

THE ROLE OF LOCUS CONTROL AND LEARNING STYLES IN THE DEVELOPMENT OF THE BLENDED LEARNING MODEL AT PSU

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ABSTRACT: This article is the report of the first phase of the research and development (R&D) in developing a blended learning model of instruction at the PSU. The objectives of the first phase were to find information about: the readiness of PSU to utilize blended learning as a model of instruction, the profile of locus of control, the profile of learning style of students, and student's expectations about the use of blended learning. The study conducted at the Faculty of Economic, Faculty of Engineering, Faculty of Sport Science, and Computer Center.. It was founded that PSU has already had a sufficient necessary infrastructure to start developing a blended learning model; In terms of locus of control the students can be categorized into external and internal locus of control, and most of them (71%) are internal locus of control; In terms of learning styles, students can be categorized into the visual learning style, auditory, and kinesthetic. Most of the students have visual learning style (59%), followed by auditory (24%), and kinesthetic (17%). Furthermore, students expected learning by blended learning would be interesting, useful and not difficult. The variables, locus of control and learning styles, needs to be considered in developing a web-based learning model.

Keywords: Instruction, Web-based Learning, Blended Learning, Locus of Control, Learning Styles

1. INTRODUCTION

One of the major programs in the development of higher education in Indonesia is improving the access of higher education which usually reflected by the rough participation index (RPI) of higher education. RPI of higher education is the percentage of population aged 19-23 years who are studying at higher education. In 2015 the RPI of Indonesia's higher education is only 26.86% and is expected to reach 32.56% in 2019 [1]. This score is much lower than the RPI of the higher education in some Southeast Asian countries in five years ago.

To increase the access of higher education will be reached by, among others, establishing new universities, changing the status of private university to state university, granting the mandate of new study program, establishing community academy, granting scholarship, putting single tuition fee into operation, and giving operational grant to state universities [1].

But, one thing may be neglected in the improvement of RPI of higher education in the 2015-2019 Strategic Plan of the Ministry of Research and Technology and Higher Education, is improving the capacity of the existing university study program. So far, the universities, particularly the state universities, find difficulties in improving their program capacity due to the regulation that limits the ratio of students to the facilities owned by the university, for example the ratio of lecturers to the students, the class rooms to the students, and the space of reading room to the students. If this regulation is broken by any university, any sanctions

will apply, for example the program accreditation may be delayed and reduction of any grant.

Of course, the regulations that govern the availability of facilities owned by the universities in order to administer a study program are very important. Such regulations are very crucial particularly when they are connected to the quality of learning process as the major target of the administration and development of higher education. However, the presence of the regulations become a paradox in the Indonesia's education system. On the one hand, the RPI of higher education needs to be improved, but on the other there is certain limiting regulation. Perhaps this is one of the reasons why the improvement of the higher education RPI in Indonesia runs so slow.

PSU is shown to choose the policy of improving the ratios of students to facilities owned by reducing the number of students. This policy is reflected by the decreasing number of students within the last five years. In the semester July to December 2011 the registered number of students was 35,957 persons. In the semester July-December 2015, four years later, it was 33,378 students (Data of the PSU's Executive Information System). It is surely that in the context of fulfilling the regulations, this policy is proper. But, in the context of improving the higher education RPI, such policy needs to be reconsidered, and need to searching for another alternative.

Actually, there is another alternative to be chosen for the improvement of the study program capacity without breaking the regulation concerning the ratio of the facilities owned by the university to the

number of students by implementing the distant education system (DES) as one model of learning. In fact, there has been a regulation governing the DES, which is the Law No. 12 Year 2012 concerning Higher Education [2], and the Regulation of the Minister of Education and Culture No. 24 Year 2012 concerning the DES [3].

The DES is a teaching-learning process that is conducted through the use of any communication media [3]. Article 4 paragraph 1 of the Regulation of the Minister of Education and Culture No. 24 Year 2012 states that the DES can be administered in the scope of study program or subjects.

Since the issuance of both regulations as mentioned above, many universities begin to seriously develop the on-line learning program or usually called e-learning. Similarly, PSU has as of the semester July-December 2013 launched Moodle as a platform-learning that can be used by all lecturers who teach one subject to develop the e-learning model for their respective subject.

The data of the last three semesters show that it is only about 9% of total subjects offered apply the e-learning facility. Additionally, the e-learning system as developed has not yet used the Moodle seriously, overlooked the characteristics of the students and not been developed according to proper learning theory.

