

An Investigation Of Student Perspective For E-Learning Readiness Measurement

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Abstract

E-learning and other online-based learning media innovations were introduced to improve the quality of education. The main aim of this study is to measure e-learning readiness from the point of view of students at a university in Karawang Indonesia. The questionnaire was used to determine the extent where e-learning readiness of first-year to fourth year students. The study was conducted in the condition of the absence of the e-learning methods applications. A measurement model of e-learning readiness presented by Aydin and Tasci is used to measure people readiness, self-development readiness, technology readiness, and innovation readiness. It was found that, the four proposed factors indicate in the ready category, but requires a slight increase in several factors. Based on the ELR readiness analysis method, two of the four aspects have high ELR scores are self-development and technological aspects. While aspects that have low ELR scores are people and innovation aspects. Therefore, both aspects require more serious improvements so that the e-learning method is ready and can be continued.

Keywords

E-learning Readiness, Technology Readiness, Information System, Student, University

1. Introduction

Within the literature of learning and teaching, the term “e-Learning” is often used interchangeably with other terms such as “online learning” and “distance learning” (Aldiab, et al. 2016). Clark and Mayer in Aldiab (2016) define e-learning as “Instruction delivered on a digital device (such as a desktop computer, laptop computer, tablet, or smartphone) that is intended to support learning”. On the other hand, Oztekin (2013), e-learning means *electronic learning* that utilizes electronic communication for teaching and learning designed to be applied from a distance. Thus, e-learning is an electronic learning using a variety of digital communication devices that can be used to conduct teaching and remote communication. Som Naidu (2006) and Aydin and Tasci (2005), revealed that increasing attention to e-learning is directly related to increasing access against information and communication technology and decreasing operational costs. Information and communication technology that were supported by multimedia based learning and teaching is also one of the factors that support the growth of e-learning. To date, several studies have reported various benefit of the e-learning application. One of them is e-learning can combine individual and group learning activities either online or offline at the same or different times. Moreover, e-learning can also help the learning process to be more fun and interactive.

E-learning has been widely used in higher education (Martínez-Torres, et al. 2011). E-learning can be used for a distance learning and it is possible to develop in its application. Increasing the work efficiency of teacher utilizing information and communication technology to achieve a better learning outcome is one of the factors that affects the development of e-learning. The students also began to hope that their lectures were supported by web-based materials and technology so that could be accessed anytime and anywhere online (Naidu 2006).

Karawang, one of the districts in Indonesia, is one of the largest industrial centers in Asia. There are universities that have considerable potential in Karawang because they are in the industrial center. Although many studies have revealed the e-learning benefits in the learning process, these universities have not applied e-learning perfectly. Some previous studies revealed that there are several factors that affect the use of e-learning at universities. Popovici and Mironov (2015) revealed that one of the factors is the technology readiness factor. Moreover, Aydin and Tasci (2005) revealed that e-learning strategies require considerable up-front analysis, development time, money, technological infrastructure, and leadership support to successful.

The specific objective of this study was to determine the university readiness level in implementing e-learning from the student perspectives. A key issue is to determine factors that must be prepared by the university to be able to apply e-learning in the teaching and learning process. E-learning implementation is thought to be able to improve teaching and learning process from various benefits that have been revealed above.

2. Methods

2.1 E-Learning Readiness

The readiness of an organization to adopt e-learning can be defined as mental and physical preparation by the organization itself (Rohayani, et al. 2015). E-Learning Readiness or also referred to E-readiness is the degree of readiness by individual that has regarding the attributes or variable that affects the success of distance learning (Suwarsono 2015). Rohayani, et al. (2015) revealed there are several factors that affect e-learning readiness, i.e. technical, content, human, and financial support. Suwarsono (2015) revealed there are three components that affect e-learning readiness, i.e. self-directed learning, technical readiness, and student preferences toward the form of material delivery that has different from face to face method.

Coopasami, et al (2017) used The Chapnick Readiness Model to measure the readiness of e-learning implementation in first year nursing student. Chapnick claims that are several factors that must be considered to assess readiness and groups them into eight categories: (1) psychological readiness, (2) sociological readiness, (3) environmental readiness, (4) human resource readiness, (5) financial readiness, (6) technological skill (aptitude) readiness, (7) equipment readiness, and (8) content readiness. Those readiness categories have become 46 questions in the questionnaire made by Chapnick.

