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A STUDY ON SHIFTS OF OPEN SECONDARY SCHOOLS POLICY IN KOREA THROUGH HISTORICAL NEW INSTITUTIONALISM

Abstract:

The purpose of this study is to analyze policy shift process of the Open Secondary Schools in Korea based on the historical new institutional theory and to make policy proposals about it. Specifically, I will study the limitation factors and the facilitating factors of the policy shift by analyzing from 'the structural-institutional-actor level integrated view' and 'view of gradual shift' through the historical new institutionalism theory. The Open Secondary Schools provide new educational opportunities for anyone who needs secondary education and it implement U-learning based lifelong education and realize blended education through offline classes twice a month. Therefore, it is required to improve education policy suitable for the future environment by analyzing the policy shift process in the age of the fourth industrial revolution. As a theoretical background, I have examined the background, the purpose, the function, the organization of project operation, the development process of the Open Secondary Schools, and the historical new institutionalism theory. As the content of the analysis, five research questions were set up. It includes the structural contextual factors, institutional contextual factors, actor contextual factors, interaction between factors, and the path of policy shift. As a research method, literature review was carried out using research reports, project reports, historical records, media related to the Open Secondary Schools since 1974. The results of the analysis are as follows. First, 'structural change of industry' and 'development of cutting edge technology', which are structural factors influencing policy change, were factors that facilitated policy shift and 'implementation of local autonomy' was a constraint factor. Second, 'community culture focusing on social justice' and 'change in education paradigm' which were institutional context factors served as facilitators for policy shift. Third, the change in the 'official actor', which is the context factor of actor, acted as a constraint on policy shift. Fourth, interaction between 'the structural-institutional-actor context' constrained or facilitated policy shift. Finally, the policy of Open Secondary Schools was shifted to the process of 'path start' - 'path dependence' - 'path evolution'. Based on these findings, suggestions for future policies are as follows. First, it is necessary to prepare human resources and infrastructure that can respond sensitively to cutting-edge technology changes. Second, customized educational content development and educational environment should be improved for the education disadvantaged group and multicultural students.

Keywords:

the Open Secondary Schools policy, policy shift, Historical New Institutionalism, 'the structural-institutional-actor context', the process of 'path start' - 'path dependence' - 'path evolution'

JEL Classification: I28

I. Introduction

A. Necessity and purpose of research

Recently, in the era of the fourth industrial revolution centering on manufacturing powerhouses such as Germany and Korea, innovation in various fields is being promoted. In particular, Korea's education is regarded as "hope" to overcome the period of the Fourth Industrial Revolution, and it is trying to change the overall education paradigm in terms of curriculum, education method, and educational evaluation, not only higher education but also elementary and secondary education. In this shift of education paradigm, the cultivation of the "4C competence" of creativity, critical thinking, communication and collaboration is regarded as a key requirement. This 4C competence is a key requirement for new humans, called phono sapiens, who use their smartphone as part of their body. This can be targeted for middle-aged and elderly people who use smartphones everyday, such as 'digital native', which is equipped with information processing and digital literacy skills. Recently, some scholars have stressed that the era of DQ(Digital Intelligence Quotient) has passed beyond IQ and beyond EQ(Korea Educational Development Institute, 2019).

It is obvious that the education method in this era of DQ should be a mix of online and offline education. Therefore, the question of "how to use the on- and off-line education appropriately", and "how to provide learner-centered education using limited physical and human resources", is to overcome the current offline-centered education method. It is also the question to be solved. I determined that the key to solving this question was in Korea's Open Secondary Schools.

The Open Secondary Schools has been established and operated since 1974 as a public high school. As the name suggests, education began with the attendance class twice a month centered on radio broadcasting, the means of communication at that time. Currently, it is building and operating a blended learning cyber education system consisting of online classes and twice-monthly attendance classes, not radio. Through the Open Secondary Schools, more than 240,000 students have been a useful means of obtaining secondary education. The cyber education system, which was conducted for all grades in 2008, has recently emphasized the 'realization of social justice' in the country to change the paradigm toward 'consumer-centered, learner-centered' education and to consider the socially disadvantaged and the education disadvantaged group. The content and academic management system are provided according to the level and situation. The class know-how and the accumulation of contents, which are a combination of online and attendance classes, will be able to supplement much of the innovation of the public education system required for future preparation. Then, "Did the Open Secondary Schools Policy change well with the times and circumstances to this day?", "What is the factor if the policy has changed or been constrained?" And it also decided that it was necessary to find out "what factors should be checked and promoted in order to promote future developmental changes?"

Therefore, the purpose of this study is to examine policies from the establishment of the Open Secondary Schools to the present from a historical new institutional point of view, and to suggest what policy efforts will be needed to develop policies that are more suitable for the future educational environment through analyzing the factors and policy pathways that specifically promoted and constrained the policy changes.

B. Research question

The study set up three research questions:

First, What are the structural, institutional and actor contextual factors that facilitate and constrain changes in the Open Secondary Schools policy?

Second, What about the interaction between the structural, institutional and actor contextual factors that facilitate and constrain changes in the Open Secondary Schools policy?

II. Theoretical background

This chapter describes functions and roles along with the purpose and background of the establishment of the Open Secondary Schools as a theoretical background, presents the development process based on policy changes of the Open Secondary Schools, and examines the concepts to be used in this research among the "Historical New institutional Theory."

A. Overview of the Open Secondary Schools Policy

1. Background of establishment

The policy for the Open Secondary Schools will begin in 1974, when Korea Open High School was established in various parts of the country. The reason behind the establishment of Korea Open High School was to solve Korea's social problems in the 1970s. The 1970s was a time when various social problems occurred, including the increase of manpower required by the government's emphasis on industrialization, the increase in the number of middle-aged students who were born in the 60s due to the school enrollment of baby boome, the increase in the number of elderly students who had an "resentment" about their academic background due to a lack of high school records, and the occurrence of repeater who dropped out of high school federation exams. Therefore, the Korean government established the Open Secondary Schools to solve various social problems by utilizing remote education with excellent economic effects. The establishment form was established with the addition of a general national and public high school, not a single type that required a lot of financial investment and time.

2. Features and Roles

Among the functions of the Open Secondary Schools, 'realization of social justice' is the most prominent function. In other words, most of the students who enter the Open Secondary Schools fail or cannot go to general high schools for economic or personal reasons. Thus, the policy of the Open Secondary Schools can be regarded as a 'fair opportunity' given to all the people who want to acquire secondary education, and this 'social justice' of Rawls. The policies of Open Secondary Schools are consistent with these policies, which have positive personal and social effects, such as the restoration of confidence and social self-esteem, the spread of lifelong education, the improvement of national education standards, and the narrowing of the educational gap.

