Vocational Education Policies in the Republic of Korea:
Past, Present and Future

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Foreword

The Korean Peninsula fell into ruin as the Korean War raged after Japanese colonial rule. The Republic of Korea came out of these ashes, achieving a marvelous degree of economic development over the ensuing half-century. At independence, the country was among the poorest in the world, but only 70 years later, the Republic of Korea is now at the threshold of standing among the most advanced. Korea lacks sufficient natural resources, and has but one unique asset: its people. We have no choice but to create the impetus for development through our education policies. After countless attempts to incorporate the education models of advanced countries that ultimately proved unsuitable for the characteristics of this land, Korea has finally developed its very own vocational education system. We have now reached the point of exporting to developing countries knowhow on development of our unique vocational education.

This research report provides an overview of the history of changes in vocational education in Korea's 70 years since independence. It considers, in-depth, the nation's major vocational education policies to determine their positive and negative impacts over time and predict how they will influence changes in vocational education in the near future. In doing so, it points to the direction and tasks for developing future policy in this area. We hope this research report will be used by vocational education researchers, policymakers and on-site educators to reflect on the past and consider the future of vocational education. Chapter 1 of this report was written by Dr. Lee Mu-keun, chapter 2 was written by Dr. Park Dong-yeol, Dr. Lee Mu-keun and Dr. Ma Sang-jin, and chapter 3 was written by Dr. Park Dong-yeol.

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Finally, it should be noted that the policy measures and opinions presented in this report are the opinions of the research team, and do not represent the official views of the organization.

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Preface

Korea achieved remarkable economic development over the 70 years following its independence, most of which was concentrated in the last 50 years. The country even became an Official Development Assistance (ODA) nation 20 years ago, crossing into advanced nation status. One factor that was a key contributor to Korea's personal, social, and national development despite its lack of natural resources was education, especially vocational education, which nurtured a skilled labor force. This has led Southeast Asian countries and other developing countries to use Korea's vocational education policies as a benchmark and attempt to train the industrial labor force they require.

However, despite such needs from abroad, there are few exhaustive and systematic studies that analyze the vocational education policies that have been implemented over the 70 years following Korea's independence. There is an insufficient number of studies that focus on which vocational education policies were established and how they evolved over the 70 years following independence and with each administration; how they were designed, decided upon, and implemented as well as what they achieved; the factors that affected these processes; which vocational education policies were successful and which were unsuccessful and why; and the implications this information has on future vocational education policies.

Although Korea's vocational education policies contributed greatly to the country's economic development and many developing countries have been using them as a benchmark as discussed, there is no comprehensive evaluation system to assess what they achieved in previous administrations, and the policies themselves are said to lack consistency due to the variance in each administration's views and goals. It can be said, however, that the vocational education policies over the 70 years following independence have managed to eventually maintain a certain level of consistency and systematic approach, while at the same time incorporating the economic, social, and cultural factors of the times.

Such examples of consistency can be found in the policies promoted by the current government, such as the increase in scale of vocational education, the implementation of joint industry-school apprenticeship schools, and the specialization of community colleges, as these policies have much in common with the 50:50 Plan, the dual program (2+1) of Specialized Technical high schools, and the community college specialization funding projects seen in the past. In spite of this, there has not been an adequate continuous and comprehensive policy evaluation system for these vocational education policies over the 70 years following independence, and this poses a great challenge as the lack of such a system has prevented the development of a vocational education model that is suitable for Korea based on vocational education policy evaluations. It is therefore necessary to consider the history of change in the vocational education policies over the 70 years following independence, build an analytical frame (plan) for vocational education policies, and carry out continuous vocational education policy evaluation studies to prevent the recurrence of these mistakes.

Moreover, factors such as the diminishing school-aged population, the strengthening of vocational education capabilities, the rising demand for a technically-skilled labor force, and the rapid development of information technology and intelligence (artificial intelligence, the Internet of Things, 3D printers, etc.) are also expected to affect vocational education considerably. The sharp decline in the number of jobs and the uncertainty of new jobs expected to result from future changes demands not only an overhaul of the current vocational education system but also a shift in the paradigm of vocational education. The bigger issue is that an overhaul in response to such future changes must take place in a short amount of time.

This study therefore looks at the implications of the changes observed in vocational education policies over the 70 years following independence in order to establish the vocational education policy of the future and propose the direction it must take as well as implementation strategies.

