Implementation of the window-shopping learning model assisted with "padlet" to increase students' mathematics learning activity and motivation

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Abstract
Student learning motivation will increase, which is determined by the teacher's ability to learn design. As a result, students are more interested in actively searching and finding their ideas. This study aims to determine increased student activity and motivation to learn mathematics on Limited trigonometric function. Researchers used the Window-Shopping learning model assisted by Padlet. This research is a collaborative Classroom Action Research. The subjects in this study are students of class XII-1 at Madani Integrated Model Senior High School in the 2023/2024 academic year. The stages in the research follow the flow of Kemmis and McTaggart and consist of planning, action, observation, and reflection. Data collection in this study was conducted by observing student activity during the teaching and learning process and using questionnaires. The results showed that students' learning activities are significantly increased. This happens more when they are involved in the learning process; consequently, students can build their knowledge. Students support each other, share ideas, and collaborate in constructing their knowledge. In addition, the results of this study are based on the completion of a student learning motivation questionnaire. Based on the questionnaire obtained in the first cycle, it amounted to 70.67%. In the second cycle, it increased by 11.35%. So, the total increase is 82.02%. This can be categorized in the predicate "good."

Keywords: learning motivation, window shopping, padlet

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I.   Introduction

Education is an important factor in the development of individuals and society. Learning is crucial in creating a conducive environment for increasing students' learning activities and motivation in the educational process. Challenges are often encountered in maintaining students' activity levels and learning motivation in mathematics learning at the high school level. Several factors, such as the perceived difficulty of the material, lack of relevance of the material to everyday life, and monotonous learning methods, can contribute to reducing student motivation in learning mathematics

Therefore, this class action research needs to be carried out. This research will explore the impact of implementing the Padlet-assisted Window-Shopping learning method on students' learning activities and motivation. In this way, students can be more involved, understand, and find interest in mathematics lessons, so their learning motivation can increase significantly.

II. Research Method

This research is a type of collaborative Classroom Action Research (PTK). The author collaborates with Teachers and Field Supervisors who act as observers and reflection providers at each stage of PTK. The subjects in the research were class XII-1 students at SMAN Madani Integrated Model. This research was carried out in two cycles, each going through 4 stages: planning, action, observation, and reflection. For more details, see Figure 1.

Teacher and student activity data were collected using observation sheets filled in by observers and students filling in learning motivation questionnaires. All data obtained is collected per cycle, and the results will be analyzed to conclude.
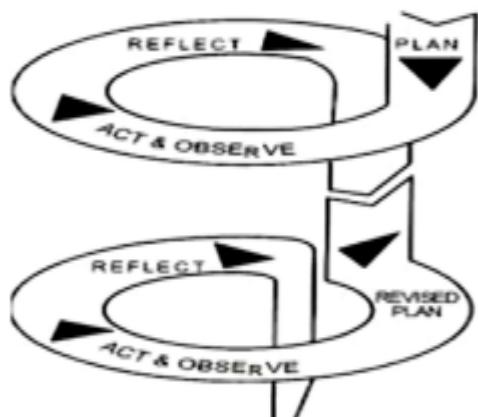

Figure 1. PTK cycle according to Kemmis and Taggart (Sumarni et al., 2016)

Observation instruments and questionnaires were carefully created to ensure relevant and accurate data could be collected. When conducting research, observers will perform their role according to predetermined procedures, recording aspects such as teacher-

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student interactions and teaching methods used in the selected model. Meanwhile, students will fill out a questionnaire specifically designed to explore their perspectives on learning. After the data is collected, analysis can be carried out using a qualitative approach for observation data and a quantitative approach for questionnaire data. The results of this analysis become the basis for designing corrective actions in learning, which is the primary goal of PTK.

