Master's Thesis of Public Administration

The Policy Change Process of Digital Textbook Program in South Korea

– The Goal Ambiguity – Conflict Matrix Revisited –

디지털 교과서 정책 집행 과정 연구

– 정책 목표의 모호성과 갈등 모형을 중심으로–

August 2023

Graduate School of Public Administration
Seoul National University
Global Public Administration Major

Yoon Hea Joon

The Policy Change Process of Digital Textbook Program in South Korea

– The Goal Ambiguity– Conflict Matrix Revisited –

Advisor Min Kyo Koo

Submitting a master's thesis of Public Administration

March 2023

Graduate School of Public Administration
Seoul National University
Global Public Administration Major

Yoon Hea Joon

Confirming the master's thesis written by
Yoon Hea Joon
June 2023

Chair Kum, Hyunsub (Seal)
Vice Chair Kwon, Illoong (Seal)
Examiner Koo, Min Kyo (Seal)

Abstract

Since 2002, Korea has initiated policy discussions on digital textbooks and started the development of digital textbooks in 2007. This study aims to analyze the implementation process of Korea's digital textbook policy based on Matland's goal ambiguity–conflict matrix. The implementation of the digital textbook policy can be divided into four stages: introduction, diffusion, adjustment, and stabilization, depending on the levels of goal ambiguity and conflict.

During the introduction phase, the policy on digital textbooks was initially announced in Korea, leading to high ambiguity in the goals, but low conflict surrounding the policy. The concept and goals of digital textbooks were not clear during this period, and the policy direction underwent multiple revisions. These characteristics align with the experimental implementation predicted by the ambiguity–conflict model. In the diffusion phase, digital textbook policy became part of a new policy called "SMART Education", the ambiguity in goals remained high. Furthermore, with the anticipation of widespread adoption of digital textbooks in all primary and secondary schools, the level of conflict increased. During this period, the Presidential Council for Information Society played a significant role in strengthening the implementation of the digital textbook policy. During the adjustment phase, the government reduced conflict by retracting the full adoption of digital textbooks and reverting to a pilot operation. This period highlighted the learning process of public officials involved in the digital textbook policy, exhibiting characteristics of experimental implementation. In the stabilization phase, normal and predictable policy management activities took place, reflecting the characteristics of administrative

implementation.

Despite the policy persisting for over 20 years, digital textbooks have not been well-established in the field. This may be because the digital textbook policy has gradually lost its momentum as it has remained at the experimental level for a long time. Additionally, the policy on digital textbooks had to undergo multiple revisions due to the rapid advancement of information technology that it aimed to reflect. This study suggests that for the successful implementation of the policy, it is necessary to mobilize public support for the policy by clearly presenting the goal of the policy to be implemented. However, this study has limitations in objectively measuring the levels of ambiguity and conflict, and future research should focus on developing measurement indicators and addressing these limitations.

Keyword : Digital Textbook, Policy implementation, Goal ambiguity-conflict matrix.
Student Number : 2021-29369

Table of Contents

List of Tables

List of Figures

Ⅰ. Introduction

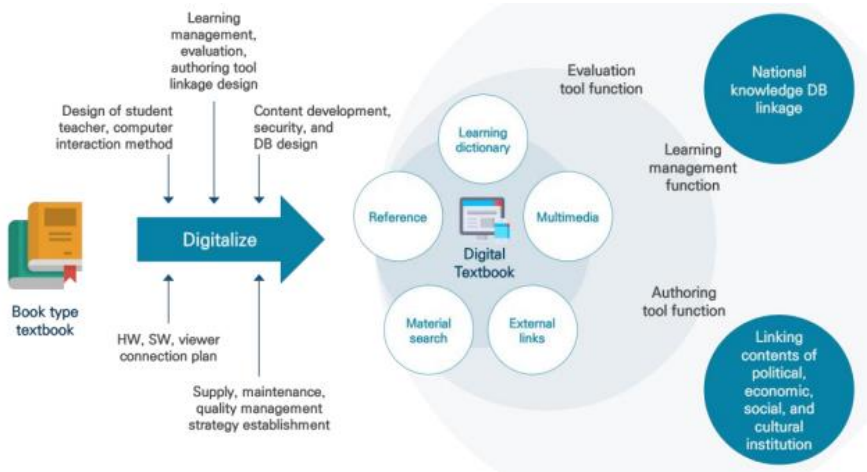
1. Research Purpose

The rapid development of information and communication technology (ICT) and the COVID-19 crisis have generated social interest in the digital transformation of education. While it is true that the pace of change has accelerated due to COVID-19, Korea has been gradually preparing for the digital transformation of education since the establishment of Phase 1 Master Plan for ICT in Education in 1995. The initial aim of this plan was to computerize students' information and store it in a system. Since then, various policies have been implemented to promote digital-based teaching and learning activities.

One of the notable ICT policies in the field of elementary and secondary education is the digital textbook policy. A digital textbook refers to a student's textbook that incorporates additional learning materials such as glossaries, multimedia resources, realistic content, and evaluation questions. It also includes learning support and management functions (Ministry of Education, 2018). With the rapid advancement of ICT since the 2000s, many people agreed that education should not solely focus on memorizing existing knowledge and mastering technology. While understanding and acquiring knowledge remain important, the ability to actively utilize and apply knowledge should be prioritized as a key educational objective. As the goal of education shifted towards fostering integrative and creative thinking among students, new educational methods based on digital technologies began to be explored. Digital textbooks emerged as a means to move away from

traditional memorization-focused education centered around physical textbooks.

< Figure 1 > Basic Concept of Digital Textbook



Source: So et al.(2021:110)

The digital textbook policy began with the announcement of the 'Plan to enhance the common use of digital textbooks' by the Ministry of Education① in 2007. Discussions on the concept and design strategy for electronic textbooks had been ongoing for five years since 2002, and in 2007, the policy was implemented. At that time, policymakers had high expectations that digital textbooks would play a crucial role in improving classroom instruction and fostering educational innovation. After a period of development and pilot operation, digital textbooks were officially distributed to all elementary, middle, and high schools starting from 2018.

However, it is challenging to conclude that digital textbooks are actively being used in classroom teaching. Although the Ministry of

① The Ministry of Education is called by slightly different names depending on the administration, but in this study, 'Ministry of Education' is used as a unified term.

Education reported an increase in the use of digital textbooks in 2020, with the number of downloads surpassing three times the previous year due to the expansion of non-face-to-face classes during COVID-19, teachers' assessments present somewhat contradictory findings. According to Kwon et al. (2020), 65.4% of teachers did not utilize digital textbooks, even in situations where remote classes were unavoidable following the COVID-19 aftermath. A survey on perceptions of digital textbooks conducted by Ahn et al. (2020) revealed that only about 15% of teachers responded that they were incorporating digital textbooks into their classes (see Table 1). Despite the government's investment of tens of billions of won in digital textbooks over the course of 13 years, they seem to be overlooked in the classroom.

< Table 1 > Digital Textbook Utilization Rate ②

	% (Overall)	School Level (%)		
	N = 4939	Elementary (N=3330)	Middle (N=1290)	High (N=319)
I have installed a digital textbook and am using it	14.7	15.1	14.4	11.6
I have installed and used digital textbooks.	23.5	27.7	15.7	11.9
I installed a digital textbook, but I don't use it.	21.5	22.2	21.3	14.7
I've only seen digital textbooks installed.	8.7	9.3	7.9	6.0
I've heard of digital textbooks, but I haven't seen the form	28.9	23.8	37.9	46.1
I don't know what a digital textbook is.	2.6	1.9	2.7	9.7

Source: Ahn et al. (2020:80)

② Survey results of 4,939 school teachers

There are various interpretations regarding the low utilization rate of digital textbooks. Firstly, many teachers highlight the difficulty of accessing the internet in schools, which hampers the use of digital textbooks. Despite the installation of wireless internet in all classrooms due to the COVID-19 outbreak, the process was completed relatively recently, towards the end of 2021. Prior to the pandemic, the Ministry of Education's policy goal was to provide wireless internet access only in four classrooms per school. In addition to inadequate infrastructure, the lack of digital devices also poses a significant obstacle to the adoption of digital textbooks. Schools often face a shortage of digital devices, resulting in only certain classes or subjects being able to utilize digital textbooks (Choi, 2019).

Teachers also highlight the low quality of digital textbooks as another factor hindering their utilization. They argue that the quality of videos in digital textbooks is subpar, and the content often consists of materials readily available online, even without the use of digital textbooks (Kim, 2020). Moreover, the cumbersome usability of digital textbooks poses an obstacle to their adoption. Teachers find that there are numerous issues to contend with during class, such as difficulties with login, frequent disconnections, and other technical challenges, which make them reluctant to rely on digital textbooks.

While there have been numerous technical challenges associated with digital textbooks, this study will focus on examining the implementation process of digital textbook policies to identify factors that have hindered the successful establishment of these policies. This is because digital textbooks have undergone a pattern of policy changes, in which the target and scope of their

implementation have been modified multiple times. The digital textbook policy was initiated with the 'Plan to enhance the common use of digital textbooks' in 2007, which entered a crucial turning point during the Lee Myung-bak administration. At that time, the Ministry of Education, along with the Presidential Council on Information Society, introduced a 'SMART Education strategy' in 2011, announcing a plan to integrate digital textbooks across all subjects from 2015. However, just two years after the plan was unveiled, concerns over excessive budget allocation and debates regarding its effectiveness emerged, leading to the withdrawal of the original plan. As a result, the policy to introduce digital textbooks was scaled back to a pilot application limited to certain grades and subjects in elementary and middle schools (Ministry of Education, 2013).

The policy discussion on digital textbooks first took place in 2002 (Korea Education & Research Information Service [KERIS], 2018). It has been over 20 years since the Ministry of Education began promoting the development of digital textbooks. Despite numerous research and policy efforts by the government to promote the adoption of digital textbooks, they are still not widely utilized in schools. This study aims to analyze the implementation process of the digital textbook policy to understand why it has not been fully established and has faced challenges for over 20 years. Specifically, with the assumption of ambiguity in policy goals as a backdrop for the policy's drift, an analytical framework based on Matland's (1995) goal ambiguity-conflict matrix will be utilized to examine the execution process of the policy.

2. Research Scope and Method

This study analyzes the period from 2007 to April 2022, covering the duration of the Moon Jae-in administration. This timeframe was chosen because the digital textbook policy was officially announced and implemented following the introduction of the 'Plan to enhance the common use of digital textbooks' in 2007.

This paper is a case study that focuses on the analysis of individual policies. Case study is a research method that involves utilizing various sources of data to comprehensively and deeply analyze a small number of cases within their natural context, considering them as a whole (Namgung, 2010). The research method employed in this study was a literature review. By examining the annual publications from the KERIS, the progress of the digital textbook policy implementation was confirmed. Furthermore, the specific details of the policy were examined through policy documents, press releases from the Ministry of Education, the Office of the President, the National Assembly, and other relevant sources.

In addition, research reports, books, and academic papers from research institutions were collected and analyzed. Particularly, media coverage reporting on the implementation process of the digital textbook policy helped identify information that was difficult to ascertain solely from existing literature.

Ⅱ. Literature Review

1. Concept of Digital Textbook

Digital textbooks are a relatively new concept that has emerged with the development of information and communication technology. Various studies have contributed to the establishment of specific concepts related to digital textbooks. As depicted in Table 2, these studies have provided slightly different definitions of digital textbooks, but they share a common understanding that it refers to digitized materials used for learning purposes.

