Advances in Social Science, Education and Humanities Research, volume 611
International Conference on Educational Studies in Mathematics (ICoESM 2021)

The Influence of MURDER Learning Model Towards Students' Activities and Achievement

Muawiah Inda Magfirah[1,*]

[1] *Mathematics Education Master's Program, Universitas Negeri Makassar, Makassar, Indonesia*
[*] *Corresponding author. Email: muawiahindahmagfirah@gmail.com*

ABSTRACT
This study aims to determine the effect of applying the MURDER collaborative model (Mood, Understand, Recall, Detect, Expand, and Review) on student achievement and activities in mathematics learning in class X. This type of research is pre-experimental with a quantitative approach. The population in this study were all students of class X SMKN 1 Makassar using a sampling technique, namely cluster random sampling. Data was collected using learning implementation observation sheets, learning achievement tests (pre-test and post-test), and student activity observation sheets. The data analysis technique used is descriptive statistical analysis and inferential statistical analysis. The results of descriptive statistical analysis showed: (1) the average implementation of MURDER collaborative learning was 3.73 (well implemented), (2) the average pre-test result was 35 (very low category). The average post-test results are 85 (high category), (3) the post-test results show that classical completeness is achieved by 94% (4) the average normalized gain is 0.77 (high category), (5) the average percentage of activity students by 90% (very active). The results of inferential statistical analysis showed: (1) the average value of students taught using the MURDER collaborative model was greater than 70, (2) the average value of normalized gain was greater than 0.3 (medium category), (3) the average classical completeness was greater than 80%. In general, it can be concluded that the application of the MURDER collaborative model affects student achievement and student activities in class X mathematics learning.

Keywords: *Learning Achievement, Activities, MURDER Collaborative Model.*

1. INTRODUCTION

The learning model is a learning activity that follows a particular learning pattern or steps (syntax), which must be applied by the teacher so that the competencies or learning objectives are expected to be achieved quickly, effectively, and efficiently [1]. The way teachers teach should be according to how students learn [2]. So the teacher should choose a suitable learning model so that the learning process goes well. If the teacher is not precise in selecting the learning model, it will affect the activeness of students in the teaching and learning process, which results in low student achievement.

Teachers need to encourage students to be more active during the learning process. This can be done by creating a more pleasant classroom atmosphere to arouse students' enthusiasm for learning. The mood of students is also one of the factors that will increase their enthusiasm for learning. Therefore, teachers should use a model to overcome this. One suitable model is the MURDER collaborative model.

MURDER combines words from Mood, Understand, Recall, Detect, Expand, and Review. MURDER builds a pleasant learning atmosphere so that it helps students to follow the learning process. If a friendly learning atmosphere has been created, the enthusiasm for learning will grow, and it will be easier to achieve learning objectives. MURDER also helps students remember and understand what they have read and can help the teaching and learning process in the classroom.

This research is supported by several related studies conducted previously and researched on the MURDER collaborative model that affects students' ability to understand mathematical concepts. The results show that the ability to understand mathematical concepts of students taught with MURDER learning is higher than students taught using conventional learning [3]. The effect of MURDER learning based on interactive flash media on critical thinking skills. The results show that the MURDER model has a significant positive impact on students' critical thinking skills [4].

This study focuses on student achievement and activities. The purpose of this study is to determine whether there is an effect of the MURDER collaborative model on learning achievement and student activities in learning mathematics. The research subjects were students of class X SMK. Subjects were given math problems to reveal student achievement. The math problem given is a matrix problem.

2. LITERATURE REVIEW

The learning model is a systematic procedure or pattern used as a guide to achieving learning objectives. Strategies, techniques, methods, materials, media, and learning assessment tools [5]. Many learning models can improve student achievement and activity, one of which is the MURDER collaborative model. MURDER model emphasizes the ability of students to reconstruct information and ideas received, understand them, which are then communicated orally or in writing [6]. MURDER model is one of the learning models that can build student motivation and increase the depth and breadth of students' thinking [7]. The MURDER model stands for mood, understanding, recall, detect, expand and review.