Aydin and Tasci (2005) and Muharina and Kelana (2017) in their research was using four variable measurements that were technology, innovation, people, and self-development. Technology is one of the factors that can be effectively used to adapt a technological innovation in an organization (Rogers, 2003). According to Rogers, technology has two components: hardware and software. Innovation as a factor mainly involves examination of past experiences (Aydin and Tasci 2005). People factor refers to the availability and set-up of the human support system. In this component some parameters such as receptivity and the prerequisites of humans to learn successfully in the new environment are defined (Saekow and Samson 2011). Self-development factor is an individual and organizational ability to actively seek for information about innovations to improve themselves, and those have higher self-efficacy beliefs for the achievement can adopt innovations earlier than others (Rogers, 2003).

This research set out to measure the level of student readiness in using e-learning in university. According to previous studies, this study also using several indicators to measure e-learning readiness, namely People Readiness, Self-development Readiness, Technology Readiness, and Innovation Readiness.

2.2 Measures

Research method that will be used is a qualitative method of a natural object. The research instrument consists of four indicators that will be analyzed related to e-learning readiness by Aydin and Tasci (2005), there are: People Readiness, Self-development Readiness, Technology Readiness, and Innovation Readiness. Then indicators will be derived into the questions or statements that written in the questionnaire. The measurement scale can easily be coded as 1, 2, 3, 4 and 5, as in a five-point Likert-type scale. Determination of the student readiness level in the e-learning implementation is based on the results of research by Aydin and Tasci (2005), which can be illustrated in Figure 1. Thus, the value of E-learning Readiness Score (ELR), $M_{ELR} = 3.41$ mean score can be identified as the expected level of readiness with the item, while the respondent's answers can have a higher or lower level of readiness. The measurement scale illustrates the point scale:

- | | |
|-----------|--|
| 1 – 2,6 | = Not ready needs a lot of work to achieve the successful implementation of e-learning |
| 2,7 – 3,4 | = Not ready and requires some work to achieve successful implementation of e-learning |
| 3,5 - 4,2 | = Ready but need few improvement |
| 4,3 – 5 | = Ready and go ahead to e-learning implementation. |

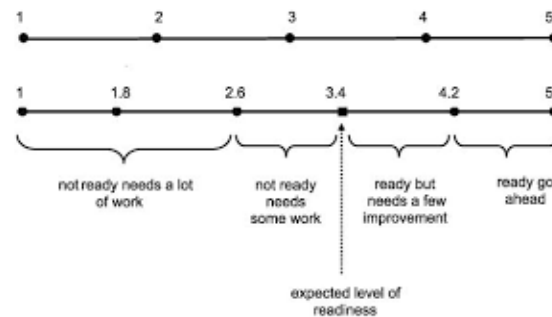


Figure 1. Assessment model of the E-learning Readiness
(Aydın and Tasci 2005)

First, the validity and reliability tests were conducted for the questionnaire. Question items that have been valid then will be distributed to students at the University. Surveys will be conducted on people who are seen to know about the learning situation at the university. The research sample was determined by purposive sampling, which is based on the purpose of this study. This will be determined later, related to the questions that will be prepared.

In this study, no descriptive hypothesis was formulated. Data analysis is done by calculating the results of the questionnaire, so that the formulation of the problem can be answered quantitatively. The descriptive problem formulation was answered through the following steps (Aydın and Tasci 2005):

- Determine the ideal score, which is the score set with the assumption that each respondent in each question gives the answer with the highest score.
- Calculate the average score for each question item from the respondent's answer.
- Calculate the average score for each indicator of each question in the indicator.
- Analyze the results of the average score for each indicator, to determine the level of readiness

2.3. Participants

Respondents for this study were taken from students in one of the faculties at the university, which was calculated by Slovin formula and obtained a sample of 100 people. Data collection was carried out through questionnaire surveys. The data used for the study include initial data useful for formulating problems and primary data used to assess e-learning readiness. Primary data is taken from research samples through questionnaires for selected respondents using questionnaire instruments.

3. Results and Discussion

3.1 Results

The concept of analyzing questionnaire results for e-learning readiness is based on the development of instrument models by Aydın and Tasci (2005). E-learning readiness scores obtained are adjusted to the conditions of the research object. To determine e-learning readiness score from research object, the following stages are carried out:

- Each respondent's answer value is added per each questionnaire item. This applies to all respondents;
- Then determine the average value of the total value of each questionnaire item;
- The average number of values for all questionnaires was then analyzed based on the e-learning Readiness Level Score.
- The E-learning Readiness Level Score is grouped into four e-learning readiness conditions, namely: (1) There is no readiness; (2) Not ready yet, but need some work (3) Ready, but requires a little improvement; (4) Ready to be implemented.

