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Application of E-Learning System for Teachers and Vacational Students to Improve the Quality of Learning in Realizing the School Concept Based On Information and Communication Technology

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Abstract

E-learning as a new learning model in education provides a great role and function for the world of education. It answers the shortcomings and weaknesses of conventional education (education in general) including the limitations of space and time. Information technology that has a standard internet platform can be a solution to these problems because of the nature of the internet, which allows everything to be connected, cheap, simple and open so that the internet can be used by everyone, everywhere, everytime and free to use (available to every one). The problems that are faced by our partners (Poncol and 2 Vocational High School of Magetan) are they have electronic devices (computers and wifi) but do not have e-learning, and also, the need of increasing teachers human resource. The objective of this Community Service Research Program is to 1) make chamilo-based e-learning media partners; 2) improve the ability of teachers and students to apply chamilo-based e-learning for actualizing the concept of ICT-based schools; and 3) increasing teacher and student interaction without limits of space and time (via online, anytime and anywhere). The method used is Participatory Rural Appraisal (PRA) method by involving more partner participants facilitated by community service programs UPN Veteran Jawa Timur as resource / facilitator for the implementation of chamilo-based E-Learning. The results of the Community Service Research Results Program are 1) Partners have chamilo-based e-learning media; 2) Teachers and students have been able to apply chamilo-based e-learning for actualizing the concept of ICT-based schools; also 3) the teacher and student interactions have increased without limits of space and time (online, anytime and anywhere). Based on implementation of this program, it was concluded that the e-learning system is useful to improve the quality of teacher and student learning for actualizing the concept of information and communication technology-based schools.

Keywords: Communication technology, e-learning, improving the quality of learning, information

INTRODUCTION

E-learning as a new learning model in education provides a great role and function for the world of education which has been charged with the many shortcomings and weaknesses of conventional education (education in general) including the limitations of space and time. Information technology that has a standard internet platform that can be a solution to these problems because of the nature of the internet itself that allows everything to be

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connected to each other not to mention the cheap, simple and open character of the internet which can be used by everyone, everywhere, everytime, and free to use (available to every one) (Ali,2006).

The development of education towards e-learning is a necessity so that education quality standards can be improved, because e-learning is one of internet technology which deliver learning in a wide range based on three criteria: (1) e-learning is a network with the ability to renew, storing, distributing and sharing teaching or information material, (2) sending to the last user via a computer using standard internet technology, (3) focusing on the broadest view of learning behind the traditional learning paradigm (Rosenberg 2001; 28), thus the urgency of information technology can be optimized for education (Ali et al., 2008).

Situation Analysis

Vocational high school as one of the educational institutions needs to equip students and graduates with adequate skills including ICT competencies. The implementation of the learning process that utilizes information and communication technology faces various obstacles that are not simple. The main problems that are often faced by schools and teachers are the limitations of infrastructure, human resources and learning resources (Chu et al., 1998).

Data from the Department of Education and Culture shows that as many as 95% of high schools and vocational high schools already have computers. However, less than 25% of high schools and 10% of vocational high schools have been connected to the Internet (Mohandas, 2003).

With regard to the implementation of information and communication technology-based learning, especially users of e-learning as alternative learning media, schools need to carry out needs analysis, prepare necessary needs, design learning models and their development. LearnFrame.Com in Glossary of e-learning Terms (Farhad, 2001) states that e-learning is an education system that uses electronic applications to support teaching and learning with Internet media, computer networks and computers. To find out the use of e-learning by the teacher as a learning intermediary, it is necessary to do an in-depth study. The development of e-learning aims to increase the ability of using information technology (Allan & David, 2001).

Information technology can develop rapidly, first it takes an infrastructure that allows internet access anywhere with sufficient speed. Second, the human resource factor demands the availability of high technology mastery. Third, policy factors require the existence of macro and micro-scale policies that favor the development of long-term information technology. Fourth, financial factors require a positive attitude from banks and other financial institutions to support the information technology industry. Fifth, the content and application factors demand information that is delivered to the person, place, and time and the availability of the application to deliver the content comfortably to the user.