2.1. Mood

The first step in the MURDER phase is to set a good mood to start learning. If you start with a positive mood, then learning will feel easy. The realm of mood is divided into two [8], namely:

- Optimism, namely the ability to maintain a realistic positive attitude, especially in the face of difficult times. In a broad sense, optimism means the ability to see the bright side of life and maintain a positive attitude, even when in trouble. Optimism assumes there is hope in the way people face life.
- Happiness is the ability to be grateful for life, like oneself and others, and be passionate and passionate about doing every activity. In a broader sense, happiness means the ability to be content with our lives, be happy alone and with others, and have fun.

Therefore, it is necessary to strive so that the learning process is an enjoyable process that can be done, firstly, by arranging an attractive room, namely choosing elements of health, secondly, through lively and varied management, namely by using learning patterns and models, media and resources [9]. In this step, students are invited to relax, aiming to set the mood before learning begins. This can be done by providing a kind of games and motivation for students.

2.2. Understand

Understanding is the process of thinking, learning, and mastering certain things. According to Carin & Sund, Understanding is the ability to explain and interpret something, which means that someone who has understood something or has gained an understanding will be able to explain or explain again what he has received [10]. In this step, the teacher divides students into groups with homogeneous abilities, and then students are invited to read and understand the material provided by the teacher. Each student reads the passage quietly.

2.3. Recall

A recall is an active effort to enter information into long-term memory. Recall a work that has been learned will increase students' ability to remember [11]. The recall is that immediately stop after studying one material in a subject. After that, repeat discussing the lesson material in the student's words. The simplest way of recall is simply to recall aloud or slowly the information we want to memorize; more complex materials require complex recall strategies, such as underlining key ideas and taking notes [12]. Based on this description, it can be concluded that Recall is an activity to recall information that has been previously obtained from students. In this step, students are invited to remember the material without looking at the reading. Each group member will orally convey their understanding with their group mates.

2.4. Detect

Detect is a process, method, act of finding or finding. The success of a teaching process is measured by the extent to which students can master a subject matter delivered by the teacher [13]. To master the material, students are not only guided by one book because various sources can gain knowledge. In this process, students are required to find a problem that is considered difficult or not understood. After that, students must find their solutions in various ways. If the student does not understand, the student can ask questions with the group or the teacher's help.

2.5. Expand

Expand is a step where students collaborate on prior knowledge and new knowledge so that the development of thinking skills will emerge with the "why" questions themselves to answer questions that will be seen when students practice developing their thinking skills [4]. At this stage, students are required to expand the material that has been mastered by working on the questions given by the teacher because, with the expansion, students will get more information. From the information obtained, students are expected to develop concepts and relate them to other situations based on fundamental concepts in a particular material.

2.6. Review

Review is to re-learn the material that has been studied. Information obtained or previously obtained materials can be retrieved or recalled for specific purposes [14]. A learning process would take place

effectively if the information learned can be remembered well and avoid forgetting. Therefore, the relearning process is a step to understanding the material better. It is not easy to forget. Students are more stable and confident to continue to the next material because they already know the previous material. In this step, each group presents and concludes the results of the discussions that have been obtained.

The MURDER collaborative model has advantages [13], namely:

a. Creating a pleasant learning atmosphere.

b. Assist students in developing an effective and efficient learning system.

c. Support student activity.

In addition, there are several weaknesses of the MURDER collaborative model [15], namely:

a. Teachers have difficulty organizing students in class.

b. Learners with less knowledge are difficult to be actively involved in the learning process, so the teacher performs heterogeneous grouping with the aim that students with more abilities can help students with fewer abilities.

c. It takes a long time to learn the learning process.

Several studies have examined the MURDER collaborative model and the effect of the MURDER model on students' ability to understand mathematical concepts. From this study, the average value of the test results for understanding concepts taught using the MURDER model is 76.00. While the average value of the test results of the ability to understand concepts taught by conventional learning is 66.17. So it can be concluded that the MURDER model is significantly more influential than the conventional model [3].

3. RESEARCH METHOD

The type of research used is pre-experimental research with a research design of One Group – Pre-test Post-test Design.