The results of the validation of learning tools are analyzed descriptively qualitatively in the form of a general assessment, which includes these learning tools Stated as lesson plan (RPP) and student worksheet (LKPD) are categorized as very good, good, fair, poor, very poor and classified as can be used without revision, can be used with slight revision, can be used with many revisions, and cannot be used/still requires consultation. (Sasongko, 2004)

The assessment is given to determine the teacher's ability to manage the Window-Shopping Learning model based on the results of observing teacher activities. The teacher's ability level at each meeting is calculated by adding the scores for each aspect and dividing it by the number of aspects assessed. The following categories are in Table 1 to categorize teacher abilities.

Table 1.
Teacher ability category in managing learning in the classroom

Teacher Ability Level (TAL)	Criteria
$0 \leq TAL < 26$	Not good
$26 \leq TAL < 51$	Not enough
$51 \leq TAL < 76$	Enough
$76 \leq TAL < 100$	Good
$TAL = 100$	Very good

Analysis of the results of observations of student activities includes calculating the average frequency of each aspect of each meeting. This is done by adding the frequencies of the aspects in question and dividing by the number of students observed. Next, the percentage of each meeting is

Calculated by dividing the average frequency of each aspect of the meeting by summing up the frequency of all aspects of the meeting and multiplying it by 100%. The criteria for limiting the effectiveness of student activities for each aspect can be seen in the following Table 2.

Table 2. Criteria for the effectiveness of student activities

No	Observation Aspect	Ideal Time %	Completeness Criteria %
1	Actively listen/pay attention to the teacher's or friend's explanation.	23	19 to 27
2	Pay attention to the learning media presented by the teacher	15	11 to 18
3	Ask students or teachers questions related to the material.	12	8 to 16
4	Take turns and share tasks	8	6 to 12
5	Express the teacher's ideas or questions directly	12	8 to 16
6	Visiting groups	8	5 to 11
7	Communicate the results of group work.	9	6 to 12
8	Summarize group friends' answers.	6	3 to 9
9	Taking quizzes	7	3 to 11
10	Activities that are not relevant to KBM	0	0 to 5

The learning carried out applies the Window Shopping Learning model with the help of Padlet. In this activity, the model teacher carries out the following activities:

1) Delivering the learning objectives
2) Provide apperception
3) Motivate students
4) Arrange students in groups
5) Convey the topic/problem
6) Provide instructions/guide students in completing LKPD
7) Set the use of a Chromebook to display "Padlet" in each group
8) Arrange the flow of group visits
9) Checking the correctness of the elaboration of work results and group visits
10) Observe student activities
11) Guide the discussion
12) Provide evaluations/quizzes
13) Guiding in making conclusions

a. Observation

Observations were carried out by field supervisors, civil service teachers, and colleagues. The results of observations show that students are enthusiastic about participating in learning. Some students are involved during the lecture process in various ways by responding to the teacher's questions and asking questions about unclear understanding. It was observed that group discussions were still hindered by the division of tasks and no exchange of roles during visiting sessions. Students only focus on their role, such as giving explanations, standing visitors, or operating Chromebooks as "padlet" viewers.

b. Reflection

Based on the results of these observations, reflection was carried out during teacher activities, especially giving instructions/guiding students in completing LKPD, arranging the use of Chromebooks to display "Padlets" in each group, and arranging the flow of group visits. Improvement efforts are carried out in the next cycle so that discussions are effective and each group has variations in student activities. Additional Chromebook facilities will be provided, from previously only 1 per group to 2 in each group.

Cycle 2

a. Planning Stage (Planning)

The activity at this stage is the implementation of the reflection results to prepare research tools that will improve the design of cycle 1. To determine the material, namely the limits of trigonometric functions, making lesson plans, LKPD, teaching materials

(PPT), assessment sheets, Quizzes, teacher observation sheets, participant observation sheets, education, and learning motivation questionnaires through G-form are still being carried out with improvements in several parts. Once the preparations are considered complete, proceed with acting.

b. Implementation of Actions (Acting)

This stage is the implementation of learning by researchers and acting as observers for field supervisors, teachers, and colleagues. Learning is carried out based on learning plans made at stage planning with material on limits of trigonometric functions with indicators of competency achievement, namely:

a) Students can solve problems related to the limits of trigonometric functions in speed applications.
b) Students can solve problems related to the limits of trigonometric functions in continuity applications.