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Changes in Vocational Education Over 70 Years After Independence

Section 1. Overview of Vocational Education Prior to Independence

1. Vocational Education Policies Before Independence (1945)

Even prior to independence (1945), Korea had organized work-related education programs for agriculture, industry and commerce, structured within a systematic vocational education framework. Vocational education prior to independence can be classified into two main periods: application of modern vocational education, which can be called the embryonic stage (1899–1910), and the vocational education period under Japanese colonial rule (1910–1945).

A. The Vocational Education System and Policy Changes in the Final Years of the Joseon Dynasty

Research by the Korea Research Institute for Vocational Education & Training (1998) shows that modern vocational education began in Korea during the Gwangmu Reform Period (1896–1904). During this time, vocational education was actively being implemented along with commerce and industry promotion policy. Reform of vocational education began with announcement of rules and regulations for commerce and industry high schools in June 1899. However, the deep-rooted contempt for vocational work and the inadequacy of state systems meant that commerce and industry high schools were unable to attract students and therefore operate properly and, as a result, there was some question about whether commerce and industry high schools (in 1899) should be viewed as official schools. That being said, considering the fact that there was a public announcement of rules and regulations for these schools by the government, which also appointed principals and instructors to these schools, and that the Korean Empire put active effort into

creating the first vocational education program, this period is likely historically meaningful. The announcement of rules and regulations for commerce and industry high schools served as momentum for the establishment and operation of agriculture, commerce and industry schools (1904), mining schools (1900), electrical skills schools (1900), telegraphy schools (1900), railroad schools (1900), Nakyeong School (1899), Boseong College (1905) and other institutions. In consideration of this, one could describe the years 1899–1910 as the embryonic period of vocational education.

In 1882, machine operation students were sent to China for on-the-job training in factory environments, and in 1883, China invited four people to improve their industrial skills (Kim Jong-cheol et al., 1969: 221). Subsequently, in 1886 the Royal English School introduced western agricultural practices as a single academic subject for the first time, indirectly offering practical education. The first electrical skills schools were also established in 1897, which offered education in telecommunications, and commerce and industry high schools were built in 1899. These schools were integrated into agriculture, commerce and industry schools in 1904 before the agriculture and forestry schools split off in 1906 (Lee Mu-keun, 2006: 83).

In the third year of King Sunjong's reign (1909), the Vocational School Ordinance and Vocational School Operating Regulations were announced and on July 10th that same year, vocational education guidelines were presented through the Ministry of Education's Instructions (Lee Mu-keun, 2006: 83).

According to the Vocational School Ordinance, vocational schools were to be divided into agricult ure and commerce high schools and technical schools, and education periods were to be 3 years in total, but could be reduced by a maximum of 1 year depending on the circumstances of a particular region. Further, the Ministry of Education Instructions stated that study periods could be extended by 1 year to make a 4-year program (Lee Mu-keun, 2006: 83).

According to the above Ministry of Education Instructions, the goal of vocational schools was to "provide appropriate education to individuals who wish to take part in various vocational activities and, with that in mind, the aims of such education are different from those of regular educational practices. Therefore when implementing, appropriate educational practices must be carried out for the sake of illuminating the current and future trends of regional industries based on this essential goal." (Lee Mu-keun, 2006: 83).

Further, while the Vocational School Ordinance distinguished between agriculture and commerce schools and technical schools, the Ministry of Education Instructions stated that, "... there must be flexibility in the process ... regarding whether one simply selects agriculture or industry or commerce or combines two or three of these into one curriculum and adds either forestry or sericulture ... depending on community situation," thereby instilling flexibility in the field selection process that did not go against the goals of education (Lee Mu-keun, 2006: 84).

In addition, supplementary vocational schools were established and implemented during the 4th year of King Sunjong's reign (1910). In these, teachers could teach 2-year courses at times and seasons convenient to them based on the circumstances of their region and the types of jobs they were involved in (Lee Mu-keun, 2006: 84).

As shown above, vocational education in the final years of the Joseon Dynasty represented a period in which new systems were introduced by Korea. However, despite this introduction, there was no opportunity to implement these systems as planned. Moreover, the changes of that period meant that these new systems were constantly in flux (Lee Mu-keun, 2006: 84).

However, it is clear the government desired to attain prosperity by moving away from Confucianism, which favored literature and theoretical discussion and looked down on vocational work, in order to embrace practical studies to enrich the nation. As such, this era can be said to be greatly significant as the starting point for the country's modern vocational education practices (Korea Research Institute for Vocational Education & Training, 1998: 33–41, 311–314, 508–516).

