

Original Research Article

THE EFFECT OF PADLET-ASSISTED FLIPPED CLASSROOM LEARNING MODEL ON CRITICAL THINKING ABILITY

Abstract :

The aim of this research is to compare the flipped classroom learning model assisted by Padlet and the blended learning model on critical thinking skills. The problem that will be studied is whether there are differences in the two dimensions of the learning model regarding critical thinking abilities. In this study, the independent variable (X) is the flipped classroom learning model assisted by padlet. Meanwhile, the dependent variable (Y) is critical thinking. The research sample was taken from students at SMA Muhammadiyah 1 Surabaya. The research sample was taken from students who were normally distributed, had the same characteristics (homogeneous), and had the same average value. Then two groups (classes) were taken as samples, named the experimental group and the control group. The data analysis technique used is the Independent Sample T-test statistical analysis technique. The results show that there are differences in critical thinking abilities between the flipped classroom learning model assisted by Padlet and the blended learning model.

Keywords: Learning model; flipped classroom; padlet; critical thinking

1. Introduction

Changes in learning paradigms in the digital era have had a significant impact on the world of education. Technological advances help streamline and lighten teachers' workload, from platforms that allow sharing of resources to learning tools. As professional educators who act as facilitators in learning, their creativity is required to explore the potential of learning resources and media in their environment in order to be able to teach their students effectively. quality. In order to become a good facilitator, educators are expected to be able to equip themselves with insight and skills in developing the design and creation of learning media so that educators can carry out their role well.

The learning model that can be applied to teach students is the flipped classroom. The flipped classroom learning model is active learning that combines student involvement, a combination of various learning designs and the distribution of learning materials via prodcast (video, sound, images and documents in the form of pdf, doc, etc.). The "flipped classroom" instructional model was developed by Jonathan Bergman and Aaron Sams in 2007 to provide instruction to secondary students who were missing class and therefore missing instruction [1]. One of the main pillars of the flipped classroom learning model is a student-centered learning model, so that students are more actively involved in forming their knowledge. The flipped classroom model is simply divided into 5 stages, namely before class, beginning of class, during class, after class, and officials hour. When outside the classroom students learn through a predetermined learning management system, while in the classroom students learn actively through real activities in the classroom.

Flipped classroom is a pedagogical approach which in its implementation starts from individual learning which can be done outside the learning class, then the results of the learning are discussed in class [2]. The main goal of the flipped classroom is that with online instruction before class, it will free up time for students to prepare more questions. The feedback given by teachers to students is to straighten out and clarify misconceptions experienced by students [2]. Learning activities will be meaningful if students learn with their own learning style.

The flipped classroom learning model is an effort to provide solutions to critical thinking problems that can be applied in facing 21st century education. Basically, the concept of the flipped classroom learning model is that students do what they do in class at home, namely

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learning by understanding the material provided by the educator, and in class students do what they usually do at home, namely doing questions and solving problems.

Flipped classroom learning is carried out by providing the required literature materials and assignments to students. In class, students conduct discussions and complete problem solving questions. The class becomes more lively where students actively communicate with friends and educators when completing the exercises given. In line with the research results Elmaadaway[3] that through the flipped classroom approach, students study the material first at home, so that in class they participate in relevant activities, ask questions and are involved in problem solving. Bergfjord and T. Heggernes[4] states that in the flipped classroom, students prepare themselves better for classroom learning, feel satisfied and achieve better learning outcomes. So, this learning has a positive effect on students' knowledge, skills and involvement [5]. Chiang[6] also supports the results of this research that project-based flipped classroom learning is effectively used in learning.

In the flipped classroom learning model, it cannot be separated from the use of learning media, namely the Padlet application. The use of padlet media can help the learning process between teachers and students to obtain the desired goals in obtaining learning outcomes. Everything helps students to understand lessons that are easy to remember so there is an interactive model with students. From the Padlet application, teachers can use it as teaching material or learning media to increase student motivation and learning outcomes. Padlet media is very interesting and can be adjusted according to the available platforms. From its definition, more precisely Padlet can be illustrated as a virtual board which is created by teachers or students as a learning medium. [1].

The purpose of this research is to compare learning using a padlet-based blended learning type flipped classroom learning model and an LMS-based blended learning learning model on critical thinking skills.

