

## *Digital Literacy Skill of Students in Public Higher Education Institutes*

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### **Abstract**

This research has the objective of studying the digital literacy skill of students in public higher education institutes. A qualitative research technique using focus group interviews 6 experts in digital learning, education science and teaching methodology, who are selected by purposive sampling. By analyzing the principle, and the parts constituting digital literacy skill of students in public higher education institutes, it is composed of 6 elements. 1) Access, this is the ability to identify the source of the data, including the ability to acquire and collect the data and to retrieve such data for repetitive usage. 2) Manage, this is the ability to use the resource which is correct and the easiest for assessment. 3) Integrate, this is the ability to relate with all other constituents. For digital literacy, this also includes the ability to deduct and interpret the meaning of the information via the ICT devices. 4) Evaluate, this is the ability to assess the timeliness and the usefulness of the information. 5) Create, this is the ability to understand and apply the advantage offered by the suitable media creating devices. 6) Communication, this is the ability to contact and interact with other individuals in the digital environment.

Keywords : Digital Literacy, Digital Literacy Skill, Higher Education

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## **Introduction**

Today it is true to say that, in most of parts of the world, we live in a digital society, a society permeated by the digital, in which our actions are frequently mediated by digital tools, and the objects we encounter are often shaped by digital intervention. The mobile phone and the MP3 player are the most visible personal artifacts of this society, whilst the PC is the ubiquitous gateway to cyber-activity, at work and at home. Yet it would be wrong to think that we live in The Digital Society, for this suggests that society is made by the digital, that its essential characteristics have been created because of the development of digital technology (Martin & Grudziecki, 2006).

For the education, it is encouraged that the learning activity is given importance to the learners and that the learners should be able to create the knowledge subjects that they consider relevant. For the 21<sup>st</sup> century, the learners must have the suitable skill to access, assess, use, manage and enrich the vastness of the data. The media of today and tomorrow are the digital tools. The learners have the historical power to enhance their abilities to learn, communicate, work and create collaboratively. With this power, there is the need to learn the suitable skill to manage the large amount of data, information, media and technology. This is known as “Digital Literacy.” (Bernie & Charles, 2009:7) As we develop the learners’ skill with digital technology, it is necessary to be aware of the change in the technology, which is called “Literate.” “Literate” has a very large meaning. It is about the parts of the writing, the message with a pattern and a script, graphical interpretation, web site access, media management and understanding (Asselin & Moayeri. 2011; Poore, 2011 ) as referenced in Marion Milton. 2013: 75.

Office of the Higher Education Commission (2009) made Thai Qualifications Framework for Higher Education (TQF:HEd) amended and in order to set the clear target of producing graduates. The results of the learning expectations of graduates in each of the courses/ Field / Program / Division. The qualification standard framework of national higher education expect at least 5 learning outcomes for graduates by following: 1. Ethics and Morals. 2. Knowledge. 3. Cognitive Skills. 4. Interpersonal Skills and Responsibility. 5. Numerical, Communication and Information Technology Skills. The researcher, therefore, is interested to study the parts that constitute the “Digital Literacy Skill of Student in Public Higher Education.” This will provide the frame for the idea needed to create the tools to help develop the “Digital Literacy Skill” for an individual such as teachers and students, to develop the learning media, to support other necessary and important skills, to be used as a learning tool and to be used as a guideline for the practice which supports the lifelong learning and for the working in the digital society.

## **Research Objectives**

The objective of the research is to study the Digital Literacy Skill of students in public higher education institutes.

## **Data Sources/Data Providers**

This study is the qualitative research in a form of focus group. Samples are the 6 experts in digital learning, education science and teaching methodology.

## **Tools and Quality Assessment**

The tool used in the research is the interviewing forms which is designed based on the information obtained from the referenced documents, text books and other research articles which are relevant or related, ideally or theoretically to this study.

The quality assessment for the research is conducted via the evaluation from the thesis advisor.

## **Data Analysis/Interpretation**

The analysis on the data is based on “Content Analysis.” It is used to explain the meaning of principle and the constituents of the “Digital Literacy Skill of students in public higher education institutes”.

## **Research Methodology**

In this study, the data for the research are collected according to the following procedure.

1. Study the documents and the research articles related to the “Digital literacy skill.”
2. Prepare the interviewing forms for the group on “Digital Literacy Skill” and have it presented to the thesis advisor.
3. Conduct the “Focus Group” meeting. A total of 6 experts are to be invited to the “Focus Group.”
4. Analyze the data obtained from the “Focus Group.”

