

Blended Instruction by Using Simulation Method Teaching to Enhance Digital Literacy for Student Teachers in Thailand

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Introduction

Now, at the turn of the new century, Web technologies are replacing TV, telephones and newspapers as the primary means by which we are informed and entertained. (Gilster, 1997)

The development of technology has impacted the digital interaction of people. The digital environment has placed a great deal of importance on the ability to successfully access and use the hardware and software necessary for online participation (Thompson, Jaeger, Taylor, Subramaniam, & Bertot, 2014). The ability to deal effectively with digital tools is often labeled *digital literacy*.

Twenty years ago, Paul Gilster claimed that digital literacy was the “ability to understand and use information in multiple formats from a wide range of sources when it is presented via computer” (Gilster, 1997, p. 1). However, there are a variety of definitions for digital literacy:

Digital literacy refers to the skill, knowledge and understanding required to use new technology and media to create and share meaning. Digital literacy also refers to the knowledge of how particular communication technologies affect the meaning they convey, and the ability to analyze and evaluate the knowledge available on the web. (Hague & Payton, 2011, p. 1)

Digital literacy involves knowing how to use a range of technology to find information, solve problems or complete tasks. Digital literacy is also about knowing how to act safely and respectfully online. (Australian Government, 2008, p. 1)

Spires and Bartlett (2012) classified digital literacy into three categories: (1) locating and consuming digital content; using strategies effectively to search for information and evaluate its accuracy and relevancy (Leu, Coiro, Castek, Hartman, & Reinking, 2008); (2) creating digital content; and (3) communicating digital content. Moreover, the Department of Broadband Communication and Digital Economy (2009) defines three core skill sets in a digital literate society: 1) the technical ability to engage at a basic level on the computer and internet; 2) the ability to understand and critically evaluate digital media and digital media content; and 3) the ability to create content and communication. It can be concluded for this research study that digital literacy is a set of skills to locate, evaluate, use, create, and communicate content or information via networks in multiple media forms.

Digital literacy has evolved into an essential literacy because the literacy of the future rests on the ability to decode and construct meaning from one’s constantly changing environment. The capacity to evaluate information on the issues of credibility and reliability is essential, as is the ability to decide when and how to apply information to solve problems (Spires, & Bartlett., 2012).

There is a survival approach to developing digital literacy. Knowledge and understanding are important to learning. Building on the knowledge about how to use search engines and having a general knowledge of resources available on the Web is a critical beginning step (Moraveji, Morris, Morris, Czerwinski, & Riche, 2011). The next steps include: practice locating; evaluate using, creating, and communicating information in various ways by spending more time facilitating student learning. Less time lecturing and allowing students to create or consume digital content may assist developing needed skills for a technological society. In addition, using mobile devices such as cellphones and tablets provide convenience and immediacy to the communication process for students (Hiller A. Spires and Bartlett., 2012). Enhancing digital literacy for students should focus on blended technology, especially digital technology in the classroom.

“Blended Learning are classes where a portion of the traditional face-to-face instruction is replaced by web-based online learning about 30%-70% depended on class, discipline and learning objectives” (University of Central

Florida & American Association of State Colleges and Univers, n,d,, p. 1). Blended learning can be implemented in many ways, such as:

- 1) students will attend face-to-face classes, study online, and do group work on a fixed schedule
- 2) students will attend face-to-face classes on a fixed schedule, but they can study online by computer laptop that flexible schedule.
- 3) students can manage their schedule to study in a face-to-face classroom and online class by themselves.
- 4) students will study via an online class at home before coming to a face-to-face classroom at school, and
- 5) students can take an online class with an online teacher in a computer lab, in addition to face-to-face classroom to provide students with more flexibility over their schedules (Clayton Christensen Institute, 2017) .

One of benefits of blended leaning is it allow students and faculty to take advantage of much of the flexibility and convenience of an online course while they can get benefits of the face-to-face classroom experience. (University of Central Florida & American Association of State Colleges and Univers, n.d.) In addition, students who attend a blended course can improve social online skill while they study and practice via the online course because they have to create and communicate information in the online class to realize meaningful learning (Garrison & Vaughan, 2008).