3. Project Operating System

The Open Secondary Schools Project is operated under the leadership of the Open Secondary Schools Project Steering Committee, which consists of the Education Ministry, the KEDI, the municipal and provincial education offices, and unit schools. First, the Education Ministry is in charge of establishing and implementing policies related to laws and institutional

bases related to the Open Secondary Schools. The KEDI develops and provides remote class operation and related contents through broadcasting and information communication, and studies the entire operation. The municipal and provincial education offices are in charge of making decisions and providing administrative and financial support for the establishment of the Open Secondary Schools under their jurisdiction, while the unit schools are in charge of the operation of undergraduate schools.

B. The Development Process of the Open Schools Policy

In this chapter, specific development processes of the Open Secondary Schools policies are reviewed by dividing them into three periods: "The introduction period(1973-1994)", "Transition Period(1995–2007)" and "Progress Period(2008-2019)" based on "Change in the Method of Teaching." The main development process was analyzed based on the changed operation feed of the Center for Digital Education Research of the KEDI, which develops, provides and researches contents related to the operation of remote classes in the Open Secondary Schools, and the government policy data by era. The details are as follows.

1. Introduction period(1973–1994)

The introduction period is a period of quantitative growth with the start of the policy for the Open Secondary Schools. If we look at the changes in the introduction period focusing on 'introduction background', 'attempt for change in educational medium', 'change in administration and financial support system', and 'quantitative growth' as follows.

First, the policy for the Open Secondary Schools was introduced to solve social problems caused by the increase of the school age population and industrialization. The direct reason for the policy launch was that in 1972 middle school students who entered high school with no-tests in the wake of the middle school's non-experience system introduced in 1969. At that time, high school entrance exams were very fierce, and as the number of high school students increased, it was becoming a social problem. Especially, the school-age students at that time were too many for the school to accept as baby boomers. In addition, it was during the industrialization process at the time, and the demand for unskilled workers and technicians increased. Thus, the Seoul Metropolitan Government and Busan Metropolitan Government announced their plan to establish the Open Secondary Schools in 1972, and the government appointed the KEDI under "Social 130-131 and 130-334" on March 8, 1973 to establish the Open Secondary Schools courses in national and public high schools in order to legally support the establishment of the Open Secondary Schools(KEDI, 2002: 107). With this, the policy of the Open Secondary Schools has begun in earnest.

Second, An attempt was made to switch the educational media. In 1980, "7.30 Education Reform" was implemented and lifelong education was emphasized, and television broadcasting exclusively for education was put into full swing to normalize education and to relieve overheating and over-the-counter. Therefore, the KEDI started 'TV High School Education Broadcasting' for high school seniors, and in 1981, it opened the Open Secondary Schools exclusively for education to conduct the entire broadcasting. However, the education of the Open Secondary Schools was still carried out through radio, and R&D was conducted to explore the possibility of using TV programs as a medium for education of the Open Secondary Schools in order to overcome the limitations of broadcasting and radio lectures and utilize more effective teaching media only when the number of students at the Open Secondary Schools was at its peak in 1987. According to a study by Park Moon-tae et

al.(1987), the survey found that the educational utilization of TV media was highly positive, and both students and teachers responded positively to the high school lectures through the use of TV media. Despite such efforts, however, the media conversion was not realized in 1990 due to the separation of EBS education broadcasting and financial burden.

Third, the subject of the Education Restoration Service was changed from the government to the municipal and provincial education offices. This would be substantially affected by the enactment and promulgation of the "Act on Local Autonomy" in March 1991. In other words, "the principal body of the Education Reception Center" has been changed from "the Education Ministry" to "the municipal and provincial education offices." This meant that for the operation of the Open Secondary Schools, all municipal and provincial governments should be consulted on the establishment and operation, and that students could receive different benefits depending on their operation policy or financial conditions. This change had a lot of confusion at the time, but it also had a positive effect, with the establishment and operation possible to suit the local situation later.

Fourth, quantitative growth has been achieved. Eleven high schools were established nationwide in 1974, and the number of schools expanded to 50 in 1887, about 10 years later, as the number of students surged to 48,067 in 1887. According to the number of students, the introduction and transfer period from 1974 to 1995 consisted mainly of young people in their early 20s or high school age who were faithful to the purpose of fostering the school's founding members and industrial personnel. Specifically, based on a statistical survey conducted since 1981, most students aged 18 to 20 and 21 to 25 years old were found to have been students in 1985, which is suitable for the purpose of establishing the Open Secondary Schools(KEDI, 2016: 113-117). The number of students began to decline after peaking in 1987.

2. Transition Period(1995-2007)

The transition period(1995-2007) is a time when the Open Secondary Schools policies seek new changes. If you look at the changes in the transition period centered on "Changes in the educational media," "Changes in the classroom system," and "Changes in the student membership."

First, the transition to a new educational medium was pushed forward. 1995 marked the advent of the information age, with the rapid development of cutting-edge technology around the world. At that time, Korea fostered the information and communication industry for the task of "preparing the foundation for the future" as the civilian government took power after a long period of military rule (itdaily, 2017.11.02.) The field of education was no exception. The civilian government formed an education reform committee to implement 5.31 Education Reform for 'Open Education Society, Construction of Lifelong Learning Society'. The Education Reform Committee proposed the establishment of the National Multimedia Education Support Center to achieve the goal of 'Open Education Society, Construction of Lifelong Learning Society' of 5.31 Education Reform, in addition the Education Information Service Promotion Subcommittee was formed, and education information was selected and promoted as a comprehensive priority policy task for changing the education paradigm corresponding to a high-level information society in terms of education and environment. In addition, the 'first education information service' project was implemented in 1996, with the spread of high-tech information engineering media such as multimedia and the establishment of a high-speed information communication network as the basis of information and communication. The Education Information Service Promotion Committee decided to establish

the Education Information Integrated Services System as the top priority for educational information services(Educational Information Service Promotion Committee, 1996.4.4.), and the Education Information Service Promotion Committee established the basic plan for the establishment and operation of the Edunet, and requested the KEDI in May 1996. As a result, the service was started with the opening ceremony on September 11, 1996 and the Multimedia Education Support Center was established(1997.3.12), which was dedicated to the operation of the edunet, and developed and published various educational information and data to serve the service(Educational Information White Paper, 1998: 97). In addition, the Center for Open Secondary Schools operated a cooperative research center from 2004 to 2005 to prepare for innovation in the Open Secondary Schools system, recognizing that the Open Secondary Schools was not emerging from the basic framework at the time of its establishment despite having been in operation for more than 30 years. The Center for Collaborative Research analyzed the performance of the 30th Open Secondary Schools for the vision of Open Secondary Schools and proposed roadmaps, and established a vision for future development focusing on the innovation tasks. In particular, the main content of the vision presented by the cooperation center was to build a cyber Open Secondary Schools outside of the existing Open Secondary Schools, which served as a stepping stone to usher in a new era for the Open Secondary Schools(KEDI, 2016: 82-86).