This study aims at developing a web-based learning model by combining the face-to-face learning process and the e-learning program, which is usually called as blended learning. Moreover, in developing the blended learning model, it is important to consider the student's characteristic, in this matter, the locus control and learning style.

2. THEORETICAL REVIEW

2.1 Blended Learning

The progressive development of information and communication technology has given immerse impact on the education world especially in the learning process. Some shifts have happened, for example from the class room and particular time to any place and any time, from the paper to on-line; from physical facilities to network [4]. Such shifts are of course resulted from the availability of any education media such as telephone, computer, internet, email and so on.

The term e-learning is getting popular. It is a learning model using information and communication technology, particularly internet. The letter "e" in e-learning stands for "electronic"[5].

In this study, e-learning means a learning model using internet technology to distribute learning materials, conduct learning process and evaluation, so that the students can access the materials from anywhere and at any time and make their own self-

assessment of their learning progress.

Blended learning or hybrid course is a learning model that combines on-line and face-to-face methods [6]. Full e-learning has been gradually overlooked and learning method has shifted to blended learning. Such shift happens because by the e-learning the students are poorly motivated, lack of responsibility, feel isolated and no support to learn [7].

Allen and Seaman argue that the combination between face-to-face and online learning is called blended learning when the portion ranges between 30-79% online [8]. When it is below 30% online, it uses network only as addition, but when it is > 80% it is considered full online. Mason & Rennie states that blended learning frequently used is 50/50 for face-to-face learning model and online learning [9]. They once studied that 75 percent online with 25 percent of face-to-face method was effective in dealing with the limitations of online learning and at the same time gave benefit to the flexibility and costs.

2.2 Locus of Control

The locus control construct originates from the Rotter's social learning theory principally stating that someone's behavior is determined by his/her values, expectations and situation where he/she places himself/herself [10]. These factors (values, expectations and situation) are considered similar in determining someone's behavior.

Furthermore, Rotter argues that the locus control construct is conceptualized as a continuum that moves from internal to external control. Viewed from this construct, someone's personality can be categorized into internal or external control. Someone with internal personality is described as a person who believes that his/her faith really depends on his/her effort. And someone with external personality believes that his/her faith is controlled more by other person or factor that is more powerful and difficult to be predicted. A person with such belief considers that his/her achievement is a destiny in nature [10].

In relation to learning process, a student may blame poor test, confusing books or unfair lecturer as the causes for his bad score in a subject. Or the student may argue that his/her success in a lesson is resulted from his/her capability [11].

Locus control can be measured by any instruments, such as most known Rotter Internal-External Locus of Control, Crandall Intellectual Responsibility Questionnaire that is specially developed for kids, Bialer Locus of Control Questionnaire that is also developed for kids, Dean's Alienation Scale, James Internal-External Locus of Control Scale, and so forth [12].

2.3 Learning Styles

We can find many definitions of learning style in any literature. Dunn and Grigs define learning style as the way by which the student concentrates, processes, internalizes and memorizes new and hard academic information [13]. Moreover, they argue that learning style consists of two characteristics, namely biology and development that makes an environment, method and certain learning resources effective for some students but not effective for other students. Most people have their own learning style that is different significantly.

More simple definition of learning style is stated by Pritchard who defines learning style as a favorable way to learn, for example a student prefers drawing to text, group learning to private learning or structured learning to unstructured learning [14]. Thus, the learning style concept refers to individual difference in relation to what learning model is most effective for them.

The student's learning style is really necessary to be considered to accommodate the needs of students with different learning style [7], [15]. The educators of elementary school up to universities in United States of America prove that they succeed to improve the academic achievement of their students significantly by observing their varied learning style [13].

Learning style is grouped by many ways. Honey and Mumford, for example, categorize learning style into four types, namely: Activist, Reflectors, Theorists, and Pragmatists; Neuro-Linguistic Programming (NLP) categorizes learning style based upon how human learns into three types, namely: (1) Visual, (2) Auditory, and (3) Kinesthetic [14]. Some other experts also propose several classifications of other learning styles. Kolb, for example, proposes that learners can be classified into convergent, divergent, assimilator, and accommodators [16]. Additionally, Felder & Silverman categorize learning style into intuitive vs. sensitive, global vs. sequential, visual vs. verbal, and active vs. reflective [17]. This study used the classification of learning style according to NLP.

