MIKAILALSYS
Journal of Multidisciplinary Sciences

e-ISSN : 2987-2286
p-ISSN : 2987-3924

Index : Dimensions, Scilit, Crossref, Garuda, Semantic, Lens,Google Scholar,Base, etc

https://doi.org/10.58578/mikailalsys.v4i2.10087

The Influence of the Quick on the Draw Type Cooperative Learning Model on the Mathematics Learning Activities

Wafith Azizah, Risnawita, Rusdi, Tasnim Rahmat
UIN Sjech M. Djamil Djambek Bukittinggi, Indonesia
wafithazizah@gmail.com

Article Info:

Submitted:	Revised:	Accepted:	Published:
Mar 28, 2026	Apr 25, 2026	May 7, 2026	May 12, 2026

Abstract

Students' mathematics learning activity is an important indicator of learning success. However, preliminary observations and interviews with teachers and students at SMKN 2 Bukittinggi indicated that students' mathematics learning activity remained low, partly due to teacher-centered instruction and limited variation in learning models. This study aims to determine the effect of the Quick on the Draw cooperative learning model on students' mathematics learning activities in Grade X Hospitality at SMKN 2 Bukittinggi. This research employed a quantitative approach with a pre-experimental design using the Static Group Comparison Design. The population consisted of three Grade X Hospitality classes at SMKN 2 Bukittinggi. The sample comprised students of Grade X Hospitality 2 as the experimental class and Grade X Hospitality 1 as the control class. Sampling was conducted using simple random sampling after normality, homogeneity of variance, and mean equality tests were performed on the population data. Data were collected using a questionnaire measuring students' mathematics learning activities and analyzed using the t-test after fulfilling the prerequisite tests of normality and homogeneity. The results showed that tcount = 2.0479 exceeded ttable = 1.6741, indicating that H_0 was rejected and H_1 was accepted. This result was further supported by SPSS

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analysis, which produced a significance value of 0.045 at $\alpha = 0.05$, showing that $0.045 < 0.05$. Therefore, the study concludes that the Quick on the Draw cooperative learning model has a significant effect on students' mathematics learning activities in Grade X Hospitality at SMKN 2 Bukittinggi in the 2025/2026 academic year. These findings contribute to mathematics education by demonstrating the potential of cooperative learning strategies to increase student participation and provide practical implications for teachers in designing more interactive and student-centered mathematics learning.

Keywords: Quick on the Draw; Cooperative Learning; Mathematics Learning Activities; Student-Centered Learning; Vocational Education

INTRODUCTION

Education is a conscious effort undertaken by humans through guidance, training, and learning activities, both in and outside of school, to optimally develop students' potential. Education plays a crucial role in shaping students' thinking skills, attitudes, and skills for facing life (Amaliyah & Rahmat, 2021). In the educational context, mathematics is a crucial subject because it serves as a foundation for learning various other sciences. Mathematics is a basic science that plays a vital role in developing logical, critical, and systematic thinking skills, as well as the ability to solve problems in everyday life (BP et al., 2022). Therefore, mathematics learning in schools is not only oriented towards mastering concepts, but also focuses on how students can actively engage in the learning process. Mathematics learning is essentially an interactive process between teachers and students, designed to develop thinking skills and create meaningful learning experiences. The success of this learning is greatly influenced by the teacher's ability to choose a learning model that is appropriate to the students' characteristics and learning objectives (Annas, 2017).

However, in practice, mathematics learning in schools is often teacher-centered, resulting in students tending to be passive during the learning process (Nurhaswinda et al., 2025). Students spend most of their time listening to teacher explanations, taking notes, and working on problems without actively engaging in discovering learning concepts. This situation causes learning to become monotonous and less engaging, resulting in low student learning engagement. Setiowati et al., (2024) stated that learning engagement is a crucial principle in the learning process because learning is essentially about doing and experiencing directly. Student learning engagement is a crucial indicator of learning success

because through it, students can build understanding, develop critical thinking skills, and enhance social skills through interactions with teachers and peers (Hayati & Jannah, 2024).

The importance of student activities in learning is also reinforced in Government Regulation of the Republic of Indonesia Number 19 of 2005 concerning National Education Standards, which states that the learning process must be conducted interactively, inspiringly, fun, challenging, and motivate students to actively participate. Therefore, student learning activities are a crucial element that must be considered in the mathematics learning process. According to Wayan et al., (2020), student learning activities include eight types of activities: visual activities, oral activities, listening activities, writing activities, drawing activities, motor activities, mental activities, and emotional activities. These activities play a crucial role in improving the quality of learning and student learning outcomes. However, student learning activity in mathematics remains relatively low. Research conducted by Santoso & Susanah, (2019) showed that low student learning activity is evident in the lack of student engagement during the learning process. Another study by Nurhafsari & Sabandar, (2018) also found that student activity remains low, especially in participating in classroom learning.