E-learning which is one of the information technology products certainly also has supporting factors in the creation of quality education, as for the First factor, there must be a policy as an umbrella which includes the financing system and the direction of development. Second, the development of content or material, for example curriculum must be based on information and communication technology. Thus, later developed not limited to operational or computer use training. Third, the preparation of teaching staff, and finally, the provision of hardware.

Specific Issues are Faced by Partners

1 The specific problem faced by partners of Poncol and 2 Vocational High School of Magetan is that they do not have e-learning, so the presence of UPN "Veteran" Jawa Timur is needed to implement Risma. Location selection is based on: (a) Schools need to increase student grades so they need ICT-based e-learning learning methods, (b) Schools already have wifi but do not have e-learning, (c) Geographically located in East Java border with Central Java, (d) 2 Vocational High School of Magetan for demonstration in cities and Poncol Vocational High School for demonstration in rural areas by implementing e-learning to realize the concept of information technology-based schools and computers.

2 This thinking departs from the demands of developing traditional learning systems towards the use of ICT. Traditional learning systems are characterized by a meeting between students and instructors to carry out

the teaching and learning process (Ali et al, 2008). This method has been going on for a long time until now in order to meet the main objectives of teaching and learning, but this concept faces obstacles related to the limitations of place, location and time of implementation with the increasing activity of students and instructors.

3 The learning system paradigm shift began to appear in the knowledge transfer process. The current learning process tends to emphasize teaching, based on content, abstract and only for certain groups (in this process teaching tends to be passive). As the development of ICT science and technology, the learning process begins to shift to the learning process, based on the problem (case base), is contextual and is not limited to certain groups. In the learning process like this students are required to be more active by optimizing existing learning resources.

Partner Problem Resolution

Based on the identification of partner 1 and partner 2 issues, as an effort to improve the quality of learning for actualizing the concept of information technology and computer-based school, they are :

Table 1. Solutions for Specific Problems that are Faced by Partners 1 and Partners 2

No	Problems of Partner 1 and Partners 2	Method of Resolving Problems	Output	Outcome
1	The problem of actualizing information technology-based learning and computers	Developing chamilo-based e-learning as a learning media	A website to develop chamilo-based e-learning as a learning media is built	Increasing student achievement and teacher's ability to use ICT learning
2	Difficulties Finding a Facilitator to actualize information technology and computers-based learning	training chamilo-based e-learning operational as a learning medium for a. Material b. Test c. Learning evaluation	Students and teachers can use chamilo-based e-learning as a learning medium for a. Material b. Test and c. Learning evaluation	Increasing student achievement and increasing the ability of teachers to use ICT in learning
3	Difficulties Finding e-learning mentoring for teachers and students	Operational assistance for chamilo-based e-learning as a learning medium for a. Material b. Test and c. Learning evaluation	Students and teachers can use chamilo-based e-learning as a learning medium for a. Material b. Test and c. Learning evaluation	Increasing student achievement and increasing the ability of teachers to use ICT in learning

Source: primary data

Target Program

The target of the community service program titled e-learning for Teachers and Students at Poncol and 2 Vocational High School of Magetan to actualize the concept of information technology and computers -based schools is:

1. Teachers and students at Poncol and 2 Vocational High School of Magetan are able to apply e-learning to actualize the concept of information technology and computers-based schools.

2. Students at Poncol and 2 Vocational High School of Magetan are able to apply e-learning to realize the concept of information technology and computers-based schools.

Output Program

The output of the community program entitled e-learning for Teachers and Students in Poncol and 2 Vocational High School of Magetan to actualize the concept of school based on information technology and computers is the ability to apply e-learning methods to improve the quality of teaching and learning. Another output is a scientific journal published in the Unair Community Service Journal.

