
Effect of Blended Learning to Learning of Informatics Management and Computer Science Students

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Abstract

Online e-learning has become primary alternative learning in tertiary educations. Students can obtain learning information whenever and anywhere. However, lecturing and program should be combined between face to face and online e-learning presentations, in according to have effective presentation on mode, learning model and learning style are effective. Indonesia government has supported online e-learning in tertiary educations since 4 years ago. Although, there was opinion, that face to face conventional learning method was better than online learning, but other opinion declared, that online e-learning was proven more superior than conventional learning, at least in online e-learning, all students can control their pace learning. More importantly, many learners supported e-learning because of the superiority of e-learning that learners can learn courses at home and any time. A data survey in this quantitative research, was collected to 63 students of Informatics Management and Computer Science of STMIK Bumigora Mataram, and revealed that: blended learning has 80% significantly from the ideal value to accommodate students learning style; there was no different influence learning style in blended learning between students genders; blended learning influenced till 85% from ideal value to students learning motivation; and there was difference students motivation between students of D3 study program and students of S1 Study program in blended learning.

Key words: *learning style, online learning, face to face, online, e-learning*

I. Introduction

Online e-learning approach grows very fast in all the worlds recently [1], [2], especially it was very dominant in tertiary institutions [3], [4], [1], [5] and also has become primary topic in education [6]. However, online e-learning constitutes advanced technology in teaching and learning processes [3]. Furthermore, e-learning enables to unite students in instructional processes without caring wherever student site [7]. Actually, e-learning activities have become main alternative in education [8]. Many learners said, it is more comfortable to be able to learn wherever dan whenever [7], [9]. Meanwhile, some learners emphasized,

they can not fully learn few topics without residing in special site, and by selecting collaboration group [7]. Furthermore, some learners suggested, the lecturing and learning program should have combination between face to face and online e-learning presentations. Meanwhile, a lot of experts predict that face to face learning will be soon as past heritage [7]. Ideally, adaptive e-learning is necessary to be developed innovatively to match to students learning style, in turn, the learning activities will be more effective [10].

Although, since for years ago, Indonesia government has allowed online e-learning in tertiary educations [11], [12], [13]. But, most Indonesia's tertiary

educations still rely on face to face learning [14]. Majority learners and lecturers agreed to e-learning, in spite of one of the primary weakness of e-learning is limited face to face interaction, and also lack of available time in finishing online assignments if it's compared to the available time on traditional learning assignments [15]. But, e-learning is persistently recommended by lecturers for the supervision reason to student learning progress [15]. Moreover, according to Arlene et. al. [16], blended learning can facilitate the effective combination presentation in facilitating the model and style of learnings.

Some opinions stressed, traditional learning method is better e-learning, but the other ascertained, e-learning has been proven more superiority than traditional learning, minimally the students can control the learning pace [17]. While, Krol [15] emphasized, many learners supported e-learning due to liking one of the superiority of learning, that can be learned at home and whenever [15].

The tending of learning recently is blended learning, but it was still doubted that e-learning will be able to replace face to face learning [17]. So, it is the challenge to be proved by research, especially in computer science.

The strength of e-learning is: (1) e-learning can perform multimedia interaction such as text, audio, visual, and other forms [2]. Further more, e-learning has effective interaction [8], high interaction and lower in cost [8] if it's compared to face to face learning.

E-learning builds students to be responsible, self regulation, capable to access technology [8], and also simplifies higher education enforcement [12]. However, e-learning has developed to be one solution of efficient learning for tertiary education and other learning institutions [18]. Moreover, in accordance to obtain the best education, it only happens if learners selve learning [19].

The fact showed, it has increased dramatically that was positive responses to e-learning [19]. Actually, e-learning facilitates learning with student pace and learns anytime with matching to student desire [20], [21].

E-learning module is needed to be built in related to realize this research. Therefore, the product online e-learning is developed firstly, by duplicating model of face to face learning, included assessment instrument and learning material of algorithm and programming lecturing subject. Characteristic of learning styles (kinestatic, visual, auditory, sequential, and pace learning) of student is payed attention significantly in learning module developing with media components: audio, video/image, text, and graphical user interface (Figure 1.1). However, according to Dick, Carey & Carey [22], in learning design, desaigners not only determine what must be taught, but also characteristic of learners. In identification characteristic of students, it must be also pay attention to learning style of students [23]. Text, video, audio, image and other interactive elements constitute more effective media in supporting various learning styles of students [24]. E-learning offers learning contents to facilitate diverse new experience to students, and also to accommodate varied learning styles of students [21].

E-learning represents modern learning method and be recognized as one of innovative learning which is implemented via internet [15]. Every one has varied cognitive load and also diverse learning style [17]. E-learning has benefit if comparing to face to face learning, that students acquire learning information no exceeding psychological and cognitive loads [17]. Developing e-learning innovative product is to answer the society information need and showing autonomy as well as impartial in acquiring knowledge surpassing culture and social [25]. Certainly, in accordance to e-learning, it needs to conduct research to

get answer that online e-learning can figure out the necessity of science to be suitable to learning style of students.

