

## An Study on Effective Factors of Social Subject Digital Textbook in Elementary School

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**Abstract.** In this paper, I researched about the effect factors which appear by using the digital textbook. Above all, I picked up 5 effect factors of society digital textbook through analysis reports of research schools, interview with expert of digital textbook and survey targeting students and teachers. And I confirmed the validity of them through a delphi survey targeting 15 experts of digital textbook. I expect the result of this paper is used to prove the effect of digital textbook.

**Keywords:** Digital textbook, Effect Factor, Validity

### 1 Introduction

In June 2011, the Korean government announced the “Smart Education Promotion Strategy”. It is a plan to provide digital textbook to elementary, middle, and high school education with mobile network. According to the Smart Education Promotion Strategy, students will look at the digital textbook by using mobile devices like smart pads or smart phones

A digital textbook has various multimedia contents such as videos, animations, music, and 3D contents added to the contents of a printed textbook and is expected to enhance the effect of learning for students. In fact, the Korean government has developed digital textbooks and tested them on certain research schools from 2008 to present, and have observed the effect. Also, it established a ‘Smart Education Strategy’ which will apply the effects of digital textbooks, which were confirmed through running tests on these research schools, to other schools in phases starting from 2014[2][4].

However, There are two negative opinion about supplying a digital textbook to young students. First, the effect which they can get by using the digital textbook is indefinite, Second, they can have a side effect on the condition of their health as like VDT syndrome, xerophthalmia and headache by using the digital textbook.

In this paper, I will research about the effect factors which appear by using the digital textbook. I expect the result of this paper is used to prove the effect of digital textbook.

## 2 Korea's Digital Textbook

### 2.1 Structure of Digital Textbook

Korea's digital textbook is based on previous printed textbooks. However it is designed to contain more contents than previous printed textbooks such that students can look at dictionaries and take tests while studying the textbook materials, and a feature that connects with external Internet materials is prepared to search for contents more in-depths on topic that raises curiosity[2][4].

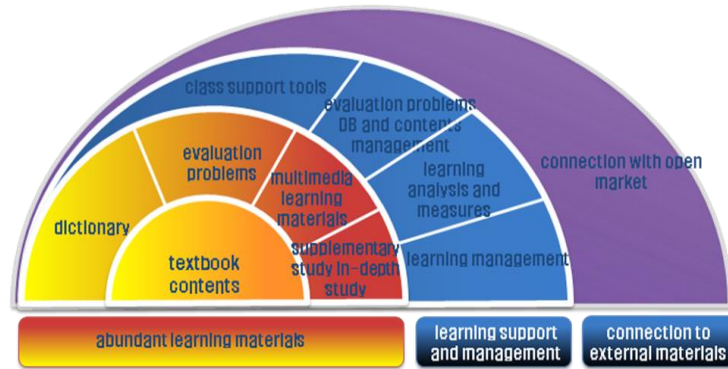


Fig. 1. Structure of a digital textbooks[2][4]

### 2.1 Promotion Status

The Korean government announced the “Digital Textbook Commercialization Plan” in 2007 and promoted digital textbook development for certain subjects in elementary and middle school as shown in [Table 1].

Table 1. Developed digital textbook.

year	level	grade	Developed subjects	
2008	Elementary school	5	Korean, Society, Science, Mathematics, Music, English	6
		6	Korean, Society, Science, Mathematics	4
2009	Elementary school	3 ~ 6	English(Level 1, 2, 3 4)	4
		4	Society, Science	2
	Middle school	1	Science, English	2
2010	Elementary school	5~6	(Society, Science improvement)	(4)
2011	Elementary school	5~6	(Korean, Mathematics improvement)	(4)

2014	Elementary school	3~4	Society, Science	4
	Middle school	1	Society, Science	2
Total				24

### 3 Effect Factors of Digital Textbook

In order to pick up effect factors of society digital textbook, I analyze reports of research schools, had interviews with experts of digital textbook and carry out survey targeting students and teachers. As a result, I pick up effect factors of society digital textbook as shown in [Table 2].

**Table 2.** Effect factor of digital textbook.

Effect Factors	Definition
Academic achievement	ability to understand what they are learning
Problem solving	ability to solve a problem
Self-directed learning	ability to study by themselves
Interest of learning	How much interest they have about what they are learning
ICT ability	ability to use ICT
Collaboration ability	ability to collaborate with peer for problem solving

### 4 The validity of Effect Factors of Digital Textbook

In order to confirm the validity of effect factors of society digital textbook, I have a delphi survey targeting 15 experts of digital textbook. As a result, I confirm the validity of effect factors of society digital textbook as shown in [Table 3].

**Table 3.** The result of confirming the validity

Effect Factors	Unit	Rikeret Scales					Total	Ave.
		←Positive			Negative→			
		5	4	3	2	1		
Academic achievement	N	9	5	0	0	0	14	4.6
	%	64.3	35.7	0.0	0.0	0.0	100.0	
Problem solving	N	8	6	0	0	0	14	4.6

	%	57.1	42.9	0.0	0.0	0.0	100.0	
Self-directed learning	N	10	4	0	0	0	14	4.7
	%	71.4	28.6	0.0	0.0	0.0	100.0	
Interest of learning	N	9	6	0	0	0	15	4.6
	%	60.0	40.0	0.0	0.0	0.0	100.0	
ICT ability	N	6	6	2	0	0	14	4.3
	%	42.9	42.9	14.3	0.0	0.0	100.0	
Collaboration ability	N	6	7	2	0	0	15	4.3
	%	40.0	46.7	13.3	0.0	0.0	100.0	

## 5 Conclusion

Korean government announced the “Smart Education Promotion Strategy” in 2011 and provide digital textbook to elementary school education form 2014. However, There was a negative opinion about supplying a digital textbook that the effect which they can get by using the digital textbook is indefinite.

So, I researched about the effect factors which appear by using the digital textbook in this paper. Above all, I picked up 5 effect factors(Academic achievement, Problem solving, Self-directed learning, Interest of learning, ICT ability, Collaboration ability) of society digital textbook through analysis reports of research schools, interview with expert of digital textbook and survey targeting students and teachers. And I confirmed the validity of effect factors of society digital textbook through a delphi survey targeting 15 experts of digital textbook.

I expect the result of this paper is used to prove the effect of digital textbook.

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