< Table 2 > Academic discussion on the definition of digital textbooks

Source	Definition of digital textbook
Son et al.(1997)	Digital book for students used in schools stored on a magnetic disk (tape) or CD-ROM so that it can be used based on a computer.
Yeo(2000)	A digitalized book that can be used on a computer basis, as the main textbook for students used for education at school or at home.
Kang(2002)	All forms of digitized learning aids related to primary and secondary school subjects
Son et al.(2004)	Multimedia type of learning material that can be used both at school or at home to provide educational services regardless of time and space. E-books designed to allow students to learn according to their characteristics and ability levels
Byun (2005)	A digital material that maximizes convenience and learning effectiveness by digitizing existing book-type textbooks and providing additional convenience functions

Source: KERIS.(2007:7)

The concept of digital textbooks originated from official government documents in 2007. Digital textbooks are defined as

textbooks where the contents are recorded in electronic media using digital data. These textbooks can be accessed, read, viewed, and listened to through wired or wireless information and communication networks (KERIS, 2007). While digital textbooks are based on the contents of traditional printed textbooks, they were conceptualized as comprehensive systems that support the inclusion of not only internal materials like dictionaries, workbooks, multimedia, and hyperlinks but also external learning resources such as question banks (see Table 3).

< Table 3 > Comparison of characteristics of digital textbooks and printed textbooks

	Printed Textbook	Digital Textbook
Material Type	Text and image-oriented print-based learning materials	Vibrant multimedia learning materials
Data Conversion	Data is fixed and cannot be converted	Ease of active data conversion according to learner needs
Collecting Data	time and effort needed to find materials other than textbooks.	Providing a rich learning experience through various educational materials and links
Delivery Method	Delivered through teacher	Delivered through computer and internet
Material Linkage	Individual and independent form of structure	Structure that links educational materials according to related topics
Learning Method	One-way learning function centered on knowledge transfer	Interactive learning between between teachers and students, and between students
Class Operation	Difficulty in customized learning	Customized learning is possible

Source: KERIS. (2007:8)

In 2011, as "SMART education" was emphasized as a new direction of education, digital textbooks received attention as a major means of SMART education. SMART education is a

customized learning system for strengthening learners' competencies in the 21st century, and it is defined as a driving force in innovation of the educational system such as the educational environment, educational content, educational method and evaluation (Ministry of Education, 2011). In the plan at the time, the elements oriented for educational innovation are defined by giving meaning to each letter of SMART. S stands for Self-directed, M stands for Motivated, A stands for Adapted, R stands for Resource-enriched, and T stands for Technology embedded.

Looking at the concept of digital textbooks in this period, digital textbooks are textbooks in the form of digital devices with contents that overcome the limitations of book-type textbooks and supplement the content (Ministry of Education, 2013). It is a kind of all-in-one learning material that is linked to reference books, dictionaries, videos, and hyperlinks based on the contents of a book-type textbook. This is a development from the initial concept of digital textbooks, and reflects the policy expectation that various learning resources can be connected through digital textbooks.

Looking at the concept of digital textbooks presented most recently, digital textbooks are defined as digitalized student textbooks with rich learning materials and learning management functions added to the contents of book-type textbooks (KERIS, 2021). Comparing the concept presented in 2013 and the concept in 2021, it was emphasized that digital textbooks overcome the limitations of book-type textbooks in 2013, but it is implied that digital textbooks were built based on book-type textbooks in 2021. It is also found that a learning management function has been added to the previous digital textbook. This indicates that digital textbooks are being conceptualized as a complement to book-type textbooks.

2. Progress of Digital Textbook Policy

The Republic of Korea has been establishing Master Plan for ICT in Education every five years, starting with the First Master Plan for ICT in Education in 1995. The initial policy focused on implementing computer education in primary and secondary schools. Over time, the scope of the policy expanded to include higher education and lifelong learning, and the computerization of educational administration was successfully carried out. In the 2000s, information and communication technology further advanced, leading to the advent of the ubiquitous era, where learning became possible anytime and anywhere, transcending time and space. Compression storage technology was developed, enabling the transfer of information from hundreds of books onto small devices, including the ability to deliver information through videos and audio. Digital textbooks are a policy that emerged within the context of rapid ICT development.

The digital textbook policy was first discussed in 2002 (KERIS, 2013). At that time, the Ministry of Education established a 'long-term plan for the development and dissemination of electronic textbooks' and sought ways to introduce a new type of textbook. At that time, basic research was pursued for the development of a new type of textbook, but it did not lead to concrete implementation.

After a long discussion and research, the Ministry of Education established the "Plan for common use of digital textbook" in March 2007 and took the first step in the development of digital textbooks. The purpose of this plan at that time was to nurture students who will lead the future society and to realize a vibrant classroom. Since then, the development and utilization of digital

textbooks has been promoted according to a number of digital textbook development projects. In 2007, prototypes of digital textbooks were developed in nine subjects in the fifth grade of primary school, and five research schools were designated to apply them.

In 2009, the Ministry of Education prepared the "Digital Textbook Pilot Project Promotion Plan". Digital textbooks were developed for the 2 subjects of the 4th grade of primary school (Social studies, Science) and the 2 subjects of the 1st grade of middle school (English, Science). In addition, 112 research schools were designated for the pilot application of digital textbooks.

In June 2011, the "SMART Education Strategy" was established and digital textbooks became a more important policy. This plan focuses on the preparation of digital textbook-related verification and accreditation systems, the preparation of digital textbook technology and content standards, and the development and application of teaching and learning models. Based on this plan, the government prepared to develop digital textbooks for the 1st ~ 4th graders of elementary school, the entire middle school, and high school English subjects.

However, in August 2013, the Ministry of Education promoted a policy to adjust the application period and scope of digital textbooks (Ministry of Education, 2013). This measure narrowed the scope of development of digital textbooks established in 2011. The scope of digital textbooks, which was intended to be applied to all subjects, was reduced to science and social studies subjects in elementary and middle schools, and schools that applied digital textbooks were also limited to government-designated research schools. This decision was made in consideration of the awareness that digital

textbooks are hastily applied to the field without being properly verified. The policy document at this time included a plan to diagnose the dysfunction that may appear from the use of digital devices. It is judged that this reflects the government's policy to apply digital textbooks more carefully in consideration of opinions from the field.

< Table 4 > Changes in Digital Textbook Policy

Year	2012		2013
Applied Subjects	Social Studies, Science, English (2014) Other subjects (from 2015)	→	Social Studies, Science, English (2014)
Applied Grades	3rd grade elementary school ~ 2nd grade high school	→	3rd~4th grade of elementary school, 1st grade of middle school (trial application)
Device Supply	One device per person	→	Joint use after purchasing a certain amount
Building Internet Network	Classrooms in all elementary, middle and high school	→	Classrooms in middle school
Coping with side effects	Lack of policy consideration for side effects	→	Efforts to eliminate side effects of digital textbooks

Source: Ministry of Education. (2013)

Digital textbooks are currently being distributed for elementary school (from 3rd to 6th grade) and middle school Social studies, Science, and English subjects. In the case of high schools, digital textbooks only for English are supplied, and the specific period of application is shown in Table 5.

< Table 5 > Development and Application of Digital Textbooks

Schools	Grades	Subjects	2017	2018	2019	2020	2021
Elementary schools	3rd~4th grades	Social studies, Science, English	Developed	Applied	→	→	→
	5th~6th grades	Social studies, Science, English		Developed	Applied	→	→
Middle schools	1st grade	Social studies, Science, English	Developed	Applied	→	→	→
	2nd grade	Social studies, Science, English		Developed	Applied	→	→
	3rd grade	Social studies, Science, English			Developed	Applied	→
High Schools	English, English Ⅰ, English speaking, English reading and writing		Developed	Applied	→	→	→

Source: KERIS. (2020:81)

3. Previous Research on Digital Textbooks

Previous research on digital textbooks can be divided into studies on the effectiveness of digital textbooks, research on the perception of education consumers about digital textbooks, and research on the policy direction of digital textbooks.

3.1. Studies on the effectiveness of digital textbooks

After the policy was formalized in 2007, research on the effectiveness of digital textbooks was conducted in earnest. Examining the early studies of policy, it can be seen that, although there are regional differences, the academic achievement and

problem-solving ability of the group using digital textbooks was statistically higher (Byun et al., 2008). Another study found that digital textbooks had significant effects in terms of learning immersion, self-directed learning ability, and problem-solving ability (Noh, Kim, & Lee, 2011). According to the results of a meta-analysis of 14 previous studies on the effect of digital textbooks on academic achievement (Byun, Ryu, & Song, 2011), the group using digital textbooks showed higher academic achievement than the comparison group.

Ahn et al. (2020) analyzed the effects of digital textbooks on learning competency by cognitive, social, and affective domains based on research from 2015 to 2019. As a result, in the cognitive, social, and affective domains of students, the difference between the pre-test and the post-test was significant at the significance level of .001. It was found that the difference between the pre-test and the post-test was significant at the significance level of .001 for communication ability and learning motivation competency. The fact that digital textbooks have a positive effect on students' learning ability, including academic achievement, has been confirmed through several studies.

3.2 Studies on the perception of teachers, students and parents

Next, there are previous studies on the perception of teachers, students and parents regarding digital textbooks. Examining the early studies of digital textbook policy, it is confirmed that teachers generally show negative views. Han (2012) revealed that most teachers think that the implementation of digital textbooks is still premature. Lim (2012) argued that it is necessary to expand the

teacher’ s independent participation in the development and operation of digital textbooks, develop a teacher’ s manual, and differentiate it from a book-type textbook. Kim & Cha (2013) pointed out that a consensus in the field has not yet been formed on the necessity or effect of digital textbooks. In addition, they argued that for effective use of digital textbooks, it is necessary to establish an environment and to enhance teachers’ ability to use digital textbooks.

Looking at recent studies, it can be seen that the negative perception of digital textbooks has been somewhat alleviated. Kim & Ahn (2020) studied the perceptions of elementary school teachers, parents, and students about English digital textbooks. According to the results of the study, teachers, parents, and students were mostly in favor of using digital textbooks as an aid in class. Teachers, parents, and students all acknowledged that English digital textbooks arouse interest in learning, but were concerned about the deterioration of eyesight due to the use of digital devices. According to Choi (2022), most teachers have an average or high level of confidence in using digital textbooks. However, the majority of teachers did not believe that students would engage in learning using digital textbooks at home. Ahn et al. (2020) conducted a public perception survey on digital textbooks. 8 out of 10 students who have used digital textbooks expressed positive opinions about using digital textbooks in class. In the case of teachers, the most difficult point when using digital textbooks was ‘difficult to concentrate students’ attention’ (87.3%) the most 37.3% of the general public answered that the reason for their opposition to digital textbooks was ‘because it can promote internet addiction and game addiction’.

3.3 Studies on the Policy Direction of Digital Textbook

Among the studies on digital textbook policy, the subject that occupies a large proportion is the study on administrative procedures. Studies on administrative procedures include a study on the digital textbook examination standards, a study on the digital textbook national, inspection, and accreditation procedures, and a study on the digital textbook distribution and management system and others. However, this study intends to focus on previous studies that dealt with policy directions, such as analyzing issues related to digital textbook policy or seeking alternatives.

Lim & Hong (2013) pointed out that the discussion surrounding digital textbooks was exaggerated in industrial, economic and educational aspects, and viewed the effectiveness of digital textbooks as being overblown. Also, they argued that book-type textbooks and digital textbooks could compensate for each other's deficiencies, and that the two types of textbooks should be developed to complement each other.

Jeong (2014) analyzed the factors affecting the implementation of digital textbook policies. He pointed out that the inertia toward the use of book-type textbooks, the firmly established legal system centered on the book-type, lack of linkage with related policies, and frequent replacement of managers are obstacles to the smooth implementation of digital textbook policies.

Hwang et al. (2014) studied the policy direction after 2015 when the digital textbook policy was reduced. This study pointed out that the values and goals pursued by the digital textbook policy are rather complex, and the policy goals have changed over time. He argued that, due to the complexity of the policy goals, the clear

goals of digital textbooks could not be imprinted on the public.

Jang (2017) analyzed issues surrounding digital textbook policy using the four-dimensional model of Cooper, Fusarelli, & Randall (2004). According to Jang (2017), it is necessary to overcome the textbook view based on the positivist epistemology for the stable implementation of the digital textbook policy. In addition, the transition to a curriculum-based textbook system and stabilization of the policy promotion organization within the Ministry of Education are required. At the technical level, the development and spread of a classroom model using digital textbooks and reinforcement of teachers' ICT competency are required.

