DIGITAL LITERACY SKILLS ON THE GENERATION OF DIGITAL IMMIGRANTS

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Abstract

This research was aimed to discover the disparity of digital literacy skills on the generation of digital immigrants by comparing it with several criteria namely demographic factors, interest in fields of science, familiarity with computer, the length of accessing internet. Digital literacy is a ability of an individual in using technology and information through digital media effectively and efficiently in various contexts such as career, academic education, and daily life (Gilster, 1997). The term of digital immigrants is referring to individuals who undergo the transition phase in which they were born before the rapid era of technology but learn to adapt to the development of technology amidst their lives. The population of this research was individuals born before the 20 century or born before 1990 and introduced with computer at High School, college, or work.The sample collection technique used purposive sampling which resulted in 135 people. The scale arranged by the researcher was based on the level of digital literacy skills by Takenouchi (2004) which consists of mechanical literacy, life literacy, and social literacy. The research results indicated that there was a significant difference between digital literacy skills of immigrants natives group based on education levels (sig 0.000), familiarity with computer (sig. 0.000), sex type (sig 0.002), and occupation (sig 0.004). The digital literacy skills of this group was categorized are in the low to medium level. Thus, it is expected that this group will acquire educations in understanding technology to prevent misunderstanding issue and the misuse of digital-based information.

Keywords: digital generation, digital immigrants, digital literacy, digital literacy skills

Introduction

The development of digital technologies generates massive influences toward interactions and activities of human. Digitalization offers the easiness for each user, and it is beneficial for almost every group or cross-generation (Mosenson & Johnson, 2008). Internet-based digital technology is the most widely used medium. In Indonesia itself, it has been recorded that since 2014, users of internet-based digital technology continue to increase significantly. The composition of the majority of the user is the 19-34 years old population (Indonesian Internet Service Provider Association, 2017).

Concerning the user of digital technologies, Prensky (2001) divided the groups of human generation into two, namely digital natives and digital immigrants. Digital natives are the generation that was born in the era of technology. This generation has learned technologies naturally and spent most of their time to access information through internet-based digital technology (Shariman, Razak & Noor, 2012). Digital Immigrants are the generation that was born before the era of technology (Prensky, 2001). This generation experiences a transition from conventional life to the life in digital technology era (Shariman, Razak & Noor, 2012). This group is generally learning about technologies in college or the workplace.

The essential characteristic of the generation of digital immigrations has the interest and will to learn technologies (Zur & Walker, 2011). This matter becomes an interesting issue because not all generations born before the 20th century is willing to adapt and learn technologies which complex on their nature. In addition, this group has the characteristic of favoring old methods in working as long as they are considered as effective and efficient (Ku & Soulier; Li et al, 2004). Therefore, this generation does not need to own higher effort and adaptation compared to the digital generation in general.

The utilization of digital technologies has become a frequent issue for the generation of digital immigrants. Ministry of Communication and Information Technology has recorded that the misuse of information often happens to the age group of < 45 years old. Spreading hoax or unclear information through

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digital communication media is the misuse of information that has been commonly done by people (liputan6.com). This condition shows that this group does not perform much of rechecking about the information before sharing it into the broader domain.

Besides the misuse of information, the generation of digital immigrants also has a high risk to become the target of cybercrimes through internet. Kaspersky Lab (2016) noted that Indonesia has become the highest target of online scams that amounted to 26%. The victim of the fraud/scam is mostly in the age group of 30 years old or above. The majority of fraudulent motives is in the form of lotteries and transactions of goods or services through internet.

Based on the condition above, it can be understood that the utilization of digital technologies requires complex skills of the user. Digital literacy is one of the crucial competencies to be owned by individuals in the present digitalization era. Digital literacy can be defined as the ability to comprehend and use in various forms the information from numeroussources accessed through computer devices or smartphones (Gilster, 1997).

According to Takenouchi (2004), digital literacy skill has three (3) stages namely 1) mechanical information literacy, 2) social information literacy, and 3) life information literacy. Mechanical literacy is the most fundamental competence that should be acquired by individuals. Mechanical literacy is associated with the information of operating information processing machines. Simple achievements such as capable of opening sites or applications through internet network into the most complex level namely computer hackings.