Second, the government sought to switch from one-way to two-way teaching and learning system. The 5.31 Education Reform has also brought changes to the operating system of Korea Open high Schools. Based on Edunet, which was developed through the implementation of 'educational information service business', a computer communication learning system for broadcasting stations has been developed. The broadcasting station in Edunet was introduced on a trial basis from the end of December 1996 before full-scale service began in March 1997. This allows learners to learn at the time of their choice by providing courses that were only available on the radio at that time in voice files. In addition, 'Development of Computer Communication Learning System for Open high School was carried out from 1996 to 2000 separately from Edunet (Korea Educational Development Institute, 2002), and under the auspices of the KEDI Multimedia Education Research Center, the Korea Communications Education Research Center was in charge of the project and operated with technical support from Korea Information Engineering. Not only is the computer communication learning system allowing learners to listen to lectures through voice at the time they want, but teaching can be made by sending questions and answers when they have problems they don't know while studying with electronic bulletin boards through menus such as 'Ask'. Not only this, but also the need to buy textbooks separately has been eliminated. Internet-based cyber textbooks have emerged. In order to cope with the rapid development of high-tech technologies since 2000, the government launched "Cyber Education System Operation Study" in 2004 to allow students to be recognized through online classes, in addition to downloading classes. It sought to transform itself into a truly interactive manual system. In 2006, the government sought a 2006 transition to a truly two-way teaching and learning system, including the introduction of the cyberscience system.

Third, the age group of the students changed. 1995 is the beginning of the transition of the age group, in which the members of students are gradually composed of the elder generation (Korea Educational Development Institute, 2016: 114). As of April 2019, those in their 50s and older accounted for 60.8 percent of the student composition, and this configuration status has remained unchanged since 1995. The older and younger generation (the Doosan Encyclopedia), born between 1955 and 1963, still played a key role in the growing age of school-age students who influenced the establishment of broadcasting schools. Therefore,

1995 can be seen as a turning point for Open high Schools as a lifelong learning institution.

Fourth, the operation cost of the Open high School Operation Center of the Korea Educational Development Institute, which organizes projects for Open high Schools, rose sharply. The Korea Educational Development Institute's Open high School Operations Center (currently the Center for Digital Education Research), which develops and provides contents related to the operation of remote classes of broadcasting stations, received 9.5 billion won in business operating expenses from the government for five years when it started the media transition to the 'cyber education system' in 2004 (Korea Education Newspaper 2003.11.06.) The project cost of the Center for Open high Schools, which had remained at 1.5 billion won until 2004, doubled to 3 billion won from 2004, and rose to 4 billion won in 2009 and 5 billion won in 2012. As of 2019, the Center for Digital Education Research's 2020 budget was set at 6 billion won. This shows that since the establishment of the Cyber Education System(A Web-Based Interactive Education System) began in 2004, Open Secondary School operation business has been greatly expanded and developed.

3. Progress Period(2008-2019)

During this period, the two-way teaching and learning system was operated reliably based on the cyber education system and the spread of smartphones was expanded, and customized operating system was developed to cope with diverse demands. If you look at the changes in the progress period centering on 'Starting Cyber Education', 'Changing in Education Media', 'establishment of the Open Middle School' and 'Diversification of Operating System'.

First, the cyber education system has been expanded to all grades and started in earnest. The Cyber Education System, which was introduced in 2006 and expanded to all grades in 2008, can be seen as the result of the "Advanced Education Environment through the Transformation of a Twin-Directional Multimedia Learning System," which was presented as a detailed project for promoting lifelong learning promotion in 2002 (Ministry of Education and Human Resources Development, 2002). As the cyber education system was expanded to all grades, radio lectures that had previously been conducted in a one-way manner were abolished, and the education system of the Open Secondary Schools in the old era, which began as radio broadcasting, ended. The cyber education system was further activated in 2011 when the Education Ministry pushed for the "smart education" project, according to analysts.

Second, educational media has changed from PC-centric to smartphone-centric. When iPhone 3Gs were sold in South Korea in 2009, it started to change from PC-centric to smartphone-centric life(Aju Economy, 2013.12.11.) Since iPhone's release, the number of smartphone users in South Korea has increased rapidly, surpassing 7 million in 2011(14% of all mobile phone subscribers). In 2013, smartphone usage time surpassed that of desktop PCs(Aju Economy, 2013.12.11.) As LTE(Long Term Evolution) mobile communication technology, which is 4G (4G mobile communication method) followed by 3G(Generation 3 mobile communication method), was commercialized in 2019 and Samsung topped the global smartphone market(Newsis, 2019.07.31). As of 2019, one out of every nine South Koreans uses smartphones(KookminIlbo, 2019.08.05.) The spread of such smartphones has driven a shift from PC-centric education to smartphone-centric, time-to-living. In order to respond to this, the company developed contents optimized for smart devices with HTML5 in 2012 and released mobile apps, and in 2013 it established a smart running platform and a unified cyber system for broadcasting, and the process of upgrading its cyber education system has been continuously carried out so far in 2019. As such, the Open Secondary Schools are realizing

"ubiquitous learning" through timely responses to media changes.

Third, the Open Middle School was established. It is 39 years since the establishment of the Open high Schools in 1974. And it was the first time in seven years since the National Assembly introduced some revisions to the 'the Elementary and Secondary Education Act' to establish the Open Middle School in 2005. The establishment of the Open middle schools had been consistently required since the establishment of the Open high schools, but the legal basis for the establishment of the Open middle schools was deleted in 1998 when the 'the Elementary and Secondary Education Act' was abolished and the Framework Act on Education was newly enacted. The Open Secondary Schools was established on January 16, 2011, seven years later, 'Plan for educational support for the minor classes, including those for the reorganization of the Open Secondary Schools operating system and students for remote education,' and the Open Secondary Schools was established on January 26, 2012, when 'the Elementary and Secondary Education Act' was revised.

Fourth, the diversification of the operating system for customized education has begun. In 2012, 'Online classes' were launched for 'student in school age.' This is an extension of the service to "general regular middle and high school students" in a departure from the general nature of the Open Secondary Schools targeting "the socially disadvantaged and the education disadvantaged group", which can be seen as a diversification of the operating system to realize the goal of "consumer-tailored education." Starting with this, diversification of operating systems will be implemented in earnest. Specifically, in 2013, the 'learning experience recognition system', which recognizes students' experiences outside of school, was implemented and 'specialized subjects' were developed and introduced. In 2017, the 'Student athletes e-school' project for student athletes who were forced to skip school classes frequently due to their athletes' activities and the 'Schooling' project for students who cannot take classes due to health reasons were fully implemented, and the 'Online Joint Education Course' project and 'Academic and Middle School Learning Support Project' project to support the transfer of unopened (optional) classes at their schools are operated on a trial basis. In 2018, the company changed the name of its "the Center for Open Secondary Schools" to "Center for Digital Education Research" and carried out "Research on the introduction of the Open Secondary Schools grades system and flexible teaching period" and in 2019, it is planning a new change to an operating system suitable for the future education environment by developing an "School For you" elementary course.