Although, Simonson et. al., [7] indicated, e-learning provides opportunity to students and instructional material to be able to wherever residing, interactive, real time, on demand. Learner center, as well as students build learning environment. But, e-learning is only possible to replace face to face learning, if e-learning can give fully satisfied experience and is obtained to e-learning students as well as experient face to face students [7]. So, the remaining question to be answered in this research are (1). is blended learning satisfaction learning style of students?, and (2). do the algorithm and programming blended learning motivate students in learning?.

The past research by Uget, Buket, & Kurboro, (2009), showed, S1 (scholarship) had the positive opinion to blended learning [28]. Truly, blended

learning is not only effective, but also comfortable students. More over, according to the researched by Wan Fatimah, Afza dan Josefina (2008) for mathematics blended learning, blended learning can provide various online interactive learning [27]. In research by Siew-Eng et. al., (2010) is found that students in rural and urban satisfied to blended learning especially in learning contents and materials which they can whenever read, download and print out [27].

The hope in this research is: firstly, to determine, can blended learning become self learning activities to motivate learning activities especially in informatics management and computer science; secondly, to know, is there suitable between learning style of students and blended learning for informatics management and computer science students, as illustration in diagram block 1.2 as follows.

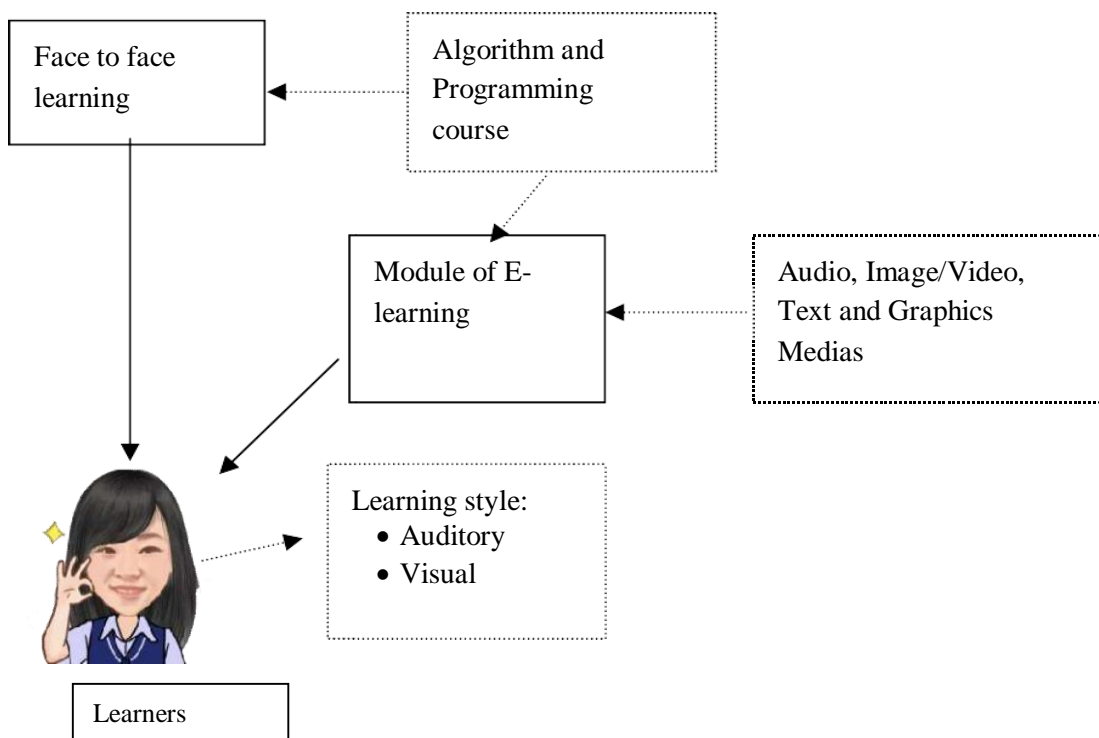


Figure 1.2. Instructional Design of Blended Learning

Specifically, finding of this research gives novelty to computer tertiary educations in enforcement of learning activities by facilitating learning styles of students as well as varied learning. In general, the finding in this research will help in decreasing doubt of blended learning use and discrepancy of future learning, by choosing better learning model for informatics management and computer science especially for algorithm and programming major.

In accordance with decision in how a module of learning or learning program to be continued to face to face and online learning students, it should be not only trusted to instructor (lecturer), or

authority command, but it should rely on research result [7].

2. Research Methodology

For the reason to fully comprehend blended learning by respondents in this research, so, product e-learning of algorithm and programming course is developed first, to explain to students which are existing face to face students, how the work of e-learning product module and to give opportunity online e-learning product module trial to student a month, before conducting survey to students.

Explicitly, it can be described learning diagram of blended learning according to this research as figure 1.3 as follows.