The second level according to Takenouchi (2004) is social information literacy. At this stage, individuals have the ability to read information carefully through digital technology media. The characteristic of this ability is showed by reading and understanding the information comprehensively while the final stage is the life information literacy in which individuals are able to understand the implicit information by comparing it with other data sources (Takenouchi, 2004).

According to the concept of digital literacy abilities, it can be understood that good cognitive and emotional abilities are need to achieve digital literacy abilities comprehensively. Considering numerous issues occur in the group of digital immigrants in the utilization of digital technologies, thus, the discussion regarding digital literacy on this group becomes important. Therefore, the author was interested to discover the digital literacy skills on the group of digital immigrants by comparing them in certain characteristics namely sex, education level, familiarity with technologies, duration of accessing internet, and scientific, and field of science.

Method

This research used a quantitative approach with survey method. The data were collected through surveys by involving natural setting through the implementation of data treatments such as test, questionnaire, or others (Sugiyono, 2009). Data collecting technique usedthe instrument of 'Digital Literacy Skills' arranged by the author based on the theory of digital literacy stages from Takenouchi (2004) which consist of mechanical literacy, social literacy, and life literacy. The instrument has passed the tests by involving 50 test subjects. The result of instrument tests indicated that the item discrimination index shifted from the score of 0.179 to 0.763 with 0.963 of reliability value.

The sample collecting technique used a purposive sampling. The author uses the characteristics or specific features of the sample that are based on the purpose of the research (Glaser & Strauss, 1967). The characteristic of the sample in this research is the category of digital immigrants that referred to the theory of Prensky (2001) namely individuals who born before 1990 or in the age range of above 30 years old and learning digital technologies in high school, college, or at work. The research was performed in the entire districts of Jambi City. Besides went to the field, the researcher also used the survey service of google form to facilitate the data collecting.

The subject in this research amounted to 135 people which consist of 69 men and 66 women. The job status of subjects consists of private employees (57%), civil employees (27%), housewives (20%), entrepreneurs (19%), freelancers (9%) and others (3%). Levels of education of the subject were generally High School/Vocational School (52%), the other were Bachelor Degree (32%), Diploma (9%), Elementary School (4%), Master Degree (2%), and Junior High School (1%).

Result

According to the description of research data, in general, the research subject in this research only recognized and learned digital technologies during their time in High School (50%). Others learned digital technologies during their time at work (26%), Junior High School (16%) and College (8%) (Figure 1).
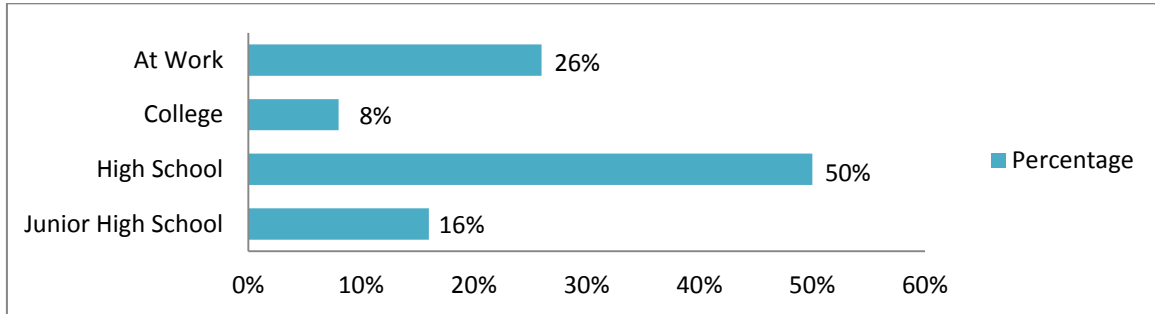

