

# Effectiveness of Blended Learning Model on Students Motivation and Competency Level In Meteorology Climatology Subject

Annisa Salsabilla <sup>a\*</sup>, Dian Utami <sup>a</sup>, Listumbinang Halengkara <sup>a</sup>

<sup>a</sup> Faculty of Teacher Training and Education, Universitas Lampung, Bandar Lampung

\* [annisa.salsabilla@fkip.unila.ac.id](mailto:annisa.salsabilla@fkip.unila.ac.id)

Article Information	ABSTRACT
<i>Article History</i> Accepted : 12 February 2020 Revised : 15 March 2020 Published : 31 March 2020	This study aims to see at student motivation arising from the application of the blended learning model, student competencies formed due to the application of the blended learning model, the effectiveness of the application of the blended learning model in increasing student motivation and competence in the meteorology climatology course, also providing references for the use of the model blended learning to other courses so that lectures can run effectively and efficiently. The method is a quasi-experiment method. The sample was student on their first semester in 2019 of the Geography Education Study Program in the Class of Meteorology Climatology. The results of the study are as follows: 1) The application of the blended learning model in the Climatology Meteorology Course in Geography Education Study Program students influences student motivation in learning. 2) The application of the blended learning model in the Climatology Meteorology Course for Geography Education Study Program students increases the level of student competency. 3) The blended learning model is one of the effective learning models for increasing student motivation and competence. This can be seen from the formed student motivation and increased student competence. 4) The use of the blended learning model can be applied to other subjects as an alternative so that lectures can run effectively and efficiently.
<b>Keywords:</b> Blended learning Motivation Level of Competence	
<b>Kata kunci:</b> Blended learning Motivasi Mantehage Tingkat Kompetensi	<b>ABSTRAK</b> Penelitian ini bertujuan untuk melihat motivasi mahasiswa yang timbul akibat penerapan model blended learning, kompetensi mahasiswa yang terbentuk akibat penerapan model blended learning, serta efektifitas penerapan model pembelajaran blended learning dalam meningkatkan motivasi dan kompetensi mahasiswa dalam mata kuliah meteorologi klimatologi, dan memberikan referensi bagi penggunaan model blended learning mata kuliah lain agar perkuliahan dapat berjalan efektif dan efisien. Metode yang digunakan dalam penelitian ini adalah metode quasi experiment. Sampel dari penelitian ini adalah mahasiswa semester 1 angkatan 2019 Program Studi Pendidikan Geografi pada kelas Mata Kuliah Meteorologi Klimatologi. Hasil penelitian sebagai berikut: 1) Penerapan model pembelajaran blended learning di Mata Kuliah Meteorologi Klimatologi pada mahasiswa Prodi Pendidikan Geografi mempengaruhi motivasi mahasiswa dalam belajar. 2) Penerapan model pembelajaran blended learning di Mata Kuliah Meteorologi Klimatologi pada mahasiswa Prodi Pendidikan Geografi membuat tingkat kompetensi mahasiswa meningkat. 3) Model pembelajaran blended learning merupakan salah satu model pembelajaran yang efektif dalam meningkatkan motivasi dan kompetensi mahasiswa. Hal ini terlihat dari adanya motivasi mahasiswa yang terbentuk dan kompetensi mahasiswa yang meningkat. 4) Penggunaan model blended learning dapat diterapkan pada mata kuliah lain sebagai salah satu alternatif agar perkuliahan dapat berjalan efektif dan efisien.

## Introduction

The industrial revolution 4.0 requires FKIP lecturers to change the teaching system, initially

100% face-to-face into blended learning between traditional face-to-face learning and online learning (e-learning). Blended learning is a new

concept in learning where material delivery can be done before class and online (Bielawski and Metcalf in Husamah 2014). Through blended learning, based learning will build bridges between teaching-based, instructor-mediated learning contexts towards learning contexts that are learning-based. Blended learning-based learning will make it easier for students to access knowledge by using various learning modes that serve as stimuli. Students hold independent control over time, place, sequence and speed of learning (Staker 2012).

