LEARNING INNOVATION THROUGH INFORMATION AND COMMUNICATION TECHNOLOGY IN VOCATIONAL HIGH SCHOOL

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Abstract

Utilization of information technology both as a source of learning and instructional media is one effective way of tackling the weakness is expected to issue ¬ lesson that liberation is still conventional. With the use of information technology is expected to occur interaction between students and student learning, with learning resources more communicative. Through a variety of learning models being offered ¬ formed it is expected that student interaction not only emphasizes the utilization of the process but the search, investigators ¬ an or excavation variety of learning resources to form a more comprehensive way of thinking and integrated.

A. preliminary

One of the problems facing our education is the low quality of education regarding both the education process is ongoing and the product of education itself. Look at the World Bank report on the reading test fourth grade children are very concerned not to mention Indonesia in mathematics from 38 countries, Indonesia was ranked 32. In terms of education, especially learning process most of our teachers are more likely to embed the learning in terms of subject matter that rests on a low-level cognitive aspects such as remembering, memorizing, and accumulate information. Therefore a variety of charges submitted to the pemeritah less people care about education, including basic education, especially primary school affairs (Udin Saefudin Sa'ud 2008)

The low quality of educational products over the picture quality of the implementation process related to the education system where many elements, but the learning process is the heart of education that must be taken into account because of the learning activity is the transformation of concepts, values and educational materials are integrated.

Associated with the future demands that are not only kompetitip but is also strongly associated with the various advances in technology and information, the quality of the learning system developed should be able to quickly correct the weaknesses that exist. One

way that can be developed is to change the conventional learning system with the learning system more effective and efficient with the support of adequate facilities and infrastructure. Learning by utilizing the tools of information technology through the Internet is one of the appropriate alternative and can cope with the problems of learning, the education system in Indonesia, although its existence is very heterogeneous due to hit the geographically huge influence on the advancement of information technology.

According, Udin Saefudin Sa'ud (2008) We must realize that the development of information technology has entered a variety of life aspects, including education, especially learning more after interventions by the existence of this technology. Along with the development of information technology applications in education, the various belajarpun materials have been produced and consumed by learners ¬ through the medium of information technology in the form of packaging is very varied. In contrast to the learning process ¬ nal traditionalist who rely on the teacher as a learning resource is first and foremost while other sources is complementary to the learning activities which are usually outlined in the Outline of the Teaching Program (GBPP).

Electronic Learning (E.Learning) is essentially a learning or learning through the use of computer technology or the internet. Learning technologies as it can be also called a web-based learning (Web Based Instruction). discussion on E-Learning is a key focus of this learning module, therefore a detailed presentation of this module material includes an explanation of: the concept of learning Electronic Learning, development model of learning through the Internet, and packaging materials to learn through information technology.

B. The Concept Electronic Learning

Advances in information technology brings many positive effects for the progress of this particular adult education computer and internet technology, both in terms of hardware and software, giving many offers and options for education to support the learning process. The advantages offered not only lies in the speed factor to obtain information but also multi-media facilities that can make learning more interesting, visual and interactive. In line with the development of Internet technology, many learning activities that can be done by utilizing this technology (Udin Saefudin Sa'ud 2008).

Given the developments in the field of learning as described above, the traditional-conventional learning process that occurs in the classroom, in the era of decentralization and globalization will have slowly but surely began to lose shape. In addition, in fact on a larger

scale, traditional-conventional learning activities require substantial costs in preparing the infrastructure (rooms, laboratories, library ¬ takaan, furniture, instructional media, etc.). With such conditions, so today many education providers begin to look to the application of distance learning as an alternative concept of learning is considered more effective and efficient, particularly as the influence of developmental emergence ¬ ment that occurs very rapidly in the field of telecommunications and information technology. Various technologies and applications are created in an effort to support the operational activities of human life and organizations, including teaching and learning.