Table 2. Target and Output

No	Target Program	Method	Partner	Output Program
1.	The teacher is able to apply e-learning to actualize the concept of information technology and computers-based schools	*e-learning* Method	Poncol and 2 Vocational High School of Magetan	The ability of teachers to apply e-learning to actualize the concept of information technology and computers - based schools
2	Students are able to use e-learning to actualize the concept of information technology and computers -based schools	*e-learning* method	Poncol and 2 Vocational High School of Magetan	The ability of students to use e-learning to actualize the concept of information technology and computers -based schools

Source: primary data

Table 3. Plan for Achieving Target of Risma Program Output

No	Output Program	Status
1	Journal publications /prociding	Accepted/Published
2	Speakers at scientific meetings	Completed
3	Intellectual Property Rights	None
4	Appropriate technology	Availability
5	Social art / engineering, services, systems, products / goods	Availability
6	Text Book	None
7	Media publications	Published

Source: primary data

METHODS

E-learning Web-Based

The paradigm of the education system that was originally based on traditional by relying on face to face only, turned into an education system that is not limited by space and time with a touch of the world of information technology, especially the cyber world (virtual). The education system based on cyber world is meant to be called and known as e-learning. The existence of limitations in the face-to-face traditional teaching and learning process is limited by space and time, so e-learning is present to anticipate this. With the teaching and learning process is no longer limited by space and time so that the relationship between students and instructors can be done anytime and anywhere (Soekartawi, 2003).

The concept of e-learning is very popular in recent years, even though the concept has long been raised before. This term itself has a very broad definition. The terminology of e-learning is pretty much expressed in various perspectives, but basically leads to the same understanding. The letter e in e-learning means electronics that are often matched with the word virtual or distance. From this, the term virtual learning or distance learning. While the word learning is often interpreted by learning education or training. So e-learning means learning by using media or electronic device assistance services. The implementation, e-learning uses audio, video, computer devices, or combinations (Surjono, 2007).

E-learning is a learning process that is carried out through a network. This means that with e-learning it is possible to convey teaching materials to students using information and communication technology media in the form of computers and internet or intranet networks. With e-learning, learning can be done anytime, anywhere, through any route and with any access speed. The learning process takes place efficiently and effectively. A distinctive feature of e-learning is that it does not depend on time and space. Learning can be done anytime and anywhere. With information technology, e-learning is able to provide teaching materials and store learning instructions that can be accessed anytime and from anywhere. E-learning does not require a spacious room as conventional classrooms. Thus this technology has shortened the distance between instructors and students. Bates and Wulf (1996) say that e-learning learning also has the following advantages.

1. Providing enhance interactivity
2. Facilitates learning interactions to access learning materials anywhere and anytime
3. Potential to reach a global audience
4. Facilitates updating of contents as well as archivable capabilities

The development of information and communication technology (ICT) that produces the internet with web-based learning is a learning activity that utilizes media websites that can be accessed through the internet network. Web-based learning or also known as "web-based learning" is one type of application of electronic learning (e-learning) the one of his writings entitled "Using the Web for Learning" published on the site web e learningguru.com suggests that web-based learning often has many benefits for its students. If it is well designed and right, web-based learning can be a fun learning, has a high element of interactivity, causes students to remember more subject matter, and reduces operational costs that are usually spent by students to take part in learning (for example pocket money / transportation costs to school) (Wahid, 2003).

Learning Theory Underlying Web-Based E-learning

Applying web-based learning can be seen as a complex process that does not merely carry out steps in the instructional design model. There are three main learning theories that are used as the basis of web-based learning, namely: behaviorism, cognitivism and constructivism.

a. Behaviorism

Behaviorism sees learning as a change in behavior that can be observed caused by external stimulus. They see the mind as a "black box", the response to a stimulus can be observed quantitatively, ignoring the influence of the thought process that occurs in the mind.

