

Digital Literacy in the Use of Technology-based Information System

Ade Romi Rosmia

Department of Community Education
Universitas Pendidikan Indonesia
Bandung, Indonesia
aderomirosmia@student.upi.edu

Melly Suziani

Department of Education Administration
Universitas Pendidikan Indonesia
Bandung, Indonesia
mellysuziani@student.upi.edu

Abstract—Digital literacy is an urgent need for society today, because technological advances that are not balanced by intelligence in using modern technology tools will have a negative impact on human civilization. Surveys conducted by the Indonesian Internet Network Organizing Association (APJII), for example, reveal that more than half of Indonesia's population is now connected to the internet. It was noted that throughout 2016 as many as 132.7 million Indonesians became active internet users from 256.2 million in total population. Digital literacy actually encourages digital citizens to be wiser in using these technological instruments. The problem regarding the ability to develop rational abilities (reason) or the cognitive abilities of the community must also be complemented by social intelligence in the form of digital wisdom. This study is directed to find out clearly about the ability of employing technology employees in the Faculty of Education in the Use of Technology-Based Information Systems established in Universitas Pendidikan Indonesia.

Keywords—digital literacy; technology-based information systems

I. INTRODUCTION

Digital literacy has been an urgent need for the society now. Technological advancement that is not supported by intelligence in using modern technology will create a negative impact on human civilization. People have given the term "literacy" and it has been developed along with the technological demand. In the past, people are considered illiterate if they are unable to read and write. Meanwhile, the term "millennial illiterate" is the condition of "technologically backward" (in Indonesian language, it is called "*gagap teknologi (gaptek)*") or minus digital literacy. Literacy or 'literature' in Latin, 'letter' in English is described as human basic knowledge that is continually developed. Meanwhile, the word 'digital' comes from Greek which means fingers. It is a portrayal of the advancement of computer and informatics technology which contains *keypad-oriented*, in other words it is all about "press the button".

The definition of digital literacy is basically developed from the initial term "*what is digital literacy?*". A *Pragmatic Investigation*, generally digital literacy is the ability of someone in using and understanding the utilization of technology, information, and communication in supporting

education and economy. Digital literacy is also a part of UN's long-term planning that deals with education and culture [1]. Digital literacy is the important foundation for the educational future. Digital literacy is the basis of knowledge supported by the integrated technology and information [2].

For Indonesia, the need of social literacy is very urgent since the people who move on "migrating to cyberspace" are already colossal. A survey by Indonesian Internet Service Provider Association (in Indonesian language, it is called Asosiasi Penyelenggara Jaringan Internet Indonesia, APJII) reveals that more than a half of Indonesian citizens are now connected to internet. In 2016, 132.7 million of the total population of 256.2 million Indonesian people are the active users of internet. *Digital literacy is the ability to find, evaluate, utilize, share, and create content using information technologies and the internet* [3]. Therefore, the main point is the combination of the abilities to find, evaluate, utilize, share, and create a content by using technology and internet.

Digital literacy is not only about a mastery on computer technology and an ability in using internet that refer human as a robotic role, but also it combines "literacy" and "digital". If digital information is a symbol of data representation while literacy emphasizes the ability on reading, writing, and thinking critically (*the ability to read for knowledge, write coherently, and think critically about the written word*).

Therefore, the technological advancement should be useful and it has benefits for the society comprehensively, especially in the social interaction. Digital literacy encourages the people in digital world (digital citizen) to be wise in using technological digital. To develop rational ability (reason) or cognitive ability, people should be supported by social intelligence like digital wisdom to improve community digital literacy. There are eight important elements including cultural, cognitive, constructive, communicative, confident, creative, critical, and socially responsible elements. It means that multi-dimensional approaches in the process of community learning in order to be digitally educated, technologically literate, as well as intelligent, creative, and cultured are needed [1]. In the middle of information distribution of digital media, digital literacy skill is a strategy that needs to be developed to build the characteristic of functional staff.

Digital literacy skill is expected to be developed in Indonesia University of Education, not only among the students and academic staffs, but also the functional staffs. The more advancement of technology and information system is developed, it creates the demand on the service through internet required, for example the website management in each study program/department, online letter delivery, complaints and suggestions through social media, data input through internet-integrated system, and the others. Therefore, these activities will handle the processes of data collection, analysis, and saving, as well as the information presentation that is accurate and punctual.

Technology-based information system very depends on human resources' abilities available in academic community, especially functional staffs (education staffs) able to master the development of information technology and communication in order to provide the public service for the students and teachers in Indonesia University of Education.

II. METHOD

This is a descriptive study supported by quantitative approach known as Quall Quant, which is the combination of qualitative and quantitative approaches. Qualitative approach is used to reveal/describe the phenomena and reality about general description [4], digital literacy and understanding on information and technological systems. Quantitative approach is used to measure the accomplishment of digital literacy of administrative staff in Faculty of Science Education, Indonesia University of Education. This study is conducted with these following stages: 1). Conducting literature study and analyzing the result of the study related to digital literacy and the competency of administration staff. 2). Studying the policy of Indonesia University of Education on the competency of technological and information mastery, 3). Doing field study on the use of technological and information system.

