

## Maximize E-Learning To Improve Students Knowledge and Interest In Learning

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### ***Abstract***

*E-learning has been believed to be an effective method to increase the knowledge of students and increase student interest in learning. The success of an e-learning is strongly influenced by the user that is lecture and students and the media used. This study aims to create an e-learning prototype, evaluate its implementation and perform prototypes quality testing made to know what factors that should be considered to maximize the functionality of e-learning. The method used is the technique of data collection using questionnaires, design techniques using methods of object-oriented analysis and design: unified modeling language (UML), testing the quality of the e-learning prototype was tested by four characteristics ISO 9126 testing models, namely: functionality, reliability, usability, and efficiency. The result achieved is a prototype of e-learning that is attractive to students, easily updated by the lecturer, is easy to use by students and meet the quality standards of ISO 9126 with good results.*

**Keywords :** *e-learning, iso 9126, UML, prototipe*

### **1 INTRODUCTION**

Nowadays, information technology has become the solution to every problem mankind faces included in the learning process. The existence of e-learning methods facilitate the learning process so that everyone can learn anywhere anytime. The medium used for e-learning can be any combination of text, graphics, audio, video, and animation. The fact that e-learning system can help education institution in reaching more student is undeniable. This system can help lectures communicate, share, and discuss matters with their students.

The combination of e-learning media are a combination of images, illustrations, charts, audio, and visual elements that are part of multimedia learning objects (Salman, 2012). Online learning performance of several universities in Jakarta are still not maximized its use (William, 2012). The the lack of e-learning implementation are due several factors that are not easy to use, look unattractive, share data is not running good, the data is not updated, the lack of experience of lecturers, and slow internet access (Diana, 2012). Institution need to support

the implementation of e-learning (Abdillah, 2013). Learning using social media that produces some of the factors that affect learning in the public media learning is context element, content element, public customization elements, connection elements, elements of communication, and community elements (Fenny, 2013). E-learning enable knowledge maangement in education institution (Abdillah, 2014).

This study aims to create ane-learning prototype , evaluate its implementation and perform prototypes quality testing made to known what factors that should be considered to maximize the functionality of e-learning.

## **2 RESEARCH METHODOLOGY**

### **2.1 Sample Selection Methods**

Sampling selection using purposive sampling technique by taking selected respondents completely by the researcher according to specific characteristics possessed by the sample. (Nasution, 2009)

### **2.2 Data Collecting Method**

1. Observation method, or by conducting field visits and direct observation of the object of research.
2. Interview method, which is done by involving the parties involved in the research to take the data evaluation and testing ISO 9126.
3. Study library method.

### **2.3 System Design Technique**

Program design or specifications of the system, which includes:

1. Making Use Case
2. Making Activity Diagrams.
3. Making WSDL diagram.
4. Making Class Diagram.
5. Making Deployment Diagram.
6. Database Design.
7. System architecture design (hardware, software, networks).

### **2.4 Testing Model ISO 9126**

Validity of the construct testing is done by calculating the correlation between each statement with a total score. In testing the validity of the instrument of this study, using Pearson Product Moment correlation with software tools IBM SPSS Statistics 21. Reliability testing used in the study is the alpha cronbach method.

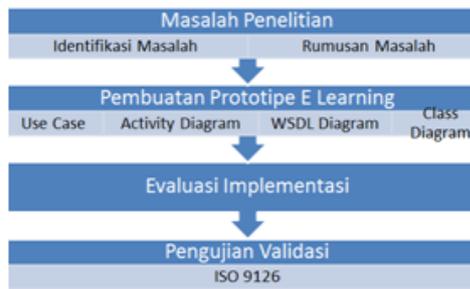


Figure 1: Research Step

## 2.5 Research Step

## 3 DISCUSSIONS

### 3.1 E-Learning

e-learning is a type of learning that allows conveyed teaching materials for students by using the internet, intranet, or other computer network media (Darin, 2001). Furthermore, It is an education system that uses an electronic application to support the teaching and learning with the Internet and network media (Jenkinson, 2009).