The learning carried out applies the Window Shopping Learning model with the help of Padlet. In this activity, the model teacher carries out the following activities:

1) Convey learning objectives
2) Provide apperception
3) Motivate students
4) Arrange students in groups
5) Convey the topic/problem
6) Provide instructions/guide students in completing LKPD
7) Arrange the use of 2 Chromebooks to display "Padlet" in each group
8) Arrange the flow of group visits by adjusting the needs and level of understanding of its members

9) Checking the correctness of the elaboration of work results and group visits
10) Observe student activities
11) Guide the discussion
12) Provide evaluations/quizzes
13) Guiding in making conclusions

c. Observation

Observations carried out by field supervisors, civil service teachers, and colleagues show that students have increased participation in various group activities. The results show an increase in asking questions to teachers/students, more direct expression of ideas to teachers, increased visits, and an exchange of roles with teacher direction. There are improvements in communicating group work results to visitors with maximum use of padlets, as well as a reduction in irrelevant actions or behavior during learning.

d. Reflection

From the results of these observations, it can be reflected that the activity of students in their groups has increased. This shows that applying the Window-Shopping Learning model with the help of "Padlet" influences student activities in classroom learning sessions. Table 4 shows that the average level of teacher ability in implementing the window-shopping learning model is 87.7%.

From Table 4, the teacher has succeeded in integrating this learning model effectively in his teaching. Among them is giving clear guidance to students and creating an interactive learning environment.

Table 4.
Teacher implementation of the window-shopping learning model

	Observation aspect	P1 S1	P2 S1	P3 S1	P1 S2	P2 S2	Amount	Average %	Ability Category
1	Convey learning objectives	1	1	1	1	1	5	100	Very good
2	Provide apperception	1	0	1	1	1	4	80	Good
3	Motivating students	1	1	1	1	1	5	100	Very good

	Observation aspect	P1 S1	P2 S1	P3 S1	P1 S2	P2 S2	Amount	Average %	Ability Category
4	Arrange students in groups	1	0	1	1	1	4	80	Good
5	Convey a topic or problem	1	1	1	1	1	5	100	Very good
6	Provide instructions or guide students in completing LKPD	1	1	1	1	1	5	100	Very good
7	Set Chromebook usage to display "Padlet" in each group	1	1	1	1	1	5	100	Very good
8	Organize the flow of group visits	0	1	1	1	1	4	80	Good
9	Checking the correctness of the elaboration of work results and group visits	0	1	1	1	1	4	80	Good
10	Observe student activities	1	1	1	1	1	5	100	Very good
11	Guide the discussion	1	1	1	1	1	5	100	Very good
12	Provide evaluations/quizzes	0	1	1	1	1	4	80	Good
13	Guides in making conclusions	0	1	0	0	1	2	40	Not enough
	Average in percent							87,7	Good

Note:
P1 S1 = meeting 1 cycle 1   P2 S1 = meeting 2 cycle 1
P1 S2 = meeting 1 cycle 2   P2 S2 = meeting 2 cycle 2
P1 S3 = meeting 1 cycle 3

The results of observations of student activities in the Window-Shopping Learning model have been summarized in Table 5. This table shows that the activities carried out by students are dominant in the aspects of actively listening/paying attention to teacher or friend explanations, paying attention to the learning media presented by the teacher, asking questions to students or teachers who relate to the material, express the teacher's ideas or questions directly, and communicate the results of group work.

This shows that more student activity occurs when they are involved in learning by building their own knowledge. In this context, students are not only passive in receiving information from the teacher but also active in seeking, understanding, and assembling their knowledge through discussion. This percentage of excellence is one of the goals to be achieved in this research, namely increasing students' learning motivation.