C. Historical New Institutionalism

Through the historical context of the Open Secondary Schools policies, I intend to present the direction of future the Open Secondary Schools policies by analyzing what factors facilitate or constrain policy changes in the course of policy changes and what pathways were of policy changes. To this end, the theory of historical new institutionalism, one of the divisions of new institutionalism, is to be analyzed using the framework of analysis, and in particular, the view introduced to overcome the limitations of the "institutional determinism" character of historical institutionalism, is to be utilized for the "integrated approach of structure, institutions and actors level" and the "view of gradual change." Before entering into the analysis, the analysis criteria and framework for 'view of gradual change' and 'integrated approach at structure, institution, and actor level' are as follows:

1. View of gradual change

The "view of gradual change" was based on the <Table 1> and 'Type of institutional change' in Streck & Thelen (2005), which noted that the process of change was gradual and the resultant 'gradual transformation'.

division		Result of change(frequency)	
		Continuous	**Discontinuous**
Process of change (width)	**gradual**	reproduction by adaptation	gradual transformation
		Path dependent of North(1990)	Path evolution of Skowronek(1982)
	radical	survival and return	breakdown and replacement
		-	Path Creation of Krasner(1984; 1988)

Based on Ha Tae-su(2001: 114-115), Streeck & Thelen(2005: 9)

However, unlike Mahoney & Thelen(2010)'s distinction of evolutionary type as 'transition, drift, lumpy and replacement', this study was reconstructed as shown in <Table 2> below with gradual 'incomplete break' and 'complete break'.

division		Result of change(frequency)		
		Continuous	**Discontinuous**	
			Incomplete disconnect	**Complete disconnection**
Process of change (width)	**gradual**	reproduction by adaptation	gradual transformation	
			Drift, Layering, Conversion	Displacement
		Path dependent of North(1990)	Path evolution of Skowronek(1982) Path type of Streeck & Thelen(2005)	

Based on Ha Tae-su(2001: 114-115), Streeck & Thelen(2005: 9)

In addition, "view of gradual change" is a study that analyzed the 'Type of Path Evolution' by Hacker(2004) and Mahoney & Thelen(2010) that explored the type of path evolution (Ha Tae-soo, 2010; Ha Yeon-seop, 2011; Nam Jae-gul, 2012; Park Jin-hyung, 2013; Lee Jae-sul and Lee Min, 2014; Jang-raum, 2015) and two commonly derived from the following <table 3>. As Lee Jae-sul and Lee Min-chang (2014: 271) revealed, Hacker(2004) and Mahoney & Thelen(2010) largely distinguished the types of path evolution based on internal barriers(institutional features) and external barriers(political contexts). The two studies generally agree on the criteria for determining the type of pathogenesis, but the interpretation of these criteria is contradictory. However, since the different types of characteristics are similar, this study distinguished the types of evolution based on the characteristics of each type presented in the preceding study.

type	character
Drift	The existing system does not change in spite of changes in circumstances. Externally stable, but not actually functioning
Layering	The components of an existing plan are retained and some new components are added to make changes to the way the existing plan operates
Conversion /Redirection	An existing scheme exists in appearance but performs a new purpose or function. a change of role
Displacement	If an existing system is replaced by a new one In case the components of a previously suppressed scheme are rediscovered and activated, the large framework of the scheme changes

Based on Hacker(2004), Mahoney & Thelen(2010), Ha Tae-su(2010), Ha Yeon-sub(2011), Lee Jae-sul & Lee Min-chang(2014)

Ha Tae-su(2001), Streek & Thelen(2005: 20-31), and Mahoney & Thelen (2010: 14-31) all considered the types of path evolution to be "completely disconnected." However, looking at its type of features, 'Drift, Layering, and Conversion' tend to be the result of incomplete disconnection, as it tends to remain within the existing system. Therefore, in this study, it is presented separately as incomplete and complete disconnection. Creating a new system is also a 'path-dependent' because it is strictly done with the existing system in place, and the elements of the existing system are bound to constrain the choice by leaving themselves in the system where they are currently being created (Goodin, 1996; Office, 1996; Pyson, 2000). Incomplete disconnection is indicative of this point. Streck & Thelen(2005) saw 'alternative' as a result of radical disconnection due to external shocks, such as natural disasters and wars. However, in this study, Hacker (2004) and Mahoney & Thelen (2010) presented 'displacement' as a type of path evolution (a gentle transformation of <Table 1>), which was not 'advanced' but a 'vacuum' break. In other words, the 'alternative' of the type of path evolution is considered to be 'displacement' as a result of cumulative progressive change, not external, and distinct from 'displacement and dismantling' in <Table 1>. In addition, this study noted that one type of evolution alone in the path of the creation of a new system cannot explain the process. In other words, the result of progressive and incomplete disconnection was determined to be cumulative and evolve as a result of complete disconnection, which was defined as 'path-dependent evolution'(Kim Sang-cheol, 2018b).

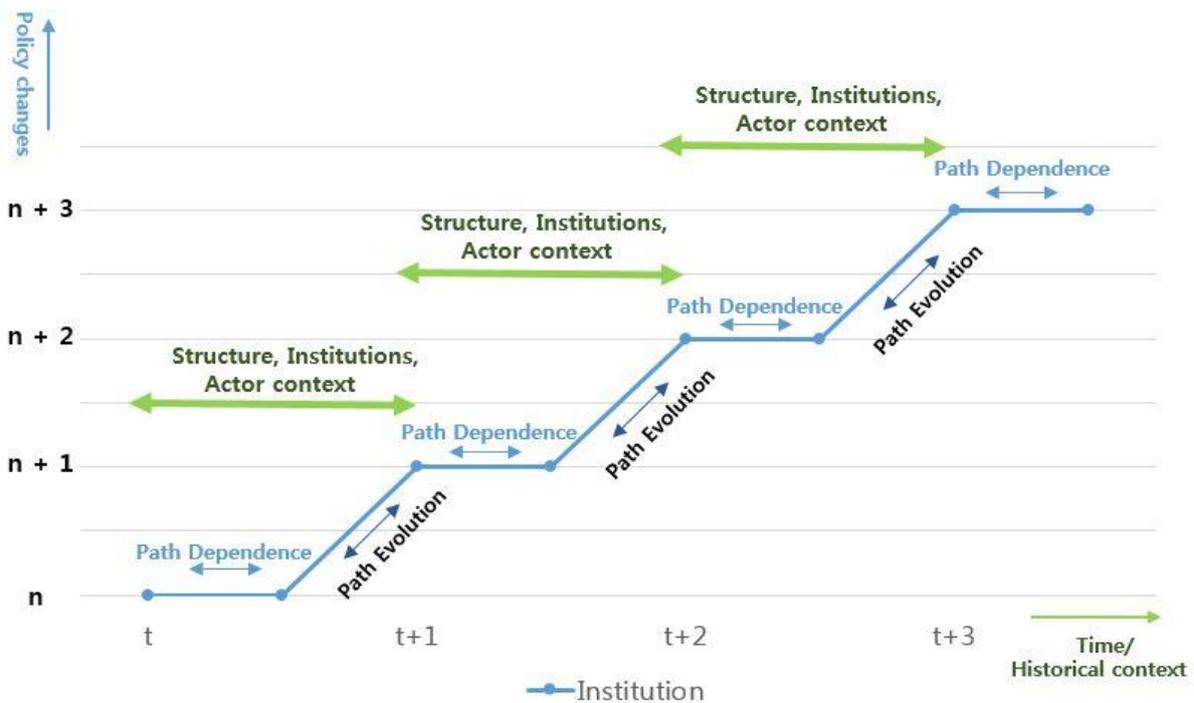## 2. Structure-Institution-Actor level integrated approach