Figure 2: E Learning (Anderson, 2004)

Online learning allows flexibility of access from anywhere without geographical and time barrier (Anderson, 2004). However the material must be designed properly to enhance the learning effectiveness. Using media such as audio, visual or both are technologies that help students gain significant learning benefit.

Benefits of e-learning (Alsultany, 2006), among others:

1. The information obtained is consistent and can be changed as needed

2. Its contents can be updated appropriately and accurately and quickly distributed to users.
3. This method allows users to perform learning anytime anywhere.
4. E learning is universality which means that e-learning can make any users who use it to get the same learning content at the same time
5. E-learning is scalability because it can be developed with little effort and expense

### 3.2 Testing Model ISO 9126

External quality characteristics are the parts of a product related to the wearer (Simarmata, 2010), while the internal quality characteristics are not directly related to the user. ISO 9126 standard in figure 3 (Al-Qutaish, 2010) has been developed in an attempt to identify the key attributes of quality for computer software. According to ISO 9126 quality factor includes six quality characteristics as follows:

1. Functionality. The ability of the software to provide functions according to user needs
2. Reliability. Software's ability to maintain a certain level of performance
3. Usability. The ability of the software to be understood, learned, used, and attractive to users
4. Efficiency. The ability of the software to provide appropriate performance and relative to the number of sources
5. Maintainability. The ability of the software to be modified.
6. Portability. The ability of the software to be transferred from one environment to another environment.

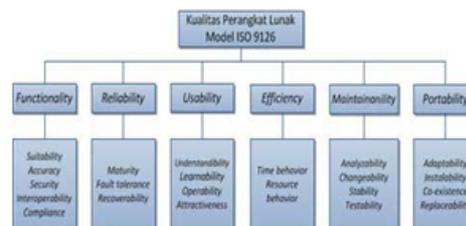


Figure 3: ISO 9126 Models

### 3.3 Interface Construction

The success of an e-learning methods can be known from the ease of lecturers provide the material and the level of student understanding. Students habits in using computer and students habits in online also affect the success of e-learning.



Figure 4: E-Learning User Interface

In addition there is a menu to support the implementation of e-learning between lecturers and students also are campus agenda as student activities of each SME, the latest announcements from the campus, and there are polling input from students on an academic issue.



Figure 5: Lecturers Control Panel

This form is used by the admin in BAAK or BSI and lecturers to upload material that will be needed by students to gain knowledge such as: lectures, coursework, SAP courses, exam results, tips and tricks ebook, ebook databases, multimedia ebook, programming ebook, and linux ebook.

### 3.4 System Testing

Respondents in the implementation of quality tests are a few lecturers and students of the total respondents as many as 200 people. Respondents were categorized by sex, education last, computer time usage, interest and use of the Internet.

Results for discussion of media is: media video and animation is very interesting, this media can add student understanding and can increase student interest in learning because it is easier for students to get knowledge that delivered by lecturers. Students do not need to interpret its own purpose. Media images in the form of twodimensional images or illustrations are also attractive and increase student comprehension but not all of the intent of the lecturers could be delivered because the data held by the student is not much that require active participation from students. Audio media into the media was not selected because it tends to

Table 1: ISO 9126 Calculation Result

Aspek	Actual Score	Ideal Score	% Actual Score	Criteria
<i>Functionality</i>	1563	2000	78,15%	Baik
<i>Reliability</i>	996	1250	79,68%	Baik
<i>Usability</i>	1604	2000	80,20%	Baik
<i>Efficiency</i>	588	750	78,40%	Baik
<b>Total</b>	<b>4751</b>	<b>6000</b>	<b>79,18%</b>	<b>Baik</b>

make students become bored, understanding gained from the audio is not great because it is from the beginning has not attractive. The existence of links to scientific reference material on the subject of discussion is felt greatly assist students in learning a subject for students to be more focused and could look for more examples.

