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Application of cooperative learning type *Quick on the Draw* on buffer solution material to improve learning outcomes of Class XI students

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Abstract: this study aims to determine student learning outcomes, determine the effectiveness and know the response of students to the cooperative learning model type *quick on the draw* on the buffer solution material. Samples from this study were students of Class XI MIPA 3 by using *simple random sampling*. Metode yang digunakan yaitu quasi eksperimen dengan *Design Randomized Control Group Pretest-Posttest.* From hasi LTHE study obtained that the learning outcomes of students who were taught using cooperative learning model type *quick on the draw* on the buffer solution material obtained an average of 79.68 while the control class 77.42 with the completeness of learning outcomes based on the value of KKM as much as 83.9% for the experimental class and 61.74% for the control class. .Based on the analysis of the value of N-gain obtained that the learning model *quick on the draw* is effectively used in the buffer solution material, this is because the value of N-gain experimental class that reaches a high category of 35% while the control Class of 19%. The results of the analysis of student response questionnaire known as 68% of students said they were very interested in the learning model *quick on the draw* because learning becomes more fun, and 87% of students are very motivated in learning.

Kata kunci: Hasil Belajar, Quick On The Draw, dan Larutan Penyangga.

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▪ INTRODUCTION

Education is a conscious effort to train learners through learning activities. Ini sesuai dengan yang dikemukakan oleh (Rina, 2018), pendidikan merupakan salah satu teknik dalam rencana mempengaruhi peserta didik agar dapat menempatkan pribadinya selayak mungkin dengan lingkungan sekitarnya, maka dengan begitu akan dapat mencetuskan transformasi terhadap dirinya sendiri yang memungkinkan supaya bermanfaat dalam kehidupan masyarakat dan sekitarnya. The purpose of education in schools is to change students so that they can have knowledge, skills and learning attitudes as a form of learning behavior change, so that educational goals can be achieved.

One of the subjects taught to high school students/equivalent is chemistry. Learning chemistry is not just memorizing, but also requires a good understanding because of the abstract nature of chemistry. One of the goals that must be achieved in learning chemistry is for students to have knowledge and be able to relate it to the chemical concepts they learn. Menurut Syamsiyah (2022), fungsi dan tujuan pembelajaran kimia adalah untuk mewujudkan siswa yang menguasai konsep-konsep kimia dan menerapkannya dalam upaya memecahkan masalah-masalah yang berhubungan dengan IPTEK dan dalam kehidupan sehari-hari di masyarakat. Learning chemistry will be more meaningful if the learning process can include student activities. Innovation is also needed during learning so that the teaching and learning process runs smoothly. Learning is a series of activities both physical and psychological that lead to changes in behavior.

Based on discussions conducted with chemistry teachers at SMA Negeri 03 Bombana, it is known that the learning model used in Class XI in Chemistry subjects is *the discovery learning learning model*. However, there are several problems that teachers often face, one of which is low student activity. Low student activity will certainly have an impact on student learning outcomes. In the 2022/2023 academic year, the average value of the mid-semester test (UTS) in Class XI MIPA consisting of 3 classes, with the percentage of students who reached KKM (75) at 14.43% and students who did not reach KKM (75) at 85.6. From the discussion with the teacher of Chemistry subjects is also known that students are less active in the learning process and students do not understand the material well and easily forget the material that has been taught. As a result, they are often unable to answer the questions given by the teacher. One of the materials that require the activeness of students in Chemistry Lessons is buffer solution material. Buffer solution material is one of the chemicals that contain many complex concepts. In addition, in order to understand the buffer solution material must first understand the underlying materials, namely acid-base and chemical equilibrium.