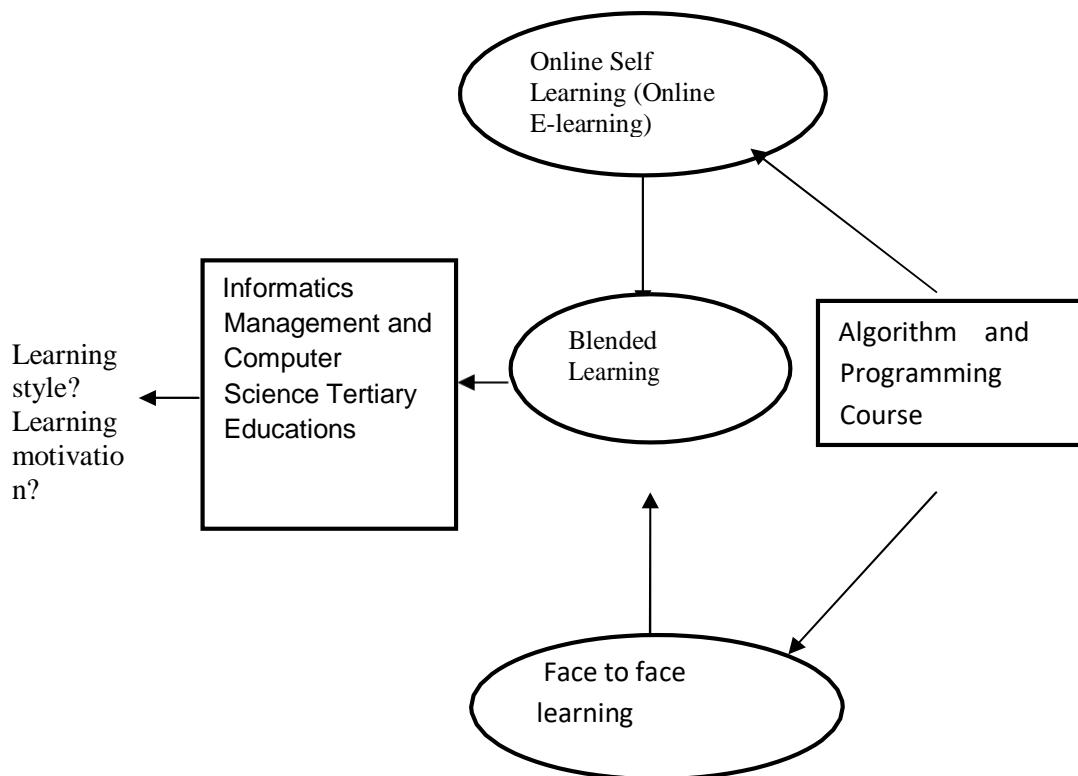


Figure 1.3 : Learning Diagram of Blended Learning Related to Students Learning style and Motivation

Survey instrument was also built to collect data as enclosed in appendix 2 in this research. Sample respondent for survey interest was 63 students (n=63) of D3 (Diploma-3) and S1 (Scholar Strata-1) study programs in semester 3 of informatics Management and Computer Science of STMIK Bumigora tertiary institution. Nominal data type or data category type with scale measuring of simple category was collected including students gender and study program. While, interval data type or continued data type with semantic scale measuring was collected too to measure influential blended learning to learning style and effect of blended learning in motivating students to learn. Statistical test to collecting data survey was used one sample t-test and two samples t-test. Due to this research is the inferential quantitative research with interval data, therefore normal distribution of data was proven using Skewness and Kurtosis tests. Data collecting instrument was reliable and valid in tested by using Cronbach alpha for instrument reliability and Pearson Moment for instrument validity..

4. Conclusion and Discussion

The instrument validity test using Pearson/Product moment, for knowing blended learning actually support or not support support learning style and motivate or not motivate students learning, is valid with coefficient relation 0.489 (see table 1.1. enclosed in appendix 1).

Meanwhile, reliability instrument test by using Cronbach Alpha is 0.657. It means, instrument for getting data for blended learning in supporting or not supporting learning style and motivating or not motivating students learning is reliable (See table 1.2 enclosed in appendix 1).

Skewness and Kurtosis normal distribution test showed data instrument for blended learning in supporting or not

supporting learning style and motivating or not motivating students learning is also reliable (See table 1.3 in appendix 1).

Blended learning supported learning style until 80.7% from the ideal value (100%). When two tailed t- test is 4.035 or failed to reject null hypothesis, or in other words, blended learning highly accommodates learning style of students.

1. There is not difference supporting learning style in blended learning between male and female genders, due to 2 tailed t-test of two independent variables is significant (0.97), or failed in rejecting null hypothesis (see table 1.5 in appendix 1).
2. Blended learning motivate student till 85.4% from ideal value. When 2-tailed t-test of variable of influence blended learning to motivation students learning, that is 4.27, is failed to reject null hypothesis (see table 1.6 in appendix 1). In other words, blended learning give great motivation to students learning.
3. There is difference motivation between blended learning of students between D3 and S1 study programs, since test of 2 independent variables, those are study program variable and motivation variable, shows 2 tailed significant value is 0.05. So, null hypothesis is rejected, or alternative hypothesis is accepted (see table 1.7 in appendix 1).

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