



The Implementation of Blended Learning Methods to Improve Student Self-Regulation at University

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The aims of this research are to find a description of blended learning implementation to improve students' self-regulation at university and to find the improvement of students' self-regulation after the implementation of blended learning methods at university. This research uses a quantitative method by using a quasi-experiment design, which studies blended learning implementation for improving students' self-regulation. The sample of the research is 160 students divided into two groups: a control group (using the conventional method) and an experimental group (using the blended learning method) through a two-group, pre-test post-test design. The research data analysis used descriptive statistics and inferential statistics in the t-test. The results of this research regard the description of the application of blended learning, which was conducted 16 times in lectures under guidance and counselling. There was an improvement in students' self-regulation after the implementation of blended learning methods. This research pointed out through hypothetical testing that the students taught through a blended learning method had greater improvement in learning qualities than those using the conventional method.

Keywords: *Blended learning, Self-regulation, Conventional, University*

Introduction

One of the important factors that enhance students' academic achievement is the learning quality of a certain university (Phelps & Benson, 2012; Rampa, 2014). The results of the learning processes are determined by the learning process and how the students are taught in class. Each student has a specific learning style (Anastasov & Ristevska, 2019; Annual, et al., 2018). Various methods improve students' motivation to attend the learning process in class and also complete tasks. The method of the learning process should consider the students'

needs, characteristics, abilities, and sufficient facilities (Adrizar, Guntur, & Pahlifi, 2020; Muth'im, 2016).

Concomitant of technological development, strategies that use information and technology are important for the learning model (Kuzhin, Zhadanovsky, Kudryashov, & Granilshchikova, 2019). The learning model regards innovation and transformation based on student needs (Coll & Coll, 2018; Serdyukov, 2017). Innovation can be developed by a blended learning model that combines direct teaching and virtual learning (Grgurovic, 2010; Husamah, 2014; Klentien & Wannasawade, 2016). The combination of two methods will give reinforcement of theory not only for students but also for lecturers. Based on a study by Bielawski & Metcalf (2003), blended learning is the fusion of technology, multimedia, CD ROM video streaming, virtual classes, emails, telephone conferences, and online animation text. The blended learning method is the most adaptable learning process that suits student needs and student learning styles (Kusairi, 2011). Blended learning is a mixed method of learning strategies and delivery methods that will optimise the use of online learning resources, especially those based on the web or blogs, without leaving face-to-face activities (Kurtanto & Asyhar 2016). An existing problem is that students' understanding and mastery of learning materials is still low. Most students have not been able to relate the material learned with daily life to the field of electrical engineering (Khilos, Hartoyo, Ali, & Yuniarti, 2010). Research conducted in Makassar indicates that some students were still learning from lecture notes and textbook material. Additionally, a collection of teaching materials was not yet available. The lecture conditions so far illustrate that various assignments that enrich student abilities are often done, but efforts to provide feedback not made. Then there are the limitations of the equipment owned and the amount of material that must be delivered. As a result, the lecture learning method in the classroom using this learning medium cannot be done properly. Lecturers tend to focus more on the achievement of material that is charged to the syllabus and SAP (Bibi, 2015).

Various learning methods through blended learning have been conducted. They intend to produce models, achievement, and academic results that can gratify and enhance interaction between students and teachers. According to Sandi (2012), there is more improvement in chemistry learning results when using blended learning than using conventional learning methods. Furthermore, in the learning experience aspect, Tham & Tham (2011) explains that the blended learning method is giving educational experience comprehensively and effectively. The method will provide more opportunities for students and lecturers to interact. This includes discussions, questions and answers, as well as looking for tasks that can be accessed anytime and anywhere (Garrison & Kanuka, 2004). As a result, it can enhance learning behaviour, flexibility, and provide a comfortable, pleasant learning environment, as well as the development of sustainable and effective learning to be utilised as a learning model (Utami, 2018; Wahyudi, Waluya, Suyitno, & Isnarto, 2019).

Learning by using a particular method can encourage students to gain many opportunities to get high academic achievements. As a result, they can be more satisfied, more comfortable,



and more active in the learning experience. Enhancing students' academic achievement requires blended learning training for students and lecturers. The aims of this research are (1) to know the description of blended learning implementation methods to improve learning quality for lecturers and students at university and (2) to find the influence of blended learning methods on the enhancement of learning qualities among students.