One of the efforts made to overcome these problems is to choose an active learning model. This corresponds to that presented by (Ayu et al., 2018) efforts that can be made by teachers to overcome problems one of them is to choose an active learning model that can involve activeness so that students are motivated to follow the learning process in class. Application of the model is expected to increase the activity of students in learning. Hal serupa juga dikemukakan oleh (Fatma et al., 2020), as for some obstacles in achieving goals in the learning process may be due to the use of inappropriate learning models. One of the learning models that play a role in increasing the activeness of students during the learning process is *the Quik on the Draw type of cooperative learning model.* Menurut (Amalia et al., 2023) cooperative learning model

is a learning activity in a group way to work together to help each other construct concepts, solve problems, or inquiry. *Quik on the Draw* type of co-operative learning is one type of co-operative learning that is easy to implement involving the activities of all students without any difference*in reinforcement*. Learning activities with games students can learn more relaxed in addition to fostering responsibility, cooperation, healthy competition and learning involvement.

Model pembelajaran *Quick on the draw learning Model*, contains elements of the game in the form of speed between groups by solving questions in a set of Cards by looking for answers directly from the source material. Berdasarkan penelitian (Ayu et al., 2018), Chemistry learning by applying *the quick on the draw type of cooperative learning model* can increase the learning activities of students in Chemistry learning. Furthermore, according to Renja (2017), there is an effect of the application *of the quick on the draw learning model* on student learning outcomes on hydrocarbon subjects.

Based on the description, the researchers conducted research on the application of cooperative learning type *quick on the draw* on the material Larutan Penyangga to improve student learning outcomes in order to determine student learning outcomes, determine the effectiveness and know the response of students to the cooperative learning model type *quick on the draw* on the material buffer solution.

▪ METHOD

The population in this study were students from all students of Class XI MIPA. Targeted sampling is carried out by *Simple random sampling*, it is said to be simple because the sampling of population members is carried out randomly, without considering the strata contained in the population (Siyoto, 2015). The samples of this study are XI MIPA 3 as an experimental class and XI MIPA 1 as a control class. Jenis penelitian yang digunakan adalah quasi eksperimental dengan *Design Randomized Control Group Pretest-Posttest.* The research design is presented in Table 1.

Chart 1. *Design Randomized Control Group Pretest-Posttest*

Kelas	***Pretest***	**Perlakuan**	***Posttest***
Eksperimen	T_1	X	T_2
Kontrol	T_1	-	T_2

(Nazir, 2003).

Research instruments used in this study are the test (*pretest-postest)* and questionnaire sheet. Angket atau kuisioner adalah metode pengumpulan data yang dilakukan dengan cara memberikan seperangkat pertanyaan atau pernyataan tertulis kepada responden untuk diberikan (Mukhtazar, 2018). Tujuan penyebaran angket ialah mencari informasi yang lengkap mengenai suatu masalah dari responden tanpa mersa khawatir bila responden memberikan jawaban yang tidak sesuai dengan kenyataan dalam pengisian daftar pertanyaan (Sudaryono, 2016). Dan menurut (Susilawati, 2018), tes adalah alat untuk memperoleh informasi, bisa berupa seperangkat butir atau pertanyaan-pertanyaan yang dibuat untuk mengukur kemampuan siswa dengan syarat-syarat tertentu.

The questionnaire used in this study is a likert scale. Where on this scale students respond to questions by choosing:

SS : totally agree : 4

S : Agree : 3
TS : disagree : 2
STS : strongly disagree : 1
(Rijal, 2018).

The teaching and learning process is said to be liked and disliked by students if the responses and responses given by students to a criterion by matching the results of the percentage with several categories of existing criteria (Table 2).

Table 2. Student response categories

Percentage (100%)	**rating**
category	91-100 very interested
61-90	interested
41-60	moderately interested
11-40	little interested
0-1	not interested

(Kriani, 2019).

Data analysis techniques used are descriptive and *inferential analysis*.

N-gain Data analysis

To see the N-gain level criteria can be seen in Table 3.

Table 3. N-Gain value and Classification

Average normalized N-gain	classification
N-gain < 0.3	low
0.3 ⓖ N – gain < 0.7	medium
N-gain 0.7	high

(Supiana, et. al., 2019).