Table 5.
Percentage of student activities in the window-shopping learning model

	Observation Aspect	Activity					Average %
		P1 S1	P2 S1	P3 S1	P1 S2	P2 S2	
1	Actively listen/pay attention to the teacher's or friend's explanation.	9,4	7,1	7,1	6,4	5,5	24
2	Pay attention to the learning media presented by the teacher	5,9	4,1	3,0	3,8	4,1	14
3	Ask questions to students or teachers related to the material	4,5	3,3	3,8	3,6	3,3	12
4	Take turns and share tasks	3,5	2,0	2,5	2,9	2,4	9

	Observation Aspect	Activity					Average %
		P1 S1	P2 S1	P3 S1	P1 S2	P2 S2	
5	Express the teacher's ideas or questions directly	3,0	3,6	3,5	4,9	4,1	13
6	Visiting groups	0,0	3,0	2,3	2,3	3,1	7
7	Communicate the results of group work	2,8	3,8	1,8	3,3	2,4	9
8	Summarize group friends' answers	0,0	2,1	1,6	2,5	1,5	5
9	Taking quizzes	0,0	0,0	3,3	0,0	3,0	4
10	Activities that are not relevant to KBM	0,8	0,9	0,5	0,3	0,3	2
	Amount	99,2%	99,6%	97,5%	99,2%	98,8%	99

The ability to ask fellow students or teachers questions about the material also increases. Students feel more empowered and confident when they can actively participate in discussions and seek clarification when confused. This provides a sense of satisfaction when they get the answers they need.

With the help of Padlet, the Window-Shopping Learning model was implemented in the first cycle. At the end of the 3rd meeting in cycle 1, a learning motivation questionnaire was distributed via Gform. It was found that student's responses to the questions given received an average percentage of 70.67% with the predicate "good." At the end of the second cycle, precisely at the second meeting, the same questionnaire was distributed again to the model class, namely class XII-1. The results of the second questionnaire showed an increase in the average percentage to 82.02%, and the predicate was "good."

With an increase of 11.35%, the impact of changes in activities in learning cycles 1 to 2, namely the use of 2 Chromebooks to display "Padlets" in each group and managing the flow of group visits by adjusting the needs and level of understanding of the members, was detected. This can be interpreted as an indication that the changes teachers have implemented have positively impacted students. This aligns with research conducted by Arif (Haqq et al., 2022) that current technological developments support the reception of information in teaching materials

for students via digital media. There was an increase in student activity and collaboration during the learning process when using Padlet. This is in accordance with Drigas's view (Drigas et al., 2020) that students will be happier participating in learning if they use gadget technology such as Chromebook. It is also seen that students can solve problems with their ideas using the information in Padlet. As in research by Weinhandl et al. (2020), support from using technology during both online and offline learning can develop problem-solving abilities and become a teaching innovation for teachers.