b. Cognitivism

Cognitivism sees learning as an internal process that involves memory, motivation, reflection, thinking, and meta cognition. According to it, the human mind manipulates symbols such as computers manipulating data. Therefore, learners are considered information processors. Cognitive psychology includes the learning process of information processing, where information is received in various senses, transferred to short-term and long-term memory. Information undergoes a flow of transformation in the human mind until the information is permanently stored in long-term memory in the form of a package of knowledge packages.

c. Constructivism

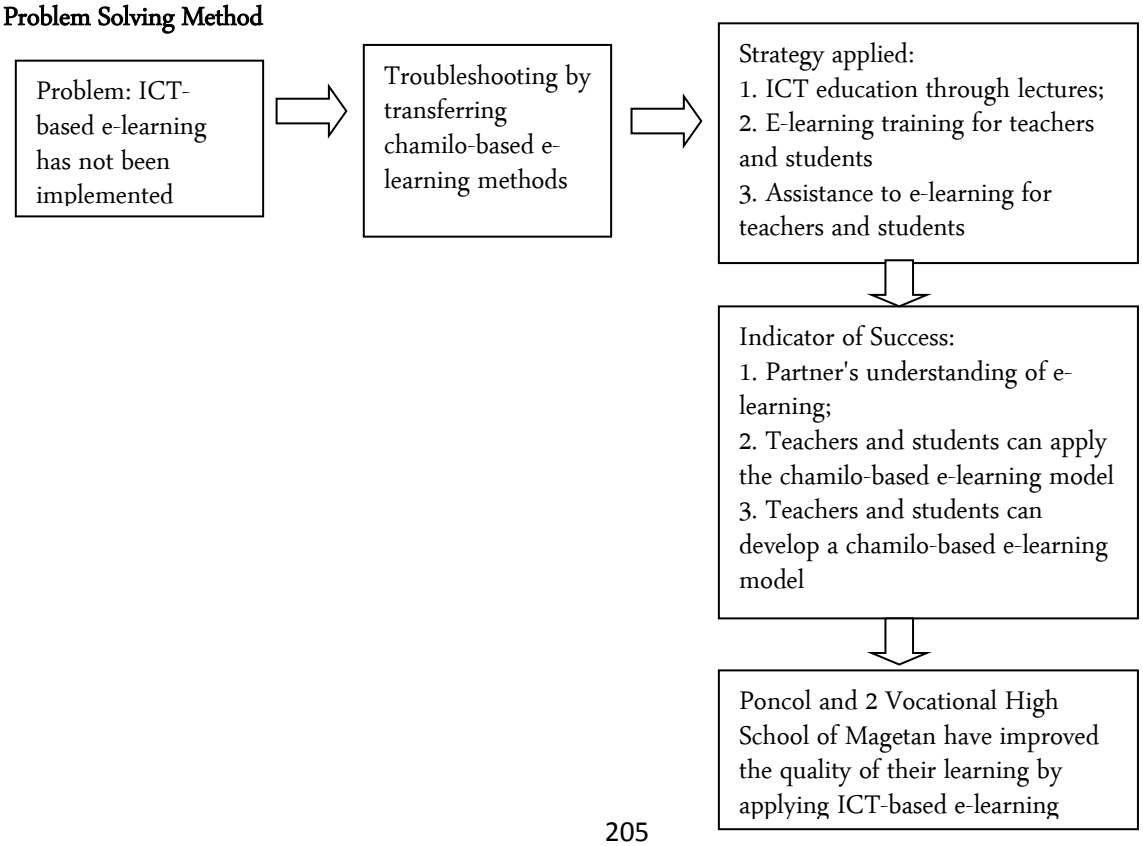
Constructivism sees students build their knowledge from their own learning experiences. Learning can be seen as an active process, and knowledge cannot be received from outside or from other people. Students should be given the opportunity to build knowledge instead of being given knowledge through teaching.