▪ RESULT AND DISCUSSION

From the results of data analysis of student learning outcomes experimental classes and control classes taught using *the quick on the draw learning model* presented in Table 4.

Table 4. Data Hasil Belajar Siswa Kelas Eksperimen dan Kelas Kontrol

Parameter Statistik	***Postest***	***Postest***
	Eksperimen	**Kontrol**
Minimum	60.0	30.0
Maksimum	95.0	90.0
Mean	79.68	77.42
Median	80.0	80.0
Mode	75.0	85.0
Range	35.0	60.0
Std. Deviation	9.40	8.35

From the results of descriptive statistical analysis used to determine the achievement of student learning outcomes in experimental and control classes. Based On Table 4. it is known that the average value *posttest*of the experimental class posttest learning outcomes of 79.68, while the increase *posttest*in the control class posttest learning outcomes of 77.42, this shows that the average value between the experimental class and the control class is not much different. However, the value that often appears in the control class is 85 and the experimental class is 75, but not evenly distributed throughout the students. This is seen from the analysis of the completeness of student

learning outcomes that refer to the KKM obtained that students who reach the value of 75 as many as 26 people in the experimental class and control class as many as 21 people. Menurut (Habibah et al., 2022), this value has been achieved if it meets the minimum completeness criteria (KKM) of 75 in Chemistry learning.

The percentage of completeness of learning outcomes of students in experimental and control classes can be seen in Table 5.

Table 5. Percentage of student learning outcomes

Nilai	Model *Quick On The Draw*	Model *Discovery Learning*
≥ 75 (Tuntas)	26 orang (83,9%)	21 orang (61,74)
< 75 (Tidak Tuntas)	5 orang (16,1%)	10 orang (32,3%)

Based On Table 5. from the data the percentage of students ' learning outcomes showed that the experimental class learning outcomes higher than the control class, so it can be concluded that the application of cooperative learning model type *quick on the draw* on the buffer solution material can improve student learning outcomes. According to Alwi (2021), if learners can achieve 75% completeness then, this study has succeeded well in improving learning activities and outcomes. The learning process that takes place in the core activities by providing cards containing questions is expected to improve student learning activities.

One of the causes of improved learning outcomes is the application of learning models. The application of appropriate learning models is expected to overcome the low activity and learning outcomes of students by creating an atmosphere that causes students to be active in learning (Renja, 2017). In addition, the use *of discovery learning model* is considered effective because it can increase the active role of learners. Learning activities with games designed in cooperative learning type *quick on the draw* allows students to learn more relaxed in addition to fostering responsibility, cooperation, healthy competition and learning involvement (Ayu et al., 2018).

In the learning process of experimental classes that use *quick learning on the draw* students are very enthusiastic and actively participate in learning because the learning process contains elements of games and competitions between groups to complete a set of questions, this causes students to be enthusiastic to complete the questions given. Compared to the control class that uses *the discovery learning model*, students are actively involved in following each stage of learning. However, the interest and motivation of each group in answering the LKPD given by the teacher is considered normal, so students sometimes lack cooperation in each group.

Test Data Analysis Prerequisites

Normality Test

The results of the calculation of the normality test can be seen in Table 6.

Table 6. Uji Normalitas

	Shapiro-Wilk		
	Statistic	Df	Sig.
Pretest Experiment	.	939	.077
31.077 Experimental	Postest.947	31.129	.129
Pretest Control	.936	31.063	.063
Postest Control	.935	31	.058

Normality test data obtaineda in Table 6. it is known that the two classes tested, namely the experimental class and the control class, have significant values greater than 0.05. So it can be concluded that both classes are normally distributed.

Homogeneity Test

Homogeneity test is a prerequisite test to test whether the variance of two categories of data is the same. Menurut (Saputra et al., 2022), This test aims to determine whether the research sample has homogeneous variance or not. The results of the homogeneity test on *pretest-Postest value data are* presented in Table 7.