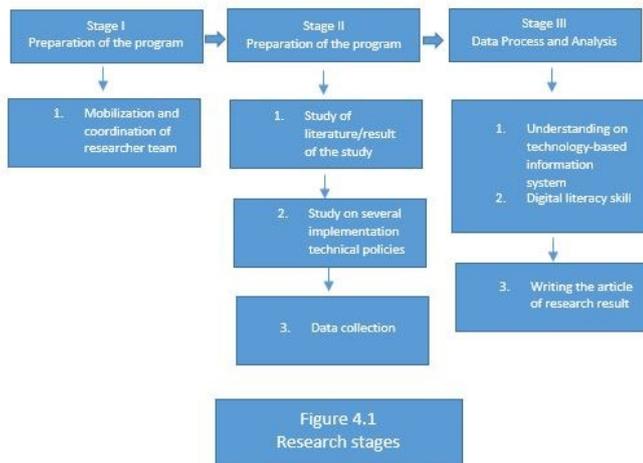


Fig. 1. Stages of research.

III. FINDINGS AND DISCUSSION

Digital literacy is the ability to use technology and information from digital devices effectively and efficiently in

various contexts such as academic, career, and daily life [5]. Gilster's argument seems simplifying the digital media that consists of various kinds of information like sound, writing, and pictures. Therefore, Eshet emphasizes that digital literacy should be more than the ability in using various digital sources effectively [6]. Digital literacy is also kind of a particular point of view. Technological literacy (defines as the ability to use, manage, and understand the technology [4]. Technological literacy is the ability to use technology involving knowledge about the factors that determine the success of technology operational system. This includes macro system, human adaptation towards technology, and systemic behavior. This also deals with the ability to do all technological activities efficiently and properly. The other concept used to arrange the concept of digital literacy is media literacy. Media literacy consists of a set of communication competencies to access, analyze, evaluate, and communicate the information in various printed and not printed messages [7]. Similar to media literacy, communication literacy forms digital literacy. Communication literacy is defined as the ability to communicate effectively and individually or work collaboratively in the group by using the publishing technology (text software, database, worksheets, drawing tools, etc.), internet, and electronic and communication tool. The other ability that becomes digital literacy dimension is visual literacy [7]. This is the competency of human's point of view developed from the ability to consider or view something integrated with sensory experience. This ability makes the human able to distinguish and interpret all behaviors, objects, and symbols seen naturally or artificially by human that happen in the surroundings. The use of this ability creatively makes the human able to communicate with the others. Meanwhile, the use of this ability appreciatively makes someone able to understand and enjoy the visual communication work.

Digital literacy is leveled. This following figure shows the levels [8]. In the first level of digital literacy, digital literacy, someone should master the basic knowledge, concept, approach, and action when handling digital media. In the second level, the digital use, someone can implement an application for productive/professional purpose such as the use of digital media for business, teaching, social campaign, etc. Meanwhile, in the highest level, someone is able to use digital media to have innovation and creativity for the society.

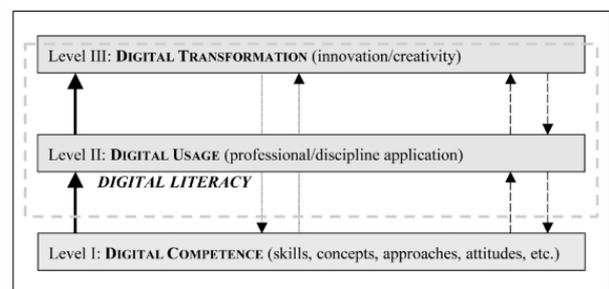


Fig. 2. Source of digital literacy level [9].

It shows that digital literacy is a multi-dimensional ability. Someone can master digital literacy stages gradually because a

level can be more difficult than the previous one. Digital competency requires computer and technological literacy. However, to have the competency on digital literacy, someone should master information, visual, media, and communication literacy. Education staffs in the Faculty of Science Education have literacy on these elements: 1). tool literacy—a competency in using software and hardware 2). Source literacy – an understanding on various kinds of sources, access, and information such as e-mail, web, and the other contents 3). Social-structural literacy – an understanding on the production method and the benefit of information socially, using and having social media like Facebook and Instagram 4). Research literacy – the use of information technology for the knowledge 4). Publishing literacy – the ability to communicate and publish the information by web management, spread the information through email and the social media.

IV. CONCLUSION

Digital literacy skill does not only develop in the students and academic staffs of the Faculty of Science Education, but also the functional staffs are able to master and follow the advancement of technology and information system. Having the internet services such as website management in each study program/department, letter delivery via online, complaint and suggestion through social media, data input through internet-integrated system, and the others enable the processes of data collection, analysis, saving, and information delivery that is accurate and punctual. In the other words, digital literacy that occurs can be listed as follows:

- Knowledge assembly, the ability to build information from various reliable sources
- The ability to provide information including critical thinking in understanding awareness of the validity and completeness of sources from the internet

- The ability to read and understand information materials that are non sequential and dynamic
- The awareness on the important meaning of conventional media and connecting it with internet
- The awareness on network access able to use as the sources of reference and help
- The use of filter for the information coming
- Feeling comfortable and having access to communicate and publish the information

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