education (RME) approach helps students todiscover for themselves the mathematical concepts they are studying, because learning activities are oriented towards active student activities that are not limited by space and time.

Overall, the improvement in students' critical thinking skills in this study indicates that the Liveworksheet-assisted RME approach had a greater impact on the development of critical thinking skills compared to conventional learning. Although both groups had similar initial abilities, the more interactive approach in the experimental group allowed them to be more active in the learning process, which in turn accelerated the development of their critical thinking skills. Thus, the RME learning model with the help of Liveworksheet can be an effective learning alternative in improving students' critical thinking skills, especially in materials that require strong conceptual understanding and analytical skills such as SPLTV.

Student Attitude Response

The implementation of the Realistic Mathematics Education (RME) approach with the help of Liveworksheets has had a positive impact on students. Based on the results of a questionnaire distributed to the experimental class after the learning process, the majority of students responded positively to the Realistic Mathematics Education (RME) approach with the help of Liveworksheets. Students felt happy and enthusiastic when participating in mathematics learning, especially because the material was presented through real-life contexts close to everyday life. This made it easier for them to understand the material and relate it to their own experiences. Using Liveworksheets as a teaching aid adds a new dimension to the learning process. Students find its engaging, interactive, and practical design helps them focus better and avoid boredom. One reason students find it convenient is that they don't need to constantly write in textbooks but can learn directly through digital devices. This makes the learning process more accessible and enjoyable.

Furthermore, students felt that the questions presented through Liveworksheets helped them think and analyze more effectively. This reflects a higher level of cognitive engagement, where students tried multiple ways to solve a problem before deciding on a final answer.This advantage can be explained through constructivism theory, which emphasizes that students construct their knowledge through active interaction with the material. The interactive elements in liveworksheets encourage students to explore various problem-solving strategies, rather than simply memorizing answers. Furthermore, the visual displays provided align with the principle of dual coding, where information is presented verbally and visually simultaneously, helping to strengthen conceptual understanding. The interactive feature, which allows students to try out answers and immediately receive feedback, also supports the process of self-reflection, which is a key characteristic of critical thinking.

The most positive student responses were found in the mathematics learning indicators using the RME approach. They felt that this approach enabled them to be more active in the

learning process and were more motivated to develop their critical thinking skills. However, a small number of students reported experiencing confusion when solving contextual math problems and found the Liveworksheets interface somewhat confusing. Nevertheless, students generally responded positively to the use of Liveworksheets in their learning and felt that this method helped improve their critical thinking skills.

Study (Syafruddin, 2020) The average student response after the implementation of the quantum learning model with the RME approach was 89.65% positive. Research conducted by Sihombing et al., 2024 found that the response to the use of the RME approach with the help of teaching aids was able to improve students' conceptual understanding of mathematical material. (Faidah et al., 2019) Student responses to the Realistic Mathematics Education (RME) approach based on Gardner's theory of multiple intelligences received very good student responses.

Thus, when students respond positively, it leads to meaningful learning. The RME approach supported by Liveworksheets not only makes learning more engaging but also aligns with the principles of modern learning theory, which emphasizes active student participation, the use of visual representations, and immediate feedback. Students find it easier to engage because they can immediately see the benefits of what they're learning and apply it to real-world contexts. This builds their confidence in critical thinking and finding solutions, rather than simply memorizing formulas or theories.

CONCLUSION

Based on the research results and general discussion, it can be concluded that the results of the study on the achievement of critical thinking skills of students who learn with the Realistic Mathematics Education (RME) approach assisted by Liveworksheets are better than the achievement of critical thinking skills of students who learn conventionally. The improvement in critical thinking skills of students who learn with the Realistic Mathematics Education (RME) approach assisted by Liveworksheets is better than the improvement in critical thinking skills of students who learn conventionally with a low category. Student responses to mathematics learning using the RME approach assisted by Liveworksheets show almost entirely very positive responses.

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