

The Role of Digital Applications as Supporting Tool in Teaching and Learning Activities in Senior High School in Bandung

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Abstract—Nowadays, the technological progress is unbeatable with the increasing smartphone user and the level of use of internet access. This study describes the role of Digital Application as supporting tools in learning activities. The type of research was descriptive qualitative using in-depth interview and observations. Based on the result of the study revealed that The role of digital application as online platform media, interaction channel among students and teachers and guidance for teaching and learning activities through online media.

Keywords: *digital application, learning activities, teaching activities, online platform, interaction channel, guidance*

Introduction

Nowadays, the technological progress is unbeatable with the increasing smartphone user and the level of use of internet access. Based on data from Baidu that the number of smartphone users in the world almost about 1.63 trillion in 2014, and smartphone user data, especially in Indonesia also has a fairly high percentage so that consumer smartphone users who can be indirectly concluded as users of internet services also have various types of needs in using internet services to meet their needs, ranging from games, social, tools, lifestyle, books, and others. According to data from interviews with Bao Jianlei, Baidu Indonesia's Managing Director, adapted from MOBoMarket's article, says that there are some descriptions of the activities and habits of smartphone users in Indonesia such as games, social media, and photography applications being the favorite applications of MOBoMarket users in Q1 / 2015 (Q1 /

Game is the most downloaded application by the user, ie as much as 45.61%, while social media and photography applications occupy the second and third position with the number of downloads each of 11.64% and 10.20%. In his research, Moba Market also get some interesting findings, as follows:

Most smartphone users who access mobile internet are in big cities from 67% to 67.34%. The cities spread among them Jakarta, Tangerang, Bandung, Yogyakarta, and Surabaya. This number increased compared to Q4 / 2014 which amounted to 61.18%.

Since Q4 / 2014 until the end of Q1 / 2015, the number of games and mobile apps continues to grow rapidly. In Q1 / 2015, the most popular types of new apps downloaded by users are lifestyle apps (20.26%), books (18.52%), and apps for productivity (11.80%). Meanwhile, three of the most downloaded new games are daily games and puzzles (22.56%), children's games (13.26%), and game cards and clubs (12.26%). The Internet began to enter Indonesia in 1992 to 1994 and now has spread to various sectors of human life. The Internet has even become a necessity in a variety of daily activities, until the assumption appears without the internet, everything becomes impossible to do. A variety of applications that can be used by digital natives (a term for the users of internet services) can be enjoyed by having internet access on owned smartphones.

Based on the literature review as mentioned above can be said that the phenomenon of using smartphones and the Internet has become commonplace. Digital applications contained on the smartphone was diverse and used in accordance with the needs of its users.

With the increasing of internet service facility especially in Bandung city, Bandung mayor also want to make society of Bandung city to "internet literate" and uniform of internet service facility can be enjoyed by all society of Bandung city which pertained as smartphone user especially student which is user enough large existing digital apps. Especially now the world of education has entered a new era by utilizing technology. All things can be done by the academic community with the help of technology that is, from mobile learning, access a variety of teaching materials via the internet, e-books, and monitor the absence of students based

SMS according to <http://www.republika.co.id/news/education/14/08/07/n9x84i-first-in-indonesia-smart-digital-classroom>

Literature Review

Media Theory

Basically the contribution in the diversity of media in this world cannot be separated from the hand-held technology and this is what is called the new media. Not just the device but the messaging process has changed from the previous direction to interactive and even produces smaller, sophisticated and flexible devices in its use (Rogers, 1986, 30-31 in Nasrullah, 2014; 3). Until now, many media have emerged as a means of communicating.

The media is essentially one of the perspectives in viewing the medium as a channel, the radio and television newspaper is basically a medium or a channel of technology (Meyrowitz 1977a: 5-7, 1999 in Nasrullah, 2014: 5).

The medium in its use in terms of the environmental context, as described in Meyrowitz's 1999 theory: 48) concerning the Medium as Environment (in Nasrullah, 2014; 6) includes several conditions including:

1. What forms of information may or may not be accepted by the medium
2. Speed of communication level
3. How the medium channels the message whether it is unidirectional, bidirectional or multidirectional.
4. Simultaneous or sequential communication intercommunication
5. Physical appeals to use media
6. Easy or relatively difficult to learn and use the medium to generate (code) and receive (decode) messages whether the medium is used once or only under certain conditions.

Computers and Internet

Corporate and Marketing Communication (2011: 149) written by Alila Primayanti stated Communication Internet or internet connection networking is a collection of computer networks of various types, communicating with each other. Technically, the internet is two or more computers that are interconnected to form a computer network that includes millions of computers in the world, which interact and exchange information. Internet can be regarded as a library in which there are various text, graphics, sound, or animation in electronic form.