The level of "There is no readiness", states that there is resistance to the plan to change learning towards e-learning. The management must concentrate on the change effort and review it, whether e-learning is the right way to achieve organizational goals. The level of "Not ready yet, but need some work", states that the organization is not ready for the implementation of e-learning, but can immediately implement. The level of "Ready but requires a little improvement" indicates that in this condition resistance is not an obstacle, but the management still needs to convince the organization toward the benefits of using e-learning. The "Ready to be implemented" level states that

the process towards learning changes can be done quickly. This is a desired condition for every organization in implementing e-learning. Management has the flexibility to decide which method selected changes.

The questionnaire was distributed online and directly in physical paper form. Up to the time limit for distribution, 103 questionnaires were collected, consisting of 83 online questionnaires and 20 questionnaires filled directly in physical paper. From the 103 questionnaires collected, there were 100 questionnaires that could be processed. The data obtained will then be processed using Microsoft Excel 2010 and SPSS. The results of the data showed that 37% of respondents were women and 63% were men. 35% of respondents are fourth year, 28% are third year, 17% are second year, and 20% are first year of grade. After the data has been collected, the validity and reliability test will be done first. Validity test is done to find out how far a measuring instrument can represent real conditions. In this study, obtained 100 data with a confidence level of 95%, obtained r table of 0.163. From the results of data validity test (Table 1), it appears that there is an invalid question item, namely FI2 in the Innovation Factor, so that the item question is not included in subsequent data processing. Reliability test done by look on cronbach's alpha value compares to the value on r table. If value of cronbach's alpha > r table then the result is reliable. The results for the value of alpha cronbach are all higher than r table (Table 2). It can conclude that all of the instruments used in this research are reliable.

Table 1. Validity Test Results

Variable	Items	R count	R table	Category
People Readiness	FM 1	0.164	0.163	Valid
	FM 2	0.281	0.163	Valid
	FM 3	0.402	0.163	Valid
	FM 4	0.5	0.163	Valid
	FM 5	0.248	0.163	Valid
	FM 6	0.39	0.163	Valid
	FM 7	0.345	0.163	Valid
Self Development Readiness	FPD 1	0.352	0.163	Valid
	FPD 2	0.538	0.163	Valid
	FPD 3	0.292	0.163	Valid
	FPD 4	0.279	0.163	Valid
	FPD 5	0.305	0.163	Valid
Technology Readiness	FT 1	0.339	0.163	Valid
	FT 2	0.363	0.163	Valid
	FT 3	0.205	0.163	Valid
	FT 4	0.403	0.163	Valid
	FT 5	0.468	0.163	Valid
Innovation Readiness	FI 1	0.376	0.163	Valid
	FI 2	0.03	0.163	Not Valid
	FI 3	0.29	0.163	Valid
	FI 4	0.294	0.163	Valid

Table 2. Reliability Test Results

Variable	Cronbach's Alpha	R table	Category
People Readiness	0.333	0.163	Reliable
Self Development Readiness	0.244	0.163	Reliable
Technology Readiness	0.5	0.163	Reliable
Innovation Readiness	0.29	0.163	Reliable

Table 3 shows the number of scores and the average of each indicator question from the e-learning readiness variables. The People Readiness was represented by 7 question items with total scores are 254, 260, 418, 346, 375, 386 and 399.

Table 3 Total Score and Average of Each Item

Variables	Items	Total Score	Average
People Readiness	FM 1	254	2.54
	FM 2	260	2.6
	FM 3	418	4.18
	FM 4	346	3.46
	FM 5	375	3.75
	FM 6	386	3.86
	FM 7	399	3.99
Self Development Readiness	FPD 1	400	4
	FPD 2	369	3.69
	FPD 3	382	3.82
	FPD 4	381	3.81
	FPD 5	387	3.87
Technology Readiness	FT 1	406	4.06
	FT 2	406	4.06
	FT 3	415	4.15
	FT 4	400	4
	FT 5	416	4.16
Innovation Readiness	FI 1	326	3.26
	FI 3	382	3.82
	FI 4	388	3.88

Self-Development Readiness in Table 3 is represented by 5 questions with total scores of 400, 369, 382, 381, and 387. Technology Readiness is represented by 5 question items with total scores of 406, 406, 415, 400 and 416, respectively. Innovation readiness is represented by 3 questions with the total scores of 326, 382, and 388. The score of each item question then will be averaged to conclude in Table 4. The results of the assessment score of e-learning readiness in table 4 found that the overall score of the e-learning readiness score was higher than the expected readiness level ($M_X=3.77 > M_{ELR}=3.41$). It can be concluded that the university is ready to implement e-learning but requires a little improvement.