B. Vocational Education Under Japanese Colonial Rule

The entire transformation process of vocational education under Japanese colonial rule, from the annexation of Korea to Japan in 1910 to the end of World War II and official independence on August 15th, can be classified into three main periods (Lee Mu-keun, 1984: 41–42).

1) The Joseon Education Ordinance Period (1911–1922)

According to Vocational Education Theory (Third Edition) (Lee Mu-keun, 2006), vocational schools in this first period fell into four categories: small-scale vocational schools, agricultural schools, commerce high schools, and technical schools. The goal of this education was to teach simple and appropriate knowledge and skills to people who would be engaging in agricultural,

industrial, and commercial activities (Lee Mu-keun, 2004: 84–85).

Small-scale vocational schools grew out of the old supplementary vocational schools, and it was recommended that they should be implemented within elementary and vocational schools. There were no entrance qualifications, study term lengths, or educational curricula and anyone who wanted to learn about vocational work could receive appropriate vocational education. Further, students could also attend classes at night, on Sundays, or during summer and winter holidays. They could even select a season during which they wished to study (Lee Mu-keun, 2004: 85).

Only students who had completed 4-year elementary schools could enter agriculture, commerce and technical schools, where study periods lasted two to three years. Courses taught at each school included Japanese ethics, vocational work-related subjects, and the six compulsory courses of hands-on learning, Japanese, Korean, Chinese characters, mathematics and natural sciences. Additional courses were offered in accordance with the circumstances and requirements of each region. Focus was on contributing to industrial development by offering practical education that did not depend on theory, but rather focused on hands-on learning (Lee Mu-keun, 2004: 85).

2) Vocational Education During the Revised Education Ordinance Period (1922–1938)

According to Vocational Education Theory (Third Edition) (Lee Mu-keun, 2006), the 2nd period of the transformation of vocational education (1922–1938) had the following characteristics during the Japanese colonial era (Lee Mu-keun, 2004:85).

In 1922 the Joseon Education Ordinance was largely reformed to redefine the school entry qualifications for each grade and lengthen the periods of study by 1–2 years. This was the result of the Japanese government’s move toward cultural policy in response to the backlash against its policy of force, as manifested by the March First Independence Movement that began in 1919 (Lee Mu-keun, 2004: 85).

Entry to vocational schools was given only to those completing 6 years of elementary school, and the study period was extended from 2–3 years to 3–5 years (Go Jae-seop, 1983:11, Lee Mu-keun, 2001: 11–15).

The types of vocational schools available also increased. In other words, while agriculture, industry, and commerce high schools, commercial shipping schools, fishery schools, vocational

schools and supplementary vocational schools were established, only vocational education and supplementary vocational schools were permitted to accept students who had completed only four years of elementary school. The study period at these schools was set as two years (Lee Mu-keun, 2004: 85).

As before, vocational school education was oriented around hands-on study. However, character building and the development of common knowledge were given special attention to ensure elementary subjects were not neglected (Lee Mu-keun, 2004: 86).

At the same time, in the upper grades a set time period was determined to focus solely on hands-on study, and study in factory settings and other such facilities largely replaced school classroom education. The aim here was to give an educational experience closely related to the actual conditions of industries. These measures taken to integrate school education with hands-on study share a commonality with today's field work, workshop hands-on study, and industry-school cooperation initiatives. This shows the synergy between classroom learning and fieldwork essential for effective vocational education and training also existed at that time (Lee Mu-keun, 2004: 86).

Though the Japanese government was moving away from a forceful style of governance toward a cultural policy after the March First Independence Movement, the lives of Koreans became more difficult as a result of the ensuing worldwide economic depression, leading to a variety of campaigns to expand vocational education (Lee Mu-keun, 2004: 86).

One example of this is the farming community education initiative to foster the development of self-reliance in farming communities. Earnest vocational education corresponding with the needs of farming, mountain and fishing villages was implemented in elementary schools to spark a revival of these communities (Lee Mu-keun, 2004: 86).

3) Vocational Education During the 3rd and 4th Education Ordinance Revisions (1938–1945)

According to Vocational Education Theory (Third Edition) (Lee Mu-keun, 2006), the 3rd period of the transformation of vocational education during the Japanese colonial era occurred from 1938–1945. During the period in which Japan entered the Sino-Japanese War and the Pacific War, all education systems and content were revised to cultivate citizens suited to the Japanese Empire, and

vocational education in particular was implemented to assist the war effort (Lee Mu-keun, 2004: 86).