If you look at the bar chart comparison between cycle 1 and cycle 2 questionnaires, there is an increase in percentages for almost every indicator. This all shows that there has been an increase in students' learning motivation, which is directly proportional to the results of observations of students' activities, which can be seen in Figure 2.
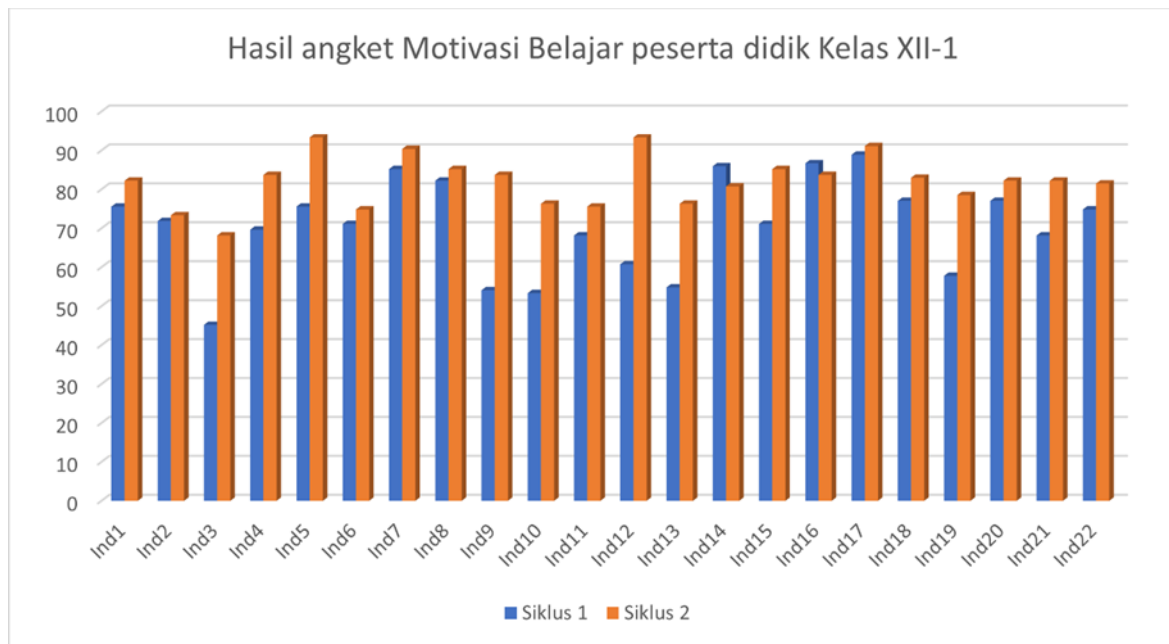
Figure 2 Diagram of Cycle 1 & 2 Learning Motivation Questionnaire Results

Implementing the Window-Shopping Learning model with the help of "Padlet" in class XII-1 motivates students to work with their classmates to achieve a deeper understanding of the subject matter. They support each other, share ideas, and collaborate in constructing their knowledge. This research shows that students not only rely on the teacher's explanations but also are active in the learning process, which can increase their understanding of the material and strengthen their learning skills.

One element that contributes to increasing motivation is the percentage increase in learning activities based on Figure 2. Students feel motivated to understand and master the material well because they know they will share their knowledge with classmates. This gives students a sense of responsibility and clear goals for learning. In addition, students who actively listen and pay attention to the teacher or friend's explanations tend to be more involved in the learning process. They realize that the information conveyed has important value, encouraging them to be more focused and enthusiastic in listening.

Taking turns carrying out assignments and sharing tasks with classmates helps create intrinsic motivation. In visiting assignments and as presenters from their respective groups, students feel like they are an important part of their group and are responsible for achieving common goals. This can increase a sense of pride and motivation to contribute positively (Fauzan, 2021). In this research, the learning stage, namely expressing ideas or questions directly to the teacher and visiting groups of friends, has created an environment that supports social interaction and collaboration. Students feel involved in the learning process as a community, and this can increase their motivation to learn together. Communication of group work results and the ability to summarize group friends' answers is another way to increase motivation. Learners feel recognized and appreciated for their contributions to the group, which can increase their desire to participate actively in learning, as seen in Table 6

Table 6.
Data on student activity and motivation

	Cycle 1	Cycle 2	increase
Activity	98,8%	98,95%	0,2%
Motivation	70,6%	82,02%	11,35%

Teachers should actively facilitate students' learning process, answer their questions, and provide constructive feedback. Thus, teacher management in this model has positively contributed to the student's learning experience. Based on the completeness criteria, it has fulfilled what was expected. However, a significant deficiency in the three cycle 1 meetings and one cycle 2 meeting was that the teacher could not manage time well, so there was no guidance in making conclusions at the end of the lesson.

IV. Conclusion

Overall, the Padlet-assisted Window-Shopping Learning Model in this research has created an environment that motivates students to be actively involved in learning, feel they have an important role in the group, and feel connected to the learning material. All of this contributes to increasing student activity and learning motivation.

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