Looking at previous studies, it can be seen that studies on the effectiveness of digital textbooks and surveys on perceptions of schools have been relatively abundant. On the other hand, there are relatively few studies on the reflective review of digital textbook policies, policy making and implementation processes. This study is significant in that it analyzes the policy implementation process of digital textbooks, a topic rarely addressed in previous studies.

Ⅲ. Theoretical Background

1. Changes in Digital Textbook Policy

Policy change refers to measures taken to modify or overcome the failure of existing policies (May, 1992:332) or to modify or terminate policies derived from previous policy decision-making processes (Yoo, 2009:135). The process of modifying and improving existing policies after their implementation is commonly repeated regardless of the type and nature of the policies.

The policy change theory of Hogwood & Peters (1982) is a representative explanation for such policy variations. They propose four types of policy change: policy innovation, policy maintenance, policy succession and policy termination. Exploring each type in more detail, policy innovation refers to significant changes in government intervention in a particular area due to the emergence of new social problems or revolutionary means to address them. Policy maintenance denotes policy changes that adapt to changing circumstances during policy implementation. Policy succession involves developing and applying new programs or measures while maintaining the same direction as the existing policy objectives. Lastly, policy termination refers to discontinuing policy implementation when the policy goals have been achieved or when the policy is no longer necessary.

Digital textbooks have undergone four different administrations over a span of 20 years. The Roh Moo-hyun administration was the first to adopt the policy of introducing digital textbooks. The Lee Myung-bak administration recognized digital textbooks as a key

means to activate SMART education. The Park Geun-hye administration took a cautious stance, scaling down the policy. The Moon Jae-in administration officially distributed digital textbooks to all schools starting from 2018. At first glance, it may seem that the digital textbook policy has persisted despite multiple changes in administrations. However, it is difficult to categorize it as a form of policy succession or maintenance, considering that digital textbooks have not been firmly established or utilized in practice. The fact that there is even a sarcastic remark stating that "digital textbooks have been in a pilot project for 10 years" (Choi, 2019) indicates that digital textbooks have not found their footing and are adrift in the field.

On the other hand, Howlett & Rayner (2006) analyzed policy change by considering policies as policy complexes, characterized by the combination of various goals and means. They classified the types of policy change into four categories: integration, conversion, drift, and layering, based on the relationships between existing policy goals and new policy goals, as well as the relationships between existing policy means and new policy means. They argued that optimal policy change occurs through integration when existing policy goals and new policy goals are coherent, and existing policy means and new policy means are consistent. On the other hand, they considered conversion, drift, and layering as suboptimal forms of policy change.

However, Howlett & Rayner's theory(2006), which distinguishes types of policy change based on the coherency of policy goals and the consistency of policy instruments, also fails to adequately explain the fluctuations in digital textbook policies. Over a period of about 20 years, digital textbook policies have undergone multiple

changes in both policy goals and means. Initially, digital textbooks were conceived as a new concept to replace traditional print textbooks, but policy authorities later withdrew from this objective. Additionally, the initial plan to distribute digital textbooks to all primary and secondary schools was also scaled down.

This study suggests that the inability of digital textbook policies to firmly establish themselves in the field is attributed to a high level of ambiguity in policy goals and frequent changes in policy means. The Korean government has repeatedly changed its decisions regarding the subjects and grades for digital textbook development. Furthermore, externally, the operating systems and devices for digital textbooks have continuously evolved along with advancements in digital technology. The internal and external environments surrounding digital textbooks have created inconsistencies in the policy.

Therefore, this study aims to examine the process of implementing digital textbook policies based on study of Matland (1995), which distinguishes types of policy implementation according to the level of goal ambiguity and conflict. By analyzing the level of ambiguity in digital textbook policy goals and the level of conflict surrounding the means of digital textbook policies, this study will explore how the implementation of digital textbook policies has taken shape.

2. Goal ambiguity-Conflict matrix

Policy change refers to changes in policy content, expansion or reduction, abolition, or succession to other policies during the implementation process after policy decision (Chung et al., 2006).

On the other hand, policy implementation is the interaction between goal setting and achievement, so policy making and implementation cannot be separated(Kim & Koo, 2012).

In this regard, Matland believed that in reality, policy goals and means are not strictly defined, and decisions and implementations are not sequential. Paying attention to the fact that policy complexity and dynamics are highlighted according to conflicts between participants, Matland viewed goal ambiguity and conflict level as key variables that cause policy implementation and change. Matland's ambiguity-conflict model suggests four paradigms. According to the model, administrative implementation is carried out when both policy ambiguity and conflict level are low. When both ambiguity and conflict are at a high level, symbolic implementation is achieved. When the level of ambiguity is high, but the level of conflict between the parties is low, experimental implementation is carried out, and when the level of policy ambiguity is low and the level of conflict is high, political implementation is carried out.

< Table 6 > Goal Ambiguity - Conflict Matrix (Matland, 1995:160)

		Level of Conflict	
		Low	High
Level of Goal Ambiguity	Low	Administrative Implementation	Political Implementation
	High	Experimental Implementation	Symbolic Implementation

First, administrative implementation has clear goals and known technical means to address problems. Therefore, the outcome of the policy varies based on whether and to what extent the necessary

resources for policy execution are secured. Due to the low level of ambiguity and conflict in administrative enforcement, it tends to establish structure and hierarchy by developing standard operating procedures, among other measures. Compliance is primarily ensured through normative means. As a result, while administrative implementation may exhibit relative stability, it can lead to uniform execution regardless of individual case characteristics (Matland, 1995: 160-163).

Second, experimental implementation occurs when the policy goal is unclear and the necessary implementation means are not specifically secured. Consequently, the outcome is influenced by macro-level contexts and contingent factors rather than micro-level policy measures. In other words, diverse outcomes emerge based on who possesses what resources and how they participate in the specific policy implementation process. Additionally, exogenous factors like public opinion flexibility in response to events or contingencies at the time also play a role (Matland, 1995: 165-168).

Third, political implementation arises in situations where the policy goal is relatively clear, but significant conflicts exist among policy participants. Particularly, participants with differing goals and means engage in political competition to pursue their objectives. Thus, implementation in this context also depends on power dynamics. Given the political nature of the process, political implementation is heavily influenced by external actors. Obtaining support and consensus for policy enforcement involves employing hard power, such as coercion or compensation (Matland, 1995: 163-165).

Fourth, symbolic implementation occurs when policy goals are unclear, and conflicts among policy participants are intense. While similar to political implementation in terms of outcome determination through power dynamics, symbolic implementation differs in the difficulty of finding mutual understanding due to ambiguous policy goals and the presentation of various policy measures. Consequently, the role of an expert group that authoritatively interprets policy means becomes crucial. The outcome of policy implementation is determined by power relations among various stakeholders established by policy participants (Matland, 1995: 168−170).

3. Analysis Framework

To analyze policy using Matland's model, it is necessary to establish the concept of the level of ambiguity and conflict level beforehand. However, a limitation of Matland's model is that it does not provide specific criteria for determining the level of goal ambiguity and conflict (Chung et al., 2006). Therefore, it is necessary to integrate existing research on goal ambiguity to enhance the conceptualization level of this model.

A policy goal refers to a ‘desirable state to be achieved through policy’ (Chung et al., 2006:34). Feldman (1989) defined ambiguity as ‘a state in which multiple perceptions exist for the same situation or phenomenon’. The existence of multiple modes of perception implies the existence of competing interpretations. It can be seen that an organizational goal loses clarity and becomes ambiguous when it allows for many different interpretations (Chun,

2004).

There are four types of ambiguity in policy goals: mission comprehension ambiguity, directive ambiguity, evaluative ambiguity, and priority goal ambiguity. Ambiguity is defined as the degree to which competitive interpretations are possible. Mission comprehension ambiguity refers to the degree of competitive interpretation regarding understanding the organization's purpose. Similarly, directive ambiguity and evaluative ambiguity refer to the degree of competitive interpretation that can arise in the process of translating abstract goals into specific behavioral guidelines and evaluating their outcomes, respectively. Finally, priority goal ambiguity refers to the level of interpretive leeway in deciding on priorities among multiple goals. In such cases, even if individual goals are clear, confusion can arise if the priorities among the goals are not established (Chun & Rainey, 2005).

This study focuses on mission comprehension ambiguity among the four types of goal ambiguity. Mission comprehension ambiguity refers to the level of interpretive leeway that an organizational mission allows in comprehending, explaining, and communicating the organizational mission(Chun & Rainey, 2005). This study will examine the process of policy implementation of the new concept called digital textbooks. Therefore, the analysis will primarily emphasize whether the goals of the digital textbook policy are clearly stated and understood during the policy implementation process.

Chung et al (2006) summarizes the reasons for the ambiguity of policy goals into four main reasons. First, policy makers are unable to determine specific policy goals or means due to lack of time and expertise. Second, because the policy problem situation is complex

or dynamic, it is decided not to determine the specific policy content until the situation becomes more certain or the uncertainty is eliminated by using the information returned during the implementation process. Third, the specificity of each policy implementation site is strong, so the policy content to be uniformly applied to the whole country is determined in an abstract way, and the specific details are implemented according to the circumstances of the site. Fourth, it is because, due to differences in preferences among policy makers, it is impossible to obtain agreement on the specific contents of the policy goal, so only abstract contents that can be agreed upon are determined, or by including contradictory or conflicting contents to obtain agreement.

Digital textbooks began to be developed with the spotlight as a new means of learning using information and communication technology. Since it is a policy based on the latest technology, it is highly likely that policy makers at the time did not have sufficient expertise in digital textbooks. In addition, since digital technology has dynamic characteristics that develop and change every year, there is a possibility that the digital textbook policy may not have specificity. As such, it can be inferred that the ambiguity of the policy goal was born in that digital textbooks are a new policy tool that is completely different from the traditional system.

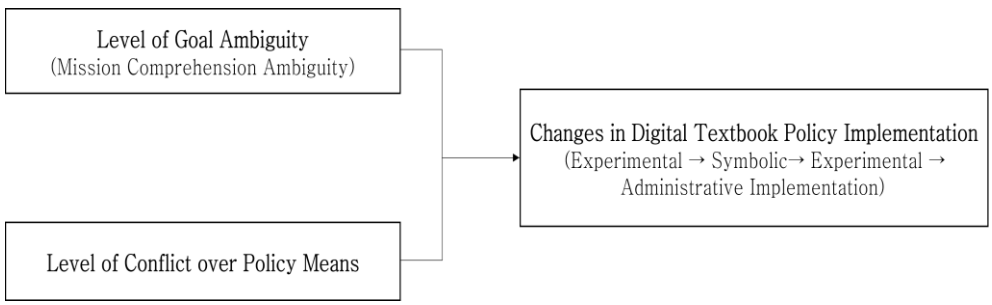
Meanwhile, policy conflict refers to a situation in which multiple values or interests collide with each other in the process of operating a single policy (Seo & Koo, 2014). Policy conflict exists when one or more stakeholders show incongruity by having different views and interests on the policy (Kim, 2006).

This study pays attention to the fact that the group related to the digital textbook policy is not a single target, but complex and

includes a large number of people. From this point of view, this study intends to define policy conflict as whether or not there is a non-acceptance of the related group. The groups directly targeted by the digital textbook policy are teachers and students. Especially, teachers can form various levels of organization by joining labor unions or teacher organizations, or by belonging to regional meetings and research groups. By expressing support for or opposition to a government policy, groups of teachers can have a significant impact on the implementation of the policy.

Also, various organizations related to policy making and implementation can also be viewed as a group that is concerned with policy. Relevant groups include public agencies including the Ministry of Education, the President Office and the National Assembly. Textbook publishers and IT companies are also important relational groups. This study will explore the influence of the above-mentioned groups on the digital textbook policy process.