Vocational education at this time enhanced hands-on training to develop manpower and increase industrial productivity to this end (Lee Mu-keun, 2004: 86).

The number of technical schools increased greatly after a period of slow growth and the number of commerce high schools also grew. However, commerce high schools were later reduced and reformed into agriculture and technical high schools. The number of agriculture schools also increased significantly at the same time. This was a result of efforts to strengthen agricultural education towards success of the 3rd grain production increase plan. This sustained increase in agricultural schools meant that there were 54 such schools after the war and the number of agricultural supplementary schools grew to 94 (Lee Mu-keun, 2004: 86).

Not only did vocational education of the time lead to a great reduction of non-vocational subjects and a focus on practical courses, normal classroom study for students was reduced so they could engage in productive state service activities under the pretext of gaining practical skills, resulting in a lot of free labor at hands-on study and production sites (Lee Mu-keun, 2004: 81).

Section 2. Main Changes in Vocational Education Over 70 Years After Independence

1. Secondary Vocational Education Policy

A. Vocational Education after Independence to the End of the Syngman Rhee Administration (1945–1960)

1) The Birth of Policy Focusing on Vocational Education

Vocational education under the United States military government after August 15th liberation was handled by the 6th Sub-committee, the vocational education department of the Joseon Education Council that was responsible for long-term educational development planning.

According to Oh Seong-cheol et al. (2015), despite the explosion of Korean education fervor for advanced schooling that had been suppressed under the Japanese colonial government, the Joseon Education Council and other government-level agencies focused on expanding secondary

education centered on vocational schools. In the Joseon Education Council debate in February 1946, participants discussed a plan to have 60% of elementary school graduates enroll at vocational middle schools. This plan was announced by Yi Inki of the 2nd Department, and of the one-third of elementary school graduates expected to enroll in middle schools in 1946, 60% (approximately 63,000) were set to enroll at vocational middle schools.

The idea to have vocational fields comprise a larger proportion of the education was applied consistently across the board for middle schools, high schools and universities. According to the plan, 60% of all middle schools and 70% of all high schools and universities should be vocational. Plans were established to expand secondary education centered on vocational training that would be gradually implemented over a 5-year period, with 460 additional middle school classrooms and more than 700 vocational school classrooms established initially.

However, these plans were not properly implemented. An examination of the number of enrolled students in secondary education institutions directly after independence in 1947 shows that there were more students in general schools than vocational schools. A division of middle schools into primary and secondary levels shows that in the case of primary middle schools there were more general than vocational schools and students. The number of secondary education schools and students in 1947 has been organized into <Table 1-1>.

<Table 1-1> Number of Secondary Education Schools & Students (1947)

(Unit: number of schools, persons)

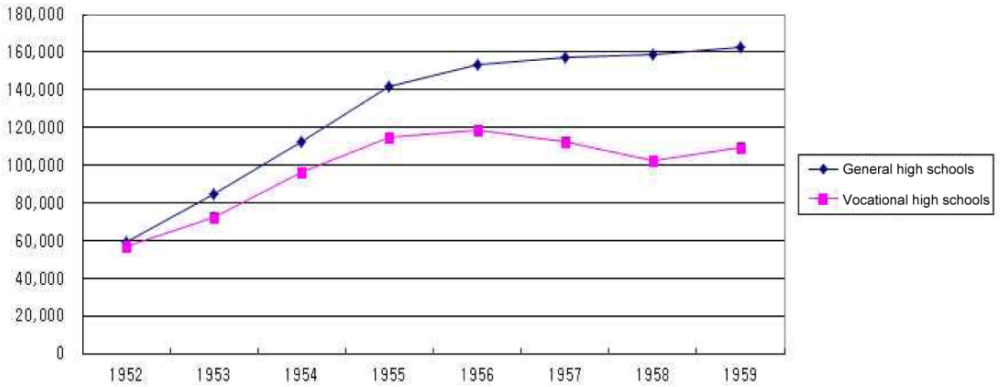
Field \ Level		Primary Middle Schools		Secondary Middle Schools	
		No. of Schools	No. of Students	No. of Schools	No. of Students
Vocational	Agriculture	64	12,294	53	23,475
	Fisheries	2	158	4	1,390
	Technical	6	1,407	19	15,004
	Commerce	19	3,712	24	15,114
	Subtotal	91	17,571	100	54,983
General		81	15,411	118	70,056
Total		172	32,982	218	126,089

Source: Jeong Tae-su (1992), p. 1062

The trend of greater enrollment in general schools than their vocational counterparts did not change later, but actually increased. A look at the number of students in each field in the 1950s

confirms this trend. Although it is impossible to confirm to what degree secondary vocational school enrollment increased after the establishment of the South Korean government, at the very least it is apparent that the percentage of students enrolled in general schools was higher than those in vocational schools with the onset of the 1950s. [Image 1-1] displays this trend.