Web-based e-learning application in the classroom

The development of information technology in the field of education, so at this time it is possible to hold distance learning by using internet media to connect students and teachers, see student grades online, check finances,

view lesson schedules, send assignment files given by teachers and so on , all that can be done. The main factor in distance learning that has been considered a problem is the absence of interaction between the teacher and students. However, with Internet media it is possible to interact between teachers and students in the form of real time or not. In realtime form can be done for example in a chatroom, direct interaction with real audio or real video, and online meetings. Interaction that is not real time can be done by mailing lists, discussion groups, newsgroups, and bulletin boards. In a way above the interaction of the teacher and students in the class may be replaced even if not 100%. Material forms, examinations, quizzes and other ways of education can also be implemented on the web, such as teacher materials made in the form of presentations on the web and can be downloaded by students. Likewise, the tests and quizzes made by the teacher can also be done in the same way. Administrative settlement can also be completed directly in one registration process, especially supported by online payment methods. Until now the world still needs more numbers of teachers with better quality. The Dakar Conference revealed that there were still 100 million out of school children who needed teachers in line with the world target for education in 2015. The implication was that there needed to be an increase of around 60 million teachers for teachers. Most of these teachers have not met the qualification standards that are expected in the sense that the word has low quality does not meet the requirements according to the demands of teacher profationalism. Under any conditions, the improvement of teacher quality needs to be continuously improved throughout their careers as teachers if we want education to lead to high quality and competitiveness. For this reason, a special strategy is needed that can accommodate the characteristics of teacher activities that can still carry out their educational and teacher work tasks in addition to continuing to obtain educational inputs and increase their qualifications. One way to strengthen the teaching profession of teachers is to use distance education by utilizing information and communication technology (ICT). Conventional learning is no longer fully a mainstay, but in the midst of current technological advancements we need a variety of methods that provide more opportunities for learning by utilizing various sources, not just from man power as well as teachers. Learning needed is to utilize the elements of information technology, without leaving a direct pattern of guidance from the instructor and the use of wider learning resources. This concept is often termed blended learning, which is a combination of conventional learning in the classroom (face to face teachers and students) with e-learning web-based (online).

Problem Solving Method



Method of Approach and Resolution of Problems

Technology transfer The development of Chamilo-based e-learning as a Learning Media facilitated by UPN Veteran Jawa Timur community service providers. Henceforth the approach method offered for solving the problems of partner 1 and partner 2, namely the Participatory Rural Appraisal (PRA) method is carried out by more involving "people from partners 1 and 2 partners" consisting of all stakeholders facilitated by the implementers of UPN Veteran Jawa Timur who more function as resource persons or facilitators.

RESULT AND DISCUSSION

The results report and discussion of this community service will be presented systematically as follows:

a. Characteristics of Teachers of Poncol and 2 Vocational High School of Magetan in the Teaching and Learning Process
b. Program Arrangement
c. Program Preparation
d. Program Implementation
e. Program Monitoring
f. Program Evaluation
g. Reporting
h. Partner Contributions to Community Service Activities
i. Partner Response to Community Service Activities

Characteristics of Teachers of Poncol and 2 Vocational High School of Magetan in the Teaching and Learning Process

Teachers of Poncol and 2 Vocational High School of Magetan in the teaching and learning process partially use power point learning media (PPT) and some still carry out the teaching and learning process in the classical way. The teacher is still a center in the learning process. Most teachers already know about e-learning, but the teachers of Poncol and 2 Vocational High School of Magetan cannot apply e-learning based learning models. This is because a). The school does not have an e-learning system, b). There is no e-learning training for both teachers and students. This problem sought a solution through the IbM E-learning program for Teachers in School to actualize the Concept of Information and Computer Technology-Based Schools.

This step is strategic in improving the quality of learning where the teaching and learning process is integrated with the advancement of information and communication technology (ICT). The process of teaching students by integrating ICT is not limited to space and time, anytime, wherever the hope is that students can carry out the learning process as far as there is an internet network.

E-learning is not to replace the conventional face-to-face learning process. However, the elearning process can be used as an alternative if for one reason or another a student is unable to attend lessons face-to-face, e-learning functions as an option for students to continue to participate in the learning process. The implementation of e-learning needs to be supported by several parties including the school principal along with school management, teachers, and students.