Furthermore, digital literacy is a construct of many skills, such as critical thinking for making informed judgements about retrieved information, verifying the information validity, and checking the completeness of internet sources (Bawden, 2008) and communicating skills to present created content via online. Thus, the development of digital literacy should enhance the new set of these skills at the same time.

Khammani (2010) developed a teaching method that enhanced several skills: interaction skills, communication skills, problem solving skills, and thinking skill supported by a simulation teaching method. While Ruksakaew (2009) found that students being taught by using the online learning interaction activities in simulation had higher scores in interpersonal communication skills than those of students being taught without online learning interaction activities with simulation at a .05 level of significance. This is study it meant the simulation teaching model promoted the use of critical and evaluative thinking because it encouraged students to contemplate the implications of a scenario. In addition. it helped students understand the concepts being taught by doing an activity in a scenario (The University of New South Wales, 2015). This model was determined to enhance the digital literacy of student teachers.

Simulation is a form of experiential learning in the imitation of real-world scenarios. Students are able to develop skills and experience safely (Glover, 2014). There were 4 steps in this model;

- 1) Introducing simulation scenario.
- 2) Defining player and role in simulation
- 3) Playing in simulation and
- 4) Discussion and Conclusion. (Jones, 1982; Mack, 2009; and Khammani, 2010).

These are the reasons the researcher for this study selected blended learning and digital literacy to enhance digital literacy for Thai student teachers.

In 2011, UNESCO redeveloped the ICT competency standards it had first developed for teachers in 2008. As stated in the standards: professional teachers should have digital literacy and be able to:

- a) Use authoring environment or tools to design online materials,
- b) demonstrate the use of an authoring environment or tools,
- c) have participants work in groups to design an online unit,
- d) Use the network to support student coloration within and beyond the classroom, etc. (UNESCO, 2011, cited in NSW Education Standards Authority, 2017, p. 1).

The NSW Government adopted all the recommendations of *Great Teaching, Inspired Learning: A Blueprint for Action* in 2013. In 2015 it was also decided to review the teacher preparation programs as the national priority for the Information and Communication Technology area. Graduated teachers of Australia have to understand: their subject area, curriculum content, and teaching strategies. In addition, they have to know how to integrate contemporary technologies, including digital technologies, into their teaching to enhance the learning of students. They also apply their ICT or digital skills in enhancing digital literacy of students (NSW Education Standards Authority, 2017). This blueprint for preparing teachers of NSW and the required competence levels for Thai teachers are similar. Thai competences were defined by The Teacher' Council of Thailand. It indicated that Thai teachers have the ability to uses technology and to apply technology to student learning.

As mentioned above, digital literacy is very important for Thai student teachers. Especially, elementary teachers because students in the third grade start developing digital literacy skills (Chall, 1996). For this reason, the researcher was interested in enhancing digital literacy of Thai student teachers who study to teach in the elementary education field by developing an instructional model based on blended learning combined with the simulation

teaching method. To design the instructional model, the first step was to set the goal of the instruction followed by analyzing the students to plan activities for them (Dick, Carey, & Carey, 2009). This research was the step to analyze students by using a survey. The result of this research will help the researcher to develop a teaching model to enhancing digital literacy of student teachers as recommended future research.

Research Objectives

The objective of this research was to survey the opinion of student teachers in Thailand on the Blended Instructional Model using simulation to enhance digital literacy for student teachers in Thailand.

Research Methods

This study is an exploratory research study with sampling methods, research tools, and procedures as follows:

Participants

The research used stratified sampling to randomly select 5 University of Thailand institutions that have Elementary Education Departments. Participants recruited for this study were 241 Thai student teachers who study in the elementary education filed.

Sample size calculation was determined by using Yamane's formula of sample size with an error 5% and with a confidence coefficient of 95%. Multi-stage Sampling was used by classifying the Students into 5 years including Year 1-5 in each year were selected by using Systematic Random Sampling. Therefore, there were 277 questionnaires distributed and 241 were returned which was equaled to 87.72%.