1.1. Critical Thinking

Thinking is the ability to analyze, criticize, and reach conclusions based on inference and good judgment. According to Mazano [7], the importance of a framework regarding learning to think for someone is: 1) thinking is necessary to develop attitudes and perceptions that support the creation of positive classroom conditions, 2) thinking is necessary to acquire and integrate knowledge, 3) it is necessary to broaden knowledge horizons, 4) need to actualize the meaningfulness of knowledge, 5) need to develop profitable thinking behavior.

Critical thinking is the skilled and active interpretation and evaluation of observations and communications, information and arguments [8]. Critical thinking is defined as evaluation because it is the process of determining the benefits, quality, price or value of something and critical thinking generally deals with evaluating the truth, probability or reliability of claims.

The definition of critical thinking was put forward by Edward Glaser [8], one of the authors of the Watson-Glaser Critical Thinking Appraisal (the critical thinking ability test that is most widely used throughout the world). Glaser defines critical thinking as follows: 1) An attitude of wanting to think deeply about problems and things that are within the range of one's experience. 2) Knowledge of examination methods and logical reasoning. 3) A skill to apply these methods. Critical thinking requires rigorous efforts to examine every belief or assumptive knowledge based on supporting evidence and the subsequent conclusions that result.

2. Method

This research uses a quantitative approach and based on its classification, this type of research is included in the type of experimental research. This research uses experimental research with a quasi-experiment type of research. In a quasi-experiment type of research, the research groups are divided non-randomly. According to Sugiyono[9], this type of quasi-experiment research has a control group but cannot fully function to control external variables that influence the implementation of the experiment.

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The variables in this research consist of independent variables and dependent variables. The explanation of each variable is as follows:

1. Independent variable

According to Sugiyo[9], The independent variable is a variable that influences or is the cause of changes or emergence of the dependent (dependent) variable. The independent variable is the treatment condition or controlled variable[10]. The independent variable in this research is the Padlet-based flipped classroom learning model.

2. Dependent variable

dependent variable adalah variables that are influenced or that are a result of the existence of the independent variable [9]. The dependent variable in this research is critical thinking ability.

The conceptual relationship between variables in this research is shown in the following figure:

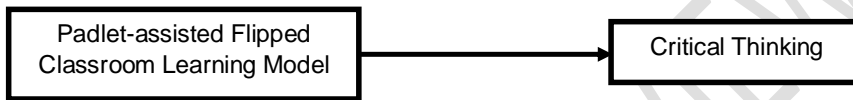


Figure 1. Relationships Between Variables in Research

In this study the independent variable (X) is the flipped classroom learning model assisted by Padlet (X). Meanwhile the dependent variable (Y) is critical thinking (Y). The following is the operational definition of each variable:

1. The flipped classroom learning model assisted by Padlet (X), is a learning model that presents the latest learning process by providing online material outside of class and doing assignments in class.
2. Critical thinking (Y), is an intellectual ability to create concepts, apply, analyze, synthesize and evaluate obtained from the results of observation, experience, reflection, where the results of this process are then decided and implemented. It can be defined that critical thinking has two steps, namely : 1) do rational thinking (reasoning), 2) make decisions or solve problems (problem solving) quickly.

Table 1. Critical Thinking Ability Indicators

Variable	Indicators	Descriptor
Critical Thinking	1. Interpretation	<ul style="list-style-type: none"> • Grouping facts or logical conclusions or statements. • Make meaning. • Meaning is clear.
	2. Analysis	<ul style="list-style-type: none"> • Testing ideas. • Recognize arguments. • Recognize reasons and statements.
	3. Evaluation	<ul style="list-style-type: none"> • Distinguish between strong and relevant arguments. • Assess the quality of arguments made using inductive or deductive reasoning.
	4. Inference	<ul style="list-style-type: none"> • Assess the quality of the question. • Draw a conclusion.
	5. Explanation	<ul style="list-style-type: none"> • State the results. • Support procedures. • Present arguments.
	6. Self-regulation	<ul style="list-style-type: none"> • Self-monitoring • Self-improvement

Adapted from Facione [13]

The research sample was taken from 120 students of SMA Muhammadiyah 1 Surabaya. The research sample was taken from students who were normally distributed, had the same

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characteristics (homogeneous), and had the same average value. Then two groups (classes) of students were taken as samples, called the experimental group and the control group.