Program Arrangement

IbM is based on the problems including a). The school does not yet have an e-learning system, b). There is no e-learning training for both teachers and students. Based on the above problems, the IbM E-learning program was prepared for Teachers in Poncol and 2 Vocational High School of Magetan to actualize the Concept of Information Technology and Computer-Based Schools with activities:

a). Making e-learning programs
b). E-learning training for teachers and students
c). Preparation of modules for e-learning training for teachers and students
d). E-learning assistance for teachers and students

so that the program is directed at the set goals, the matrix is made as follows:

Table 5.1 Preparation of the IbM E-learning Community Service Program for Teachers in Poncol and 2 Vocational High School of Magetan to actualize the Concept of Information and Computer Technology-Based Schools.

Program Preparation

After the program is prepared, the preparations made by the team include the following: team coordination, management of licensing for partners, identification of community service requirements, implementing TOT for accompanying students, and determining indicators of achievement of community service programs. The preparation steps are presented as follows:

1. **Team Coordination**
   The team has coordinated to carry out the community service. Coordination includes the division of tasks and responsibilities for community service needs.
2. **Arranging permits to partners**
   The next step is to arrange licensing with partners. The team went to partners to follow up on cooperation in the implementation of community service. Partners receive the community service program well and support the implementation of the community service program.
3. **Identify training requirements**
   The team has worked together to prepare all training needs including: making a moddle-based elearning system, manual modules, stationery, and preparing power point presentation materials for training, etc.
4. **The team conducted a TOT for companion students**
   Efforts to implement the community service process can run well, the team recruits students to be a companion in the implementation of community service. The assistant is in charge of guarding the teacher and students in applying e-learning.
5. **Determine indicators of Community Service Achievement**
   The team has collaborated to determine the achievements of the community service indicators including:
   a. Teachers of Poncol and 2 Vocational High School of Magetan are able to apply e-learning programs.
   b. Students of Poncol and 2 Vocational High School of Magetan are able to apply e-learning programs.

Program Implementation

The community service program is carried out with the guidelines that have been prepared.

Monitoring Program

Monitoring of community service activities is carried out internally. Monitoring is a part of seeing the implementation of the community service program. Internal monitoring is carried out by the UPN Veteran Jawa Timur LPPM. The monitoring activity aims to make the implementation of the community service in accordance with the schedule and objectives that have been set.

Program Evaluation

The evaluation process is a step to evaluate the extent to which the community service program can run in accordance with the objectives set earlier.

Reporting

This community service activity report is provided in the form of progress reports and final reports on the results of the activities of the program. In addition, the team also compiled a draft journal based on the implementation of the Community Service.

Partner Contribution to Community Service Program

1. Partners rent for the domain and website for sustainability of the e-learning program. Researcher only provides 1 year rent as a stimulus for further extension by partners. The venue for the event at Poncol and 2 Vocational High School of Magetan.
2. Partners integrate with the website of Poncol and 2 Vocational High School of Magetan.

Partner Response to Community Service Activities

Positive response from partners of Poncol and 2 Vocational High School of Magetan in accepting the IbM E-learning program for Teachers in Poncol and 2 Vocational High School of Magetan to actualize the Concept of Information and Computer Technology-Based School

CONCLUSION

The E-learning program for Teachers in Poncol and 2 Vocational High School of Magetan sto actualize the concept of school based on information technology and computers has gone according to plan. The results of the Community Service Research Results Program are 1) Partners have chamilo-based e-learning learning media; 2) Teachers and students have been able to apply chamilo-based e-learning to realize the concept of ICT-based schools; and teacher and student interactions have increased without limits of space and time (online, anytime and anywhere). Based on the implementation of this program it was concluded that the e-learning system is useful to improve the quality of teacher and student learning so that it can realize the concept of school based on information and communication technology.

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