Method

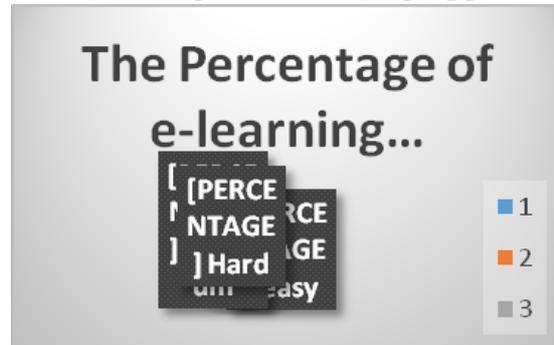
This research is quantitative research. The method of this research involved a non-equivalent control group design and pre-test and post-test design. The data was collected through adaptation from a self-regulated learning questionnaire (SR-Q) (Miller & Brown, 1991) and HOTS (Merta Dhewa, Rosidin, Abdurrahman, & Suyatna, 2017). The sample of this research was 86 undergraduate and postgraduate students at Universitas Negeri Makassar.

The data collection technique used a learning quality instrument, which was measured by a validity test and reliability test before the collection of data from the sample. The methods of analysis were descriptive analysis and inferential analysis through the T-test. The intervention process consisted of five steps: 1) Blended learning training for lecturers: In this step, the lecturers were trained to use e-learning applications through LMS, such as uploading subject material, making tasks, opening discussion forums, making a quiz, and evaluating the students' tasks and exams. 2) Blended learning training for students: In this step, the students were trained to use e-learning applications to upload tasks, participate in the discussion forum, and take the quiz. 3) The learning process using a blended learning method was conducted for 16 weeks. The sample was divided into an experimental group (using a blended learning method) and a control group (using a conventional method).

Results

The execution of the learning model (using blended learning in the guidance and counselling department) was conducted for students in the second semester in the 2018-2019 period. Lecturing processes were conducted in the initial semester by using a blended learning method between the conventional model and e-learning. Conventional lecturing was conducted eight times and blended learning lecturing afterward. Before the blended learning method was executed, the teachers and the students were trained to use e-learning by an LMS application on the website <http://lms.unm.ac.id/> for two days.

Figure 1. The Percentage of e-Learning Application Utilities



Based on Figure 1, regarding the percentage of e-learning application utilities and students, it can be seen that 83% of students could operate the LMS application in the learning process, and 17% of the students experienced a problem in operating the LMS application. 55% agree that it is easy to operate the LMS, with 28% in the medium category. As per the data, it can be concluded that the application can be applied to the learning process at university. □

The influence of blended learning implementation on learning qualities can be seen in the data analysis results from the T-test by SPSS. The hypothesis of this research is "there is an influence of a blended learning method on learning qualities in the guidance and counselling department in the graduate program of Universitas Negeri Makassar". Furthermore, the results of data analysis through the T-test regarding the implementation of a blended learning method and its effect on learning qualities are expressed in Table 1.

Table 1. The Results of the Paired Sample Analysis

Paired Samples Statistics	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Pre-test Experiment	55.6087	23	11.24415	2.34457
Post-test Experiment	87.6087	23	2.91920	.60870
Pair 2 Pre-test Control	39.3043	23	2.85139	.59456
Post-test Control	43.0000	23	7.50151	1.56417

The implementation of the blended learning method is measured by pre-test and post-test results in the control group and the experimental group. The value of the pre-test in the experimental group shows 55,60 and the value of pre-test in the control group is 39,30 from 23 samples. Moreover, the implementation of the conventional method shows that the value of the pre-test is 39,30 and the value of the post-test is 43. The gain score between pre-test and post-test shows that there is a difference in the average scores in the experimental and control groups. The experimental group shows an average score greater than the control group. As per the data, it can be concluded that the blended learning method is effective in

enhancing learning qualities in the graduate program. Guidance and counselling department, Universitas Negeri Makassar. □

Table 2. Results Analysis of Differences in Learning Before and After the Application of the Blended Learning Method