Figure 1. Starting to recognize and learn digital technologies

According to the frequency of subject in accessing internet per day, the group of digital immigrants used at least 1-6 hours to access internet (77%). It can be interpreted that they spent the quarter of their days to use digital technologies and internet access. The other (21%) spent 7-12 hours per day and only 2% who accessed internet up to 13-18% per day(Figure 2).
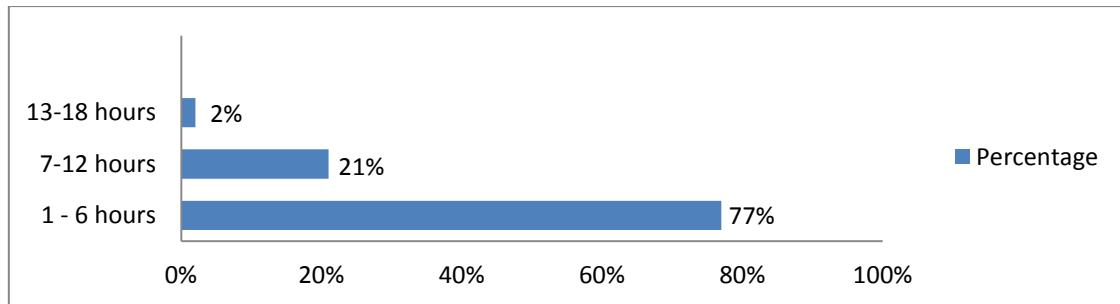

Figure 2. DailyDuration of Internet Access

As the initial step to answer the research hypothesis, firstly, the researcher conducted the assumption test through a normality test to discover the data distribution in this research. A datum is determined as normal if the p value is larger than 0.05. The result of the assumption test through a normality test showed that the variable of digital literacy skills has $p = 0.200$ or $p > 0.05$. This score indicated that the distribution of data in this research was normal and the result can be generalized into larger groups.

Then, the researcher performed categorization to discover the level of digital literacy skills in the group of digital immigrants. According to the description of research data, it has been acquired that the hypothetical mean was higher than the empirical data. This condition showed that the digital literacy skills inthis research group tend to be lower than the general group (Table 1).

Table 1. The Comparison of Hypothetical and Empirical Data

Variable	HypotheticalEmpirical							
	Min	Max	Mean	SD	Min	Max	Mean	SD
Digital Literacy 32	128	64	21.33	18	124	80.2319.80		

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The description above became the reference for the researcher to formulate the categorization of the subject group related to the level of digital literacy skills. The categorization can be seen in the table as follows:

Table 2. The Categorization of the Level of Digital Literacy Skills

Categorization	Range of Score Frequency	Percentage
Low	X< 60.43	33%
Medium	60.43< X ≤ 100.0379	58%
High	X >100.03 12	9%

According to the categorization, it can be known that most of the subjects have the medium level of digital literacy skills (58%). Even though, there were more subjects who have low level of digital literacy skills namely about 33% compared to subjects who have high level of digital literacy skills which only amounted to 9%. This condition showed that the group of digital immigrants has the digital literacy skills which tendto be in the low to medium levels.

Based on the categorization result, a distinction test was performed to discover the characteristics that able to influence digital literacy skills of individuals. The researcher conducted the distinction test toward several characteristics including sex, the length of knowing and learning digital technologies, the daily duration of internet access, the level of education, employment, and the interest in the field of science (exact or non-exact). The results of this research can be seen in the table as follows:

Table 3. Hypothesis Test

Characteristic	p	Information
Familiarity with technology	0.000	Significant
Education Level	0.000	Significant
Sex	0.002	Significant
Employment	0.004	Significant
Daily Duration of Internet Access	0.160	Insignificant
Interest in Field of Science	0.900	Insignificant

A variable or characteristic is considered as having significant impact if the p value is < 0.01. The analysis of the coefficient of determination showed that there weredifferencesof the length of knowing and learning technologies (p = 0.000), the level of education (p = 0.000), sex (p = 0.002), and employment (p = 0.004) on digital literacy skills of the group of digital immigrants. This condition showed that the factors of the length of knowing and learning computer, education level, sex, and employment were capable of influencing digital literacy skills of someone. While the daily duration of accessing internet and exact or non-exact field of science did not have significant impact toward digital literacy skills of an individual.

On the group of digital immigrants, based on sex, men have higher digital literacy skills (75.1 of mean) compared to women (64.1 of mean). According to the level of education, it can be known that higher education level will enhance the digital literacy skills of individuals in which the difference of mean between digital literacy skills of individuals with elementary school and master degree education wasamounted to 48.4, much larger than other education levels except for High School. According to the employment, jobs which do not much involve external activities tend to have low level of digital literacy skills including the job as the housewife. Whilebased on the length of knowing and learning digital technologies, it can be known that the longer individuals know technologies; the better digital literacy skills they have except during the college.