One of key factors that influences the online learning participation is learning style [18]. Picciano in his work "Blending with purpose: the multimodal model" develops blended learning model with a multi-modal concept [19]. He suggests a proper model for the web-based learning, which is a model that integrates lecturer-designed learning with varied needs of the students.

3. RESEARCH METHODOLOGY

3.1 Research Type

This is a Research and Development (R&D)

study using the Borg and Gall procedure [20] that is modified into four phases namely: (1) Preliminary Research and Collecting Information, (2) Preliminary Model Plan, and Expert Validation, (3) Field Test I and Preliminary Revision, and (4) Field Test II and Final Revision. This article only covers Preliminary Research and Information Collection.

3.2 Time and Location of Research

This study was conducted in the semester July-December 2014 at three study programs at PSU, namely Electrical-Engineering Education Program (EEEP), Economics Education Program (EEP), and Health and Recreation Program (HRP).

3.3 Research Subject

The subjects of this study were the students of Electrical-Engineering Education Program, Economics Education Program and Health and Recreation Program of PSU who had never attended e-learning model. The subjects were selected in cluster, and the cluster was class or study group, each class for every study program. The three classes selected consisted of 92 students.

3.4 Instrument of Data Collecting

There were three instruments used in the Preliminary Research Phase and Information Collecting, namely: (1) expectation questionnaire about blended learning that is modified from adjective rating scale [21]; (2) questionnaire of locus control [22], and (3) questionnaire of learning styles [23]. The content validity of the three instruments has been guaranteed by the developers of the said instruments. While, the internal reliability of the three instruments as reflected by alpha Cronbach coefficient is 0.886, 0.345 and 0.604, respectively.

3.5 Data Analysis Technique

Data analysis used in this study were:

- Descriptive analysis covering mean, percentage and proportion.
- Point bi-serial correlation analysis for item validity whose item score is dichotomy (1 or 0).

$$r_{pb} = \frac{\overline{X_1} - \overline{X_0} \sqrt{p(1-p)}}{S_x} \quad (1)$$

Where:

$\overline{X_1}$ = mean raw score of all students who got the items right

$\overline{X_0}$ = mean raw score of all students who got the items wrong

S_x = standard deviation of the raw scores

S_x = proportion of students who got the right answer

c. The product moment Pearson correlation for the item validity whose item score in form of interval.

$$\alpha = \left(\frac{K}{K-1} \right) \times \left(1 - \frac{\sum s_i^2}{s_t^2} \right) \quad (2)$$

Where:

K = Numbers of Items

$\sum s_i^2$ = sums of varians of each item

s_t^2 = varians of total score of all items

d. Alpha Cronbach for the internal consistency of the instrument whose item score is interval.

$$r = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{[N \sum x^2 - (\sum x)^2][N \sum y^2 - (\sum y)^2]}} \quad (3)$$

Where:

N= number of pairs of scores

$\sum xy$ = sums of the products of paired scores

$\sum x$ = sums of x scores

$\sum y$ = sums of y scores

$\sum x^2$ = sums of squared x scores

$\sum y^2$ = sums of squared y scores

4. RESULTS

4.1 Preparedness of Implementing E-learning

It is shown that the development of network, hardware and software of information and communication technology constitutes one of the prioritized programs in improving the learning quality at PSU [24]. In the end of 2011 the capacity of server storage had reached 5 terabits, and in 2014 had become more than 10 terabits. Thus, at present almost all services of the students' academic administration such as admission test, registration, paying tuition fee, arrangement of the students' study plan card, checking study result, registration of field practice, transcript printing and inauguration registration are all conducted online.

In addition, the students can also use the campus' information and communication technology facilities for email and internet access. The lecturers can also use the same facilities for any purposes such as uploading academic scores, email and internet access.

The role and use of information and communication technology in the next five years (2011-2015) are increasingly enforced and widened, since the same is determined as one of the pillars to develop the university [25]. This is indicated by the stronger and wider capacity of the university's information and communication technology such as greater bandwidth and more applications and the hot spot access that can reach almost entire area of the campus. In 2015 the university still pays serious attention to the development of information and communication technology, by enlarging the bandwidth to become 300 MHz.