An analysis of the 'integrated approach at structure, institution, and actor level' was conducted. Based on what Mahoney & Snyder(1999: 7-11) suggests. Mahoney & Snyder added structure, drafting and actor levels, including: The structure level was divided into macroscopic and domestic structures and presented as a variable the world system(power structure), the national and national level, which means economic development or cultural level, and the domestic class structure. The system level presented institutionalized ideology, legal system and party system as variables. The level of actors was divided into social groups and leadership, and variables were presented as advocacy groups and political leadership.

Ⅲ. Research method

A. Analysis frame

Since both 'view of gradual change' and 'integrated approach of structure, institution and actor level' were considered in this study, the characteristics of path evolution type of Mahoney & Thelen(2010: 14-31), path evolution process of Ha Tae-su(2001) and the analysis frame of Shin Hyun-seok & Jeon Sang-hoon(2007) were changed to suit the Open Secondary Schools. Therefore, the framework of analysis for this study is as follows.

Figure 1: An integrated approach framework at the structure, institution, and actor level of institutional change in view of gradual change

Specifically, the analysis frame is described as n, whose path was accidentally 'started' by external requirements at t-time, which then shows a tendency of self-strengthening path dependence, which results in the accumulation of macro and aesthetic contextual factors (structural, institutional, actor) in which the system is adrift, cumbersome, and switched. In other words, it evolves into a system of 't+1', 't+2' and 'n+2'. This path-dependent evolution accumulates and eventually evolves into a new system called 'nacle' at the time of 't+3'. The evolved scheme is considered to have evolved because of the combined effect of all the contextual factors accumulated in the time flow from t to t+1 rather than the effect of the contextual factors at a particular point in time.

The criteria for determining at what point a particular plan was the result of a path-dependent evolution or a replacement by a new one are the parts that require further discussion, and in this study 'drift, layering, conversion, displacement' based on the characteristics of the 'path-evolution type' as a common outcome agreed among researchers. However, it is judged that the criteria for determining 'alternative' - the result of a break in a gradual process - should be

related to the goal of the "path creation" period, as suggested earlier, and should be related to the goal of the "path creation" period, as well as a new system derived after a long period of policy changes, such as switching to a different goal or pursuing the original goal and adding new policy. Thus, in this study, the criterion for determining 'alternative' as a result of a break in incremental change can be the result of rediscovering the associations with 'path creation', the effects of the schemes added after path creation, or the components of new or existing plans obtained based on the results.

Further, detailed variables for each level are selected and analyzed in accordance with the study for 'integrated access to structure, institution and actor level'. The 'social, political and economic change factors' were extracted as sub-parameters of the structural level, the 'social justice ideology' and 'educational paradigm change' were extracted as sub-parameter variables of the institutional level, and the 'official actor's influence' was extracted and analyzed as sub-parameter of the actor's level.

B. Analysis target and analysis method

The analysis targets include the Open Secondary Schools policy, budget status from the preparation stage of the establishment of the Open Secondary Schools in 1973 to the present in 2019, education policy and information service project of the Ministry of Education, IT industry development history, lifelong education policy and education welfare policy.

A literature analysis was conducted for the analysis method. Specific data collection and research methods for target analysis are as follows. First, related domestic and international literature was collected for analysis of the history of the government's education policy and the Open Secondary Schools policies. Domestic literature included national documents(national policy data, press releases, policy implementation plans), research reports and research papers. To that end, the ministry and the National Center for Curriculum and Information were used to collect policy materials and press releases for each period and research reports conducted by state-run research institutes such as the KEDI and the Korea Research and Information Institute. Second, internal data of the Center for Digital Education Research were collected and referenced to analyze budget trends in the Open Secondary Schools policy, distribution of student membership, and information related to the establishment of various systems and business execution. Based on the data collected from various data, the development process of the Open Secondary Schools policy was analyzed, and the influence of these factors on the process of change of the Open Secondary Schools policy was analyzed by extracting the context factors of the structure, institution, actors' level that emerged during the development process. The variation path was then analyzed by compiling the analysis of these factors.

IV. Results of research

A. Structural Context Factors

The structural context factor is to be divided into social, economic and political factors based on the development process of the Open Secondary Schools.

1. Social fluctuation factor

1) Increase in the number of educational disadvantaged groups

'The educational disadvantaged groups' means people who are threatened with minimum educational opportunities due to socioeconomic backgrounds or who are inadapt with the educational system (Jeong Dong-cheol et al, 2016: 3). South Korea achieved rapid economic development through industrialization after the Korean War. Baby boomers(born in 1955-1963) who went to middle school in 1969 with a standardized middle school pass, and by the time they entered high school, the number of high school students had increased, as regular schools failed to accommodate all of these middle school students. In other words, many of the Bayboom generation failed to enter regular high schools, leaving them unsecured for "education opportunities" and falling into an educational outsider. This led the government to establish a new type of school called 'the Open Secondary Schools' to ensure their educational opportunities. This means that the social fluctuation factor of 'increase in the number of educational disadvantaged groups' has had a very significant impact on the start of the route of the Open Secondary Schools policy.

Since the establishment of the Open Secondary Schools, interest in 'the educational disadvantaged groups' has increased again since the IMF financial crisis started in 1996(Jeong Dong-cheol et al, 2016 : 3) and the number of students in middle and high schools has increased temporarily(KEDI, 2016: 115). In particular, The new government, which emerged after the foreign exchange crisis, has made social polarization a national task. This was the reason why the government invested 9.5 billion won($795,000, Exchange Rate Criteria at the time) in research to change the operating system of broadcasting schools.

