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## Development of producing and using e-books competencies of teachers in Chachengsao, Thailand

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### Abstract

Using E-books can develop students' achievements and lead to meaningful learning. The purposes of this research were to develop competency in terms of the production and use of E-books on the part of teachers in Chachengsao, and to study the effects of using E-books in the instruction of teachers in Chachengsao. This study employed both quantitative and qualitative approaches. The research procedure was divided into four phases. The findings revealed that the components of E-books could be categorized into three key components: E-book structure; multimedia; and hyperlinks. The procedure with regard to the design and development of E-books was divided into 11 steps. The overall competency of the teachers' producing E-books was at a high level. Data from interviews revealed that the effects of using E-books in the instruction of teachers in Chachengsao were divided into two parts: (1) the effects of using E-books in instruction on students' attention; and (2) the effects of using E-books in instruction on students' learning behavior.

Keywords: e-books, producing e-books competencies, using e-books competencies, teachers in Thailand.

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## 1. Introduction

The rapid development of information and communication technologies created more progressive educational technology. This was found with regard to a variety of electronic learning sources; web-based instruction; electronic books (E-books), social media, virtual classrooms, and massive open online courses (MOOC). The aim was to create more effective and productive teaching and learning processes. In modern-day society in Thailand, many organizations support websites for teacher education using channels such as Distance Learning Foundation and TruePlookpanya. These offer supportive ways that teachers can use to benefit teaching and learning, though the teachers may not really produce any of that supportive ways by themselves.

In addition, the benefits of using E-books were various, especially in terms of enhancing student knowledge, as it was seen as being more accessible in that it was running in parallel with the technology developing nowadays. The E-book could ensure high levels of knowledge delivery and accessibility, and it created long-lasting memorization of knowledge (Letchumanan & Tarmizi, 2010). However, it was found that the benefits also depend on the teachers' knowledge level and approach to E-books and the devices available when it comes to transferring knowledge to their students (Yalman, 2015).

This study aimed to develop competencies among the teachers in the Chachengsao province of Thailand with regard to the production and the use of E-book, and also to study the effects of using E-books among those teachers. It was believed that the study would essentially benefit sustainable professional development in Thai education. Moreover, it could help to enhance the capabilities and skills required for the production and utilization of this resource in a way that was appropriate to the educational technology available to Thai teachers.

## 2. Objectives of the study

The primary goals of this study were (1) to develop the competencies of teachers in Chachengsao, Thailand with regard to producing and using E-books; and (2) to study the effects of using E-books with regard to the teachers in Chachengsao.

## 3. Literature Review

Vassiliou (2008) stated that E-books can be divided into two types: (1) a book in an electronic environment which has contents including text and digital objects, and (2) a book which includes text, but also uses advanced technologies such as hyperlinks, multimedia, highlights, and note taking. The E-book structure can be divided into the seven components proposed by Srimaneepant (2004): text; still image; animation; sound; video; interactive links; and multimedia storage.

There are many differences between traditional books and E-books: E-books are easier to find than traditional books; traditional books need space for storage. On the other hand, E-books need space in the form of memory cards or online storage; traditional books are more expensive than E-books; traditional books can be damaged by temperature and physical damage, E-books can be damaged by falling, being exposed to wet, and viruses; in terms of greenness, traditional books use paper and E-book use electric power (Rubin, 2012; Harness, 2010).

#### 4. Research Methods

This study employed both quantitative and qualitative approaches to develop the competencies of teachers in Chachengsao, Thailand with regard to the production and use of E-books, and to study the effects of using E-books in the instructional procedures of teachers in Chachengsao. The research procedures were divided into three phases. Details are as follows.