## **Digital Literacy Skill**

CETF (2008) defined that the digital literacy is ability to use digital technology and communications tools, and/or networks to access, manage, integrate, evaluate, create and communicate information in order to function in a knowledge society. Ilomäki et al(2011) stated that the digital competence is the most recent concept describing technology-related skills. In recent years, several terms have been used to describe the skills and competence of using digital technologies, such as ICT skills, technology skills, information technology skills, 21st century skills, information literacy, digital literacy, and digital skills. Ala-Mutka (2011) also shows elements of digital literacy clearly. Digital Literacy have overlapping areas with Information Literacy, Media Literacy, ICT Literacy and Internet Literacy showed in Figure 1.

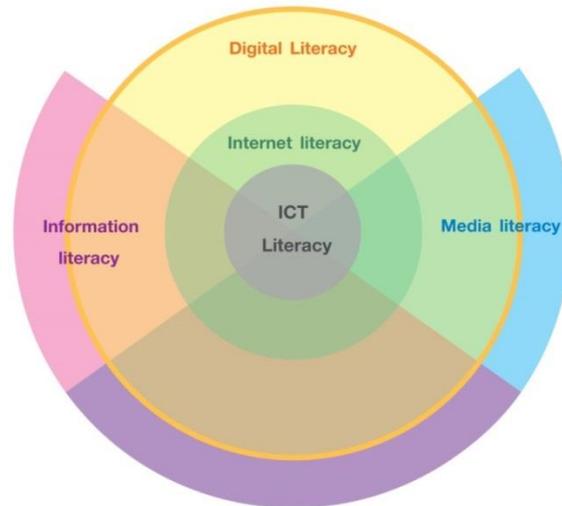


Figure 1. Mapping Digital Competence : Towards a Conceptual Understanding. (Ala-Mutka, 2011)

Figure 1 illustrates how the typical definitions make the concepts overlap considerably. Different interpretations of the concepts make it impossible to have a general agreement about the exact overlap in relation to different digital competence areas. This figure follows from the concept discussion above, and aims to show the following main points:

- **ICT literacy** is typically the narrowest digital concept, and mainly concentrated on technical knowledge and usage of computers and software applications.
- **Internet literacy** adds to the tool-related knowledge and skills the considerations and ability to successfully function in networked media environments.
- **Information literacy and media literacy** concepts largely overlap. However, some different focuses can be detected in that information literacy is more about finding, organizing and processing information, whereas media literacy is more about having the skills to interpret, use and create media for one's own benefit and participation. A critical attitude is important in both of them.

### **Thai Qualifications Framework for Higher Education (TQF:HEd)**

Office of the Higher Education Commission (2009) made Thai Qualifications Framework for Higher Education (TQF:HEd) to be a mechanism or a tool for setting a policy to improve the quality and standards of education as defined in the Education Act of 1999 which was amended and in order to set the clear target of producing graduates. The results of the learning expectations of graduates in each of the courses/ Field / Program / Division. The qualification standard framework of national higher education expect at least 5 learning outcomes for graduates by following:

1. Ethics and Morals. (E&M) Development of:
  - Habits of acting ethically and responsibly in personal and public life in ways that are consistent with high moral standards.
  - Ability to resolve value conflicts through application of a consistent system of values.
2. Knowledge. (K), the ability to understand, recall and present information including:

- Knowledge of specific facts,
- Knowledge of concepts, principles and theories and
- Knowledge of procedures

3. Cognitive Skills. (C), the ability to

- Apply knowledge and understanding of concepts, principles, theories and procedures when asked to do so; and
- Analyze situations and apply conceptual understanding of principles and theories in critical thinking and creative problem solving when faced with unanticipated new situations.

4. Interpersonal Skills and Responsibility.(I&R), the ability to;

- work effectively in groups, and exercise leadership;
- accept personal and social responsibility, and
- plan and take responsibility for their own learning.

5. Numerical, Communication and Information Technology Skills. (N&ICT), the ability to

- use basic mathematical and statistical techniques,
- communicate effectively in oral and written form, and
- use information and communications technology.

### **Bloom's Digital Taxonomy**

Churches (2009) shows that Bloom's Revised Taxonomy is key tools for teachers and instructional designers. Bloom's Revised Taxonomy account for the new behaviours, actions and learning opportunities emerging as technology advances and becomes more ubiquitous. The details show in the figure 2.