Table 7. Uji Homogenitas

		Levene Statistic	df1	df2	Sig.
Hasil	Based on Mean	.495	3	120	.686
	Based on Median	.467	3	120	.706
	Based on Median and with adjusted df	.467	3	113.345	.706
	Based on trimmed mean	.455	3	120	.714

Based on data from Table 7. on the value *Based on Mean* can be seen that the control class and experimental class tested has a significant value greater than 0.05. So it can be concluded that the sample used in this research group is homogeneous.

Hypothesis Test

Hypothesis testing using *Independent-sample t-test* with GIS level. (2-tailed) < 0,05 berarti tolak H_0 dan terima H_1 (Mirantika et al., 2019). The hypothesis Data can be seen in Table 8.

Table 8. Uji *Independent-Sampel T test* Nilai *Postest*

T Test	***Sig.* (2-*tailed*)**
experimental	class
0.321 control	Class 0.321

Based On Table 8. it can be seen that the value of GIS. *(2-tailed)* is smaller than 0.05, so there is a difference in the average value *posttest* of student learning outcomes posttest. So it can be concluded that there is an effect of the use of cooperative learning model type *quick on the draw* on student learning outcomes.

Efektifitas Model Pembelajaran *Kooperatif Tipe Quick On The Draw* pada Materi Larutan Penyangga

The effectiveness of cooperative learning model type *quick on the draw* on buffer solution material can be known from the results of the N-Gain Test. Data acquisition of N-Gain value can be seen in Table 9.

Table 9. N-gain value

Normalized N-gain Normalized	classification	% of students	
		experimental (%)	control (%)
N-gain ⑧ 0.70	high	35.5	19.3
0.30 ⑧ N-gain < 0.70	medium	61.3	74.2

Normalized N-gain Normalized	classification	% of students	
		experimental (%)	control (%)
N-gain < 0.30	low	3.2	6.4

Based On Table 9. The value of N-gain in the experimental class for the high category is greater than the control class. While in the medium category, the percentage value of the experimental class is lower than the control class. For the low category, the percentage of the control class is higher than the experimental class. Thus, from these data it can be seen that the cooperative learning model *of quick on the draw type* on buffer solution material is effectively used.

Student response *to cooperative learning model type Quick On the Draw* on buffer solution material

The instrument used to obtain student response data is the student response questionnaire. The use of student response questionnaire aims to determine the response or responses of students to *the application of the quick on the draw learning model* on buffer solution material. The existence of a questionnaire of satisfaction of learners in a learning activity, it can be believed that effective learning activities can be achieved (Ena et al., 2022). The results of the analysis of student responses to the implementation of chemical learning through the application of cooperative learning model type *quick on the draw* described in Table 10.

Chart 10. showed that on questions 1 and 3 listed on the questionnaire sheet where on Question 1 (cooperative learning model type *Quick On the Draw* makes learning more interesting and fun) and Question 3 (Use of cooperative learning model type *Quick on the Draw* does not make learning more interesting) are opposite each other. On Question 1 as many as 68% of students who answered "very agree" and as many as 32% of students who answered "agree". While on Question 3 as many as 58% of students who answered "strongly disagree" and 42% of students who answered "disagree". From the percentage of questions 1 and 3 it can be seen that students find learning more interesting and fun using cooperative learning type *Quick On the Draw.*

On Question 2 listed on the questionnaire sheet (*the quick on the Draw type cooperative learning model* that was implemented motivated me to be more active in learning) as many as 13% of students answered "strongly agree" and 87% of students answered "agree". While on Question 4 listed on the angkrt sheet (cooperative learning Model type *Quick On the Draw* makes me inactive in learning) as many as 58% of students who answered "strongly disagree" and 42% of students who answered "disagree". That is, students are motivated to be more active in learning by using cooperative learning type *quick on the draw.*

On Question 5 listed on the questionnaire sheet (I find it difficult in the learning process by using the cooperative learning model type *Quick On the Draw*) as many as 6% of students who answered "strongly disagree" and 93% of students who answered "disagree". While on Question 7 listed in the questionnaire (I do not feel difficulty in the learning process by using the cooperative learning model type *Quick On the Draw*) as many as 35.5% of students who answered "very agree" and 64.5% of students who answered "agree". Based on questions 5 and 7, it can be seen that students feel no difficulty in the learning process by using the cooperative learning model type *Quick On the Draw*.