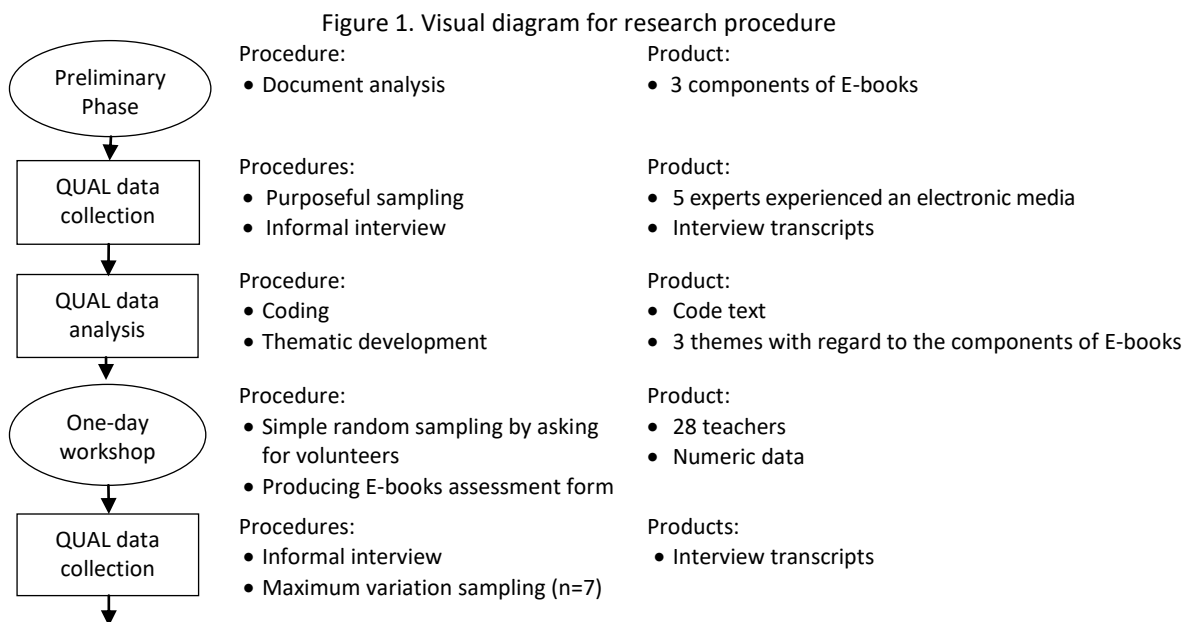
The preliminary phase was a documentary analysis of material with regard to designing and producing E-books. Data was collected from textbooks, articles, theses, and work in published journals.

Phase 1 (understanding the electronic media) consisted of an interview procedure in which qualitative data was collected by interviewing five experts who have experience in electronic media. The criteria for selecting these experts were (1) they were experts who have experience in the use of educational technology and (2) they were experts who have experience in designing and developing electronic media.

Phase 2 (enhancement of the production of E-book competencies of teachers in Chachengsao). In this phase the researcher designed a one-day workshop to enhance the E-books competencies of teachers in Chachengsao based on the results in the preliminary phase and phase 1. Simple random sampling involved asking for volunteers to be participants. The participants in this phase were 28 teachers in Chachengsao.

Phase 3 (study effects of using E-books in instruction). Qualitative data was collected by interviewing seven participants who have experienced the one-day workshop. Maximum variation sampling was used to select the participants for this study. The criteria for selecting the participants was experience in teaching particular subjects: (1) sciences; (2) mathematics; (3) Thai language; (4) foreign language; (5) social studies; (6) career and technology; and (7) early childhood. The qualitative data were collected using an interview protocol. The qualitative data were analyzed by employing content analysis.

The procedure of this research is briefly explained as follows:



QUAL data analysis

Procedures:

- Coding
- Thematic development

Products:

- Coded text
- 3 themes of the effects of using E-books in instruction

## 5. Research Methods

Research results were divided into four parts: (1) the components of E-books; (2) the procedures associated with the design and development of E-books; (3) the competency of teachers in terms of the production of E-books; and (4) the effects of using E-books with regard to teachers in Chachengsao. Details are as follows:

### 5.1. The components of E-books

E-books comprise three key components: (1) E-book structure consisting of nine elements including front cover; introduction; contents; pre-test; details; activity; post-test; references; and back cover; (2) multimedia consisting of five elements including text; still images; animation; sound; and video; and (3) hyperlink consisting of two elements including internal links and external links.

### 5.2. The procedures associated with the design and development of E-books

The procedures of the designing and development of E-books were divided into 11 steps as follows: (1) E-book's objectives analysis e.g. tutoring reading empowerment practice; (2) learner analysis – to investigate prior knowledge and attention; (3) determining learning objectives – to define learner performance after using the E-book; (4) determining appropriate content by determining the appropriate E-book content with regard to learners' knowledge and level of education; (5) encouraging learners' attention by including the design of attractive covers and designing multimedia; (6) designing and constructing activities or practices to increase learners' confidence; (7) designing hyperlinks; (8) scriptwriting and storyboarding - to demonstrate the overall contents and hyperlinks; (9) assessing content validity; (10) building the E-book; and (11) assessing the E-book in terms of content and learning design.