For user that already get used to work using computer affect the student activity in finding the information contained in e-learning. Students who are already accustomed to using computers will not be difficult to find a source of learning from professors. In terms of internet usage shows that the browsing and the use of social media so dominant that it is necessary to combine e-learning with social media as a medium of learning.

### 3.5 ISO 9126 Models

Validity of test results of 200 respondents using Pearson Product Moment Correlation table values obtained correlation between the scores of the items with the total score for the four variables: functionality, reliability, usability, and efficiency is greater than 0,138 so that it can be valid. Rtable value of 0.138 for  $n = 200$  (Based on R table) (Sugiyono, 2010). Reliability tests performed with Cronbach alpha ( $\alpha$ ). Instruments used in the variable is said to reliable (reliable) if it has more than a Cronbach alpha of 0.60 (Sekaran, 2006). The test results of 4 variables produce iso 9126:

1. For functionality AC value = 0.634
2. For reliability AC value = 0.714
3. For usability AC value = 0.682
4. For efficiency AC value = 0.768

From these results we concluded that for the four variables can be said to be reliable.

ISO 9126 calculation results showed that the level of quality learning software e-learning model in the Good criteria overall, with a percentage of 79.18%. Aspects of the highest quality is based on Usability aspects with a percentage of 80.20%, which indicates that the prototype e-learning produced is easy to understand, easy to learn, easy to use, and attractive in users appearance. Following aspects with 79.68% is Reliability indicates the level of performance can be categorized either. Efficiency aspects with a percentage of 78.40% indicates that the prototype is no problem even if used simultaneously and the performance is relatively stable, while the lowest is the quality aspect of the aspects of functionality with a percentage of 78.15% which indicates the prototype could provide functions according to user needs.

### 3.6 Acunetix WVS 8 Software Testing

Acunetix is a software that is used by network security pentester web, this software is used to find the weak points of a web-based application that can subsequently be covered with repair existing weak points. Acunetix commonly used by IT consultants or Web Developer in testing web applications.

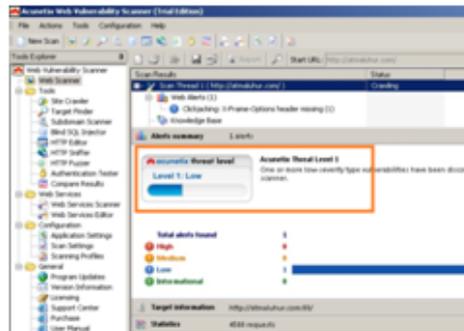


Figure 6: Average fitness comparison results between hierarchical pheromone updating and previous work (Kurniawan et al., 2008)

From the test results shows that the level of thread-level there is at level 1 (low) after the 4588 request. Threats only form of information, ie the existence of the X-Frame option header is missing in my PHP Admin her. This indicates that there are no loopholes in PHP prototype e-learning made.

## 4 CONCLUSIONS

From the discussion we concluded as follows:

1. Factors affecting the success of e-learning can come from:
  - (a) User habits: habits using a computer, and online time usage
  - (b) Media used: audio, picture, video, animation
  - (c) Application of e-learning made.
2. Results of the evaluation of e-learning on campus XYZ is easily updated by the lecturer, and easy to use by students.
3. The results of using the ISO 9126 quality testing and software are:
  - (a) ISO 9126 calculation results showed that the level of quality learning software e-learning model in the Good criteria overall, with the percentage of 79.18%. usability aspects with a percentage of 80.20%, reliability aspects with 79.68% , efficiency aspects with percentage of 78.40%, and functionality aspects with a percentage of 78.15%.
  - (b) From the results of software testing Acunetic WVS 8 indicates that there are no loopholes in PHP prototype e- learning made

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