So the internet can be said as an effective means as well as efficient in its usefulness as an exchange of information that shrink the distance. Internet is categorized healthy if it can be used productively, and generate benefits have a certain

economic value. ICT-based information and communication technology, which can provide added value to its users when it is used proactively. ICT and internet both can help simplify human work because it is judged to have high efficiency value and internet grows dynamically, to be adapted to human needs. The development of communication technology has an influence on the world of education, especially in the learning process. According to Rosenberg (2001 there are five shifts in the learning process as below:

- (1) from training to appearance
- (2) from the classroom to where and at any time
- (3) from paper to "on-line" or channel
- (4) physical facilities to network facilities
- (5) from time to time cycle.

Interaction in using media in education between teacher and student is not only done through face-to-face relationship but also done by using media such as telephone, email, application such as web cam etc. Through communication technology, in certain situations teachers can provide teaching services without having to deal directly with students as media learning in communication technology. Through communication technology also, students can also obtain information in a wide range of sources through cyber space or virtual space using computer supported devices with internet, even learning can be done through cyber teaching or virtual.

Technology and Its Relationships With Learning Methodology

The educational technology has a broad meaning because education technology is a combination of human elements, machinery, ideas, procedures, and management (Hoba, 1977), then the notion will be more clear with the understanding that technological is essentially the application of other organized knowledge or knowledge into practical tasks (Galbraith, 1977). Technology cannot be separated from the problem, because technology is born and developed to solve the problems faced by human, in this case existence of technology should be interpreted as effort to improve effectiveness and efficiency in learning problem. In this regard, educational technology can also be viewed as a product and process (Sadiman, 1993). Educational technology can be understood as a complex, integrated process that involves people, procedures, ideas, tools, and organizations to analyze problems, finding ways to address the issues of implementing, assessing, and managing solutions that cover all aspects of human learning. (AECT, 1977). Current educational issues

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There are three basic principles in educational technology as a reference in the development and utilization, namely: system approach, student-oriented, and utilization of learning resources (Sadiman, 1984: 44). The principle of system approach means that the organization of education and learning needs to design lesson using a system approach. In designing the lesson, procedural steps are needed, including: problem identification, situation analysis, objective identification, learning management, method setting, learning instruction media setting (IDI model, 1989). Student-oriented principles stated that learning should focus on the learners by taking into account the characteristics, interests, potentials of the students. The principle of the use of learning resources means that through learning the students should be able to utilize learning resources to access the knowledge and skills needed.

Educational technology is an area that emphasizes the aspects of student learning through an effort made in educational activities by observing how students can learn, by identifying, developing, organizing, and using all kinds of learning resources to achieve goals. Thus the problem-solving efforts in the educational technology approach is to utilize learning resources. This is in accordance with marked by changing the terms of educational technology into learning technology.

The Role of Information Technology In Education Modernization

According to Resnick (2002) there are three important things relate to the modernization of education:

- (1) how we learn (how people learn)
- (2) What do we learn (what people learn)

- (3) When and where we learn (where and when people learn).

How we learn, related to the methods and learning models that occur through the interaction between teachers and students in learning. Related to this, according to Pannen (2005), currently there is a change of paradigm of learning related to dependence on teachers and the role of teachers in the learning process. The learning process should not be 100% dependent on the teacher (instructor dependent) but more student-centered learning or an independent instructor, so the teacher is no longer the sole reference of all knowledge but rather as a facilitator or consultant.

In general, the application of communication technology in education is the application of learning activities and application on the administrative activities of the institution. More about its role, described as follows:

a. Implementation in learning activities.

The role of communication technology in learning is characterized by the presence of e-learning with all the variations of its level has facilitated changes in learning delivered through all electronic media including such as: audio / video, interactive TV, CD ROM, intranet and internet. In general, the role of e-learning in the learning process can be grouped into two, namely: **Complementary**, assumes that the way of learning with face-to-face meeting is still running but coupled with the interaction model assisted information technology; **Substitution**, most of the learning process is done with the help of information technology.

In learning activities, the application of communication technology can be seen from how educators provide a material delivered to learners. The role of the school as an institution that facilitates the means (communication technology) in supporting learning activities, such as computer or laptop, Internet or wifi network, LCD projector, TV, VCD, OHP / OHT, Tape recorder and so on. From the existing facilities can be utilized educators to accommodate the learning techniques that will be used.

Paradigm of the development of communications technology

Paradigm of the development of existing communication technology resulted in the conventional model of learning little by little changed. Some examples the application of communication technology in learning activities are:

- (1) The use of learning media by educators in the delivery of learning materials such as Power Point, Windows Journal, tutorial and interactive CDs, the use of OHT, audio tutor, and so on.
- (2) Use of internet or wifi network provided by the school as a means of learners to seek reference of tasks assigned by educators.
- (3) The use of computers as a means of practice of certain materials that require computer facilities such as, ICT materials that teach the use of office applications, graphic design, and so forth.

b. Implementation within the administrative activities of the institution.