Discussion

This research aimed to discover the levels of digital literacy skills on the group of digital immigrants by comparing them to several characteristics such as sex, education level, employment, familiarity of technology, duration of accessing internet, and field of science. The research results indicated that there were different levels of digital literacy skills based on sex, education level, employment, and familiarity with

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technologies. While the factors of the duration of accessing internet and field of science did not have significant impact toward digital literacy skills of the digital immigrant generation.

According to the results of this research, the group of digital immigrants tends to have low to medium levels of digital literacy skills. Prensky (2001) revealed that the group of digital immigrants is the transition group which 'amazed' and has the desire to learn technologies. However, despite their interest in technologies, this group still uses their old principles in learning (Prensky, 2012). The immigrant group tends to use manual method to learn digital technologies without assuming that the technologies themselves that teach them automatically. Not only regarding technical issues, in term of digital literacy skills, the immigrant group is highly vulnerable to havemisunderstanding and misuse of information (Comscore, 2017). This condition is also influenced by the old principles in which the information that arrives through digital media will always considered as right because it is already gone throughstrict editorial checking just like the print media. This matter which causes this group to become vulnerable target in spreading hoax.

In principle, digital literacy skills are not solely determined by ages or certain generations in the development of technologies but also due to many factors. In this research, sex is one of the demographic factors that determine digital literacy skills of individuals. According to the data of APJII (2017), men are bigger internet users than women. It can be denied that the utilization of Information and Communication Technologies (ICT) are still highly related to men especially in the context of work. While the utilization of ICT on women in the context of work is only in the administrative level which does not require higher digital literacy skills than men (Lestari, 2010).

Besides sex, the level of education can influence digital literacy skills. Higher education level affects individual to have better responds toward technologies. According to Harjasujana (1977), education is always related to learning. The abilities to learn and analyze are categorized as the learning process. By reading and learning critically, individuals can enhance their information literacy to be better. Therefore, it can be interpreted that higher education of individuals will make the method used to analyze information to be better as well, including through the media of digital technologies.

Employment also affects the digital literacy skills of someone. According to the results of this research, jobs which do not involve much of external activities and interaction with others tend to result in lower digital literacy skills (Lyons, 2019). In addition, jobs which involve a lot of utilization of digital technologies tend to stimulate the digital literacy skills of the employees to be better (Reginasari & Annisa, 2018).

The researcher also associated digital literacy skills with the length of individuals in recognizing and learning digital technologies. It can be known that the length of individuals in recognizing technologies can affect their digital literacy skills. The longer individuals know about digital technologies, thus, the better digital literacy skills they have. Prensky (2001) revealed that individuals who are familiar with technologies will have easiness in adapting themselves and sharpening their digital literacy. Therefore, it is undeniable that the generation of digital natives which born in the era of technology is better in responding to digital technologies compared to the group of digital immigrants which barely knows technologies or only knows them in the middle of their life.

According to interest or field of science, there was no significant difference between digital literacy skills. Although the previous researchers assumed that the non-exact field science is closer to the comprehension regarding digital literacy, however, this condition depends on the way the individuals learn about technologies. Similar to the duration of accessing internet which did not generate significant impact toward digital literacy skills of someone. This condition is consistent with the study conducted by Lei and Zhao (2007) which emphasized that digital literacy skills are not affected by how often individuals access digital technologies but how far individuals understand the purpose of the utilization of the digital technologies themselves.

Conclusion and Recommendation

Conclusion
There were differences of digital literacy skills on the group of digital immigrants based on the familiarity of digital technologies, education level, sex, and employment. The digital literacy skills on the group of digital immigrants are in the low to medium level.
Recommendation

The government needs to put their attention through socializations or transfers of knowledge to the group of digital immigrants to learn digital technologies either technically or analytically. While toward the research subject, the sensitivity in understanding technology information should be improved to prevent the misunderstanding issues and the misuse of digital information.

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