These problems were also identified based on observations conducted on July 30–31, 2025, at SMK Negeri 2 Bukittinggi. The observations indicated that the mathematics learning activity of 10th-grade Hospitality students was still relatively low. Teachers appeared more active than the students. Students participated less in asking questions and providing responses, lacked initiative in taking notes and completing exercises, and lacked focus during the lesson. Furthermore, some students displayed a lack of enthusiasm, frequently leaving class, and lacked responsibility in completing assignments, creating a less conducive learning environment. Interviews with the mathematics teacher, Reni Febrianti, on July 31, 2025, indicated that students tended to be passive, easily bored, and unenthusiastic about participating in mathematics lessons. Interviews with several students also revealed that they perceived mathematics as a difficult subject and that the learning process was uninteresting. To strengthen the results of observations, interviews, and literature studies regarding student learning activities, the researchers used a questionnaire as a data collection instrument. The questionnaire data obtained was then analyzed to determine the level of student learning activity. The questionnaire results are presented as follows.

Tabel 1. Hasil Angket Aktivitas Belajar Matematika Siswa Kelas X Perhotelan SMKN 2 Bukittinggi

Criteria	Class			Amount	Precentage
	Hotel 1	Hotel 2	Hotel 3		
High	0	0	0	0	0
Medium	6	7	12	25	26,88%
Low	25	23	20	68	73,12%
Very Low	0	0	0	0	0
Total	31	30	32	93	100%

This data was supported by a questionnaire on the mathematics learning activities of 10th-grade Hospitality students, which showed that of the 93 students, 73.12% were in the low learning activity category and 26.88% were in the moderate category. There were no students in the high category. This data indicates that the majority of students are not optimally engaged in mathematics learning, whether through asking questions, discussing, expressing opinions, or completing assignments. This low level of student learning engagement needs to be addressed immediately through the implementation of learning models that encourage active student involvement in the learning process. One alternative learning model that can be used is cooperative learning. Cooperative learning involves students working together in small, heterogeneous groups to achieve shared learning goals. Through cooperative learning, students can improve social interaction, cooperation, and learning activities throughout the learning process.

One type of cooperative learning that can be implemented is the Quick On The Draw cooperative learning model. This model prioritizes student activity in searching for, answering, and reporting information through games that lead to intergroup competition (Kisshella & FH, 2026). According to Setiawati & Hilmiyati, (2017), Quick On The Draw can be used in various subjects, including mathematics, because it creates an active and enjoyable learning environment. This model also provides opportunities for students to work together, think quickly, and actively participate in completing group assignments (Sari et al., 2025). Several previous studies have shown that the Quick On The Draw model has a positive impact on mathematics learning. Maimunah & Nasution, (2018) research demonstrated that implementing the Quick On The Draw strategy can increase student engagement in mathematics learning. Another study by Ahzan et al., (2024) showed that cooperative learning with Quick On The Draw activities can improve students' independence in mathematics learning. Furthermore, Nurlina et al., (2021) research found

that the Quick On The Draw model has an impact on students' mathematical knowledge competencies.

However, research on the effect of the Quick On The Draw cooperative learning model on students' mathematics learning activities at the vocational high school level, particularly among 10th-grade hospitality students, is still limited. Most previous research has focused on learning outcomes, creative thinking skills, or understanding of mathematical concepts at the junior high and elementary school levels. Therefore, this study is novel because it focuses on vocational high school students' mathematics learning activities through the implementation of the Quick On The Draw cooperative learning model. This research is important because learning activities are a crucial factor in successful mathematics learning. Through the implementation of an appropriate learning model, it is hoped that students will be more active, enthusiastic, and directly involved in the learning process. Furthermore, this research is expected to provide an alternative solution for teachers in creating more engaging, interactive, and student-centered mathematics learning. Therefore, this study aims to determine the effect of the Quick On The Draw cooperative learning model on the mathematics learning activities of 10th-grade hospitality students at SMK Negeri 2 Bukittinggi.

METHODS

This study used a quantitative approach with an experimental approach. The purpose of this study was to determine the effect of the Quick-On-The-Draw cooperative learning model on the mathematics learning activities of tenth-grade students at SMK Negeri 2 Bukittinggi in the 2025/2026 academic year. The research design used a Pre-Experimental Design with the Static Group Comparison Design. The study involved two classes: an experimental class and a control class. The experimental class was given treatment in the form of the Quick-On-The-Draw cooperative learning model, while the control class used conventional learning. The study population was all tenth-grade students at SMK Negeri 2 Bukittinggi, consisting of three classes with a total of 97 students.