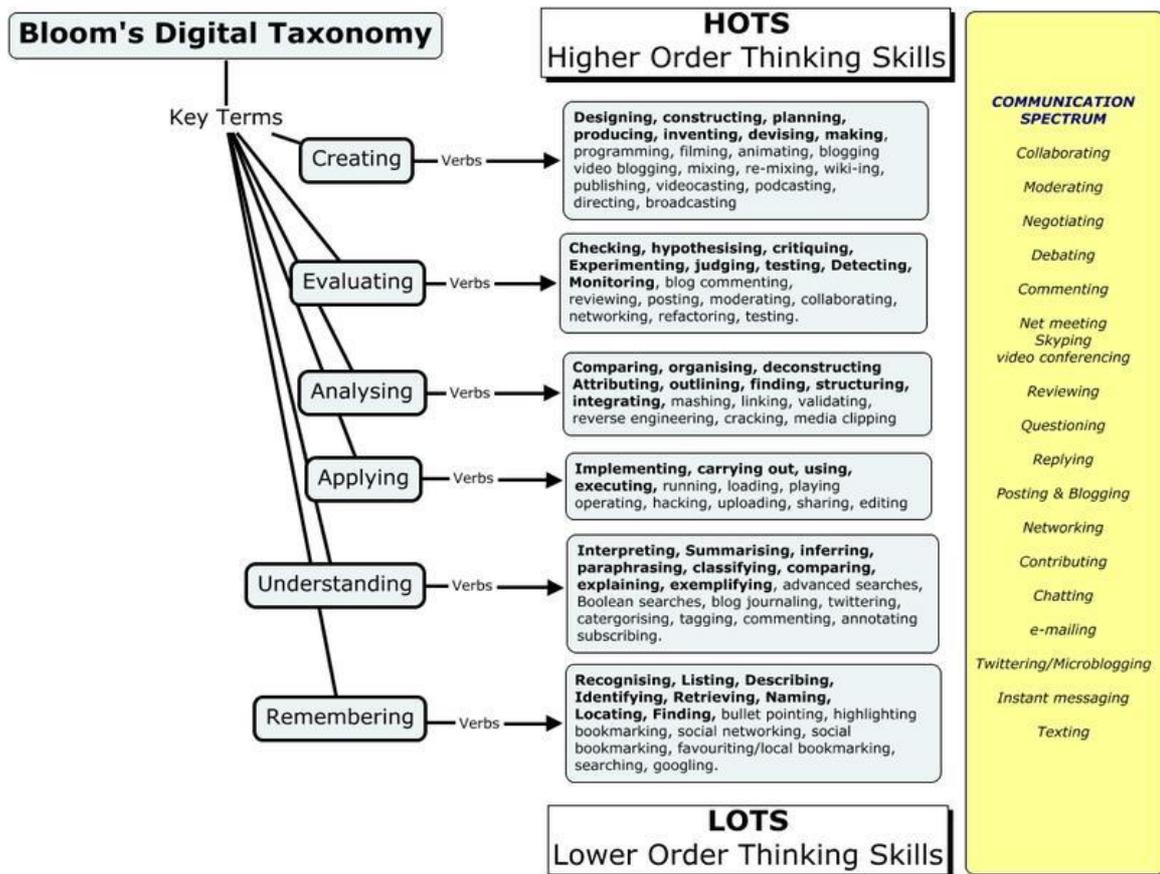


Figure 2. Bloom's Digital Taxonomy. (Churches, 2009)

## Result

### Digital Literacy Skill of Students in Public Higher Education Institutes

From the study of documents and related research, the framework idea of 21st century skills about the technology using standards for the students of The International Society for Technology in Education (ISTE) found that there is no standard for digital literacy knowing in higher education. It also has not set any standard for digital literacy skills to students in higher education of public higher education institutes yet. So that this study has concluded the concept, theory and factors of digital literacy knowing, as shown in Table 1 and 2 considering along with Thai Qualifications Framework for Higher Education (TQF:HEd)

For the analysis of synthetic concepts and components of Digital Literacy Skill, the researcher has conducted the digital literacy skill of students in public higher education institutes draft. Design a structured interview and focus group meetings six experts in the digital learning, the education science and the teaching methodology. Details showed in Table 1.

**Table 1 : Mapping Digital Literacy Skill with TQF**

Elements	Define	Competency	TQF:HEd				
			E & M	K	C	I&R	N&ICT
1.Access	Knowing about and knowing how to collect and/ or retrieve information	Access information sources as well as having the techniques for collection and retrieval of such information, is a basic component of all literacies	✓	✓	✓	✓	✓
2.Manage	Applying and existing organizational or classification scheme.	Conduct a rudimentary and preliminary organization of accessed information for retrieval and reuse.	✓	✓	✓	✓	✓
3.Integrate	Interpreting and representing information summarizing comparing and contrasting.	Interpret and represent information by using ICT tools to synthesize summarize compare, and contrast information from multiple sources.	✓	✓	✓	✓	✓
4.Evaluate	Making judgments about the quality, relevance, usefulness, or efficiency of information.	Judge the currency, appropriateness, an dedequacy of information and information sources for a specific purpose	✓	✓	✓	✓	✓
5.Create	Generating information by adapting, applying, designing, invention, or authoring information.	Adapt, apply, design, or invent information in ICT environments.	✓	✓	✓	✓	✓
6.Communicate	Communicate information persuasively to meet needs of various audiences through use of appropriate medium.	Communicate, dapt, and present information properly in its context in ICT environments and for a peer audience.	✓	✓	✓	✓	✓

Table 1 The synthesis of the views of experts combined with the learning expectations of graduates shows that digital literacy skills are composed of six elements. Each element should have all five learning outcomes for graduates and are: Ethics and Morals, Knowledge, Cognitive, Interpersonal Skills and Responsibility, Numerical and Communication and Information Technology Skills.