< Figure 2 > Analysis Framework



The digital textbook policy can be broadly divided into four phases. The first phase, from 2007 to 2009, focused on the introduction and establishment of the concept and development system of digital

textbooks. During this stage, experiments and research on the effectiveness of digital textbooks were primarily conducted in a few selected schools. The second phase, spanning from 2010 to July 2013, involved significant revisions to related systems and procedures to grant digital textbooks the status of official textbooks. In 2011, the "SMART Education Strategy" was published, outlining the concurrent use of traditional printed textbooks and digital textbooks. The third phase, covering the August 2013 to 2017, can be characterized as an adjustment phase for digital textbooks. In 2013, the initial plan for full-scale implementation of digital textbooks was withdrawn, and they remained limited to pilot projects until 2017. The fourth phase is from 2018 to April 2022, digital textbooks began to be distributed for selected subjects in elementary and middle schools.

< Table 7 > Digital Textbook Policy Progress

Phase	1st : Introduction (2007~2009)	2nd : Diffusion (2011~2013.7)
Policy Announcement	·Plan for Common Use of Digital Textbook (March 2007)	· Textbook Advancement Plan(2010) · SMART Education Strategy(2011)
Phase	**3rd : Adjustment (2013.8~2022.4)**	**4th: Stabilization (2018~2022.4)**
Policy Announcement	2013 Development & Application Strategies of Digital Textbook(2013) Classification of digital textbooks for elementary and secondary schools (2016)	Official distribution of digital textbooks(2018)

Source : KERIS(2013), KERIS(2017). Restructured.

Ⅳ. Result of Analysis

1. Introduction Phase(2007-2009)

This was the period when the government introduced the policy in earnest by officially announcing the "Plan for Common Use of Digital Textbooks" in 2007. During this period, the digital textbook policy exhibited a notable degree of policy goal ambiguity and a low level of conflict. According to Ambiguity-Conflict matrix, this period can be characterized as an experimental implementation phase.

1.1 High level of goal ambiguity

The Ministry of Education promoted the introduction of digital textbooks through several plans from 2007 to 2010. Upon reviewing government documents published during this period, it is evident that there was a policy intention to address various issues in the Korean education sector through the adoption of digital textbooks. These textbooks were positioned as a solution to problems such as lecture-oriented teaching, excessive reliance on private education, and the growing educational disparities between regions.

Prior to the development of digital textbooks, there was a lack of clarity regarding the primary values that these textbooks should embody, as multiple policy expectations were taken into account. The digital textbook policy during this period had both educational and industrial aspects. The objective was to revitalize the e-book

and e-learning industries by developing digital textbooks and establishing related standards, as evidenced by several governmental documents.

<Table 8> Digital Textbook Policy Goals Stated in Official Documents

Document Name (date of announcement)	Policy Goals / Expected Effects
Plan for common use of Digital Textbook (March 2007)	· Reinforcement of self-directed learning · Alleviation of dependence on private education · Bridging the education gap · Activating the mobile communication device and e-book industry · Diversification of domestic digital content market
Digital textbook development and implementation plan(March 2008)	· Overcoming the limitations of book-type textbooks
Digital Textbook Pilot Project Promotion Plan (July 2009)	· Overcoming the limitations of book-type textbooks · Establishing an effective teaching and learning model suitable for the digital generation · Providing continuous education to hospital schools and overseas Korean schools · Fostering the domestic e-learning industry, preoccupying related standards
Plan for Pilot Project of Digital textbook (March 2010)	· Establishing a teaching and learning system that responds to the era of U-learning · Increase interest in learning, promote interactive learning · Improving presentation skills, expanding cooperative learning and discussion

Source : Jeong(2014:148-150), Restructured

The digital textbook policy encompassed various goals within the realm of educational policy. <Table 8> demonstrates the expected effects of digital textbooks as perceived by policy authorities, including improvements in teaching and learning, equal access to education, and the integration of education and information and communication technology (ICT). These policy goals not only posed challenges in terms of simultaneous achievement but were particularly difficult to accomplish within a short timeframe. The digital textbook policy entailed overlapping educational and industrial objectives, making it challenging to prioritize among multiple goals. The presentation of different types of goals was due to the policymakers' struggle to fully comprehend the mission of the digital textbook policy during this time. As there was no prototype of a digital textbook developed at this period, the policy found itself targeting several ambiguous goals.

1.2 Low level of Conflict

After the announcement of the digital textbook policy, there were simultaneous expectations and concerns surrounding the policy. On one hand, there were expectations that it would enable a new form of education suitable for the digital age. On the other hand, concerns were raised regarding the potential excessive budget requirements and side effects of digital education. However, there was a low level of conflict surrounding the digital textbook policy during this period. The government, along with IT companies and other industries, actively supported digital textbooks. Teachers' organizations and textbook publishers expressed concerns about potential side effects of digital education but did not explicitly oppose the policy.

In 2007, the term 'ubiquitous era' gained popularity. 'Ubiquitous' referred to the ability to use computers anytime, anywhere, and it was a term associated with the rapid development of ICT technology. As digital textbooks aligned with this prevailing trend, the positive aspects of the policy were emphasized. Numerous reports have highlighted the future where digital textbooks would replace traditional textbooks and notebooks in classrooms.[③] The digital textbook policy received strong support from the industry, including IT companies. Introducing policies that digitize educational content and enable learning through mobile devices opened up new market opportunities for these companies. They received budget support through prototype development projects and the formation of developer consortia for specific subjects (Ministry of Education, 2008). Additionally, they benefited from media exposure through press coverage of digital textbook-related topics, which provided promotional advantages (Baek, 2007).

On the other hand, teachers and education experts voiced concerns about the introduction of digital textbooks. At that time, the Korean Teachers & Educational Worker' s Union criticized the hasty adoption of digital textbooks, pointing out the risks of implementing a policy that brings about a comprehensive transformation in education without proper educational validation or clinical trials regarding student well-being (Yoon, S.H., 2007). Seong (2007) expressed concerns about the potential side effects of digital textbooks on students' psychological, physical, and economic well-

③ After the announcement of the introduction of digital textbooks, Chosun Ilbo (March 29, 2007) described it as "Textbooks and notebooks disappear from classrooms," and Joongang Ilbo (March 8, 2007) reported, "School bags disappear... Tablets replace textbooks in elementary and middle schools."

being.

The textbook publishing industry also expressed concerns about the digital textbook policy (Cho, 2007; as cited in Jeong(2014)). Their fundamental concern likely stemmed from the potential threat to the survival of publishers through the digitalization of textbooks. The publishing industry emphasized the necessity of printed textbooks and argued for the gradual introduction of digital materials with a supplementary learning nature.

While teachers and the publishing industry criticized the digital textbook policy, it is difficult to consider their response as outright opposition. The publishing industry recognized the trend of textbook digitalization and put forth opinions on the need to devise strategies in response (Cho, 2007). Teachers also advocated for conducting sufficient research and validation before the introduction of digital textbooks, rather than outright opposing their implementation (Yoon, G. H., 2007). The lack of explicit opposition to the policy can be attributed to two factors. Firstly, the digital textbook policy was perceived as aligning with the prevailing trends of the time. Secondly, since digital textbooks had not yet been developed at that time, people had difficulty accurately perceiving the issues or side effects associated with the policy.

1.3 Experimental Implementation

The analysis of the implementation process of the digital textbook policy reveals that it exhibited characteristics of experimental execution during this period. In other words, the implementation process was shaped based on who actively participated in the policy implementation and the resources that could be effectively utilized

during the process.

<Table 9> illustrates the multiple changes in policy direction that occurred during the implementation process of the digital textbook policy. The government reversed its decisions several times regarding the subjects targeted for digital textbook development. “The Plan for Common use of Digital Textbooks” announced in 2007 planned to develop digital textbooks for 10 subjects (Korean, Ethics, Social studies, Mathematics, Science, Physical Education, Music, Art, Practical Course, English) in the 5th and 6th grades of elementary schools. However, the subsequently established "Plan for Development and Implementation of Digital Textbooks" announced that after evaluating the digital textbook prototype, the target subjects for the digital textbook will be decided. Since then, the decision to develop digital textbooks for which subjects and grade levels has changed several times.

< Table 9 > Changes in Digital Textbook Development Plan for Elementary Schools

Period	Subjects for digital textbook development
March 2007	10 subjects for 5th grade, 10 subjects for 6th grade
April 2007	Determination of subject to be developed after prototype evaluation
December 2007	5 subjects for 5th grade
2011	English for grades 3-6, Social Studies and Science for grades 4

Furthermore, the digital textbook policy was also influenced by changes in the highest policy administrators (Jeong, 2014:68-70). Minister Kim Shin-il of the Ministry of Education (served from September 2006 to February 2008) initiated the policy by

formulating plans for the development of digital textbooks. In 2008, Minister Kim Do-yeon (served from March 2008 to July 2008) aimed to utilize digital textbooks as a supplementary tool to enhance English education. Subsequently, Minister Ahn Byung-man (served from August 2008 to August 2010) introduced new policies with the goal of using digital textbooks to bridge the educational gap between urban and rural areas.

2. Diffusion Phase(2010 - July 2013)

2.1 High Level of Goal Ambiguity

Two significant policies related to textbooks were announced after 2010. In January 2010, the Ministry of Education unveiled the "Plan for Textbook Advancement," which revealed plans to distribute e-textbooks to students in the form of CDs, alongside the traditional print textbooks (Ministry of Education, 2010). E-textbooks refer to the digitized version of print textbooks stored on electronic media such as CDs, essentially representing electronic books. With the emergence of the concept of e-textbooks in 2010, the digital textbook policy and the e-textbook policy coexisted. While the government had announced the full-scale promotion of digital textbooks in 2007, just three years later in 2010, plans were made to distribute e-textbooks. Even in 2010, when the "Plan for Textbook Advancement" was announced, the concept of e-textbooks was limited to the conversion of print textbooks into PDF format (Ministry of Education, 2010). However, over time, e-textbooks incorporated various learning materials and additional

features (Ministry of Education, 2012), evolving into a form similar to digital textbooks.

The coexistence of these two similar textbook policies can be attributed to the fact that digital textbooks possessed characteristics of both a textbook policy and an online learning (e-learning) policy. According to "the Act on Promotion of the E-Learning Industry and Utilization of E-Learning", e-learning refers to learning that utilizes electronic means, information and communication technology, broadcasting, artificial intelligence, virtual reality, and augmented reality. The policy of digitizing the content of print textbooks and storing them in electronic media aimed to increase accessibility to textbooks, allowing students to access learning materials without being restricted by time and space. Furthermore, including multimedia materials that are difficult to include in print textbooks in digital textbooks can be considered a policy to enhance learning effects through e-learning.

Efforts by the government to bridge the gap between the e-textbook policy and the digital textbook policy and enhance the integration of these policies can also be observed. In 2012, the Ministry of Education aimed to integrate the separate initiatives of e-textbooks and digital textbooks. The Government of Lee Myung-bak (2013) describes e-textbooks as a case where the functionalities of digital textbooks were applied in advance during the evolution process from e-textbooks to digital textbooks.

The simultaneous emergence of new policies such as e-textbooks, digital textbooks, and SMART education was driven by the rapid development of the digital environment. The widespread adoption of mobile devices such as smartphones and tablets, along with the prominence of cloud computing, immersive and experiential

educational content, led to increased attention on using information technology in education. These rapid environmental changes served as driving forces behind the formulation of new policies.

However, policies aiming to integrate digital technologies into education inevitably face high levels of goal ambiguity. Due to the difficulty in predicting the direction and speed of digital technology advancements, setting clear policy goals becomes challenging. In 2007, the government mentioned collaborating with relevant industries to develop devices for digital textbooks. In contrast, in 2011, the Ministry of Education explicitly stated plans to promote digital textbook distribution based on the assumption of one PC per person, without mentioning device development. As for e-textbooks, they were initially distributed in CD format but shifted to web-based documents after 2012.