Instruments

Instruments employed in this research included a questionnaire exploring the opinion of student teachers in Thailand on the Blended Instructional Model using simulation to enhance digital literacy. This particular questionnaire consisted of 3 sections as follows;

- 1) Participants' information,
- 2) Participants' use of digital tools and
- 3) Opinion of participants on the Blended Instructional Model using simulation to enhance digital literacy.

In ensuring the technical adequacy of the research instruments, 3 experts reviewed the instruments. Those experts consisted of 1 expert in digital literacy, 1 expert in blended learning and 1 expert in simulation. They evaluated all the content and construct validity, and scopes and relevancy of the items.

Data Collection

The Researcher sent letters to the Elementary Department, Faculty of Education by post to ask for permission to collect data, along with an exploratory letter to certify that data obtained from the questionnaire would remain confidential, and the questionnaire. After the Elementary Department granted permission, the Department distributed questionnaires to student teachers who met the criteria identified in the questionnaire. Participants were asked to complete the questionnaire. Then, the Department sent the questionnaire back to the researcher by mail.

Research Results

The participant pool was 241 Thai student teachers all studied in the elementary education filed: students in first year 24.1%, students in second year 25.7%, students in third year 16.2%, students in fourth year 20.3% and students in fifth year 13.7%. The researcher found that all of the Thai student teachers use smart phone while some of the participants did not use computer or tablet (3.7%). Most of them use smart phone and computer 3-4 hours per day (33.1% using smart phone and 38.6% using computer/tablet)

Table 1. Using Digital Tools by Student Teachers

Time/day	Smart Phone		Computer/tablet	
	frequency	percent	frequency	percent
None	0	0	9	3.7
Less than 1 hr..	1	0.4	53	22.0
1-2 hr.	23	9.6	93	38.6
3-4 hr.	79	33.1	56	23.2
5-6 hr.	70	29.3	23	9.5
More than 7 hr.	66	27.6	7	2.9
total	241	100.0	241	100.0

The study indicates that Thai student teachers tend to use smart phones for communicating in social media (21.4%) more than other uses while most of them use a computer/tablet to do student papers (23.5%). In addition, online searching was the secondary computer use (19.6%) while communication via applications was the secondary smart phone use (15.6%)

Table 2. Smart Phone Use by Student Teachers.

topic	frequency	percent
Talking on phone	122	13.3
Communication via the applications	143	15.6
Communication in social media: Facebook	196	21.4
Online searching	129	14.1
Sending or receiving E-mail	52	5.7
Game playing	85	9.3
Reading/Listening online news	80	8.7
Listening to music	107	11.7
Other	1	0.1
total	915	100.0

Table 3. Computer/Tablet Use by Student Teachers

topic	frequency	percent
Communication via the applications	54	7.8
Communication in social media: Facebook	89	12.9
Online searching	135	19.6
Sending or receiving E-mail	68	9.9
Game playing	45	6.5
Reading/Listening online news	38	5.5
Listening to music	95	13.8
Doing student paper	162	23.5
Other	2	3
total	688	100.0

The findings based on the opinions of Thai student teachers regarding blended instructional by using the simulation method teaching were: Thai student teachers prefer simulation scenario being introduced via online but complete the activity in a face-to-face classroom. In addition, the most suggested advice from participants (28.2%) about online tools for introducing stimulation scenarios is a document in PDF form that allows students to download the file to read it.

Table 4. The Findings of Opinions by Student Teacher On Blended Learning

	Online learning		Face-to-Face classroom	
	frequency	percent	frequency	percent
<u>Step 1</u> Introducing simulation scenario.	170	70.5	71	28.5
<u>Step 2</u> Defining player and role in the simulation.	111	46.1	130	53.9
<u>Step 3</u> Playing in simulation.	104	43.2	137	56.8
<u>Step 4</u> Discussion and Conclusion	95	39.4	146	60.6