Sampling was conducted using the Simple Random Sampling technique. The samples in this study were class X Hotel 2 as the experimental class and class X Hotel 1 as the control class. Data collection used a questionnaire on student mathematics learning activities with a Likert scale compiled based on learning activity indicators according to

Paul B. Diedrich. The data analysis technique used the Independent Sample t-test after first conducting prerequisite tests such as normality and homogeneity tests. The normality test was conducted using the Liliefors test and showed that the data for both classes were normally distributed, while the homogeneity test using the F-test showed that both classes had homogeneous variances. Data analysis was also performed using SPSS software to strengthen the results of manual calculations with a significance level of 0.05.

RESULTS

Research Results

Based on the data collection results, an overview of the research findings was obtained. The data was processed based on the results of the questionnaire completed by students, collected using a data collection tool. The post-test questionnaire was obtained in the experimental class, which used the Quick On The Draw learning model, and the post-test questionnaire was obtained in the control class, which used the Conventional learning model. The post-test data on student learning activities in mathematics are summarized in the table below:

Table 2. Description of post-test learning activity data

Class	Mean	S	Max	Min	P	K
Experiment	129,42	12,64	164	110	76,129	High
Control	122,84	12,897	149	104	72,258	Medium

The table shows that the students' scores after the learning process differed from the two classes with the highest scores. The class implementing the Quick-On-The-Draw cooperative learning model had the highest score of 164 with a lowest score of 110, and the control class had the highest score of 149 with a lowest score of 104. In the table above, the Quick-On-The-Draw cooperative learning model had the highest average score of 129.42, while the control class had the lowest average score of 122.84. The highest Std. deviation for the group was in the control class, at 12.897, and the lowest Std. deviation was in the Quick-On-The-Draw cooperative learning model, at 12.64. The following prerequisite tests were analyzed:

a. Normality Test

The normality test is conducted to determine whether the analyzed data is normally distributed. If the data is normally distributed, it can be processed using the t-test statistic. The normality test uses SPSS software to compare the calculation results. Data is

considered normally distributed if the sig value is > α = 0.05 and abnormal if otherwise. The results of the normality test using SPSS software can be seen in the following table:

Table 3. Results of the Normality Test of the Mathematics Learning Activity Questionnaire Scores for Sample Class Students Using SPSS Software

Kelas	α	Sig	Keterangan
Hotel.2(Experiment)	0,05	0,200	Normally distributed data
Hotel.1(Control)		0,200	Normally distributed data

Based on Table 3, the sig < a value is obtained, thus it can be concluded that the sample is normally distributed, both in the experimental and control classes.

b. Homogeneity Test

After the level of normality of the data was determined, a homogeneity test was conducted. The data was then analyzed using the homogeneity of variance test for both samples. The results of the posttest homogeneity test are as follows:

Table 4. Results of the Homogeneity Test of the Mathematics Learning Activity Questionnaire Scores of Students in the Sample Class Using the F Test

α	Sig	Information
0,05	0,95	Homogeneous variance

After calculating the homogeneity test using SPSS software, the sig value was obtained = 0.95, which is greater than 0.05. It can be concluded that the sample has a homogeneous variance. The hypothesis test in this study was a t-test. The t-test used was an independent sample t-test. This test is used to determine the difference in the means of two independent data groups. The results of the hypothesis test on student learning activities in this study are as follows:

Table 5. Results of the Hypothesis Test on Student Mathematics Learning Activities in the Sample Class

Class	N	$\bar{X}$	t	$t_{0,05;61}$	α
Experiment	31	129,42	2,0479	1,6741	0,05
Control	32	122,84			

Based on table 5, the results of the analysis show that at a significance level of 0.05, t = 2.0479 and $t_{((0.05;61))}$ = 1.6741 are obtained, which means that $t_{count} > t_{((0.05,53))}$, namely 2.0479 > 1.6741, with the testing criteria if $t_{count} > t_{table}$ then H_0 is rejected. Thus, it means that H_1 is accepted, so it can be concluded that the mathematics learning activities of

students who participate in Quick On The Draw learning are better than the learning activities of students who participate in conventional learning.

DISCUSSION

Based on the research results, it was found that the mathematics learning activities of students who participated in the Quick On The Draw cooperative learning model were better than those who participated in conventional learning. This was evident from the average learning activity score of 129.42 for students in the experimental class, which was higher than the 122.84 for the control class. Furthermore, the results of the hypothesis test using the t-test showed that $t_{calculated}$ = 2.0479 was greater than tt_{able} = 1.67, thus H_0 was rejected. The analysis results using SPSS also showed a significance value of 0.045, which is less than 0.05. Thus, it can be concluded that the Quick On The Draw cooperative learning model had a positive effect on the mathematics learning activities of 10th-grade students in Hospitality at SMK Negeri 2 Bukittinggi in the 2025/2026 academic year.