The digital textbook policy gained further momentum with the release of the "SMART Education Strategy" jointly announced by the Ministry of Education and the Presidential Council on Information Society in 2011. According to the Ministry of Education, SMART education is an acronym derived from the initials of Self-directed, Motivated, Adaptive, Resource-free, and Technology-embedded, representing an intelligent personalized learning system. The SMART Education Strategy encompasses seven tasks, with the first task being the completion of digital textbook development for elementary, middle, and high schools by 2015.

With the incorporation of the SMART Education framework into the digital textbook policy, the ambiguity of policy goals appears to have intensified. According to media reports describing the situation at the time, although educational training on SMART Education was provided to teachers by the government, even after the training,

many teachers expressed confusion and a lack of understanding about what SMART Education actually entailed (Song, 2012a).

Furthermore, the government's decision regarding the scope of digital textbook development was reversed within just over a year. When the SMART Education strategy was announced in 2011, the government stated its plans to develop digital textbooks for all subjects in elementary, middle, and high schools. However, merely a year later, the government excluded high schools from the digital textbook policy and indicated the possibility of reducing the number of subjects to be developed (Song, 2012a).

2.2 High Level of Conflict

As the policy direction of introducing digital textbooks in all elementary, middle, and high schools by 2015 was solidified, opposition to the digital textbook policy began to emerge. The opposition to digital textbooks at that time can be divided into three main arguments.

Firstly, it was argued that digital textbooks required excessive funding. The Ministry of Education estimated that approximately 2.2 trillion won would be needed for the development and distribution of digital textbooks from 2012 to 2015 (Ministry of Education, 2011). This estimation did not include the cost of providing devices to students, and it was anticipated that the total cost, including device distribution, would amount to 3.6 trillion won (Hong et al., 2013). This was a significant amount, accounting for about one-tenth of the education budget of approximately 43 trillion won.

Another argument against digital textbooks was the concern about digital device addiction. At that time, adolescent internet addiction

and gaming addiction were emerging as serious social issues. The government was also conscious of these social concerns. Even President Lee Myung-bak, who received the policy proposal at the time, expressed concerns about the potential decline in social skills due to the adoption of SMART education. He remarked, "Education is not only about knowledge, but also about emotional and social development. I am concerned that social skills may deteriorate if we rely too much on SMART education. Students should make friends and learn to consider others, rather than being in front of computers all the time" (Lee, J. Y., 2011).

The third opposition argument against digital textbooks was the unclear educational effectiveness of digital textbooks. There were many criticisms that the content included in digital textbooks was not adequately prepared and that the educational enhancement was not significant enough to replace printed textbooks. According to Byun & Song (2010), research schools using digital textbooks experienced technical errors, short battery life, and limitations in content. Furthermore, Yang (2013) pointed out that previous studies on the effects of digital textbooks did not provide compelling empirical evidence to support remarkable effects.

During this period, there was a growing phenomenon of resistance to the policy, particularly among teacher organizations. However, even among these organizations, there were conflicting opinions regarding the adoption of digital textbooks. The Korean Teachers & Educational Worker's Union opposed the full-scale adoption of digital textbooks, citing reasons such as excessive budget requirements and a lack of consensus within schools. On the other hand, the Korean Federation of Teacher's Associations expressed support for the full-scale adoption of digital textbooks. In June

2013, they signed a cooperative agreement with the Digital Textbook Association, committing to efforts for the stable introduction of digital textbooks (Han, 2013). The "Good Teachers' Movement," an association of educators established in 1995, published a statement opposing the SMART education strategy and voiced criticism (Good Teachers' Movement, 2012).

Criticism of the digital textbook policy also took place in the National Assembly. Members of the Democratic Unity Party, including Kim Tae-nyeon and Yoo Eun-hye, held policy debates in the National Assembly, arguing that a comprehensive reassessment of the digital textbook policy was necessary. (Kim & Yoo, 2013).

Opposition to the digital textbook policy was also evident within the publishing industry. In a survey conducted among publishing companies, it was found that there was a greater proportion of opposition (33.3%) to the government's policy proposal to transition from paper-based textbooks to digital textbooks by 2015, compared to support (16.5%), indicating a twofold difference (Baek et al., 2012; as cited in Jeong, 2014:103). In the publishing industry, there was strong criticism of the government's policy, with claims that digital textbooks would actually hinder classroom instruction (Han, 2012).

The policy on digital textbooks, which faced opposition from public opinion, experienced difficulties in securing a budget and implementing the project. The Ministry of Planning and Finance stated in the "2012 Government Subsidy Program Operational Evaluation Report" that financial support from the central government should be withheld until the feasibility of the digital textbook development project is clearly recognized (Song, 2012b). This decision was made due to concerns about the effectiveness of

digital textbooks not being verified and potential side effects. Additionally, the Board of Audit and Inspection demanded a comprehensive review of the digital textbook policy in a special audit in 2013 (Jeong, 2014).

2.3 Symbolic Implementation

In cases where the goals and means of a policy are ambiguous, and there is high conflict among actors, symbolic implementation occurs. In a symbolic implementation phase, power relationships play a crucial role in determining the outcomes of the implementation. When the goals and means are ambiguous, and there is high conflict among actors, symbolic implementation may occur to reaffirm policy objectives or emphasize important values and principles.

During the diffusion phase (2010 – July 2013) of the digital textbook policy, the SMART Education Strategy was reported to the President, leading to the comprehensive adoption of the policy. However, as opposition to the policy grew, conflicts surrounding the policy increased. During this period, the following characteristics of symbolic implementation emerged.

First, policy implementation was carried out based on power relationships within the government. The "SMART Education Strategy," which declared the comprehensive adoption of digital textbooks, was a policy jointly announced by the Ministry of Education and the Presidential Council on Information Society. The Presidential Council on Information Society, established in November 2009 and active until February 2013, was a presidential public–private joint committee. At that time, the Council presented the "Top 10 Agenda for National Information Society" and played a

role as the control tower for national informatization (Presidential Council on Information Society, 2013). The Council appeared to exert considerable influence on policies related to information technology. News articles describing the policy formulation process mentioned that the SMART Education Strategy was originally led by the Presidential Council, and even until just before the announcement, the Ministry of Education was not involved in the discussions (Song, 2012a). The policy was implemented in a form where the Presidential Council led the direction of the SMART education policy, and the Ministry of Education, responsible for implementation, cooperated with it. At that time, the Presidential Council set a goal to enter the top 10 in global education competitiveness by 2015 and to enter the top 3 by 2025, and it announced the establishment of the SMART Education Strategy as a means to achieve these goals (Presidential Council on Information Society, 2013).

Second, due to the ambiguity of policy goals, policy instruments were not clearly presented. At that time, the Ministry of Education had not even confirmed which grade and subject would be targeted for the introduction of digital textbooks, despite the implementation being only about a year away in June 2013 (Song, 2013). Due to the government's delayed decision, schools were unable to plan teacher training, and concerns arose among publishers that there would be insufficient time for the rapid development of digital textbooks. Eventually, in August 2013, the Ministry of Education announced the withdrawal of the comprehensive adoption of digital textbooks. This policy reversal ultimately reflects a decline in the momentum for smart education promotion as the administration changed.

3. Adjustment phase(August 2013 – 2017)

The digital textbook policy underwent a significant change when the Park Geun-hye administration assumed office in January 2013. In August 2013, the Ministry of Education introduced the "2013 Digital Textbook Development and Application Plan," which scaled back the scope of digital textbook implementation. Instead of the original plan to fully implement digital textbooks in elementary, middle, and high schools by 2015, the new plan proposed a pilot implementation limited to specific subjects in elementary and middle schools. This decision was made in response to criticism and social conflicts surrounding the previous administration's "SMART Education Strategy" (Ministry of Education, 2013).

Following the announcement of the new plan, digital textbooks were once again scaled back to a pilot project. The government acknowledged at that time that there was insufficient verification of the effectiveness of digital textbooks. To address this, longitudinal research was conducted from 2014 to 2016 to gather evidence on the necessity of implementing digital textbooks. Subsequently, in September 2016, the government made the decision to develop digital textbooks for social studies, science, and English subjects in elementary and middle schools, as well as English subjects in high schools.

3.1 High Level of Goal Ambiguity

Under the Park Geun-hye government, as part of the national agenda "Establishment of Comprehensive Textbook Learning System", a detailed task was proposed to integrate print textbooks and digital textbooks. The concept of comprehensive textbook learning referred to the idea that students could prepare for the school entrance exam by studying solely with the textbook, without the need for additional private education (Kim et al., 2013). Under the goal of establishing a comprehensive textbook learning system, digital textbooks were seen as a means to extend learning beyond the classroom and facilitate studying at home (Ju et al., 2014).

However, there were different expert opinions on the role and form of textbooks in implementing comprehensive textbook learning, and a clear definition of comprehensive textbook learning was lacking (Ju et al, 2014). The relationship and roles of print textbooks and digital textbooks were not firmly established, leading to insufficient discussions on how they should be integrated. As a result, the policy on digital textbooks underwent repeated discussions and research.

The policy goals of digital textbooks presented from 2007 to 2013 show continuous changes in the values pursued by the policy(See Table 10). As a result, the clear goals of the digital textbook policy were not effectively conveyed to the public, and there was a lack of shared understanding of the goals among the stakeholders involved in the policy (Hwang et al., 2014).

< Table 10 > Policy goals for digital textbooks presented in official document(2002-2013)

Classification of Policy Goals	Policy Background/ Vision / Goals	Year of policy announcement
Overcoming limitations of paper textbooks	Development of digital textbooks that reflect social changes and demands	2002
	evelopment of future-oriented learning materials suitable for the U-learning	2007
	Overcoming the limitations of traditional paper textbooks	2008,2009, 2010
	Maximizing the educational value and potential of digital textbooks	2009
	Establishing a textbook-centered learning environment by integrating traditional textbooks and digital textbooks	2013
Developing Future leaders	Fostering creative and problem-solving talents	2002
	Developing future leaders in society	2007
	Promoting happiness education and nurturing creative talents	2013
Establishing Digital Education Environment	Promoting the spread of digital literacy and culture	2002
	Establishing U-learning environments suitable for the digital generation	2008
	Preparing for future learning environments	2009,2010
	Establishing a leading teaching and learning system that responds to the U-learning era	2011
Promoting Growth of Education Industry	Preempting technological standards related to digital textbooks	2007
	Nurturing the domestic e-learning industry	2009
	Securing competitiveness in content development and overseas market expansion	2011

Source: Jeong(2014:48)

In 2013, the Ministry of Education withdrew its plan for full-scale development of digital textbooks and announced that the revised plans for digital textbooks would be finalized by the first half of 2014. However, the determination of the subjects for digital textbook development and the timing of implementation occurred in August 2016. The Ministry of Education announced "Classification of digital textbooks for elementary & secondary schools in accordance with the 2015 revised curriculum". The classification specified the grades and subjects for which digital textbooks would be introduced, including social studies, science, and English subjects from the 3rd grade of elementary school to the 3rd grade of middle school, and English subjects in high school (Ministry of Education, 2016).

From 2013 to 2017, the digital textbook policy was implemented under the pretext of a pilot project but progressed weakly. The reason for the slow pace of the policy was the scheduled revision of primary and secondary school curricula in 2015, which led to the argument that it would be better to develop digital textbooks aligned with the new curriculum. However, fundamentally, the ambiguity of the digital textbook policy goals prevented the consolidation of support among policy stakeholders, resulting in a prolonged period of policy drift. Jo (2014) pointed out that the digital textbook policy was pursued from various perspectives, including overcoming the limitations of traditional textbooks, establishing a digital education environment, and fostering the education industry. These frequent changes in direction contributed to the instability of the digital textbook policy.

3.2 Low Level of Conflict

In 2013, the Park Geun-hye administration withdrew the full-scale introduction of digital textbooks, leading to a resolution of conflicts surrounding the policy. The Ministry of Education announced plans to conduct the analysis of effectiveness of digital textbooks and gather diverse opinions, with the intention of formulating policies to diagnose and address any adverse effects of digital textbooks (Ministry of Education, 2013). This change in government stance helped pacify opposition to the introduction of digital textbooks.