Table 5. Online Tools in Step 1: Introduce Simulation Situation

	frequency	percent
A document in PDF form.	68	28.2
Content on website	46	19.1
A thread on Facebook	22	9.1
A Video clip on website	22	9.1
Combine a video clip and a tread on Facebook	38	15.8
Interaction via online real time		
Skype	46	26.6
You Tube live	22	12.7
Hang out video	22	12.7
Facebook live	48	27.7
Line Group call	35	20.0
Other	0	0
Other	0	0

When analyzing responses by a student's year in the program, the research found:

1. All Thai student teachers said that the step 1 introducing a simulation scenario should study via online.
2. Only Thai student teachers in the first year said the step 2 defining player and role in the simulation and step 3 playing in simulation should study via online.
3. All of students said the step 4 discussion and conclusion should study in face-to-face classroom.

Table 6. Result of Opinions by Student Teacher Year

Year	Step 1		Step 2		Step 3		Step 4	
	Introducing simulation scenario.		Defining player and role in the simulation.		Playing in simulation		Discussion and conclusion	
	Online learning	Face-to-Face classroom	Online learning	Face-to-Face classroom	Online learning	Face-to-Face classroom	Online learning	Face-to-Face classroom
Year 1	44 (75.9%)	14 (24.1%)	30 (51.7%)	28 (48.3%)	31 (53.4%)	27 (46.6%)	24 (41.4%)	34 (58.6%)
Year 2	44 (72.1%)	17 (27.9%)	27 (43.5%)	35 (56.5%)	27 (43.5%)	35 (56.5%)	20 (33.3%)	40 (66.7%)
Year 3	25 (64.1%)	14 (35.9%)	15 (38.5%)	24 (61.5%)	8 (20.5%)	31 (79.5%)	12 (30.8%)	27 (69.2%)
Year 4	31 (63.3%)	18 (36.7%)	24 (49.0%)	25 (51.0%)	26 (53.1%)	23 (46.9%)	23 (46.9%)	26 (53.1%)
Year 5	25 (75.8%)	8 (24.2%)	15 (45.5%)	18 (54.5%)	12 (36.4%)	21 (63.6%)	14 (42.4%)	19 (57.6%)

Discussion

Digital literacy is one skill needed in the present and for the future. Developing digital literacy in elementary students is very important. Therefore, improving digital literacy of Thai student teachers is also important. There are several ways to enhance digital skills: blended learning by simulation was selected for this research. Because blended learning allows learner communication via digital tools, it helps learners develop online communication skills. The simulation method can enhance thinking skills, especially critical thinking; an essential digital skill. To achieve the goal, it was necessary to analyze the background and opinion of student teachers about the blended instruction model by using simulation method. This research found:

- 1) All Thai student teachers use smartphones, but some do not use a computer/tablet. Smartphones are very functional: sending messages (SMS), calling, chatting, opening documents, checking-email, internet browsing and socialization (Alson & Msiagal, 2016). Moreover, nowadays smartphones are small and can be carried easier than a tablet. Another advantage is that the average prices of smartphones are cheaper than computers/tablets.
- 2) Most Thai student teachers use smartphones for socialization such as Facebook. This finding is the same as the results of researchers Alson and Msiagal (2016). They found socialization is the most widely used feature on smartphones. Because there are many socialization applications for smartphones, it helps people to easily connect and socialize online. For this reason, smartphones are the most popular digital tools for socialization.
- 3) Blended learning by simulation method includes 4 steps. Thai student teachers prefer the simulation scenario that was introduced via online (step 1) but defining player and role in simulation (step 2), playing in simulation (step 3), and discussion and conclusion (step 4) are activities that should be done in a face-to-face classroom. The results revealed in this study is that Thai student teachers still believe in face-to-face classroom more than online learning.

- 4) When analyzed separately by year, the results indicated that first year students preferred online learning. This may be because first year students are the new generation or Gen Z; born after 1977 (FAIRVIEW CAPITAL, 2017). Technology has permeated Gen Z in their lives in many ways: they use cloud computing for homework assignments or make online friends around the world on social networks. In addition, for Gen Z, the real world and the virtual world naturally overlap (FAIRVIEW CAPITAL, 2017). The Researcher believes this is the reason that Thai student teachers that were first years prefer to study online more than the others.

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