C. Understanding of information and Communication Technology in Development

The term Information Technology was born in the twentieth century that begins with the formation of information society. The term Information Technology that uses the word information, in essence is related to the term TK (Communication Technology) is known in advance. We see there is a communication technology that serves as an information distribution, information technology also serves as a store of information processing. It is this last function that causes people call communication technologies as information technology. Richard Weiner in the New Word Dictionary Websters Communications stated that information technology is the processing, processing, and dissemination of data by a combination of computers and telecommunications. More information technology to the processing of data. IT focuses attention on how the data is processed and processed with the use of computers and telecommunications.

Thus it became clear that the birth of the term based on the development of data processing technology. If communications technology is a tool to increase the ability of people to communicate, the information technology is a data processing by computers and telecommunications. Separation of the term in moderation shown by the organization of international communication scholars to group communication scholars who pursue the field of communication technology in the division "Communication and Technology", whereas communication scholars who pursue information technology divisions are grouped into information systems (Abrar, 2001).

In a broader context, summarizing all aspects of information technology related to communication machines and techniques used to capture, collect, store, manipulate, deliver and present a large body of information. The computer that controls all forms of ideas and information plays a crucial role (Munir, 2004).

Was originally defined as information technology hardware and software to perform one or a number of data processing tasks (Alter in the Sham, 2004). But in its development have a wider response, which also includes information technology as a means of communication techniques to transmit information. Thus all forms of technology that is implemented to process and send information in electronic form, transaction processing software for spreadsheet software, communications equipment and networks, including the information technology area. Everett M. Roger in the Sham (2004) put the information technology as a means not only physical, but can serve as a continuing social values for the users.

There are some views that led to the definition of E-Learning include:

1. E-Learning is the convergence between learning and the internet (Bank of America Securities).
2. E-Learning to use the strength and fabric of the work, especially may occur in Internet technology, but also can occur in the fabric of work and the gratification of digital satellite for the purposes of learning (Ellit Tronsen).
3. E-Learning is the use of the work fabric technology to design, deliver, select, organize learning (Masie Elliut).
4. E-Learning is learning that can occur on the internet (Cisco Systems).
5. E-Learning is a dynamic, operating in real time, collaborative, individual, comprehensive (Greg Priest)
6. E.Learning is sending something through the electronic media including internet, intranet, extranet, satellite broadcast, audio / video tape, interactive television, and cd-rom (Cornelia Weagen).
7. E-Learning is the total variation of the internet and web technologies to create, send, and facilitate learning (Robert Peterson and Piper Jafray)
8. E-Learning to use the strength and fabric of the work for learning anywhere and anytime (Arista Know System).

Electronic Learning ultimately be defined as an effort to connect learners (students with learning resources (data base, expert / teacher, library) which is physically separate or apart. Interactivity in the relationship can be either direct (synchronous) or indirect (asynchronous).

D. The nature of information and communication technology (ICT)

Advances in technology that unites computing advances, television, radio, and telephone into one unit (integrated) is formed as a global information and communications revolution. Revolution was made possible from technological advances in personal computers, communications and data compression, bandwidth, data and data acess stroge, integration of multimedia and computer networks. Information technology can be a driving force towards the progress of the nation. One of the biggest impact is the development progress in education. It is a bridge towards a developed nation where people can have the tools that help them develop business and enjoy the results are easy, inexpensive and equitable. Something which is a framework of access to all the people in this 21st century wading.

Information and communication technologies can help give a big change in many countries. In today's global era no longer bulkhead in terms of information access so that all segments of society have the same opportunities to develop themselves in all aspects of life. Indonesia of course, we as a society can not refuse to "boom" Information and communication technology, the role of education becomes the main prntu fatherly filter, transfer and deliver so that the constraints, the traditional values that are not easily eroded even positive we hope to join in synergy. Course incumbent on us all to think alike to find the best format how to utilize and evaluate the role of information technology and communications dalarn improve the quality of education in this beloved tandh water. A relatively short period since the first open Internet use for general use in 1986, information and communication network has been expanded with remarkable speed to all corners of the world including Indonesia. According to recent data, in 1999 more dari100 million people use the Internet and the number continues to rise tersebul, along with increasing awareness of the need for information and the increasing number of convenience to be had metalui Internet.