During this period, the level of conflict regarding the digital textbook policy was relatively low. Amidst the slow progress of the digital textbook policy, there were subtle differences of opinion within the related industries. Textbook publishers advocated for a gradual introduction of digital textbooks, while IT companies urged for the swift implementation of the digital textbook policy (Kim, 2014). Among teachers, there still existed a resistance towards digital textbooks (Kim, 2016).

In summary, as the digital textbook policy remained in a state of indecision, conflicts surrounding the policy diminished. Both the demand side (teachers) and the supply side (publishers) had lowered expectations for the policy. Students and parents also gradually became indifferent toward digital textbooks.

3.3 Experimental Implementation

The period from August 2013 to 2017 exhibited the characteristics of an experimental implementation. Firstly, the digital textbook policy was piloted in some schools and had not been fully implemented in all schools. Policies such as establishing wireless networks within schools and distributing tablet PCs were implemented in selected research schools. The government conducted numerous studies to evaluate the effectiveness of digital textbooks, focusing on research schools, and made efforts to gather evidence for the effectiveness of digital textbooks. The government took this period as an opportunity for policy learning by conducting various studies and research.

Secondly, during this period, the specific grade levels and subjects for the introduction of digital textbooks were not yet determined. The government finalized the details of digital textbook implementation in September 2016, and the development and distribution of digital textbooks began after 2017.

4. Stabilization Phase (2018–April 2022)

The Ministry of Education has begun nationwide distribution of digital textbooks since 2018. Digital textbooks were introduced and distributed alongside the implementation of a new curriculum in elementary and middle schools. During the Moon Jae-in administration (May 2017 – April 2022), digital textbooks were pursued as one of the detailed tasks under the National Agenda No.54. During this period, digital textbooks included a variety of

learning materials, including immersive content such as augmented reality and virtual reality.

4.1 Low level of Goal Ambiguity

As digital textbooks began to be officially distributed, the goals of the policy became relatively straightforward. The government explained that the development direction of digital textbooks aimed to increase students' interest and learning effectiveness (Ministry of Education, 2018). Furthermore, it was mentioned that digital textbooks could be utilized in classroom instruction or for home learning, according to the needs of teachers or students. Digital textbooks established themselves as supplements to traditional printed textbooks.

The development approach of digital textbooks also influenced their utilization as supplements to traditional textbooks (Ahn et al., 2020). When traditional textbooks were developed, digital textbooks were created by adding additional materials for enrichment and supplementation based on the content of the traditional textbooks. Digital textbooks maintained consistency in terms of content with traditional textbooks but incorporated various resources such as interactive content, allowing for supplementary or in-depth learning.

Examining the content of the digital textbook policy pursued since 2018, it is observed that specific policies are consistently implemented each year. The Ministry of Education carries out activities such as the development and distribution of digital textbooks, operation of digital textbook service platforms, identification of case studies on the utilization of digital textbooks,

and teacher training related to the use of digital textbooks, as part of policy management activities conducted annually.

4.2 Low level of Conflict

During this period, the conflicts surrounding digital textbooks were relatively low. Although digital textbooks were officially distributed, their utilization depended on the discretion of teachers or students. From a financial perspective, the structure of budget sharing between the Ministry of Education and local education offices was established, resulting in no significant expenditure of a large budget. According to the Budget Explanation Materials of the Ministry of Education(2021), the allocated budget for digital textbooks was 1,168 million won. 79 million won was allocated for the purpose of revising digital textbooks, and 1,089 million won was allocated to support the operation of digital textbook certification.

Criticism during this period primarily centered around the low utilization rate of digital textbooks rather than conflicts surrounding the policy. Even amid the COVID-19 pandemic and the shift to remote learning, the utilization of digital textbooks remained limited. According to Kwon et al. (2020), in elementary schools, only 40.9% of remote classes utilized digital textbooks, while in middle schools, the rates varied by subject with 34.9% for social studies, 39.5% for science, and 39.7% for English. In high schools, the utilization rate for English digital textbooks was 23.4%. Teachers expressed their dissatisfaction with digital textbooks, citing minimal differences from traditional textbooks, difficulties in accessing them, and errors present within the digital materials (Jeon, 2020).

4.3. Administrative Implementation

In 2018, with the official distribution of digital textbooks, the nature of policy implementation shifted towards administrative implementation. The policy goals became more concise, and the scope of digital textbook application became clearer. Digital textbooks were recognized as supplementary materials that offered diverse learning resources beyond what traditional textbooks could provide. They were seen as educational materials that could be utilized in classroom or by students themselves based on their needs.

Annual policy management activities, including operation of digital textbook platforms, exploration of case studies for utilizing digital textbooks, and teacher training, were consistently carried out within predictable parameters each year. According to Matland (1995), administrative implementation is the most stable form of implementation, characterized by predictable implementation following standard operating procedures or manuals. Given the annual nature of policy management activities, the digital textbook policy during this period exhibited traits of administrative implementation.

However, The transition from experimental implementation to administrative implementation of digital textbooks does not imply that the policy has firmly established itself. The initial goal of the digital textbook policy was to completely replace traditional textbooks or to make digital textbook more common in schools. The policy's initial objectives have not been achieved, and digital textbooks are still functioning only as supplementary materials for students. The current status of implementing the digital textbook

policy primarily focuses on maintaining the status quo rather than achieving its intended goals.

Ⅴ. Conclusion

1. Summary of Findings

According to Matland's goal ambiguity-conflict model, the implementation of digital textbook policy in the Republic of Korea followed a sequence of experimental implementation, symbolic implementation, experimental implementation and administrative implementation. During the introduction phase, the government formalized the development of digital textbooks, which had been the subject of research and exploration for a long time. Despite a lack of understanding of the concept of digital textbooks during this period, the policy was piloted, resulting in high policy ambiguity but low conflict. Therefore, this period exhibited the characteristics of experimental implementation, where policy outcomes were determined by contextual conditions.

During the diffusion phase, the momentum of the digital textbook policy was strengthened with the establishment of the "SMART Education Strategy". However, as the digital textbook policy became part of the new agenda called SMART Education, policy goal ambiguity remained high, and conflicts surrounding the policy increased. During this period, the Presidential Council for Information Society played a leading role in formulating the SMART Education policy as a powerful organization and a group of policy experts. This indicates the symbolic implementation characteristic, where the results of policy implementation are influenced by power relations.

In the adjustment phase, the plan for full-scale adoption of digital textbooks was withdrawn, and the policy continued with pilot

operations until the official distribution of digital textbooks began in 2018. In the stabilization phase, goal ambiguity was gradually decreased, and conflicts regarding the policy remained at a low level. During this period, a transition from experimental implementation to administrative implementation was observed.

< Table 11 > Types of Digital Textbook Policy Implementation by Period

	Introduction (2007-2009)	Diffusion (2010-2013)	Adjustment (2013-2017)	Stabilization (2018-2022)
Implementation type	Experimental Implementation	Symbolic Implementation	Experimental Implementation	Administrative Implementation
Status of Digital Textbook Policy	Pilot program	full-scale development	Pilot program	official distribution
Level of Goal Ambiguity	High	High	High	Low
Level of Conflict	Low	High	Low	Low

2. Implications

This study applies Matland's ambiguity-conflict model to the actual policy implementation process, aiming to validate the theory. Through the analytical framework, it was confirmed that the digital textbook policy in Korea has gone through phases of experimental implementation, symbolic implementation, experimental implementation, and finally administrative implementation. Over time, the ambiguity of the digital textbook policy goals gradually decreased, and except during the diffusion phase, the level of

conflict surrounding the policy remained low.

However, even with the reduced ambiguity and managed conflict surrounding the digital textbook policy, it does not necessarily mean that digital textbooks have been firmly established. Students and teachers still have limited utilization of digital textbooks, including during the online learning period caused by COVID-19. Digital textbooks have been drifting without fully settling for over 20 years.

There are two factors that contribute to the background of why the digital textbook policy has become adrift with high ambiguity. Firstly, unlike other pilot projects, the digital textbook policy remained at the experimental level for about ten years. Pilot projects are implemented to verify the effectiveness of the policy and increase its efficiency by avoiding waste of public resources before full implementation of the policy. A pilot project can be defined as an operation conducted to measure or observe the effects and operational mechanisms of a specific policy in advance. One important characteristic of a pilot project is that it is conducted based on rigorous pre-design and on a small scale (Lee et al., 2009:285-286).

Typically, the Ministry of Education's pilot projects are conducted for a period of about three years before the formal adoption of the policy. However, the digital textbook policy remained in the status of a pilot project for approximately ten years, undergoing changes in the scope of development and timing of dissemination. Over the long period of experimentation, the policy gradually lost momentum. The transformation of ICT technology was one of the key factors that triggered the drift of digital textbook policies. The past 20 years, during which the digital textbook policy was unfolded, coincided with rapid advances in information technology. In the

initial plan for the digital textbook policy, the Ministry of Education mentioned the development plan for digital devices to implement digital textbooks. (Ministry of Education, 2007). At that time, tablet PCs and smartphones were not widely used, so there was a policy decision to develop new digital devices that students could carry. There was also a certain period during which the competition between Linux and Windows for the operating system of digital textbooks was formed.

From 2007 to 2009, it appears that digital textbooks were only operated on tablet PCs produced by specific companies. Starting from 2010, the Ministry of Education improved the functionality to enable the use of digital textbooks on general desktop PCs and laptops as well (KERIS, 2011). In 2013, the government provided "Digital Textbook Development Technology Standards." By applying e-book standards (EPUB 3.0) and web standards (HTML5) in the development of digital textbooks, they were made compatible with Windows, Android, and iOS operating systems simultaneously. As a result, students were able to utilize digital textbooks using their existing devices without the need to purchase new ones. In 2018, immersive content with cutting-edge technology was incorporated into digital textbooks, allowing students to indirectly experience phenomena that are difficult to experience in real life. These technological changes and advancements surrounding digital textbooks have been the cause of frequent fluctuations in digital textbook policies. Park (2016) pointed out that from the perspective of developers, the development of digital textbooks faced significant policy fluctuations and encountered difficulties in the development process. Consequently, the government had to make multiple changes in its plans to implement digital textbooks to

reflect these technological transformations.

As a result, the digital textbook policy failed to gain persuasiveness. Particularly, the lack of support and empathy from teachers, who can be considered primary users of digital textbooks, was a critical factor hindering policy stability. Additionally, the government repeatedly changed decisions regarding the timing and scope of digital textbook implementation. The government declared full-scale implementation of digital textbooks and then withdrew it after only two years. Such government behavior undermined public trust and expectations for digital textbooks.

The digital textbook policy is expected to face another significant turning point in the future. The current government, under the Yoon Seok-yeol administration (May 2022 - present), has announced plans to promote AI-based digital textbooks for mathematics, English, and Information subjects in 2025. The government's intention is to go beyond the current digital textbooks that contain various learning content and implement AI-based tutoring and customized learning.

The public's perception of AI-based digital textbooks seems to be quite similar to the initial public opinion when the digital textbook policy was first announced. While there is recognition that it is an appropriate policy for the digital age, concerns about excessive budgetary requirements, digital addiction, and insufficient operating systems also exist.

Future digital textbook policies should differ from the past, where they remained in the experimental phase for an extended period. Proactive measures should be taken to address debates and conflicts surrounding digital textbooks, and support for the digital textbook policy should be consolidated. Additionally, by presenting

a clear vision of the future to the public through digital textbooks, the ambiguity of policy goals should be reduced.

3. Limitations

This study, being a single case study, acknowledges its inherent limitations in terms of generalizability. To enhance the causal explanatory power of the goal ambiguity–conflict matrix as proposed in this study, future research should continue to investigate similar cases. This study conducted a literature review of government reports and media coverage to examine the existence and level of goal ambiguity and conflict in the digital textbook policy. Through this process, the ambiguity and conflict in policy implementation during different periods were identified, although specific numerical measurements of ambiguity and conflict were not obtained. In future research, it is necessary to develop objective indicators for measuring ambiguity and conflict. Additionally, a detailed analysis of the relationship between ambiguity and conflict was not conducted. Matland explains that as the level of goal ambiguity increases, stakeholders' preferences become more ambiguous, resulting in a decrease in conflict. Therefore, goal ambiguity is generally inversely proportional to the level of conflict (Matland, 1995: 158). When research on the correlation between these two variables is conducted, it will enable more precise analysis of policy implementation.