2) Variation of student composition

The changes in student composition affected the change in the management of the curriculum of the Open Secondary Schools policies. Composed of students in 1974, the Open Secondary Schools ran the same curriculum as ordinary high schools until the sixth curriculum. However, during the 7th curriculum before the 7th curriculum(1997-2009), it should be noted that the curricula of the previous period were changed and applied collectively so that all schools across the country were equally affected by each revision, but from the 7th curriculum, they were operated at their discretion by region and by school. Unlike previous years, the curriculum has become more flexible. Under 'the Regulations for Enforcement of the Open Secondary Schools Establishment(Education Decree No. 683, 1996.5.9.)' the total number of classes for the Open Secondary Schools was adjusted to 168 units, equivalent to 80% of the current curriculum for general high schools, in consideration of the number of days of the Open Secondary Schools and attendance classes reduced to alleviate the burden of classes for students at the Open Secondary Schools to provide convenience of learning(KEDI: 2016, 131). This change can be seen as a change since 1995 when the members of the Open Secondary School's students took up a majority of younger, middle and older students than their school-age peers. It can be seen that "change in the composition of students" has affected changes in the Open Secondary Schools policies.

2. Economic fluctuation factor

1) Changes in industrial structure

The 'change in industrial structure' affected the beginning of the policy path. It was during the industrialization process that the government had been pushing forward with emphasis when the Open Secondary Schools were established. In the 1970s, the introduction of policies to foster heavy and chemical industries increased the demand for manpower to be deployed to industrial sites, which made it imperative to absorb unskilled labor and skilled workers to

industrial sites.(KEDI, 2002: 107). Urbanization and industrialization caused by economic development caused the rural population to move to cities where many jobs were created(Farming Newspaper, 2014.07.17). As a result, the population was concentrated in Seoul and Busan, and the number of disadvantaged education groups in Seoul and Busan has increased due to the entrance of the school age of baby boomers. Therefore, Seoul and Busan announced their plan to establish the Open Secondary Schools in 1972, and the government accepted and supported the plan, which led to the establishment of the Open Secondary Schools in 1974, so it is possible to judge the "change in the industrial structure" as well as the "increasing number of students" and the "change in the industrial structure" of the Open Secondary Schools policies.

2) Advancement of most advanced technology

The advancement of the most advanced technology has been a key factor in policy changes from the beginning of the Open Secondary Schools policies to the present. Specifically, the popularization of 'radio' was based on the beginning of the Open Secondary Schools policies, and 'computer evolution' and 'IT technology development', which have relied on radio for a long time since mid-1990s, have provided an opportunity to fundamentally change and develop into interactive classes. In addition, the development and distribution of 'smartphones' that were activated around 2010 has been a factor that facilitated the shift of the Open Secondary Schools policies to a customized operating system. However, it can be seen that the development of the most advanced technology is not necessarily the only factor driving the change in the Open Secondary Schools policies, given that efforts to switch to 'highway operating system through TV media' were made in 1987 but were soon frustrated by various contextual factors and that training was conducted through radio broadcasting over the next 10 years.

3. Political Fluctuations factor

1) Implementation of the local autonomy system

The 'local autonomy system', which was implemented in the early 1990s, restricted or promoted the Open Secondary Schools policies. The local education self-governing system was started in 1952 when 'the Education Act' was enacted and promulgated. It was partially implemented in June of the same year, but was abolished in the wake of the May 16 military regime in 1961, and the local education autonomy system was adopted at the municipal and provincial levels from 1964 to the 1980s. The local education autonomy system, which has existed nominally for more than 40 years, will not be established until March 1991 when 'the Act on Local Autonomy' was enacted or promulgated. It is also the first time in 40 years that a practical system that conforms to the original ideology of education autonomous governments will be implemented by electing an education committee to lead education autonomy in August and forming an education committee in each city and province. In accordance with the implementation of the local education self-governing system, the education committee was set up in each city and province as a deliberative and voting body separately from the general local council from the 1990s, and the education superintendent was required to review and approve the ordinance, budget and settlement proposals in advance and implement the office. In addition to the local education grants allocated by the central government, the expenses for education and education were to be covered by special fees for education, fees for use, and other property income related to education, local education finance grants, local education grants and transfer payments from the local governments' general accounts, and other

education scholarships. Securing the local education budget has always been an important issue since the local education autonomy system was implemented. Securing local education funds can be a requirement for local education autonomy to be realized properly, but with the responsibility limits of central and local governments unclear, local governments' transfer of education funds remains very small to this day(KEDI, 2016: 63-64).

However, this change led to more interest and participation in the city's efforts by making the Open Secondary Schools project implemented by 'necessity by city and province' rather than 'national policy'. For example, in Daegu, the nation's first branch the Open Secondary Schools was opened in 2016(KyungbukIlbo, 2016.01.06), and the youth class of the Open Secondary Schools was expanded, enabling the establishment of a public alternative school(Catholic Newspaper, 2018.02.25) for the first time.

2) Changes in regime structure and political ideology

It is analyzed that changes in 'government structure' and 'political ideology' had significant influence on changes in the Open Secondary Schools policies. Specific analysis details are as follows.

First, after examining the influence of 'change in regime structure' divided by 'military regime' and 'civilian regime', it showed that although the Open Secondary Schools policy started in the military regime, it remained unalterable despite the time demand for change in operating system(the development of TV media). Since 1993, when the military regime came to an end and the civilian government took power, the Open Secondary Schools policies have only attempted to transform the operating system, and have so far continued to develop.

Second, "Changing Political Ideas" can be measured as a national agenda focusing on each administration. Roh Moo-hyun regime is say we have as a 'resolve social polarization' as a core of previous administrations.(National Daily, 2002.12.23.; Monday, 2006.02.17). This was a national agenda meeting the purpose of the Open Secondary Schools. In particular, active investment is usually made in order to solve the national tasks, but the fact that the support for the operation cost of the center for the Open Secondary Schools was doubled in 2004 from the 2002 budget is analyzed to have nothing to do with the investment to solve the national tasks. The main reason for the rise in operating costs is the development of a cyber education system. The government has decided to invest 9.5 billion won over the next five years for "Study on the Development of the Open Secondary Schools Cyber Education System" from 2004(Korea Education Newspaper, 2003.11.06.)

The Roh Moo-hyun as president, just performed(2003.02.25.) and the media that these 'knowledge of the underprivileged, eliminating digital divide' through the aid was great. the Open Secondary Schools will be able to contribute to evaluating and (The newspaper, 2003.11.06) and as part of the Open Secondary Schools of 'lifelong learning for the Advancement of master plan' released by active in the Kim Dae-jung government in 2002. Policy "interactive multimedia educational environment, advanced technology through the turn of the learning styles", presented as promotes policy changes in that factor into reality.

B. Institutional Context Factors

The institutional context factor influences policies, ideologies, social values or consciousness through a control system that constrains or constrains actors to ensure the stability and continuity of the system(Shin Hyun-seok & Jeon Sang-hoon, 2007). In response, the government will look at the "social justice" ideology and "change in the education paradigm" as institutional context factors that have affected the Open Secondary Schools policies.