IDC memperkitrakan have 196 million internet users around the world until the end of 1999, and is forecast to be 502 million users in 2003. Surfing activity will increase doubling every 100 days, and is expected in 2005 as many as 1 billion of the world's population will be incorporated and connected to each other through the Internet network. Development of Internet usage in Indonesia is quite impressive. Industry and Trade Institute Center for Entrepreneurship Development Prosperous Community Partnership, reported that in 1995 there were about 10,000 users connected to the Internet, and by 1997 that figure to 100,000. Then according to the Association of Indonesian Internet Service Providers (APJII),

internet users in Indonesia at the end of 2001 reached 2.4 million people. That number had increased more than doubled compared with the numbers at the end of the year 200 by 1.9 million people. Users as much as 2.4 million people is comprised of 550 thousand residential users, 26 thousand corporate users, 2000 schools with an average of 500 users persekolah students, 500 colleges with an average of 1000 students and 2500 perkampus cafe with an average of 100 people perwanet customers.

Public awareness both from the content provider and the user audience is also quite encouraging. At least not at this moment there are five sites in Indonesia is a community that is supersiswa.com online education, school 2000.orid, pendidikan.net, ksi.plasa.com, esensi.com, ayo.net.com, and ub.net. id. The seven sites are growing because there are audiences that there is a need for educational services through the Internet, and seemed to need was responded positively by the private sector, which received support from the Ministry of Education.

Specific sites in the field of education including school site was originally named 2000 High School 2000, which is one of the largest educational site that grew from the initiative APJII (Inter Network Association of Indonesia) and then get support from the Ministry of Education and other private parties such as manufacturers of computers Iain and so on. With the support of Ministry of Education is now the School in 2000 succeeded in establishing the educational community that has members of the junior high school, vocational school and the State and private sector in 20 provinces (2000.or.id School, May, 2001). Increasing numbers of schools who are members of. education community increasingly growing number of cafe-cafe, and in line with increasing household have a computer connected to the Internet, the opportunity for students to make use of the Internet is also increasing. Thus can be assumed also that the chances of utilizing the Internet for educational purposes or, more specifically for the purpose of learning in the school environment in Indonesia, became a very possible and feasible to implement.

E. The concept of learning through Information and Communication Technology

Development of human civilization is accompanied by the development of ways to deliver information (hereinafter referred to as information technology). Starting from the pictures that had no meaning in the walls of the cave, laying a milestone in the form of inscriptions until the introduction of the world's flow of information that became known as the Internet. The information presented was developed from merely describing the state to battle tactics.

Special use of the Internet for education is widespread concern, especially in developed countries, a fact which shows that the media is indeed possible convening of the learning process more effective. It happened due to the nature and characteristics of the Internet is fairly typical, so expected to be used as a medium of learning as other media have been used previously as radio, television, CD-ROMs and other Interkatif.

Use of the Internet as part of their deliverance ¬ lesson at school is not as simple and as easy as one might imagine, because many things to be learned, observed and performed in earnest before applying it ¬. As the media are expected to be part of a process of teaching and learning in schools, the Internet should be able to provide support for the implementation of an interactive process between teacher kornunikasi with students as gleaned ¬ syaratkan in a learning activity. Conditions to be able to support internet ofeh is mainly concerned with learning strategies will be developed, which when translated in a simple, could be interpreted as a ditakukan communication activities to encourage students organized the tasks and assist students in gaining a knowl ¬ knowledge required in order to do these tasks (Boettcher 1999). Learning strategies that include teaching, discussion, reading, assignments, presentations and evaluation, in general, appropriateness depends on one or more of three basic models of communication as the following dialogue (Boettcher 1999):

1. Dialogue / communication between teachers and students
2. Dialogue / communication between students with learning resources
3. Dialogue / communication between students

If these three aspects can be organized with a matching composition, it is expected that optimal learning occurs. As confirmed by Bottcher (1995), that the design of a learning by emphasizing balance among the three diaiog / communication, it is very important in Web-based learning environment.