**Table 2 :** Mapping Elements of Digital Literacy Skill with Bloom’s Digital Taxonomy

Elements	Competence	Bloom’s Digital Taxonomy (Keywords)	Digital Literacy Skill of Student in Public Higher Education (Keywords)
1.Access	Access information sources as well as having the techniques for collection and retrieval of such information, is a basic component of all literacies	<b>Remember :</b> Recognizing, Listing, Describing, Identifying, Retrieving, Naming, Locating, Finding,	find, search, browse , retrieve, tag, navigate, locate
2.Manage	Conduct a rudimentary and preliminary organization of accessed information for retrieval and reuse.	<b>Understanding :</b> Interpreting, Summarizing, Inferring, Paraphrasing, Classifying, Comparing, Explaining, Exemplifying	capture, collect, store, classification, delivery
3.Integrate	Interpret and represent information by using ICT tools to synthesize summarize compare, and contrast information from multiple sources.	<b>Applying :</b> Implementing, carrying out, using, executing, Implementing, showing, exhibiting <b>Analyzing :</b> Comparing, Organizing, Deconstructing, Attributing, Outlining, Finding, Structuring, Integrating,	interpret, represent, summarize, contrast , implement, using
4.Evaluate	Judge the currency, appropriateness, an dedequacy of information and information sources for a specific purpose	<b>Evaluating :</b> Checking, Hypothesising, Critiquing, Experimenting, Judging, Testing, Detecting, Monitoring	judge the currency, appropriateness, and adequacy of information compare, organize, deconstruct
5.Create	Adapt, apply, design, or invent information in ICT environments.	<b>Creating :</b> Designing, Constructing, Planning, Producing, Inventing, Devising, Making	design or invent, pull-related issues, adapt, apply, utilize
6.Communicate	Communicate, dapt, and present information properly in its context in ICT environments and for a peer audience.	<b>Communication :</b> Collaborating, Moderating, Negotiating, Debating, Commenting, Reviewing, Questioning, Replying,	communicate, adapt, and present

		Posting, Contributing, Chatting	
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## **Conclusion**

By analyzing the principle and the parts constituting the digital literacy skill of students in public higher education institutes, it is understood that the digital literacy means the ability to use the digital technology, the communication devices and the network in the digital environment to live the life efficiently. That is composed of six elements;

1) Access 2) Manage 3) Integrate 4) Evaluate 5) Create and 6) Communicate.

## References

- Ala-Mutka, K. (2011). *Mapping Digital Competence: Towards a Conceptual Understanding*. [Online] Available: [http://ftp.jrc.es/EURdoc/JRC67075\\_TN.pdf](http://ftp.jrc.es/EURdoc/JRC67075_TN.pdf).
- California Emerging Technology Fund . (2008). *California ICT Digital literacy Assessment and Curriculum Framework*. [Online]. Available : <http://www.ictliteracy.info/rf.pdf/California%20ICT%20Assessments%20and%20Curriculum%20Framework.pdf>.
- Churches, A. (2009). *Bloom's Digital Taxonomy*. [Online]. Available: <http://edorigami.wikispaces.com>.
- Marion Milton. (2013) .California Emerging Technology Fund .2008. *California ICT Digital literacy Assessment and Curriculum Framework*. [Online]. Available : <http://www.ictliteracy.info/rf.pdf/California%20ICT%20Assessments%20and%20Curriculum%20Framework.pdf>.
- Martin, A., & Grudziecki, J. (2006). DigEuLit: Concepts and Tools for Digital Literacy Development. *ITALICS: Innovations in Teaching & Learning in Information & Computer Sciences*, 5(4), 246-264.
- Ministry of Information Communication and Technology. (2011). *ICT2020 Conceptual Framework*. Thailand. Ministry of Information Communication and Technology.
- Ilomäki, L., Kantosalo, A. & Lakkala, M. (2011). *What is digital competence?* [Online] Available : [http://linked.eun.org/c/document\\_library/get\\_file?p\\_l\\_id=16319&folderId=22089&name=DLFE-711.pdf](http://linked.eun.org/c/document_library/get_file?p_l_id=16319&folderId=22089&name=DLFE-711.pdf).