DIGITAL LITERACY SKILLS FOR DEVELOPING LEARNING ABILITY OF UNDERGRADUATE STUDENTS: A QUALITATIVE INTERVIEW APPROACH

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Abstract— Digital literacy is an essential skill for enhancing university learning in a digital-based, global economic environment. Graduates must be knowledgeable workers, and therefore must have digital literacy skills to accomplish job tasks efficiently. This research studied 12 indicators of digital literacy skills through a qualitative research method to determine the most effective way to develop Thai undergraduate students. The informants were 42 undergraduate students at a public university and a private university selected through purposive sampling. Semi-structured interviews were employed to collect data from the volunteers. The interviews focused on three themes: definition and essentials of digital literacy; perception and performance of digital literacy in academic life; and digital literacy indicators needing improvement. The research data was summarized by content analysis. Results revealed six indicators of digital literacy needing improvement: invention, presentation, creativity, evaluation, legal literacy and safeguarding self. The students also proposed ways to improve themselves by seeking support from friends, faculty members, IT staff and librarians.

I. INTRODUCTION

The growth of the Internet and media communication technologies have profoundly changed people’s communication habits, consumption of information, and participation in activities. Educational systems are faced with the necessity of preparing effective new pedagogies that develop the necessary skills and competencies. Students need to possess effective skills and understanding of digital technology as a basis for a lifelong learning. The acquisition of skills and competencies in the digital age presupposes a new way of thinking and the ability to continuously adapt to new technologies (Coiro, et al., 2008). The rapid increase of technology drives the public and private sectors to continually respond to and evolve within digital-based economies. Digital technology and media penetrate every aspect of daily life including work places, business, government and community. Digital literacy has been acknowledged by the European Union (2007) as one of the eight competencies for lifelong learning and a prominent 21st century skill. Therefore, digital literacy is a fundamental requirement of a graduate who will be employed in the workplace. University education needs to promote digital literacy as a practical reality. Digital literacy has become a key concept in the discussion of the skills and understanding required in the knowledge society (Ilomäki, Kantosalo & Lakkala, 2011). Many academics have defined and conceptualized digital literacy. The concept was first introduced by Paul Gilster (1997) in his book, “The Digital Literacy”. He explains that a digitally literate person needs to understand and use information from a variety of digital sources. He defines this simply as literacy in the digital age. Digital literacy is not only a technical skill but also a cognitive, motor, social and emotional skill that people need to possess in order to function effectively in a digital environment (Stepić, 2013). The American Library Association (2013) defines digital literacy as the ability to use information and communication technologies to find, evaluate, create, and communicate information requiring both cognitive and technical skills. For education, Cornell University (2009) defines digital literacy as the ability to find, evaluate, use, and share, and create content using information technologies and the Internet. Students need to be digitally literate in their day-to-day activities including writing papers, creating multimedia presentations, and sharing information. Changes in technology also influence the concept of digital literacy.

Our previous research work has defined 4 factors and 12 indicators of digital literacy for Thai students. These include operation skills consisting of cognition, invention and presentation; thinking skills consisting of analysis, evaluation and creativity; collaboration skills consisting of teamwork, networking and sharing; and awareness skills consisting of ethics, legal literacy and safeguarding-self (Techataweewan & Prasertsin, 2016). The present paper evaluates the perceptions of undergraduate students concerning the definition, importance and application of digital literacy in their academic lives in terms of these factors and indicators.