Indeed the Internet is a medium that is multi-way, on one side of the internet can be used to communicate interpersonally eg by using e-mail and chat as a means of interpersonal communication (one-to-one communications), on the other side with any e-mail users can perform communication with more than one person or a group of other users (one-to-many communications). In fact, as has been mentioned on the front, the Internet also has the ability to facilitate discussion and collaboration by a group of people. In addition to its ability to carry out face to face communication (teleconference), enables Internet users to communicate so that the possible implementation of audiovisual and non-verbal communication in real-time verbal.

Internet significantly is going to be used in teaching in the school setting, because it has unique characteristics: (1) as a medium of interpersonal and mass media as well as enabling the communication one-to-one or one-to-many, (2) has interkatif properties, and (3) allows for synchronous communication (syncronous) and delayed (asyncronous), so rnemungkinkan implementation of the three types of dialogue / communication is a requirement terselengaranya a learning process.

Some studies suggest that the Internet can indeed be used as a medium of learning, such studies have been conducted by the Center for Applied Special Technology (CAS7) in 1996, conducted on about 500 fifth graders and six elementary schools. To 500 students are included in two groups: the experimental group who completed their studies with access to the Internet and the control group. After two months showed that clogs ¬ experimental groups scored higher on the final test results. Further experimental studies conducted by Anne L. Rantie and his friends in high school 1 Sower CPC Jakarta in 1999 about the use of the Internet to support teaching and learning activities in English, shows that students involved in the experiment showed significantly improved their ability in writing and an essay in English.

Internet has a strategic role, even with the unique characteristics in the future the Internet could become a medium of learning the most prominent and most widely used.

F. Factors Supporting Learning through Information Technology

According to Udin Saefudin Sa'ud (2008) As a basis for utilizing the Internet as a medium of learning in the school setting, there are some things that need serious attention and treatment to penyeleng ¬ garaan internet use for learning to be successful, namely:

1. Environmental factors, which include educational institutions and community organizers
2. Students or learners include age, background, culture, language acquisition and a variety of learning styles
3. Teacher or educator include a background, age, teaching style, experience and personalitinya.
4. Factors include computer technology, software, network, connection to the internet and various skills associated with implementing dibutuhk internet in the school environment

1. Institutions

The role of institutions in the form of policies and commitments, largely determines the utilization of the Internet to the implementation of environmental education in schools. The very first institution that claimed to have committed in the utilization of the Internet for learning is a school of course. It mainly deals with the use of high technology which involves the necessity to provide some funds for the provision of equipment (computers and completeness), network, telephone line (connection to ISP), the cost of subscribing to an Internet Service Provider (ISP), the cost of telephone usage and so on.

Difficulties not only for investment in equipment or infrastructure, but also on the issue of maintenance costs and operating expenses, which must be removed so that the system continues to function. Not to mention the difficulty to prepare the human resources that have the competence to manage the system, either via the internet and learning systems facilities management system (hardware, network and software management).

The role of other institutions is equally important in providing the consciousness (awareness) both to the teachers want the students about information and communication technologies, especially the potential of the Internet as a medium of learning. Then followed the provision of knowledge about procedures and procedures for use of the Internet, through various activities and ongoing training, so it would indirectly create an environment that is familiar technology.

Seen that the most fundamental in the application of internet in schools is the motivation, readiness and sincerity with an institution that embodied the whole policy, including policy changes in teaching methods, policies and procedures regarding the management, policy internet access and others. Because it is the key to the successful utilization of the Internet for learning in the school environment.