Starting from 2012 the Modular Object-Oriented Dynamic Learning Environment (Moodle) as the management system of web-based learning has been available at the PSU's portal. The training programs for the lecturers to develop e-learning for their respective subject started in 2013 and the same was continued in 2014. Up to August 2014 total 596 lecturers had been trained to develop e-learning for the subject they taught.

Concerning the usage and development of e-learning, the following information describes:

- The percentage of lecturers who have used the e-learning facility for their subject is still low, it is only about 9 %.
- The e-learning program that is developed is just a supplement to a face-to-face meeting, since there are still 16 face-to-face meetings that must be performed for one subject.
- Most of the lecturers who use the e-learning facility have only used the facility and sources existing in the Moodle in a limited way, for example for assignment, attaching syllabus, and uploading material files.
- The learning component that can actually be created through the use of the Moodle has not been utilized in an optimum way.
- The existing learning component has not been fully developed according to the principles of designing a proper web-based learning system.
- No any clear rules concerning the status of e-learning in the University's academic system.

4.2 Locus of Control

Viewed from the locus control, the profile of students is shown in Table 1.

Table 1 Locus of Control

Locus of Control	EEEP	EEP	HRP	PSU
Internal	77 %	64 %	65 %	71 %
External	23 %	36 %	35 %	29 %

Tabel 1 shows a large number of the students of PSU (71%) is categorized into internal locus

control and the remaining (29%) is external control. This pattern is similar for the three study programs.

4.3 Learning Styles

Furthermore, if the students are grouped according to visual (V), auditory (A) and kinesthetic (K) learning styles, a large number of students (59%) is included in visual, followed by auditory (24%), and kinesthetic (17%). This pattern is similar for the three study programs under study, as shown in Figure 1.

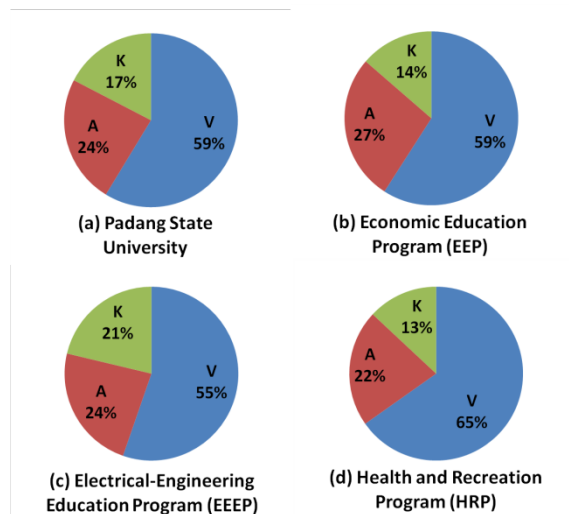


Figure 1 Comparison of learning styles

4.4 Expectation toward Blended Learning

Expectation toward blended learning is categorized into three aspects, namely attractive, benefit and level of difficultness. The students' responses to these three aspects are described in Table 2.

Table 2 Expectation toward blended learning

Aspects	EEEP	EEP	HRP	PSU
Attractive	3.10	3.45	3.13	3.23
Benefit	3.11	3.23	2.98	3.11
Difficultness	2.79	3.29	2.58	2.89

Notes: 3.25-4.00 highly agree; 2.50-3.25 agree; 1.75-2.50 disagree; 1.00-1.75 extremely disagrees.

From Table 2 it can be inferred that the students expect that the blended learning model is attractive, beneficial and easy.

5. CONCLUSION

This preliminary study found that PSU, both at University level, Faculty and Study Program has proper information and communication technology facilities to implement web-based learning process covering availability of bandwidth, storage system, fiber optic (fo) network integrated with Telkom and Indosat connecting to the buildings at the main campus, Moodle as its learning management system and computer laboratory with sufficient capacity.

Furthermore, knowledge, skills and commitment of the lecturers highly support the development of web-based learning. The lecturers state that they know and are able to implement it. This is supported also by a large number of students who agree that the face-to-face lesson is better combined with the e-learning lesson because the university's portal has provided the e-learning facilities. In connection to the use and development of e-learning, it is actually at its preliminary stage, both from the number, quality and status of e-learning in the learning system at PSU.

PSU cannot use e-learning fully as a mode of instruction because it is not justified by law. But can combine e-learning with face-to-face, called blended learning. Individual characteristics of students, in this case the locus of control and learning styles, needs to be considered in designing blended learning. In addition, a formal academic rule is also needed so that the implementation of blended learning is legitimate.

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