Table 1. Research Design One Group – Pre-test Post-test Design [16]

Pretest	Treatment	Posttest
O_1	X	O_2

This research was conducted in one of the Vocational High Schools in Makassar City. The sample of this study consisted of 35 students using the Cluster Random Sampling Technique. The independent variable in this study was the MURDER collaborative model. While the dependent variable is learning achievement and student activity.

Data collection techniques were carried out by giving tests and filling out observation sheets. The instruments developed were learning achievement tests (pre-test and post-test), learning implementation observation sheets, and student activity observations. Two validators have validated the instrument.

The data analysis used in this research is descriptive statistical analysis and inferential statistical analysis. Descriptive statistical analysis was used to describe the values of pre-test, post-test, normalized gain, and activity. Inferential statistical analysis was used to test the post-test hypothesis and normalized gain. But before that, a prerequisite test was carried out, namely the normality test. The hypothesis in this study is the average student achievement for (post-test) 70, normalized gain value 0.3, and classical completeness 80%. As for student activity, 76%.

4. RESULTS AND DISCUSSION

The research was carried out with 6 meetings, 1 meeting giving the pre-test, 1 meeting passing the post-test, and 4 meetings giving the MURDER collaborative model. The pre-test is an initial test given before learning is carried out. Meanwhile, the post-test is the final test after the learning is carried out. In addition, during the learning process, the learning implementation observation sheet and student activity observation sheets were filled out.

4.1. MURDER Model Implementation

Table 2. Recapitulation of Observation Results of Learning Implementation

Phase	Meeting				Average	Category
	1	2	3	4		
Preliminary	3.4	3.6	3.8	4	3.7	Well
Core activities	3.75	4	3.83	3.75	3.83	Well
Closing	3.5	3.75	3.5	4	3.68	Well
Average	3.55	3.78	3.71	3.91	3.74	Well

Table 2 shows that in the preliminary phase, each meeting increased from the first meeting 3,4 to the last meeting 4. Students were getting used to the preliminary stage, namely the mood where the teacher gave games to feel comfortable learning. The overall average score of learning implementation is 3.74 (well implemented).

4.2. Achievement Learning Students

4.2.1. Descriptive Analysis

Table 3 shows that the average student achievement score before applying the MURDER collaborative model is 35, with an ideal score of 100. In other words, the average score indicates that the student's pre-test is still very low. The scores achieved by students are spread

from the lowest score of 10 to the highest score of 60, with A range of 50.

Table 3. Recapitulation of Student Pretest Scores

Statistics	Mark
Sample Size	35
Average	35
Median	40
Mode	20
Standard Deviation	16.9
Variance	284.5
Score range	50
Lowest score	10
Highest score	60

Table 4. Distribution and Percentage of Student Pretest Scores

Rated students	Category	Frequency	Percentage (%)
90-100	Very high	0	0
80-89	High	0	0
65-79	Currently	0	0
55-64	Low	5	14.3
0-54	Very low	30	85.7
Amount		35	100%

Table 4 shows that 100% of students' classical mastery does not meet individual mastery. This can be seen from the students' scores which are only in the range (0-54) and (55-64). Thus, the average score of student learning achievement before being taught the MURDER collaborative model is in the "very low" category.

Table 5. Recapitulation Value posttest Student

Statistics	Mark
Sample Size	35
Average	85
Median	90
Mode	90
Standard Deviation	12.4
Variance	154.9
Score range	40
Minimum	60
Maximum	100

Table 5 shows that the average score of student learning achievement after applying the MURDER collaborative model is 85, with an ideal score of 100. The average score is in the high category. This can be seen from the highest score of 100, with a value that often appears 90, which means that most students understood the material being taught.

Table 6 shows that classical completeness is fulfilled, with 94.3% of students achieving individual mastery. The value of 94.3 was obtained from the percentage of very high, high, and medium categories. Thus, it can be concluded that the average score of student achievement after being taught using the collaborative model is MURDER in the "very high" category.