Table 4. Scale Assessment of E-learning Readiness

Variables	Score	ELR Score	Results
People Readiness (M_H)	348	3.48	Ready, but requires a little improvement
Self Development Readiness (M_{SD})	383	3.84	Ready, but requires a little improvement
Technology Readiness (M_T)	408	4.09	Ready, but requires a little improvement
Innovation Readiness (M_I)	365	3.65	Ready, but requires a little improvement
Total E-learning Readiness Score (M_X)	1506	3.77	Ready, but requires a little improvement

3.2 Discussions

A. People Readiness

People Readiness in Table 4 have a higher value than expected readiness level ($M_H = 3.48 > M_{ELR} = 3.41$), it can be concluded that the university has enough qualified human resources in the implementation of e-learning. However, from this value, the University is advised to keep improving their human resources. According to Table 3 in the People Readiness, it is necessary to increase the students' knowledge with socialization or provide guidance on e-learning and online learning. ($M_{FM1} = 2.54 < M_{ELR} = 3.41$). Unpreparedness of human factors is also marked by the low experience of students in the use of e-learning ($M_{FM2} = 2.6 < M_{ELR} = 3.41$), but some students believe that they can use e-learning properly ($M_{FM5} = 3.75 > M_{ELR} = 3.41$). This can be improved by providing socialization and training about e-learning to the students. The result shows that students support the application of e-learning at universities by looking for providers of e-learning services from outside the university ($M_{FM3} = 4.18, M_{FM4} = 3.46 > M_{ELR} = 3.41$). Students believe that using e-learning can make it easier for students to cooperate in completing lecture assignments and facilitate collaboration with lecturers in the teaching and learning process ($M_{FM6} = 3.86, M_{FM7} = 3.99 > M_{ELR} = 3.41$).

B. Self Development Readiness

From Table 4, it appears that the ELR score for Self Development Readiness is greater than the expected ELR value ($M_{SD} = 3.84 > M_{ELR} = 3.41$). This shows that the university is ready to implement e-learning, but it still requires an increase in factors related to self-development. University is advised to focus on using their budget for e-learning development. In addition, students can also maximize learning time by using e-learning, obtain new knowledge concepts, and can evaluate the understanding level of the material in each subject.

C. Technology Readiness

From Table 4, it appears that the ELR Score for Technology Readiness is greater than the expected value of ELR ($M_T = 4.09 > M_{ELR} = 3.41$). This shows that the university is ready to implement e-learning but requires a little improvement. The increase in technology factors is in line with the results of research from Coopasami, et al. (2017), that improvement can be done by adding the number of computers and increasing internet access, so that it can facilitate the use of e-learning.

D. Innovation Readiness

From Table 4, it appears that the ELR Score for Readiness Innovation is greater than the expected ELR value ($M_I = 3.65 > M_{ELR} = 3.41$). This shows that the university is ready to implement e-learning but still needs improvement related to innovation factors. Students can implement the application of e-learning by forming study groups with other students who are guided by lecturers online.

3. Conclusions

Overall, the level of readiness for the implementation of e-learning based on ELR Aydin & Tasci's readiness analysis method is included in the "ready" category in the implementation of e-learning, but requires a slight increase in several factors ($M_X=3.77 > M_{ELR}=3.41$). The four proposed factors indicate in the ready category, but requires a slight increase in several factors. Based on the ELR readiness analysis method, two of the four aspects have high ELR scores, there are self-development and technological aspects. While aspects that have low ELR scores are people and innovation aspects. Therefore, both aspects require more serious improvements so that the e-learning method is ready and can be continued. Although readiness measurement is very important, this study only uses four aspects in measurement, there are people, self-development, technology, and innovation. There are still many readiness factors that need to be considered. Chapnick (Chapnick 2002) revealed that the readiness factor was represented by eight factors. Therefore, further research might explore more factors in e-learning readiness factors.

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