1. Social justice

Social justice ideology served as a policy facilitator that brought a lot of investment into the Open Secondary Schools during the transition period. In general, 'social justice' means 'distribution justice'. This is the inevitable result of bringing "social structural problems," or problems arising from the gap between the rich and the poor, to the core of "justice theory." The definition of distribution boils down to the question of "will it be distributed again according to market principles as it is capable?" "Should it be given a fair opportunity to make the same start and distributed?" and "Will it be viewed as random factors all of its birth backgrounds, socioeconomic benefits, innate abilities or talents and enhance distribution to the deficient through differential principles?" Rawls insisted that the share of distribution was unequal from a moral point of view, with the share of distribution determined by arbitrary factors such as birth background, social or economic advantage, innate ability or talent, or the free market that distributes the same birthright as the caste system, or the free market that officially recognizes opportunity equality and equality, and that only the 'principle of differentials' was equal to income and wealth distribution. That is, one's own interests from a given natural or social environment should serve the common good. This is seen as the most persuasive argument for advocating a more equal society under the ideology of liberal equality that human dignity should be respected equally by anyone. In general, 'social justice' tends to be based on the two principles of Rawls(principle of greatest liberty, principle of difference) and determines social justice based on the value of 'equality as fair opportunity equality' as the value to realize it. It is also emphasized that the role of the country, namely the realization of social justice through national policy, is to be seen as the best possible distribution(Kim Sang-cheol, 2018a). Therefore, using social justice as the basis for carrying out state affairs 'providing and distributing fair opportunities that make the start equal' means that the state will actively step in and play a role. The government took office in 2003, Roh Moo-hyun government has 'resolve social polarization' as catchphrases of its national policy and the social polarization phenomenon, which was exacerbated by the IMF financial crisis, had to be highlighted as an important task for the government at that time(Ohmynews, 2002.11.17.).

Roh Moo-hyun said, "The days when fouls and privileges are acceptable should be over. The refracted climate of justice being defeated and opportunists gaining power must be settled. Let's set the principles straight and build a trust society. Let's move on to a successful society where people who strive justly. Most people should feel proud of myself I can do for honesty and integrity.", former president of more evident in his inaugural address(Pressian, 2003.02.25). It is believed that the government's task of resolving social polarization is based on the ideology of social justice, and that it was able to provide unprecedented support in the management history of the Open Secondary Schools, which is to provide 9.5 billion won over five years to improve the operation system of the Open Secondary Schools as a way to solve the problem.

2. Changing Education Paradigm

The 5.31 Educational Reform, conducted in 1995 by the civilian government, can be said to be the beginning of a change in the education paradigm of "consumer-oriented, learner-oriented." This was part of an effort to break away from the infusion-style ideological education during the military regime. This change in educational paradigm has continuously affected education as a whole to date, and has greatly influenced the Open Secondary Schools policies. Specifically, it actively applied and researched education methods using IT

technologies to realize 'demand-oriented' and 'learn-oriented' and 'learn-oriented' and brought about a shift to a two-way teaching and learning system that conforms to the education paradigm of 'demand-oriented' and 'study-oriented' as 'cyber education system study' was developed in 1997 and 'cyber education system' was carried out in 2004.

C. Actor Context Factor

Actors contextual factors can be largely divided into formal and informal actors factors. The contextual factors of actors that influenced the Open Secondary Schools policies are the following.

1. Fluctuations in the official actors at the decision level

As we looked at 'the implementation of local autonomy system' earlier as a political variable, the implementation of local autonomy system has changed the system of administrative and financial support for the operation of the Open Secondary Schools, which can be seen as a change in the official actors for policy decision-making. In particular, the authority to finalize budgets and allocate budgets for cities and provinces was transferred to each city and provincial education office. In addition, all the subsidies (50% of the textbook bill), which was subsidized as part of the nation's lifelong education support policy, were paid to students based on the principle of paying the beneficiary. In line with this trend, the current operating expenses of the Center for Open Secondary Schools of the KEDI, which had been consulted and decided by the Education Ministry, were set up in consultation with the respective municipal and provincial education offices(KEDI, 2002: 314-315). Accordingly, all administrative and financial matters concerning operation of open high schools were changed to a structure decided under the consultation of the 'Committee for Operation of Open Secondary Schools', which consists of the Ministry of Education, the KEDI, and the city and the province. Accordingly, changes in the official actors on the determinative level were required to be readjusted to changes in the administrative and financial consultative structure, and served as factors limiting policy changes, such as constraining investments.

2. Fluctuations in the official actors at the executive level

There have been two changes in the "official actor's variation in the enforcement level" over the past 45 years. As the Educational Broadcasting System (EBS) affiliated with the KEDI became virtually independent in 1991, the rights to produce and transmit programs that the Center for Open Secondary Schools of the KEDI previously had were transferred to the EBS side. This created many difficulties in the cooperative system between the KEDI and the educational broadcasting service as the broadcasting transmission and contents operation were carried out separately. This change limited the policy shift to the Open Secondary Schools class operating system using TV media, and was the decisive reason why the Open Secondary Schools's educational media was forced to switch directly from radio to computer instead of going through TV. Next, it is assumed that the separation and independence of the attached EBS education broadcasting and multimedia education research center into 'Korea Education Broadcasting Institute' during the transition period was responsible for the broadcasting station's computer communication learning system, and that the switch to the operating system using TV media after the separation of EBS during the introduction and transition period had a significant impact on the Open Secondary Schools's operations. The rationale was that seven years after the establishment of the Korea Education Broadcasting

Institute, the Open Secondary Schools independently promoted and built the transition to a Cyber Education System(A Web-Based Interactive Education System). Specifically, the shift to a "double-way multimedia learning method" based online was promoted in 2002 under the "Comprehensive Plan for Lifelong Learning Promotion," as high-speed Internet networks were distributed to households in late 1990 and the number of Korean Internet users increased significantly from 138,000 in 1994 to 19 million in December 2000. In 2004, KERIS began pilot research by launching 'cyber-transfer learning' for ordinary students, and the KEDI launched 'Restudy on operation of the Open Secondary School cyber education system' to promote the transition to a new operating system independently of KERIS and expand the cyber education system to the previous school year in 2008. In summary, it is analyzed that the separation and independence of 'EBS' among the changes in the operational body acted as a limiting factor in policy changes, and the separation and independence of 'Multimedia Education Research Center' acted as a facilitator of policy changes.

D. Policy Shift Path

1. Path start

Path start means that the system is inadvertently initiated and created during critical periods of choosing one of several alternatives in relation to the development of the plan(Mahoney, 2000; 510-98512; Howlett & Rainer, 2006: 5; Ha Tae-soo, 2010: 49; Kim Sang-chul, 2018b). In this regard, the Open Secondary Schools policies were initiated by the establishment of the Open Secondary Schools in 1974 to solve social problems that were "increased in the number of students out of school" due to the increase of the school age population. However, it is also believed that the 'change in industrial structure' in the beginning of this path led to an increased need for manpower and remote education enabled by the 'popularization of radio' also contributed to the shift in policy.