The data analysis technique used to determine the effect of the flipped classroom learning model on critical thinking skills is the Independent Sample T-test statistical analysis technique. The independent sample t-test is a parametric test used to determine whether there is a difference in the mean between two independent groups or two unpaired groups with the intention that the two groups of data come from different subjects. Decision making based on Independent Sample T-test analysis is carried out by comparing the t-value value with t-critical with the provisions.

3. Results and Discussion

Based on the results of statistical tests, results were obtained which will be explained in the following sub-chapter.

3.1. Tests of Normality

The normality test of the critical thinking ability data obtained was conducted. The normality test was performed to determine whether the distribution of the obtained data is normal or not, and also to meet the requirements of the hypothesis testing to be conducted.

Table 2 :Tests of Normality

	Model Pembelajaran (X1)	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Berpikir kritis (Y)	Flipped Classroom berbasis <i>Padlet</i>	.093	60	.200 [*]	.962	62	.051
	Blended learning	.102	50	.200	.968	58	.127

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the normality test table above, the control class and experimental class have a significance value of more than 0.05 so it can be said that H0 is accepted. This shows that the data is normally distributed.

3.2. Independent Samples Test

After testing the prerequisite analysis, hypothesis testing is then carried out. The following are the results of the independent sample t-test.

Table 3 :Independent Samples Test

	Levene's Test for Equality of Variances	t-test for Equality of Means								
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Berpikir kritis (Y1)	Equal variances assumed	.817	.368	.668	118	.025	1.289	1.930	-2.532	5.111
	Equal variances not assumed			.666	114.835	.027	1.289	1.936	-2.546	5.125

Based on the output above, it is known that the value of Sig. Levene's Test for Equality of Variances is 0.368 > 0.05, which means that the variance of the data between groups is homogeneous or equal. Thus, the interpretation of the Independent Sample T-test table above is based on the values found in the "Equal variances assumed" table.

Based on the output table "Independent Samples Test" in the "Equal variances assumed" section, the value of Sig. (2-tailed) is 0.025 < 0.05. Therefore, according to the decision-making basis in the independent sample t-test, it can be concluded that H0 is rejected and Ha is accepted.

Furthermore, from the output table above, the value of "Mean Difference" is 1.289, indicating the difference between the average critical thinking abilities of students in the control and experimental groups. The difference range is -2.532 to 5.111 (95% Confidence Interval of the Difference Lower Upper).

Padlet-Assisted Flipped Classroom Learning Model to Improve Critical Thinking Ability

Based on the results of hypothesis testing, there is a significant difference in critical thinking abilities between the experimental class taught using the Padlet-based flipped classroom learning model and the control class taught using the LMS-based blended learning model. The results of this research are in line with research conducted by Jian[11], Lin[12] and Chis[2].

The application of the flipped classroom learning model is effectively used to improve students' critical thinking skills. This is shown by a significant increase in critical thinking ability test results between before and after the Flipped Classroom learning model was implemented. The implication in applying the Flipped Classroom learning model in the learning process is that there is a process of interaction between students, the teacher and the learning environment which aims to produce a change in behavior, a change that initially could not become possible, that which previously did not know becomes knowing. So that when implementing the Flipped Classroom learning model the teacher is able to be more interactive with students and is able to create various conditions and situations in learning both at home and in the classroom in order to produce changes that are in line with the objectives, both learning outcomes and thinking abilities (cognitive, affective and psychomotor).

The flipped classroom learning model is the most widely known learning model. The flipped classroom starts with student learning carried out online outside the classroom or at home with content that has been provided previously. After carrying out the online learning process outside of school, students then deepen and practice solving problems at school with teachers or peers. Thus, it can be considered that the role of traditional learning in the classroom has become "reversed". However, basically this learning still maintains the traditional learning format but is carried out in a new context.

In online distance learning activities, students will be freer or freer to express opinions or ask questions because there are no other students physically observing them. Online discussions via Padlet give students freedom to express their opinions. Students seem free to ask questions and express opinions using everyday language.

4. Conclusion

Based on the results of data analysis, it can be concluded that there are differences in critical thinking abilities caused by differences in the Padlet-based flipped classroom learning model and the control class taught using the LMS-based blended learning model.

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