II. RESEARCH OBJECTIVE

The research objective was to study digital literacy based on the experience and perspective of Thai undergraduate students with a focus on three issues:

1. Definition and essentials of digital literacy
2. Perceptions and performance of digital literacy in their academic lives
The cognition indicator in this study refers to knowledge and understanding concerning ICT and digital media. It includes the appropriate selection and discriminating use of technology in various situations. The students performed well using various formats of digital media for presentations in the classroom, using software for calculating, completing study tasks, searching for information on the Internet, and considering the veracity of posts on social networking sites. Likewise, they could discriminate which tasks needed to be done manually or through automation such as writing a drama script, using mobile devices in presentation, accessing information, or manually calculating numbers up to three digits. Invention refers to integrating and applying ICT and digital media to invent new projects, create knowledge or make innovations. The students performed this skill moderately well using digital media to create work, and employing office software such as PPT, DOC and XLS formats. They mostly produced assignments such as clips, advertisements and online reports. The presentation indicator refers to the ability to present digital content in various formats. The students effectively engaged digital technology for presentations in the classroom or on the Internet. They also perceived the widespread reach of social media. The students could apply various applications and computer devices to present their works and assignments such as Airdrop application for data transfer; mixing PowerPoint, Photoshop and video clips in one work; posting or uploading their works for online publishing or social networking; and choosing appropriate channels for target audiences.

2nd Factor: Thinking skills
The analysis indicator in this study refers to consideration, digestion, interpretation and recognizing relations in digital content. This includes organizing content in formats such as sorting, classifying and calculating, for summarizing or other specific purposes. Beyond mathematics and statistics courses, students perform analytical thinking to determine meaning and to summarize content from various information sources for doing reports and projects. Evaluation is the ability of assessing information in terms of necessity, utilization, accuracy, timeliness and reliability. Evaluation also involves discriminating misinformation, propaganda and hate speech. Students evaluate their information exposure by assessing the reliability of sources. If they receive the facts, they seek further evidence from alternative sources. They understand the unreliability of information from social media such as Facebook, IG and Line. They must also know how to effectively utilize mass media.

Creativity indicator is refers to the ability of problem solving, answering diversely, flexibility and positive thinking applied to novel inventions and knowledge for the public interest. The students utilize technology to create the works and to solve their academic problems in their studying. They have good attitudes about towards technology because it helps them that
it has brought the idea of how to help them easily to make develop their portfolios which they intend to invent the good works for the career in future.

3rd Factor: Collaboration skills

The teamwork indicator in this study refers to the ability to use ICT and digital media in collaboration with others. This includes leadership and effective use of team potential for working together and achieving group goals. Using digital technology helps students more conveniently communicate in a group such as making appointments, and discussing the roles and responsibilities of each member. Therefore, they accomplish the group assignments on time.

Networking is the ability to create or subscribe to online network groups for building relationships for mutual benefit. Most students are members of online networks such as Line, IG and Facebook to help them save money and time in communication with each other at any time comparing to former telephones or e-mail uses. Internet networking builds relationships among students in group assignments such as doing advertising work, business models, customer relations and study projects. Some students created a website for a charity project or social support such as a dog lovers website for donating dog food, and a housing website for donating money to build houses for the poor.

Sharing is the ability to exchange information through ICT in digital format and through proper channels with concern for the value and usefulness to recipients. Digital technology such as current information, popular news, knowledge or ideas can be shared in various ways. With regarding to the benefit of recipients, students share stories concerning great experiences, merit, social support and good health.

4th Factor: Awareness skills

The ethics indicator in this study refers to practices that are accepted by society in general or on the basis of doctrine. This includes netiquette of respecting diversity and inequalities of social groups in digital technology communications. Students can learn netiquette and use the Internet without trespassing on other people’s boundaries. Ethics is concerned with paying respect to the diversity of people on the Internet including factors such as gender, race, and social status where everyone has equal rights. They learn to beware of communications such as using correct wording, using less slang, not interfering in the private affairs of others, not using derogatory speech, respecting others, and not spreading disinformation or hate speech.

Legal literacy is knowledge, understanding and compliance with laws and regulations relating to the use of information technology and digital media. Students perceive the fundamental laws about media and Internet as well as piracy laws by avoiding illegal activities such as posting photos of people without permission, defaming others via social media, using disrespectful or indecent words, uploading video with alcohol, cigarettes and drug content.