In carrying out all of its operational activities, many schools take advantage of various technologies, especially those based on communication technology to facilitate all its activities. Examples of application of communication technology in administrative activities are:

- (1) The use of computers in the scoring system of academic achievement of learners.
 - (2) The use of computers for the identification of identity database of all citizens of the school both learners and educators.
 - (3) The use of Internet as an access to actual identity of educational institutions (school or college website) and online monitoring
 - (4) The use of audio devices (sound system, tape recorder) and visual (LCD projector, TV) for activities outside learning such as meetings, training, seminars, and so on.
- Function of Communication Technology In Learning

Communication technology has three main functions used in learning activities, namely:

- (1) Technology serves as a tool (tools). In this case, communication technology is used as a tool for users or students to help learning, for example in word processing, processing numbers, creating graphic design, creating databases, creating administrative programs for students, teachers and staff, employment data, etc.
- (2) Technology serves as a science (science). In this case the technology as part of the discipline that must be mastered by students in improving their competence.
- (3) Technology serves as a material and aids for learning (literacy). In this case, technology is interpreted as learning materials as well as aids to master a computer-assisted competence while still making teachers as facilitators, motivators, transmitters, and evaluators in the principle of complete learning.

Thus, information and communications technology must remain in education and continue to be developed by:

- (1) Minimize internal weaknesses by introducing global information technology with information technology tools themselves (radio, television, computer), (2) Develop information technology to reach all regions with information technology (Local Area Network, Metropolitan Area Network and Wide Network Area)
- (3) The development of citizens of educational institutions into an information technology-based society in order to be able to coexist with information technology through information technology tools.

The role and function of information technology in the broader context, namely in the management of the education world, based on the study of the purpose of utilizing information technology in the world of leading education in America, Alavi and Gallupe (2003) found several purposes of utilizing information technology, namely:

- (1) improve competitive positioning
- (2) Improve brand image
- (3) improving the quality of learning and teaching
- (4) increase student satisfaction
- (5) increase revenue
- (6) expanding the student base
- (7) improving service quality
- (8) reduce operational costs
- (9) developing new products and services

Therefore, it is not surprising that currently many educational institutions in Indonesia are competing to invest in the field of information technology to win the increasingly fierce competition. Therefore, to win a quality education, then it is dissolved to position educational institutions in a favorable opportunity environment and strong internal strength.

Factors Supporting Communication Technology In Education

Communication technology which is the main ingredient of e-learning itself plays a role in creating services that are fast, accurate, organized, accountable and reliable. In order to

achieve these objectives, there are several factors that influence information technology:

- (1) Infrastructure, (2) Human Resources, (3) Policy, (4) Financial, and (5) Content and Applications (Soekartawi, 2003).

Thus, for communication technology can grow rapidly, it is necessary to note the factors that influence it, namely: First, infrastructure that allows access to information anywhere with sufficient speed. Second, the HR factor demands the availability of a human brain with high technology. Third, the policy factor demands the existence of macro and micro schemes that favor the development of long-term information technology. Fourth, financial factors require positive attitudes from funding parties such as government, banks and other financial institutions to assist in the development of communication technology in education. Fifth, content and application factors require information to be delivered to the right people, places, and times and the availability of apps to deliver the content conveniently to their users.

E-learning which is one of information technology products in education of course also has a supporting factor in the creation of quality education, as for these factors; Firstly, there should be a policy that includes, among others, the financing system and the direction of development. Second, the development of content or material, for example curricula should be based on communication technology. Thus, it will be developed not limited to operational or computer usage exercises. Third, the preparation of teaching staff, and Fourth, the provision of hardware (Soekartawi, 2003).

Problems of Using Communication Technology In Education

Communication technology is experiencing a very rapid development that can be utilized in various fields, one of the most sophisticated information and communication technology is the internet. The Internet is one of the instruments in the era of globalization that has made this world transparent and connected very easily and quickly without knowing the boundaries of territoriality or nationality. Through the internet everyone can access to the global world to gain information in various fields and in turn will have an effect on the overall behavior. The presence of communication technology brings many potential benefits to education, besides that the presence of communication technology can also bring problems. Particularly the Internet, the widespread of information dissemination, fast and difficult to control has opened access to information that is useless and damaging to some users. Therefore, the preparation of student ethics also needs to be done in the use of information technology and

communications to confront a variety of information that is not useful.