Bibliography

1. Books and articles

Ahn, S., Kim, H., Hwang, J., Ju, G., Seo, J., Ahn, S., Lee, S., & Lee, S. (2020). *A study on analysis of actual use of digital textbooks and future plans.* Daegu : Korea Education and Research Information Service.

Byun, H., Ryu. J., & Song, Y. (2011). "Research Trends on Digital Textbook and Meta-analysis on its Academic Achievement." *The Korean Journal of Educational Methodology Studies, 23*(3), 635-663.

Byun, H., & Song, Y. (2010). "Current Status and Future Challenges of Digital Textbooks." *Journal of the Korea Institute of Information Scientists and Engineers, 28*(10), 58-63.

Byun, H., Seo, J., Ryu, J., Yang, S., & Choi, S. (2008). *A study on measuring the effectiveness of digital textbooks*. Seoul : Korea Education and Research Information Service.

Cho, S. J. (2007). "A Reflection on the Impact of Digitalization of Textbooks on Publishers." *Journal of Textbook Research, 51,* 27-32.

Choi, H. (2022). "A study on elementary school teachers' perception and utilization of digital English textbooks based on 2015 revised national curriculum." *Primary English Education, 28*(1), 55-77.

Chun. Y. H. (2004). "Goal Ambiguity in Public Organizations: Concept, Measurement, and Validation." *Korean Public Administration Review, 38*(5), 49-65.

Chun. Y. H. & Rainey, H. G. (2005). "Goal Ambiguity and Organizational Performance in U.S. Federal Agencies." *Journal of Public Administration Research and Theory, 15*(4), 529-55.

Chung, C., Choi, J., Lee, S. and Jung, J. (2006). *Theories of policy*

sciences. Seoul: Dae Myeong Publisher.

Cooper, B. S., Fusarelli, L. D., & Randall, E. V. (2004) *Better policies, better schools: Theories and applications*, Pearson College Division.

Feldman, M. (1989). *Order Without Design: Information Production and Policy Making*. Stanford. CA: Stanford University Press.

Han, S. (2012). *A Study on Elementary School Teachers' Perception on Digital-textbook* (Masters dissertation). Jeonju National University of Education, Jeonju, South Korea.

Hong, H. J., Min, B. J., Kim, D. S., Shin, W. S., & Lee, M. (2013). "Teacher Survey on the Adoption of Digital Textbooks." *Korean Education, 40*(1), 109-130.

Hogwood, B. W. & Peters. B. G. (1982). "The dynamics of policy change: Policy succession." *Policy sciences, 14*(3), 225-245.

Howlett, M., & Rayner, J. (2006). "Design principles for policy mixes: Cohesion and coherence in new governance arrangements." *Policy and Society, 26*(4), 1-18.

Hwang, J., Kim S., Kim H., Ohn, J., Jang, D., Jeong, S., Ju, H., Lim, S., Jo, O., Kim, K., & Choi, M. (2014). *A study on the implementation plan of the digital textbook development and activation support project after 2015*, Seoul: Korea Educational Development Institute.

Jang, D. (2017). "Analysis of the Focal Issues on the Digital Textbook Policy and Exploration for the Improvement of the Policy." *Journal of Digital Convergence, 15*(8), 15-23.

Jeong, K. H. (2014). *A Study on the Influential Factors on Digital Textbook Policy* (Doctoral Dissertation). Korea University, Seoul, South Korea.

Jo, N. S. (2014). "Current Status and Challenges of Digital Textbook Policies." *Educational Review, 260,* 50-63.

Ju, H. M., Yang, Y. J., & Nam, C. W. (2014). *Exploration of*

Implementing a Comprehensive Learning System in Textbooks. Seoul: Korea Institute for Curriculum and Evaluation.

Kim, A. & Ahn, K. (2020). "The Perceptions That Teachers, Parents, and Students Hold of English Digital Textbooks in Elementary School." *Journal of Research in Curriculum & Instruction, 24*(4), 425-438.

Kim, J. C., Park, S. Y., Son, B. G., Lee, J. G., Jung, J. Y., Cho, S. J., Hyun, Y. H., & Sun, J. G. (2013). "Special Feature I - Direction of Research on Establishing a Comprehensive Learning System without the Need for Reference Books." *Journal of Textbook Research, 71,* 7-15

Kim, H. (2006). "A Study on Influences of Policy Goal Ambiguity on Policy Implementation." *Public Policy Review, 20*(1), 73-96.

Kim, H. & Cha, J. (2013), "An Analysis of Teachers' Perceptions on E-Textbooks and Digital Textbooks." *The Journal of Yeolin Education, 21*(4), 275-298.

Kim, I. & Koo, M. G. (2012). "Changes and Continuities in the European Capitals of Culture Program: Focusing on the Goal Ambiguity-Conflict Matrix." *Korean Society and Public Administration, 23*(1), 107-141.

Kim, K., Kim. D., Kim. B., Kim. J., Noh. H., Park. S., Park. J., Oh. Y., Lee. D., Lee. S., Lim. D., Jeong. K., Jeong. Y., & Choi. J. (2006). *Policy Case Studies*. Seoul: Daeyoung Munhwasa.

Kim, T., & Yoo, E. (2013). SMART education strategy: An alternative is needed. National Assembly of Korea

Kwon, J., Kim, M., Lee, S., Yoo, K., Choi, J., Kang, H., & Shin, S. (2020) *Exploring the current state of elementary, middle, and high school distance classes and directions for improvement during COVID-19.* Chungbuk: Korea Institute of Curriculum & Evaluation.

Kwon. T. (2015). *Goal Ambiguity in Policy Programs : An Analysis of Policy Programs in Korean Government* (Doctoral

dissertation). Seoul National University, Seoul, South Korea.

Lee, S., Jung, Y., & Lee, E. (2009). "An Exploratory Study on Pilot Projects: The Ministry for Health, Welfare, and Family Affairs in Korea." *Korean Institute of Public Affairs, 47*(4). 279-305.

Lim, B. (2012). "Analysis of the Elementary School Teachers' Needs on Digital Textbooks and Its Implications on the Policy Making." *Journal of Educational Technology, 28*(2), 317-346.

Lim, Y. N. & Hong, H. J. (2013). "Developmental Phases from Paper Textbooks to Digital Textbooks." *Korean Journal of Educational Research, 51*(2), 1-36.

Matland, R. E. (1995). "Synthesizing the Implementation Literature: The Ambiguity Conflict Model of Policy Implementation." *Journal of Public Administration Research and Theory. 5*(2), 145-174.

May, P. J. (1992). "Policy learning and failure." *Journal of public policy, 12(4)*, 331-354.

Namgung, G. (2010). *Research Methods for Public Administration*. Seoul: Beomunsa.

Noh, K., Kim, B., & Lee, W. (2011). *A study on measuring the effectiveness of digital textbooks*. Seoul : Korea Education and Research Information Service.

Park, J. (2016). "The Present and Future of Digital Textbooks." *Journal of Textbook Research, 85,* 28-41.

Seo, D., & Koo. M. G. (2014). "The International Anti-Ocean Dumping Regime and South Korea: Policy Diffusion, Policy Learning and the Ambiguity - Conflict Matrix." *The Korea Association for Policy Studies, 23*(2), 145-171.

Seong, Y. S. (2007). "Exploration of the Counterproductive Effects of Digital Textbooks on Adolescents." *Journal of Textbook Research, 51, 33-37.*

Yang, M. (2013). "A Critical Review of Digital Textbook

Characteristics and Problems." *The Journal of Curriculum Studies, 31(4),* 51-75.

Yoo, H. (2009). *Policy Change*. Seoul: Daeyoung Munhwasa.

Yoon, S. H. (2007). "A Reflection on the Issues of Introducing Digital Textbooks." Journal of Textbook Research, 51, 20-26.

2. Online Contents

Ahn, H. S. (2009, October 19). "Lack of Verification for the Harmfulness of 38 Billion Won Digital Textbooks." *Yonhap News Agency*. Retrieved from https://m.yna.co.kr/view/AKR20091019139000004

Baek, J. S. (2007, March 8). "LG Electronics Demonstrates 'Bright' Digital Textbooks." *iNews24*. Retrieved from https://www.inews24.com/view/251866

Choi, M. Y. (2007, March 7). "Textbooks, Reference Books, and Notebooks - Just One Tablet PC is "OK"." *Kyunghyang Shinmun.* Retrieved from https://m.khan.co.kr/national/education/article/200703071824141

Choi, Y. J. (2019, July 8). "Reviving the Digital Textbook: Over 10 Years of Practical "Pilot Project"." *Chosun Edu*. Retrieved from http://edu.chosun.com/site/data/html_dir/2019/07/08/20190700800794.html

Dong-a Ilbo. (2012, March 2). "Digital Textbooks Falling Short: A Poor Resemblance to Effective e-Textbooks." Retrieved from https://www.donga.com/news/Opinion/article/all/20120301/44450631/2

Good Teachers' Movement. (2012, October 23). "The Government's Overreach in Promoting the e-Textbook Initiative and the Perplexity in the Field: A Glimpse of the Future of the Smart Education Promotion Strategy." Retrieved from

https://goodteacher.org/bbs/board.php?bo_table=news&wr_id=20

Government of Lee Myung-bak. (2013). "National Report of the Lee Myung-bak Administration. Volume 9: Education Reform and the Opening of the New Era of High School Education." Retrieved from http://president.leemyungbak.pa.go.kr/paperView.do?sectCode=G&bookId=03ATzSFUBfDGJMPSV000&volId=03ATzTz7dYDGJMPSV000&pageIndex=1&srchKeyword=#03ATzTz7dYDGJMPSV000

Han, J. G. (2013, June 5). "KFTA-Digital Textbook Association Sign MOU to Promote Smart Education." *Newsis*. Retrieved from https://mobile.newsis.com/view.html?ar_id=NISX20130605_0012139081

Han, K. H. (2012, April 2). "Teaching with Electronic Textbooks Leads to Classroom Chaos." *Dong-a Weekly*. Retrieved from https://weekly.donga.com/List/3/all/11/93767/1

Jeon, H. S. (2020, December 14). "Can Digital Textbooks be Improved? 65% of Teachers 'Neglecting' ... "Start with System Evaluation"." *Naeil News*. Retrieved from http://m.naeil.com/m_news_view.php?id_art=370761

Jeong, S. J. (2007, March 29). "No Textbooks in the Classroom of the Future." *Chosun Ilbo*. Retrieved from https://www.chosun.com/site/data/html_dir/2007/03/07/2007030700722.html

Kang, H. Y. (2012, March 27). "Government Initiates "Smart Learning," But Fails to Find a Direction." *MBN*. Retrieved from https://www.mbn.co.kr/news/economy/1171618

KERIS. (2007). "2007 White Paper on ICT in Education in Korea." Retrieved from https://www.keris.or.kr/main/na/ntt/selectNttList.do?mi=1244&bbsId=1104

KERIS. (2011). "2011 White Paper on ICT in Education in Korea." Retrieved from

https://www.keris.or.kr/main/na/ntt/selectNttList.do?mi=1244&bbsId=1104

KERIS. (2013). "2013 White Paper on ICT in Education in Korea." Retrieved from https://www.keris.or.kr/main/na/ntt/selectNttList.do?mi=1244&bbsId=1104

KERIS. (2017). "2017 White Paper on ICT in Education in Korea." Retrieved from https://www.keris.or.kr/main/na/ntt/selectNttList.do?mi=1244&bbsId=1104

KERIS. (2018). "2018 White Paper on ICT in Education in Korea." Retrieved from https://www.keris.or.kr/main/na/ntt/selectNttList.do?mi=1244&bbsId=1104