Table 6. Distribution and Percentage of Student Posttest Scores

Rated students	Category	Frequency	Percentage (%)
90-100	Very high	18	51.4
80-89	High	8	22.9
65-79	Currently	7	20
55-64	Low	2	5.7
0-54	Very low	0	0
Amount		35	100%

Table 7 shows that the taught class has an average increase in learning achievement of 0.77 with a pre-test average of 35 and an average post-test of 85. The average increase in student achievement shows an increase from very low to high. Mode 1 means that most students experience an increase in learning mathematics after applying the MURDER model.

Table 7. Recapitulation of Student Achievement Improvement

Statistics	Mark
Sample Size	35
Average	0.77
Median	0.77
Mode	1
Standard Deviation	0.18
Variance	0.03
Score range	0.60
Minimum	0.4
Maximum	1

Table 8. Classification of Normalized Gain in Classes Taught Using the MURDER Collaborative Model

Normalized Gain Coefficient	Total students	Percentage	Classification
$g < 0{,}3$	0	0%	Low
$0{,}3 \leq g < 0{,}7$	12	34%	Currently
$g \geq 0{,}7$	23	66%	High
Sum	35	100%	
Average	0.77		High

Table 8 shows 12 students or 34% in the medium category and 23 students or 66% in the high category. None of the students were in a low category. Based on the average student pre-test, the average increase in student achievement is calculated by the normalized gain formula of 0.77. This means that the increase in student achievement taught using the MURDER collaborative model is high.

4.2.2. Inferential Analysis

In the inferential analysis, based on the normality test for the students' post-test, p-value > was 0.302 > 0.05. The increase (gain value) of students is obtained by p-

value >, i.e. 0.065 > 0.05. This shows that the post-test result data and the increased data (gain value) come from a normally distributed population.

Furthermore, hypothesis testing is carried out:

Table 9. One Sample t-test Results Posttest

	Test Value = 70		
	T	**Df**	**Sig. (2-tailed)**
Posttest	6,925	34	0,000

Table 9 shows that Sig. (2-tailed) for the post-test data is 0.000. If = 0.05 is used, then p-value < is obtained. This means that the average student learning outcomes (post-test) after applying the MURDER collaborative model is greater than or equal to 70.

Table 10. One-Sample T-Test Results Normalized Gain

	Test Value = 0,3		
	T	**Df**	**Sig. (2-tailed)**
Normalized gain	15,391	34	0,000

Table 10 shows that Sig. (2-tailed) for the normalized gain, the data is 0.000. If α = 0.05 is used, then ρvalue $<$ $is\ obtained$. This means that the post-test average score is higher than the average pre-test score (the average normalized gain exceeds 0.3).

Table 11. Classical Completeness Z-Test Statistics

	Z count	**Z table**
Classical Completeness	2.07	1.96

Table 11 shows that Z_{count} =2.07 and Z_{table}=1.96 then obtained $Z_{count} > Z_{table}$. This indicates that students achieve mastery learning using the MURDER collaborative model classically greater than or equal to 80%.

4.3. Student Activities

Table 12 shows that aspect 7 is in the moderately active category, and most of the other aspects are in the active and very active category. This happens because students are used to MURDER activities. Furthermore, the average percentage for all meetings is 90% (very active). Where the average percentage of student activity is greater than 76%

Table 12. Recapitulation of Student Activity Observation Results

Observed aspects	**The average score of student activity per meeting**				**Average**	**Percentage Per Aspect**	**Category**
	1	**2**	**3**	**4**			
1	4	4	4	4	4	100%	Very active
2	4	4	4	4	4	100%	Very active
3	2	4	4	3	3.25	81%	Active
4	3	4	4	4	3.75	94%	Very active
5	3	3	4	4	3.5	88%	Very active
6	3	3	4	4	3.5	88%	Very active
7	3	3	3	3	3	75%	Active Enough
8	4	4	3	4	3.75	94%	Very active
9	3	3	3	4	3.25	81%	Active
10	4	3	4	4	3.75	94%	Very active
11	3	4	3	3	3.25	81%	Active
12	3	4	3	3	3.25	81%	Active
13	4	4	4	4	4	100%	Very active
14	4	4	4	4	4	100%	Very active
Average	3.35	3.64	3.64	3.71	3.58	90%	Very active
Meeting Percentage	84%	91%	91%	93%	90%		Very active

5. CONCLUSION

The conclusion obtained from this study is that the MURDER collaborative model affects learning achievement, student activities in mathematics learning in class X. This can be seen from students' mathematics learning achievement after being taught using the MURDER collaborative model, which shows that the average score is 85 from a minimum score of 70. As many as 94.3% of students achieved individual mastery, meaning that classical learning mastery was achieved. And the average score of students' normalized gain is 0.77 (high). In addition, the average score of student activity is 90% (very active).