### 5.3. The competency of teachers in terms of the production of E-books

There were 28 teachers in Chachengsao who attended the one-day workshop to enhance the development of E-books competencies on the part of the teachers. The overall competency of the teachers' producing E-books was at a high level (M = 8.68). Among six competencies associated with the production of E-books, the highest average was assessed in terms of the content arrangement with a high average mean score (M = 8.83). The second highest average was assessed in terms of the use of simple pictures with a high average mean score (M = 8.79). In terms of text formatting; the use of appropriate pictures; and flow content, each had the same high mean scores of M = 8.63. However, the lowest average related to the use of content-related pictures with a high average mean score of M = 8.53.

Additionally, the six competencies associated with teachers producing E-books were also presented in a hexagonal diagram as shown in Figure 2. The figure obviously shows that the hexagon is almost

symmetrical. It indicates that all competencies with regard to producing E-books on the part of teachers was similar, the same mean scores.

Table 1. The competency of teachers' producing E-books

Competencies	Lowest score	Highest score	Mean	SD	Level
1. Content arrangement	7	10	8.83	0.96	High
2. Content-related picture	7	10	8.58	1.02	High
3. Text formatting	7	10	8.63	1.06	High
4. Appropriate picture	7	10	8.63	0.97	High
5. Simple picture	7	10	8.79	0.88	High
6. Flow content	6	10	8.63	1.10	High
Total	6	10	8.68		High

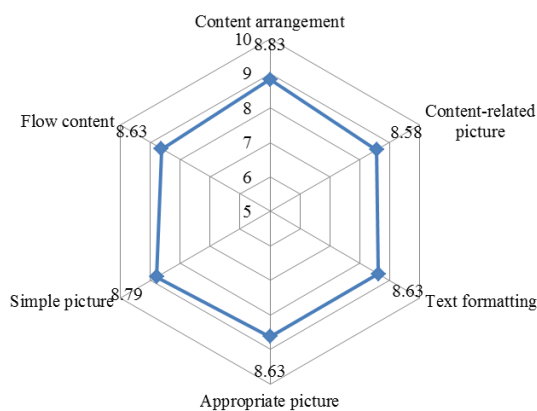


Figure 2. The competency of teachers' producing E-books

#### 5.4. The procedures associated with the design and the development of E-books

Based on the interviews, the findings revealed that the effects of using E-books from the point of view of teachers in Chachengsao could be divided into two parts: (1) students' attention and (2) students' learning behavior.

Teachers reflected on the effects of using E-books in instruction on students' attention as follows:

*"I usually use pictures and sometimes use motion pictures, it help increase students' attention."*

Teachers reflected the effects of using E-books in instruction on students' learning behavior such as revision and reading as follows:

*"I brought E-book that I had created at the workshop to try in my class. My students were excited because E-books have both pictures and video. Furthermore, students can review the material by themselves at home"*

*"To clearly understand, I used video clips on E-books or created useful links in order to help student to read in more detail by themselves."*

In terms of level of teachings, teachers reflected the effects of using E-books in instruction, especially on kindergarten and elementary level as follows:

*“Early childhood students cannot read efficiently, so I use animation picture and video clips for instruction”*

*“I teach Thai language in elementary school. My students enjoy learning with E-books”*

## **6. Discussion and Recommendations**

This study has confirmed that the one-day workshop is essential when it comes to enhancing the production of E-book competencies on the part of teachers, and also using E-books in instruction. In terms of the Third National Education Act B.E. 2553, teachers should have the knowledge, capabilities, and skills required for the production and utilization of appropriate, high-quality, and efficient technologies. Therefore, educational administrators should be providing workshops to enhance the E-book production competency of in-service teachers, and also the ICT integration capacity building of such teachers.

Interestingly, using E-books in instruction encouraged students’ learning, especially at kindergarten and elementary level. Therefore, E-books should be integrated in early childhood instruction so that teachers can encourage and motivate students.

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