2. Community

Environment that need attention is the family environment of students. Because of the expected emergence of neighborhood support families that are capable of providing encouragement to motivate students in utilizing the internet untulk educational purposes. Hardijito (2001) in his study of 210 high school students and vocational Establishments that regularly access the internet, found that students who are most diligent internet access (55.7%) came from a family environment that all members (parents, elder sister) using internet, and only 5.7% of families who did not use the internet. In addition to the family, the closest other environments that influence students in using the internet is peer (peer group).

Environmental influence is even larger than the family environment, as obtained from the research results Hardjito (2001) which showed that of your friends is ¬ they first learn the internet, internet taught in more depth and get the urge to use the internet. Therefore, students are also prepared environment and be touched in order to create a conducive atmosphere, which is able to provide support to students in utilizing the Internet for education.

3. Teacher

The teacher's role is not less decisive for the success ¬'s use of internet in schools. Monitoring while in some primary schools, secondary schools in London and generally indicates that the use of internet in schools initiative just a lot of that comes from teachers who have early Iebih awareness about the potential of the Internet to support teaching and learning process.

The success of internet-based learning is significantly determined by the characteristics of teachers who will be involved in the utilization of the internet. For that to note the following:

Teachers need to be given an understanding of the various advantages including the advantages and disadvantages of using the Internet for learning, so they have the motivation and commitment are high enough

Teacher, whether he will be acting as developers and users as well as those projected as a manager of an Internet-based learning systems, should be provided with awareness, insight, knowledge and skills on the internet.

Teachers who will be involved in the development and use of internet for learning and experience should have adequate teaching skills.Number of teachers who will be involved in the development and use of the Internet for learning, should be adjusted to the needs and carried out gradually. Teachers must have the commitment and seriousness in addressing the development and use of internet for learning.While maintaining the teaching style of each teacher. because it will be reflected in the way of their learning later in the learning system with the internet.

4. Student

Understanding of the audience can be obtained through the analysis using demographic data and psychographic, among others, by examining differences in the characteristics, attitudes and behavior of audiences. Sorting or grouping is required in relation to a approach to strategy can make more efficient use of the Internet on target, given that students are

highly segmented target groups dalarn different schools. An understanding of these differences based on Internet usage patterns and psychographic aspects demografl, it becomes important for the development of educational programs to utilize the internet can be more touching the real condition of the target.

Indeed the target students are grouped in certain segments of mengehendaki a different treatment. So as to implement the utilization of internet in schools would be better if done in a more homogeneous segmentation both in terms of demographic and psychographic aspects, although the actual segmentation approach is better known in the marketing concept requires knowing the target groups clearly through market segmentation approach, but the approach This was sesunguh ¬ can also be applied in all areas of activity included in the field of education. This concept began to develop after Wenddell Smith (1956) explained that consumers are fundamentally different, and so we need marketing programs ¬ Different suggestions are to reach them. Opinion was then amplified by Frederick Winter (1977) which states that the average consumer, for all practical purposes - had to be removed from the dictionary of marketing management (Kasali, 1999). Segmentation is a matter that must be taken in a process of both commercial and social marketing, because then we can provide the best possible service to each segment and provide the satisfaction of ¬ in the segment (Kasali, 1999).

This is consistent also with the theory of liberation technology ¬ successful lesson in which learning objectives are determined by the extent to which we recognize our students goals. When educators consider their students as human beings (human being), with all the rights and differences in motivation, he will assume that the student is a part or the subject of a learning process (Heinrich, 1996).

Segmentation is very important, because as stated delivered Renald Kasali (1999) in his book 'Indonesia Market Targeting, Segmentation Targeting and Positioning ", that over 60% of business failures are caused by the failure of employers to define target markets, and more than 60% failure of the campaign due to social and political does not understand the intended market segment. The description indicates that the learning system by utilizing the Internet to be developed should consider the differences and characteristics of learners targeted segments. Or in other words to develop a learning system that best suits the segments target students who fostered.