There are still some interesting things that can be further researched. This study only measures two variables. The dependent variable is the MURDER model, and the independent variable is learning achievement and activity. Other variables that can be developed are critical thinking skills and problem-solving. In addition, it can be applied to other learning materials as further research in this study.

REFERENCES

[1] A. Suyitno, Dasar-dasar dan Proses Pembelajaran Matematika I. Semarang: Universitas Negeri Semarang, 2011.

[2] Warli, & Fadiana, M. (n.d.). Math Learning Model That Accommodates Cognitive Style to Build Problem-Solving Skill. *Higher Education Studies*, *5*(4). DOI:10.5539/hes.v5n4p86

[3] R. Elnanda, Pengaruh Model Pembelajaran Collaborative MURDER Terhadap Kemampuan Pemahaman Konsep Matematika Siswa (Skripsi). Universitas Islam Negeri Syarif Hidayahtullah Jakarta, Tangerang, 2014.

[4] P. W. Mayangsari, Suratno, & B. Wahono, Pengaruh Stategi Pembelajaran MURDER (Mood, Understand, Recall, Digest, Expand, Review) Berbasis Interaktif Flash Terhadap Kemampuan Berpikir Kritis, Metakognisi Dan Pencapaian Hasil Belajar Siswa. Jurnal Edukasi UNEJ, (Online) 2(2) (2005)

[5] M. Afandi, E. Chamalah, & O. P. Wardani, Model dan Metode Pembelajaran di Sekolah. Semarang, Unissula Press, 2013.

[6] I. N. Berata, Pengaruh Model Cooperative Learning Type MURDER with Metacognitive Scaffolding (CLMMS) Terhadap Hasil Belajar, 2013

[7] Darmika, Pengaruh Model Pembelajaran Kooperatif MURDER Terhadap Motivasi Belajar dan Prestasi Belajar. E-jurnal Program Pascasarjana Universitas Pendidikan Ganesha,4, 2014.

[8] H. B. Uno, Orientasi Baru Dalam Psikologi Pembelajaran. Jakarta, PT Bumi Aksara, 2006.

[9] W. Sanjaya, Strategi Pembelajaran Berorientasi Standart Proses Pendidikan. Jakarta: Kencana Prenada Media, 2006.

[10] A. Susanto, Teori Belajar dan Pembelajaran di Sekolah Dasar. Jakarta, Kencana Prenada Media Group, 2013.

[11] Isran, & Hidayati, Pengaruh Model Pembelajaran MURDER (Mood, Understand, Recall, Digest, Expand, Review) terhadap Hasil Belajar. Jurnal Ilmiah Pendidikan, (Online) 3(1), 2016.

[12] Nadlir, Psikologi Belajar. Jakarta: UIN Press, 2009.

[13] S. Andriani & W. Utama, Pengaruh Model Pembelajaran Kolaboratif MURDER Terhadap Kemampuan Berpikir Kritis Matematis Siswa, Seminar Matematika dan Pendidikan Matematika UNY, 2017.

[14] E. A. Setiyowati & J. A. Pramukantoro, Model Pembelajaran Kooperatif MURDER Untuk Meningkatkan Hasil Belajar Siswa, Jurnal Pendidikan, (Online) 3(1) (2014).

[15] A. Nurhayati, Keefektifan Teknik MURDER Dalam Pembelajaran Keterampilan Membaca Peserta Didik Kelas IX SMA Negeri 1 Ngaglik Sleman (thesis). Universitas Negeri Yogyakarta, Yogyakarta, 2013.

[16] Sugiyono, Metode Penelitian Kualitatif dan R&D, Bandung, ALFABETA, 2008