KERIS. (2020). "2020 White Paper on ICT in Education in Korea." Retrieved from https://www.keris.or.kr/main/na/ntt/selectNttList.do?mi=1244&bbsId=1104

KERIS. (2021). "2021 White Paper on ICT in Education in Korea." Retrieved from https://www.keris.or.kr/main/na/ntt/selectNttList.do?mi=1244&bbsId=1104

Kim, B. (2020, September 21). "[Post-Investigation] 'Digital Textbooks' that Cost 57.7 Billion Won, Teachers' Evaluation is 'Failing Grade'." *KBS.* Retrieved from https://news.kbs.co.kr/news/view.do?ncd=5008696

Kim, B. D. (2016, July 12). "Digital Textbook Project Shows Signs of Progress After 11 Years." *Financial News*. Retrieved from https://www.fnnews.com/news/201607121821237771

Kim, H. J. (2020, April 19). "Is South Korea Really an IT Powerhouse? Shocking Truth of Digital Education Revealed." *Chosun Ilbo.* Retrieved from https://www.chosun.com/site/data/html_dir/2020/04/17/2020041703190.html

Kim, H. K. (2007, March 7). "Carrying Computers Instead of Backpacks" – Where Does the Money Come from for Operating Digital Textbooks? *Donga Ilbo*. Retrieved from https://www.donga.com/news/amp/all/20070307/8415208/1

Kim, J. Y. (2016, July 15). "Intense Debate on the Pros and Cons of Digital Textbooks." *Weekly Education News*. Retrieved from http://www.edu-week.com/news/view.asp?msection=1&ssection=1&idx=7822

Kim, M. H. (2013, August 30). "Global Digital Textbook Market Expected to Reach $70 Billion by 2020." *Weekly Chosun*. Retrieved from http://weekly.chosun.com/news/articleView.html?idxno=6144

Kim, M. H. (2014, April 20). "Controversial School Smart Education Project, Diverging Opinions in the Industry." *Electronic Times.* Retrieved from https://www.etnews.com/20140418000085

Kim, S. J. (2010, August 16). "Drifting Digital Textbook Project." *Asia Economy*. Retrieved from https://www.asiae.co.kr/article/2010081313314469367

Lee, B. S. (2014, October 13). "[National Assembly Audit Briefing] "Only 3.7% Utilization of Digital Textbooks"." *Seoul Shinmun Daily*. Retrieved from https://news.nate.com/view/20141013n00861?mid=n0208

Lee, H. J. (2011, June 29). "Disparity in Digital Textbooks, Concerns about Learning Effect." *Newsis.* Retrieved from https://mobile.newsis.com/view.html?ar_id=NISX20110629_0008565552#_enliple

Lee, J. H. (2012, December 9). "Unused e-Textbooks in Local Schools... Ministry of Education Claims "80% Download Achieved."" *Hankook Ilbo*. Retrieved from https://www.hankookilbo.com/News/Read/201212091797665029

Lee, J. Y. (2011, June 29). "President Lee "Concerned About

Social Skills Decline Due to Smart Education"." *Yonhap News Agency.* Retrieved from https://www.yna.co.kr/view/AKR20110629099900001

Lee, O. H. & Lee, Y. T. (2011, July 1). "Is "Smart Education" – Studying with Digital Devices Instead of Paper Books – Desirable?" *Hankyoreh*. Retrieved from https://www.hani.co.kr/arti/opinion/argument/485428.html

Ministry of Education & Human Resources Development, (March 7, 2007), "Plan for common use of digital textbook." Retrieved from http://img.yonhapnews.co.kr/etc/press/PR/2007/03/07/RPR20070307021200353_01.pdf

Ministry of Education. (January 17, 2008). "Commencement of the Digital Textbook Development Project for Future Education." Retrieved from https://www.korea.kr/common/download.do?fileId=161005452&tblKey=GMN

Ministry of Education, Science & Technology (2010). "Announcement of textbook advancement plan for 2010." Retrieved from https://www.korea.kr/news/pressReleaseView.do?newsId=155428787

Ministry of Education and Science and Technology. (2011). "SMART Education Strategy." Retrieved from https://www.korea.kr/archive/expDocView.do?docId=29389

Ministry of Education. (2012, August 16). "E-textbooks to be Provided Online Starting from the Next Semester." Retrieved from https://www.korea.kr/briefing/pressReleaseView.do?newsId=155844231

Ministry of Education. (2013). "Announcement of 2013 digital textbook development and application plan." Retrieved from https://www.moe.go.kr/boardCnts/viewRenew.do?boardID=294&boardSeq=49892&lev=0&searchType=null&statusYN=C&page=1&s=moe&m=020402&opType=N

Ministry of Education. (2016). "Classification of Digital Textbooks for Elementary & Secondary Schools in accordance with the 2015 Revised Curriculum." Retrieved from https://www.moe.go.kr/boardCnts/viewRenew.do?boardID=294&boardSeq=64153&lev=0&searchType=null&statusYN=C&page=1&s=moe&m=020402&opType=N

Ministry of Education. (2018). "Implementation of digital textbook and software education, the first step in future education." Retrieved from https://www.moe.go.kr/boardCnts/viewRenew.do?boardID=294&boardSeq=73654&lev=0&searchType=null&statusYN=C&page=1&s=moe&m=020402&opType=N

Ministry of Education. (2021). "Budget Explanation Materials for fiscal year 2022." Retrieved from https://moe.go.kr/common/down.jsp?fileNM=2022_Government_budget.pdf

Nam, H. H. (2012, December 7). "Digital Textbooks Without Philosophy, Stagnating for 6 Years." *ZDNet Korea*. Retrieved from https://zdnet.co.kr/view/?no=20121207074054

Presidential Council on Informatization Society (2013). "Creating a Smart Republic of Korea through National Information Society." Retrieved from http://president.leemyungbak.pa.go.kr/paperView.do;jsessionid=EF016912F5DDD8376E5D66870FBCF25E?sectCode=P&bookId=03ATxG6UdyDGJMPSV000&volId=03ATxG8wDZDGJMPSV000&pageIndex=1&srchKeyword=#03ATxG8wDZDGJMPSV000

Seo, H. J. (2007, March 21). "<Statistics on the Issue> Paper vs. Digital Textbooks." *Korean Education Newspaper.* Retrieved from https://www.hangyo.com/mobile/article_comment.html?no=21247&comment_mode=write

So, H., Yeon, K., Buchanan, K., Ha, S., Lee, J., Lee, H., On, G., Kim, E., & Lee, N. (2021). "K-Edu ICT in education : Policy guidelines and history." Retrieved from https://www.keris.or.kr/main/ad/pblcte/selectPblcteRMInfo.do?mi=1139&pblcteSeq=13466

Song, H. S. (2012, October 22). “E-Textbooks Have No Content and Are Inconvenient - Teachers and Students Don't Use Them.” *Kyunghyang Shinmun*. Retrieved from https://m.khan.co.kr/national/education/article/201210222021215

Song, H. S. (2012, November 8). “Complete Budget Cut for Digital Textbooks - Fiscal Government Raises Doubts on Project's Effectiveness.” *Kyunghyang Shinmun*. Retrieved from https://www.khan.co.kr/national/education/article/201211080300035

Song, H. S. (2013, June 18). “Ministry of Education Introduces 'Digital Textbooks' Next Year, But Can't Even Decide on the Subjects.” *Kyunghyang Shinmun*. Retrieved from https://www.khan.co.kr/national/education/article/201306180600015

Yang, Y. Y. (2007, March 8). “Textbooks and Notebooks Disappearing in the Classroom.” *Joongang Ilbo.* Retrieved from https://www.joongang.co.kr/article/2655654

Yoon, G. H. (2007, March 7). “Replacing with Digital Textbooks without Conducting Clinical Trials on Student Health.” *Education Hope.* Retrieved from http://m.news.eduhope.net/7917

국문초록

디지털 교과서 정책 집행 과정 연구
– 정책 목표의 모호성과 갈등을 중심으로 –

윤혜준
서울대학교 행정대학원
행정학과 글로벌행정전공

대한민국은 2002년부터 디지털 교과서에 대한 논의를 시작하였으며, 2007년에 디지털 교과서 개발과 보급을 위한 정책을 본격적으로 추진하기 시작하였다. 본 연구는 한국의 디지털 교과서 정책의 집행과정을 Matland의 모호성-갈등 모형을 바탕으로 분석하고자 한다. 디지털 교과서 정책 집행은 정책목표의 모호성과 갈등 수준에 따라 크게 도입기, 확산기, 조정기, 안정기의 네 단계로 구분할 수 있다. 모호성-갈등 모형에 따르면 각 시기별로 실험적 집행, 상징적 집행, 실험적 집행, 관리적 집행의 양상이 나타날 것으로 예상되는 바, 본 연구에서는 이를 검증하고 효과적인 집행을 위한 시사점을 찾고자 한다.

도입기에는 디지털 교과서 정책이 처음 공식화됨에 따라 목표 모호성이 높았지만, 정책을 둘러싼 갈등은 낮았다. 이 시기에는 디지털 교과서의 개념과 도입 목표가 뚜렷하지 않았고, 정책이 집행되는 과정에서 방향이 여러 번 수정되었다. 이러한 특성은 모호성-갈등 모형이 예측한 실험적 집행에 해당한다. 확산기에는 정부의 '스마트교육 추진 전략' 발표를 계기로 디지털 교과서 정책의 동력이 강화되었다. 이 시기에는 디지털 교과서 정책이 '스마트 교육'이라는 새로운 정책 슬로건의 세부 과제로 포함되면서 목표 모호성이 높게 유지되었다. 또한 디지털 교과서가 모든 초,중등학교에 전면적으로 도입될 것이 예고되면서, 정책을 둘러싼 갈등 수준이 높아졌다. 디지털 교과서 정책 집행이 강화된 배경에는 당시 대통령 직속기구인 국가정보화전략위원회의 깊은 관여가 있었는데, 이러한 사실은 권력관계에 따라 집행의 결과가 좌우되는 상징적 집행의 특성을

보여준다. 조정기 동안에는 정부가 디지털 교과서의 전면 도입 계획을 철회하였고, 일부 학교에 대한 시범 적용으로 정책을 축소시키면서 정책에 대한 갈등이 봉합되는 양상을 보였다. 이 시기에는 디지털 교과서의 효과성과 역기능에 관한 여러 연구가 진행되었다. 이러한 점은 정책관계자들의 학습이 두드러지게 나타나는 실험적 집행의 특성을 보여준다. 안정기에는 디지털 교과서가 서책형 교과서의 보완재로 자리매김하면서 목표 모호성이 낮아졌고, 정책에 대한 갈등도 낮은 수준을 유지하였다. 이 시기에는 표준화된 정책 관리 활동들이 이루어져 관리적 집행의 양상을 보였다.

하지만 20여년의 기간을 거쳐 개발, 보급되어 온 디지털 교과서는 아직까지 교육 현장에 잘 안착되지 않은 것으로 보인다. 교사들과 학생들 사이에서 디지털 교과서가 여전히 잘 활용되지 않고 있기 때문이다. 이는 디지털교과서 정책이 오랜 기간 시범 사업이라는 실험 수준에 머무르면서 정책이 동력을 서서히 잃었기 때문이라고 볼 수 있다. 또한, 디지털 교과서 정책은 급격하게 발전하는 정보 기술을 반영하면서 추진되어야 했기에, 기술적 측면에서도 정책의 방향이 여러 차례 변경될 수 밖에 없었다. 본 연구는 정책의 성공적인 집행을 위해서는 정책의 목표와 구현하고자 하는 미래상을 명확히 제시함으로써 정책에 대한 국민들의 지지를 결집시켜야 한다는 시사점을 제공한다. 다만 본 연구는 모호성과 갈등의 수준을 객관적으로 측정하는데 한계를 가지는 바, 향후 연구에서는 측정 지표 개발 등의 보완이 필요할 것이다.

주요어: 디지털 교과서, 정책집행, 모호성-갈등 모형
학번: 2021-29369