5. Technology

The implementation of learning activities with the support of internet, then after the third element in front is filled with the conditions as described, then the technology factor is something that is also absolutely must be available and must meet the minimum standards required, whether in relation to equipment, infrastructure, operation, and maintenance. Ideally the use of the Internet for school pembelajarar, have available a number of computers that can access the internet for learning in school, have available a number of computers that can access the internet will be even better if the computers are connected to the internet was placed in a special room as a computer lab space or in other rooms that are considered strategic. It is intended to provide facilities for students and access to internet. The most effective and efficient way to connect multiple computers to the internet is to build local networks, Local Area Network (LAN). With the network then it only takes one connection to the internet which can be used jointly by kompuler incorporated in the network. One of the most important of the network and connect to the internet for purposes of liberation ¬ lesson, its reliability is to be used at any time during 24 hours with the level of disruption or failure is very minimal.

Commonly used network is a network model of client / server. This model separates clearly, any computer that provides service (server) and the computers which receive service (client). In order for the server and client can communicate with necessary server program / software and client programs / software.In terms of how to connect the server to the client, there are three options that can be used typology is the typology bus, ring typology, and typology star or hub. To develop, ¬ to operate, and maintain the infrastructure of the factors considered four aspects of the client technology (software and hardware), server (software and hardware), mode of distribution and technical support (McCormack, 1998).

1. **Client (software and hardware)**

   a. Minimal configuration of computers that are used, including the ability procesot, memory, storage capacity, monitor and network cards.

   b. Program (operating system) that will be used.

   c. Internet software (browser) that will be used.

   d. Other software will be used to support the implementation of internet-based learning.

   e. Timing and long term access by any user.

2. Server (software and hardware)

a. Is it used a single server to handle all of the activities or to use more than one server to handle any type of activity (file server, webserver, e-mail server, web-server course and others).
b. Minimal configuration of computers used as servers, including the ability of the processor, memory, storage capacity, monitor, network card, and support equipment such as switches, modems, routers, and others.
c. Program (operating system) and server management that will be used.
d. Other software will be used to support the implementation of internet-based learning.
e. Setting the level of security, a long time and access by any user.
f. Supporting software from virus attacks or hackers and crackers that are reliable.

3. Distribution Mode

a. Is the communication in the framework of the learning is done online, off-line or a combination of online off-line.
b. How quickly the necessary access.
c. Bandwidth is determined what the relationship is distributed (text, graphics, audio, video)
d. Ties of the n etwork to the ISP, be used by dial-up via a regular phone connection, lease-line, radio or satellite. Course selection tailored to the type of communication will be done, materials distributed, and of course the funds available.

4. Technical support

This support is more to the provision of human resources who will be responsible for the proper functioning of the system and provide assistance when teachers and students have difficulty relating to hardware and software, the implementation of internet-based learning organization. Human resources at least the required minimum consist of:

a. Network Administrator
b. Course Web Administrator
c. Computer technician

Human resources can be specifically recruited staff who already have qualified for it, or by providing special training for some teachers who have an interest and dedication towards it.

G. Conclusion

Utilization of information technology both as a source of learning and instructional media is one effective way of tackling the weakness is expected to issue ¬ lesson that liberation is still conventional.

With the use of information technology is expected to occur interaction between students and student learning, with learning resources more communicative.

Through a variety of learning models being offered ¬ formed it is expected that student interaction not only emphasizes the utilization of the process but the search, investigators ¬ an or excavation variety of learning resources to form a more comprehensive way of thinking and integrated.

Through these interactions are expected to have an increase in thinking skills, people skills and the skills of an ideal-skill ¬ other. This can be done when the support comes from the institute, teachers, students, society and technology.

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