Safeguarding-self is the ability of managing personal data by recognizing the risks inherent on the Internet. Students must be concerned with their privacy on the Internet. They should not reveal real private data in public such as home address, phone number and location. They keep their private data safe and do not disclose it carelessly, becoming fully aware of the consequences of identity theft. They require secure websites and software. They need to carefully use passwords with mobile phones, notebooks and social media websites to prevent others from accessing their personal information.

DL indicators needing improvement

Students were asked how to improve their digital literacy. They identified six indicators of digital literacy skill that needed improvement: invention, presentation, creativity, evaluation, legal literacy and safeguarding self. The students also proposed ways to garner necessary support from friends, faculty members, IT staff and librarians. They only need legal experts concerning legal literacy. Their answers are summarized in tables 1, 2 and 3 below.

| Table 1. Primary digital literacy skills needing improvement |
|-----------------------------|-----------------------------|-----------------------------|
| Methods for development | Involved persons |
| 1. Presentation indicator (7 responses = 16.67%) | - Students lack presentation skills. They want to ensure their presentations are interesting and attract the target audience. |
| 2. Invention indicator (7 responses = 16.67%) | - Students can’t fully integrate technology in their courses. |

| Table 2. Secondary digital literacy skills needing improvement |
|-----------------------------|-----------------------------|-----------------------------|
| Reasons for improvement | Methods for development | Involved persons |
| 1. Creation indicator (6 responses = 14.29%) | - Students want to practice their analytical thinking. |
| 2. Evaluation indicator (6 responses = 14.29%) | - Students are not concerned with details of information. |

| Table 3. Tertiary digital literacy skills needing improvement |
|-----------------------------|-----------------------------|-----------------------------|
| Reasons for improvement | Methods for development | Involved persons |
| 1. Legal literacy indicator (11 responses = 26.19%) | - Students do not know much about computer and copyright laws. - They do not know about the creative commons (CC). |
| 2. Safeguarding-self indicator (5 responses = 11.90%) | - Students always post their private photos or stories without - Less posting of private information |


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DISCUSSION AND CONCLUSIONS

Digital literacy is an essential skill for enhancing university learning in a digital-based, global economic environment. Graduates must be knowledgeable workers, and therefore must have digital literacy skills to accomplish job tasks efficiently. Students have realized that digital literacy is the fluent use of computers and Internet to produce projects or create content from digital media. This involves a range of skills such as utilizing technology in daily life with awareness, understanding security and participating in the digital world. Technology makes it easier to produce and spread large volumes of information. Students should be conscious and literate when consuming digital information. Digital literacy proposes a balance between ICT and information literacy skills that students need for their professional and personal development in the 21st century. This definition is in accord with the purposes set forth by the American Library Association (2013), Cornell University (2009) and Štepić (2013).

Students perform digital skills while doing assignments through various methods depending on their academic interests. They need to apply critical and analytic thinking when accessing information, plus be cautious with the inherent risk on the Internet. UNESCO has highlighted the critical and analytical skills needed for digital users to evaluate information and to recognize the importance of the social impacts of technology on their daily lives. In addition, 21st century skills require a combination of various digital literacy skills that empower users through critical and communicative skills (Grizzle, et al, 2014). Likewise, students must recognize methods for improving their digital literacy skills.

This study has revealed the six most important indicators of digital literacy that require improvement: invention, presentation, creativity, evaluation, legal literacy and safeguarding self. These findings are in accordance with Ng (2012), Norishah, et al. (2012), Hall, et al. (2013), Shopova (2014), Ozdamar-Keskin, et al. (2015) and Ting (2015). The common theme in all of these studies demonstrates that students need to develop ICT and digital technology skills, especially software and digital tools, to enhance their information access and the effective of their assignments and presentations. They prefer technology integration in courses. Furthermore, the students proposed ways to improve themselves including support them are friends, faculty members, IT staff and librarians. Universities need to encourage students to develop digital literacy through teaching and learning environments. In order to accomplish these goals, universities need to enhance staff competence and teaching tools.

REFERENCES


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