Pair	Group	Mean	Std. Dev	Std. Error	t	df	Sig
Pair 1	Pre-test Experiment Post-test Experiment	32.00	11.69	2.44	-13.19	22	.000
Pair 2	Pre-test Experiment Post-test Experiment	3.69	6.48379	1.35	-2.734	22	.012

As seen in Table 2, the experimental group's t score is 13,123, with a score of significance of 0.000. If the value of significance < 0.05 , it can be concluded that the H_0 hypothesis is rejected and H_1 is accepted. This means that there is a difference in learning qualities before and after the implementation of the blended learning method in the class. Furthermore, in the control group, the t score is -2,734, and the significance score is 0,012. Because of the significance score being $> 0,05$, it can be concluded that H_0 is accepted and H_1 is rejected. This means that there is no difference between the pre-test and post-test for the students who participated in the conventional learning method.

Discussion

The aims of improving students' academic achievements and learning qualities are the factors that are strongly supported in creating a high interest in learning, academic motivation and gaining high academic achievement. Based on the research results, the blended learning method can influence students' learning processes. As for the LMS application, most of the lectures can use the application with average percentage scores of 55% in the easy category and 28% in the medium category. To operate the LMS program, the lecturers should have the skill to use the program and exercise with the program, such as in analysis, design, analogical thinking, evaluation, and reflection (Bralić & Divjak, 2018). The exercise is a learning experience accustomed to reflecting on the material prepared.

Lecturers as educators should understand computer technology with the internet as a source of information, materials, and reference resources for students. It gives opportunities to interact with others by using technological communication and information (asynchronous and synchronous) (Bibi, 2015). Asynchronous communication is defined as direct communication 278 times in different places (Coll & Coll, 2018; Qamar, Riyadi, & Wulandari, 2019). Moreover, this model has big possibilities for communication between lecturers and students in various locations (Coll & Coll, 2018). The fusion of this communication model and blended learning can build learning strategies, such as offline learning and online learning methods (Nurhasanah, 2019).



This research has been conducted with offline lecturing in the initial semester and online learning in the mid-semester until the last semester. After the implementation of the e-learning method through the LMS application on <http://lms.unm.ac.id/>, learning activities became more active and there was an enhancement of students' knowledge, motivation to attend class, discipline in completing tasks and speed in understanding learning materials when compared to the conventional method. These findings relate to research by Bibi (2015), who indicates that there is a difference in student's knowledge when using blended learning methods and using the conventional method in the Teknik Informatika Department, IKIP PGRI Pontianak.

Furthermore, the quality of learning is a fundamental determinant of enrolment, retention, and achievement. Its expanded definition of quality sets out the desirable characteristics of learners (healthy, motivated students), processes (competent teachers using active pedagogies), content (relevant curricula), and systems (good governance and equitable resource allocation). Although this established an agenda for achieving good education quality, it did not ascribe any relative weighting to the various dimensions identified (Dakar, 2005).

The quality of the character of a learner can be seen in a motivated student. A motivated student can enhance academic achievement. According to a related study from Scherer & Nilsen (2016), some factors directly represent the quality of education. It consists of expectation of success, interest-enjoyment value, attainment value, utility value, and cost. As per a study from Scherer & Nilsen (2016), quality in learning encourages students to be people who have high achievement motivation. □

A related study has been conducted by Moore et al. (2015), who shows that web-based courses contribute positively to students' academic achievements and self-regulated learning among students. Based on this study, it can be concluded that the blended learning method is effective for enhancing learning quality in the learning process at university.

Conclusion and Suggestion

Based on the research results, it can be concluded that the lecturers can operate e-learning applications based on LMS because 55% of lecturers agreed they found it easy to manage the application. This process involves uploading learning materials, creating tasks, and downloading students' assignments. 28% fell in the medium category and 17 in the hard category. There is an improvement in learning qualities through the use of blended learning models.

As per certain conclusions, the recommendation of this research is for academicians/educational institutions to use the blended learning model. There should be information and material applied to science development, particularly to improve learning qualities and students' academic achievements. For lecturers, the learning method involves



using a blended learning model, which is expected to become a reference for lecturers in conducting lectures in class. This is intended to enhance learning qualities and students' academic achievements. For researchers, this study becomes a reference for future research on the developing educational science related to blended learning.



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