The presence of communication technology brings the influence of utilization in learning, but its application is still a serious problem for education. This can be seen from several problems such as Availability of services, Availability of supporting facilities, Utilization by educators, and Utilization by learners.

With the availability of communication technology services as well as adequate supporting facilities allow for the potential to adjust the way of learning and getting information. Utilization of communication technology as a medium of learning by faculty also remains a matter that need to get attention through increased competence. Even students also need to equip themselves to keep using communication technology to obtain various information knowledge and use it in accordance with the rules of morality.

Characteristics of Communication Technology in Formal Education

Communication technology has a relationship with what the characteristics of communication technology in education formally, among others:

A. Formal, controlled and bound in certain rules.

Communications technology that is in the formal scope has rules created by the relevant educational institutions. As an example of Internet use, learners can use the internet only for constructive purposes such as searching for information from multiple search engines, mailing, use of social networking sites.

B. Limited.

The communication technology provided by a particular educational institution does not allow anyone outside the institution to be able to access the existing facilities. An example is the use of a wifi network that does have privilege for its use. So that it is possible to access the facility only those who are within the scope of existing institutions.

C. Instructional nature.

Facilities related to communication technology available in existing formal institutions are expected to have a constructive nature of one by performing instructional functions in utilization. So in formal education the presence of communication technology can provide "profit" in every institutional activity. So that technology does have the usefulness in its application.

4.2 Analysis Results

4.2.1 Online Platform Media

Viewed from the Media side, Edmodo application is felt to provide a lot of ease in the learning process because of the existing tools are considered easy to use (user friendly) this is due to simple tools and instructions for the user simple and many uses features that have been well known by students / i. Like the media theory put forward in Meyrowitz's theory, 1999: 48 in Nasrulah, 2014: 6 which says that the media is present from an environmental context by including several conditions including:

1. What forms of information may or may not be accepted by the medium
2. Speed of communication level
3. How the medium channels the message whether it is in directional, bidirectional or multidirectional.
4. Simultaneous or sequential communication intercommunication
5. Physical appeals to use media
6. Easy or relatively difficult to learn and use the medium to generate (code) and receive (decode) messages whether the medium is used once or only under certain conditions.

However, the Edmodo application has not yet fully addressed the environmental context as the above-mentioned theories, although its use is user-friendly but the content of Edmodo's app still needs to be upgraded to make it easier to use.

4.2.2 Interaction channel among students and teachers

Well designed applications need to be supported with facilities and adequate technology infrastructure in order to synergize in supporting teaching and learning activities (KBM). In general, perceived computer facilities have been appropriate student expectations when using the application Edmodo but on the other hand the internet connection is felt still burdening students with the cost to be incurred because to get a fast internet connection then students need to increase their internet quota from personal funds so expect Internet connection provided by the school has greater share of ability for each student while using the internet simultaneously.

Like the theory of Rosenberg, 2001 which says that the development of communication technology has an influence on the world of education, especially in the learning process.

According to Rosenberg (2001 in https://www.academia.edu/7391410/Eranan_Teknologi_Komunikasi_Dalam_Teknologi_Pendidikan accessed on June 16,

2015 at 6:44 pm) with the development of ICT use there are five shifts in the learning process that is:

- (1) from training to appearance
- (2) from the classroom to where and at any time
- (3) from paper to "on-line" or channel
- (4) physical facilities to network facilities
- (5) from time to time cycle.

Thus, it can be said that the means of availability of computers and also a good internet network is needed in every school, so that learning activities can be more effective, efficient and well done, and supported by human resources who are quite understanding of technology.

4.2.3 Guidance for Teaching and Learning Activities Through Online Media

The Edmodo application that facilitates the teaching and learning activities of students and teachers and enables communication between students and teachers to be more intense is proof that reliable technology greatly helps improve the teaching process. In this case perceived by students and teacher when using Edmodo application is that they are able to understand the teaching materials provided by the teacher better because the material is delivered not only in the classroom but can be accessed through the application where the material stored as data and understanding can be improved by discussion and the process of question and answer both between students and teachers helps improve students' understanding. Of course there are still things that need to be improved because of the awareness of experience while interacting with the rapidly evolving world of information technology students / I find a variety of alternative applications that are also interesting so that they compare every application that offers these different features.

5. Conclusion and Recommendation

Technology transformation in the education world welcomed by students and teachers where they have felt the advantages gained using their chosen digital app that is Edmodo application into a medium that makes teaching and learning activities become more interesting, supported technology that allows teaching and learning activities can be done outside the classroom as long as it can access the internet, with instructions, tools and features that are easy to understand and the existence of digital communication between students and teachers. The teaching and learning

process is recorded digitally, so students will easily download the subject matter wherever they are. All of these things need to be supported by a stable and cheap and fast internet connection that can be tailored to the economies of a high school student.

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