Blended learning-based education will also improve soft skills (skills utilizing information technology) for students. The advantage that can be obtained through learning is mainly to provide learning resources for students to provide opportunities to develop each student to achieve abilities in hard skills and soft skills. The elaboration of all the concepts above gives impetus to research whether or not the blended learning model effectively lecturing in the Geography Education Study Program, FKIP, Unila, especially in the Meteorology Climatology course. The Meteorology Climatology course itself is one of the basic courses for geography education students, which is worth three credits. Therefore, this study raises the title "Effectiveness of Blended Learning Model on Motivation and Competency Level of Students in Meteorology Climatology Courses."

## Method

The approach used in this research is quantitative. According to Suharsimi (2012), quantitative analysis prioritizes numbers, starting from data collection, interpretation, and elaboration of results. Conclusions in quantitative research are accompanied by tables, graphs, charts, or pictures.

The research method used is a quasi-experiment method. In this method, the researcher is possible not to do full control of external variables that affect the study results. The purpose of experimental research is to look for certain treatments on others under controlled conditions.

In this study, the experimental group used the blended learning model (x1), while the control group used traditional/conventional learning (x2). The research location is in the Geography Education Study Program Department of Social Sciences Education Faculty of Teacher Training and Education. Meanwhile, the basic consideration of choosing the campus as a location and subject in research is that some of the study program courses have implemented a blended learning model in the learning process.

Measure the blended learning model's effectiveness using pre-test and post-test were carried out in the experimental and control groups. The blended learning model's effectiveness can be seen from the difference in the total value of pre-test and post-test in the experimental group and the control group—research data in the form of motivation scores and scores of understanding levels. The questionnaire instrument consisted of 20 statements with a Likert scale, which had five alternative answers.

To test the significance of the mean difference of more than two different groups due to the use of several treatments on an independent variable can be done with a parametric statistical test using the t-test. Before conducting parametric statistical analyses, the data obtained must have the conditions for testing with parametric tests including normal and homogeneous distribution).

## Results and Discussion

Before being given treatment, the whole group was given a pre-test to see the initial value. The pre-test scores are taken into consideration as a starting value for viewing student learning outcomes. The research instruments were tested before being used in the research sample. The trial is applied to students who are not part of the research sample of 10 people with details of five people from the experimental class and five people from the control class. The results of this trial are then tested for validity. Student motivation instruments, pre-test, and post-test instruments consisted of 20 questions each.

**Table 1.** The distribution of pretest values in the experimental class and the control class

No	Value	Cotrol Class		Experimental Class	
		Fabsolute	Frelative (%)	Fabsolut	Frelatif (%)
1	10	4	12,5	4	12,12
2	20	6	18,75	6	18,18
3	30	10	31,25	7	21,21
4	40	8	25	8	24,24
5	50	1	3,13	4	12,12
6	60	3	9,38	3	9,09
7	70	0	0	1	3,03
<b>Total</b>		32	100	100	33

The validity test uses the Pearson Product Moment correlation formula. Significance level of 5% and  $N = 10$  obtained a valid calculation if  $r_{count} > r_{table}$  where  $r_{table} = 0.4973$ . Test the validity of the student motivation questionnaire instrument and the pre-test or post-test questions based on the calculation of all items known to be valid because the  $r_{count} > 0.4973$  so that the whole problem can be used for research data. If there is a calculated value smaller than  $r_{table}$ , then the problem cannot be used.

The lowest pre-test scores in the control class and the experimental class were 10, respectively, and the highest value in the control class was 60, and the experimental class was 70. The average values obtained from both classes were 31.56 and 34.55. The distribution of values in both the control class and the experimental class can be seen in Table 1

Most students from both the control class and the experimental class still have a low understanding of the questions given. This can be seen from the pre-test results where the two classes' average scores are still very low. There were only three students from the control class,

and four students from the experimental class whose grades were above 60.

The pre-test variant's value in the control class was 194.25, which means that the control class had a high variation in the value of the pre-test results. The pre-test variant value of the experimental class was 171.59. The experimental class also had a high variance value. However, the control class variant is still higher than the experimental class, which means the values in the control class are more diverse than the experimental class.