In question 6 listed on the sheet (with the cooperative learning model type *Quick On the Draw* I have a high willingness to take Chemistry Lessons) as many as 16% of students who answered "strongly agree", 64% of students who answered "agree" and 16% of students who answered "disagree". This means that many students have a high willingness to follow the learning of chemistry, but there are some students still lack the high willingness to follow the learning of chemistry.

On Question 8 listed in the questionnaire sheet (I feel the buffer solution material is not interesting if using *the Quick On the Draw type cooperative model*) as many as 61% of students answered "strongly disagree" and 39% of students answered "disagree". While the 10 questions listed in the questionnaire (I feel the buffer solution material is very interesting if using *a quick on the Draw type cooperative model*) as many as 61% of students who answered "very agree" and 39% of students who answered "agree". Based on questions 8 and 10, it is known that students find the buffer solution material very interesting if they use *the Quick on the Draw type cooperative model*.

On Question 9 listed in the questionnaire sheet (I don't understand the material of buffer solution using kooperatif tipe *quick on the Draw type cooperative model*) as many as 55% of students who answered "strongly disagree", 29% of students who answered "disagree" and 16% of students who answered agreed. This means that students can understand the material of the buffer solution using kooperatif tipe *the quick on the Draw type cooperative model*, but there are some students who do not understand the material of the buffer solution using kooperatif tipe *the Quick on the Draw type cooperative model*.

Table 10. Student Response Data

No	statement	number of students			
		strongly	disagree disagree	agree	strongly agree
1	cooperative learning model type *Quick On the Draw* makes learning more interesting and fun	0%	0%	32%	68%
2	cooperative learning Model type *Quick on the Draw* implemented motivates me to be more active in learning	0%	0%	87%	13%
3	The use of cooperative learning learning model type *the use of cooperative learning model Quick on the Draw type* of learning does not make learning more interesting	48%	52%	0%	0%
4	cooperative learning model *Quick on the Draw type* makes me inactive in learning	58%	42%	0%	0%
5	I find it difficult in the learning process by using cooperative learning model *quick type On the Draw.*	6.5%	93.5%	0%	0%

No	statement	number of students			
		strongly	disagree disagree	agree	strongly agree
6	with the cooperative learning model type *Quick on the Draw* I have a high willingness to follow the lessons of Chemistry	0%	16%	68%	16%
7	I do not feel difficulty in the learning process by using the cooperative learning model type *Quick on the Draw.*	0%	0%	64.5%	35.5%
8	I feel that the buffer solution material is not interesting if using *the Quick on the Draw type cooperative model.*	61%	39%	0%	0%
9	I do not understand the material of buffer solution using kooperatif tipe *quick on the Draw type cooperative model.*	55%	29%	16%	0%
10	I find the buffer solution material very interesting if using *the quick on the Draw type cooperative model.*	0%	0%	39%	61%

▪ CONCLUSION

Based on the results and description of the discussion above, it can be concluded, based on descriptive data analysis of student learning outcomes, it is known that there is an increase in student learning outcomes by using the cooperative learning model type *quick on the draw*, this is seen from the average value of learning outcomes of 79.68 with a percentage of completeness of learning outcomes of 83.9%. Based on N-gain data, it is known that the cooperative learning model *of quick on the draw type* is effective to use, this is seen from the N-Gain value of students for the high category of 35.5% and the medium category of 61.3%.The results of student response questionnaire analysis is known to be 68% of students interested in learning model *quick on the draw* because learning becomes more fun, by 13% of students are interested in active learning, by 16% of students are interested in learning chemistry and 61% of students feel buffer solution material is very interesting if the model of cooperative learning type *quick on the draw*.

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