2. Path dependent

Factors that affected the dependence of the path were 'change in the structure of the regime', 'implementation of the local autonomy system', 'change in official actors'. The "change in the structure of the regime" can be largely divided into military and civilian regimes. The Open Secondary Schools policies continued without much change for about 20 years from the beginning of the route during the military regime until the launch of the civilian government, and despite the rapid economic growth, they did not actively invest in high school classes using TV media, causing the media to fail to switch. In addition, 'the implementation of the local autonomy system' restricted a change in policy by bringing about a big change in the financial and operating systems of the Open Secondary Schools. "The change of official actors" caused confusion in the operation of the Open Secondary Schools as the main body of the government, the government and the state-run education office was changed to the municipal and provincial education offices at the decision level, and the EBS, which was in charge of broadcasting and transmission from the executive level, was separated from the KEDI, which resulted in the failure of the switch to the TV medium and the policy became the path dependent.

3. Path evolution

The Open Secondary Schools policies was 'path evolution' during the progress period. Factors

that have affected path evolution are "change in student composition," "advance of the most advanced technology," "change in regime ideology," "increase in the number of educational disadvantaged groups," "change in education paradigm," "change in official actors (executive levels), "implementation of local autonomy" and "social justice ideology." All of these factors served to facilitate policy changes to a Cyber Education System(A Web-Based Interactive Education System) during the transition period. In addition, the Roh Moo-hyun administration, which used the resolution of social polarization as its national agenda, could be seen as centering on the realization of 'social justice'. Following this, the policy once again influenced the path evolution, and on the basis of this, the Open Secondary Schools used could welcome the progress period. Unprecedented in history led to many policy path of the key factors in evolution. 'Changes in student composition', 'change in industrial structure', 'advancement of state-of-the-art technology', and 'change in education paradigm' have affected the policy once again by enabling 'customer-tailored education' to bring diversification of the operating system to the progress period. The 'policy shift to two-way teaching and learning system' and the 'policy shift to consumer-centered education' in the transition period correspond to a 'changes in the way the existing system operates' that 'components of the existing system remain the same and some new components are added to it.' which is 'layering'.

IV. Conclusion and Suggestions

A. Conclusion

The purpose of this study is to examine policies from the establishment of the Open Secondary Schools to the present through the historical new Institutionalism, and to propose what policy efforts are needed to develop policies more suitable for future educational environments through analyzing the factors and policy pathways that specifically promoted and constrained policy changes. Two of the following were set as research issues. "What are the structural, institutional and actor contextual factors that facilitate and constrain changes in the Open Secondary Schools policies?" "What about the interaction between the structural, institutional and actor contextual factors that facilitate and constrain changes in the Open Secondary Schools policies?". The conclusions of this research question are as follows.

First, the context factors that promoted and inhibited changes in the Open Secondary Schools policies are 'change in industrial structure', 'advance of the most advanced technology', 'increase in the number of the educational disadvantaged groups', 'change in the composition of students', 'implementation of local autonomy system', 'change in the structure of government', 'change of political ideology', 'change of education paradigm' and 'change of public actors'. If you look at this by level, it is as follows: Structural context factors such as 'change in the industrial structure' and 'advancement of the most advanced technologies', 'increase in the education field' and 'change in the composition of students', 'Changes in Political Ideology' served as factors that facilitated changes in policy. 'Implementation of the local autonomy system, 'Changes in the structure of government' served as a limiting factor for policy changes. The institutional context factors 'socialist ideology' and 'education paradigm change' served as factors that promoted policy changes. An actor context factor, 'formal actor variation', served as a factor that restricted or facilitated policy changes.

Second, the structure, institution and actor-level contextual factors interact with each other and facilitate or constrain policy changes. The implementation of the local autonomy system, which is a factor of 'path dependence' and the related level of the structure of the port, affected the 'official actor's variation' that was a factor of the actor's level and restricted policy

changes. In addition, 'advance of the most advanced technology' and 'change in the structure' factors of the structure level affected each other and restricted policy changes. In other words, the 'military regime' that is the 'change in the structure of the regime' functioned as a limiting factor in which the conversion of the medium was not realized by not actively investing in the Open Secondary Schools's operation despite the effect of the 'advancement of the most advanced technologies'. With regard to path evolution, 'change in the composition of students', 'Increase in the number of educational disadvantaged groups', 'advance of the most advanced technologies' and 'change in the ideology of the regime' led to changes in the progress period's policies by promoting the demand-oriented 'change of education paradigm' which is a system-level context factor. In particular, the 'change in the ideology of the regime' was a decisive factor in the expansion of investment into the 'cyber education system' in the transition period in conjunction with the 'Social justice', which was a context factor for the system level. Eventually, the contextual factors of structure, system and actor level interact with each other or on their own, constraining and promoting changes in the Open Secondary Schools policy.

B. Suggestion

The following policy efforts will be needed for Korea's the Open Secondary Schools to function in a future society.

First, it is necessary to build a human and physical infrastructure that can respond sensitively to cutting-edge technology changes. 'Changes in the most advanced technologies' were analyzed to be a key factor that promoted policy changes from the beginning of the Open Secondary Schools policies to the present. This will continue to have an impact in the future, and a virtuous circle structure should be established to generate student demand based on the human and physical infrastructure that can respond sensitively to these technological changes. In particular, the Open Secondary Schools should be able to establish a big data analysis platform and use it to present policy directions. The world is now at a time of "digital transformation" that transforms the working environment of companies and users' daily lives on a digital basis. The education sector is no exception. The results of all educational activities are being digitized. Smart textbooks, online class operations for middle and high school students, and the introduction of tutors robots to elementary schools in 2019, are digitizing everyday education, and the Open Secondary Schools is also in the midst of such changes. We should consider the data to be an important resource and collect and analyze it. This is because data comes from digital, and digital has substance through data. The reason why the Open Secondary Schools is closer to the educational environment of the future than ordinary middle and high schools may be due to the cyber education system available online. Therefore, instead of letting the accumulating "data" pile up, it should be able to provide big data analysis systems for teachers to make full use of big data collected through online learning, and analyze big data in various areas, including the learning trends of the entire student, to present policy directions.

Second, it is necessary to develop customized educational contents and to improve the educational environment for the education disadvantaged group. 'Changes in student composition' served to promote policy changes. The multicultural era will expand in the future along with the era of low birth rate and aging, and a "change in the composition of students" is expected. Therefore, it is necessary to respond to the "change in the composition of students" through efforts to develop customized educational content for the special and minor classes and improve the educational environment.

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