The treatment that is carried out after the pre-test is doing the blended learning process in the experimental class and conventional (only learning in the classroom) in the control class. In the experimental class, blended learning activities are carried out on Edmodo's learning platform. Material presented about the climate classification system. Students are given some material for understanding. The material in the form of PowerPoint presentations, reading sources in the form of journals, video teaching materials, and quizzes. The lecturer announces the schedule of learning activities and uploads the teaching

**Table 2.** Post-test value distribution in the experimental and control class.

No	Value	Cotrol Class		Experimental Class	
		Fabsolute	Frelative (%)	Fabsolute	Frelative (%)
1	40	1	3.13	-	-
2	50	1	3.13	1	3.03
3	60	8	25.00	7	21.21
4	70	10	31.25	8	24.24
5	80	6	18.75	7	21.21
6	90	3	9.38	5	15.15
7	100	3	9.38	5	15.15
<b>Total</b>		32	100	33	100

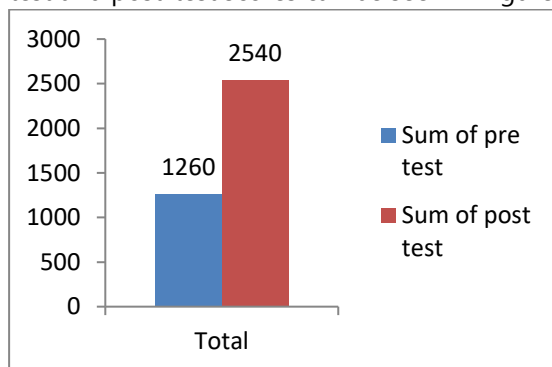
material, and then the student enters the class online, listens to the material available, then asks if there are any difficulties.

In the control class, the teacher conducts teaching and learning activities as usual in the classroom. The lecturer delivers the material that presented about the climate classification system. The lecturer divides the class into groups. Some groups formed then looked for material following the agreement and then held presentations.

Presentation activities carried out by students and students are required to be active to carry out discussion activities. After treatment (experiment), the test is again in the form of a post-test. The distribution of post-test values can be seen in table 2

From the post-test scores obtained, there is an increase in value when compared with the pre-test value. Most students from both the control class and the experimental class have a value > 60. This means that both the control class and the experimental class can understand the lecturer's material either by blended learning or by conventional means.

In the experimental class, there were eight students whose grades were  $\leq 60$  when they were post-test while before receiving blended learning treatment, 99% of students received grades  $\leq 60$ . Through this blended learning model, students' abilities and competencies increased. To find differentiation in the experimental class, pre-test and post-test scores can be seen in Figure 1.



**Figure 1.** Experiment Pre Test and Post Test Values

To see the differences in students' motivation and competence in between those who use blended learning models and conventional models use a different test (t-test).

This difference in power test is used for testing hypotheses that have been previously established. The hypothesis testing results are done through calculations with the paired t-test formula then obtained t count of 2,200, while t table of 2,020, with degrees of freedom (df) 63 and a significance level of 0.05. The criterion used for testing is an accepted hypothesis if the t count is greater than t table. Then it can be concluded that the calculation results are following the testing criteria so that the hypothesis can be accepted. This shows that results show differences in the motivation of students who use blended learning with students who use conventional models.

Competence is a fundamental characteristic of an individual, that is the cause associated with the reference criteria for effective performance "A competency is an underlying characteristic of an individual that is causally related to criterion-referenced effective and superior performance in a job or situation" (Spencer & Spencer, 1993). The basic characteristics of competencies are motivation, innate, self-concept, knowledge, and skills. Thus, the link between motivation and one's level of competence cannot be separated. Changes in motivation in students can affect changes in the level of ability of students themselves

## Conclusion

Based on the research results, it can be described several conclusions as follows: First, the application of the learning model of blended learning in the Meteorology Class of Climatology in Geography Education Study Program students influence student motivation in learning.

Secondly, the application of the blended learning model in the Climatology Meteorology Course for Geography Education Study Program students increases student competency.

Third, the blended learning model is effective in increasing student motivation and competence. This can be seen from the formed student motivation and increased student competence.

Fourth, the use of the blended learning model can be applied to other subjects as an alternative so that lectures can run effectively and efficiently.

The application of the blended learning model is proven to be able to increase student motivation and competence. So it is necessary to have the support of facilities and infrastructure from the university so that this activity can continue to run smoothly. The need for re-socialization from the university to lecturers who have not applied this learning model to participate actively in blended learning activities immediately

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