The increase in student learning activities in the experimental class occurred because the Quick On The Draw model provided opportunities for students to be actively involved during the learning process. In its application, students work together in groups, discuss, find answers, and compete to solve problems quickly and accurately. These activities make students not only act as recipients of information, but also as active subjects in learning (Abdullah, 2017). This condition is in line with the opinion Ayuwanti, (2016) who stated that cooperative learning can improve students' learning activities and social interactions. In addition, Rosmaini et al., (2018) stated that the Quick On The Draw model can improve learning activities because it provides opportunities for students to actively participate, work together, and foster a sense of responsibility in completing group assignments.

The results of this study are also supported by learning theory, which states that learning will be more meaningful if students are directly involved in the learning process. Rosidah, (2018) states that activity is a crucial principle in learning because learning is essentially about doing (learning by doing). Through the Quick On The Draw model, students are trained to be visually, verbally, mentally, and emotionally active throughout the learning process. This activity is evident when students discuss, express opinions, answer questions, write answers, and collaborate in groups to win games. Active and enjoyable

learning environments make students more enthusiastic about participating in mathematics learning compared to conventional learning, which tends to be teacher-centered.

These research findings are relevant to several previous studies. Research conducted by Siregar et al., (2023) showed that implementing the Quick On The Draw strategy can improve students' mathematics learning activities because students are more active in discussions and solving problems in groups. Research Ariawan, (2017) also showed that cooperative learning with Quick On The Draw activities can increase student independence and engagement in mathematics learning. Furthermore, research Putra et al., (2020) found that the Quick On The Draw model positively impacted students' mathematical knowledge competency by creating an active and competitive learning environment. These findings reinforce the findings of this study, which demonstrate that the Quick On The Draw model is effective in enhancing students' mathematics learning activities.

This research has important implications for mathematics learning in schools, particularly at the vocational high school level. Implementing the Quick On The Draw cooperative learning model can be an alternative for teachers in creating more interactive, enjoyable, and student-centered learning. This model not only enhances student learning activities but also fosters collaboration, communication, responsibility, and the courage to express opinions. With increased student learning activities, it is hoped that the mathematics learning process will become more effective and improve the overall quality of learning.

However, this research still has several limitations. During the implementation of the study, the researcher encountered several obstacles. Some students complained when grouping, wanting to choose their own groups. Furthermore, during discussions, some students with active or kinesthetic learning styles tended to move to other groups after completing assignments, making the classroom atmosphere less conducive. This research was also limited to one school and only conducted with 10th-grade Hospitality students over a relatively short period of three meetings. Therefore, the results cannot be broadly generalized to all levels or with different student characteristics. It is hoped that further research can be conducted with a larger sample size, a longer research period, and to examine the influence of the Quick On The Draw model on other variables such as learning outcomes, problem-solving abilities, or students' critical thinking abilities.

CONCLUSION

Summary of Research Results

Based on the research results and discussion, it can be concluded that the Quick On The Draw cooperative learning model has a positive effect on the mathematics learning activities of class X Hospitality students at SMK Negeri 2 Bukittinggi in the 2025/2026 academic year. This is indicated by the higher average mathematics learning activity score of the experimental class compared to the control class, namely 129.42 > 122.84. Furthermore, the results of the hypothesis testing using the t-test showed that t = 2.0479 was greater than t = 1.67, and the results of the SPSS test obtained a significance value of 0.045 < 0.05. Thus, it can be concluded that the learning activities of students participating in the Quick On The Draw cooperative learning model are better than those participating in conventional learning. The application of the Quick On The Draw model can create an active and enjoyable learning atmosphere and encourage students to be more involved in the mathematics learning process through group work, discussions, and activities such as answering questions quickly and accurately.

Contribution to Science

This research provides theoretical and practical contributions to the field of mathematics education. Theoretically, this research strengthens the study on the effectiveness of the Quick On The Draw cooperative learning model in improving students' mathematics learning activities, especially at the vocational high school level. This research also adds to the research references related to cooperative learning that is oriented towards active student involvement in the learning process. Practically, this research can be an alternative for mathematics teachers in choosing a more innovative and student-centered learning model to improve learning activities in the classroom. In addition, the results of this study can be used as a consideration for schools in creating more interactive, enjoyable learning that is able to increase student participation during the learning process.

Recommendations for Further Research

Based on the research findings, the researcher offers several recommendations for further research. First, further research is expected to be conducted with a larger sample size and at different educational levels so that the results can be more broadly generalized. Second, further research can develop the application of the Quick On The Draw model to different mathematics materials or other subjects to examine the model's effectiveness in

greater depth. Third, further research is expected to not only examine student learning activities but also examine the effect of the Quick On The Draw model on critical thinking skills, problem-solving abilities, learning outcomes, creativity, and student learning motivation. Furthermore, further research can also combine the Quick On The Draw model with learning media or digital technology to make the learning process more engaging and in line with 21st-century learning developments.

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