[Image 1-1] Changes in the Number of Students in Humanities/Vocational High Schools in the 1950s



Source: Oh Seong-cheol et al. (2015), p. 53

The Republic of Korea government was later established in 1948 and in the 1949 Education Act, 6 rules were created in relation to the school system. One of these stipulated that "Secondary education must be implemented according to a ladder system with the condition that general education to prepare for university enrollment and vocational education to prepare for the world of work must be included at the high school level." Furthermore, the fact that when the Education Ministry was established 1 of its 5 departments was the Science Education Bureau (in addition to the Fisheries, Commerce, and Agriculture Education departments, and the Science Promotion Department) shows the importance the government placed on vocational education (Ministry of Education, 1998a: 544).

2) Emphasis on One-man, One-skill Education Approach in Vocational Education Policy

The education ministers at the time stressed the promotion of vocational education as contributing to the economic development of citizens (Korea Research Institute for Vocational Education & Training, 1998: 372). In particular, Dr. Baek Nak-jun, the 2nd Minister of Education, emphasized this One-man, One-skill Education policy whereby each student was to refine their abilities in at least one skill. Further, he created a campaign to inspire people on to diligence and frugality and engaging in honest hard work, and during and after the war he focused on productive education for reconstruction. To achieve these initiatives, at least 10% of courses had to be vocational for middle school students, while this number increased to 15% for high school students (Ministry of Education, 1998a: 545-546).

3) Expansion of Vocational High Schools

In order to emphasize production education at the time, the ratio of general high schools versus vocational high schools was adjusted to 3:7 in an effort to expand vocational education. The result was a great increase in the number of vocational high schools from 1952 to 1958. The number of schools increased by 73% (160→277), the number of classes increased by 78% (1,599→2,851), and the number of students increased by 80% (56,929→102,559). Most notably, within this same period, the number of agricultural high schools increased 423% (30→127) while the number of technical high schools increased by 175% (28→49) (Korea Research Institute for Vocational Education & Training, 1998: 381).

One approach to expanding vocational education and satisfying the educational demands of regional society was a trial launch of a comprehensive high school system unrelated to vocational schools whereby general school curricula and vocational school curricula would be integrated within a single school. Although the comprehensive high school system was expanded to include 60 schools by the end of the 1960s, it failed to achieve significant results.

4) Establishment of Administrative Bodies to Support Vocational Education

A Science Education Bureau was established within the structure of the Ministry of Education, and affiliated departments of Science Promotion and Agricultural, Commerce and Fisheries Education

departments were also created and given responsibility for vocational education-related tasks. The desire to rebuild the country through vocational training is evident through these initiatives.

5) Enhancing In-Service Education of Vocational Instructors

The rapid increase of vocational high schools led to a shortage of practical course teachers. A vocational teacher training center was thus established with a 1-year curriculum. In addition, One-man, One-skill Education teacher in-service education classes and other in-service education classes were continued to improve the proficiency of vocational teachers (Lee Mu-keun, 1969: 5).

6) Enactment & Implementation of a Curriculum Time Allocation Standard

Because there was no vocational school standard for curricula, each school implemented its own. The "National School, Middle School, High School, Teacher's College Curriculum Time Allocation Standard Act" (Ministry of Education Ordinance, Article 76) was enacted to remedy this situation. In addition, 30% of vocational high schools were organized around professional subjects.

7) 5-year Vocational & Technical Education Plan

The Ministry of Education established a 5-year Vocational & Technical Education Plan in 1957 with the aim of increasing the number of administrative positions in charge of vocational and technical education, expanding related institution facilities, assisting teacher training, advocating a healthy perception of vocational education among the populace, and other such initiatives. This 5-year plan was implemented in 1958 (Ministry of Education, 1998a: 547-548). However, it remained ineffective as it ignored actual needs on the ground in favor of the desired aims and suffered from a lack of funding.

8) Resolution to Enact the Vocational Education Promotion Bill

The Central Education Committee resolved to introduce a Vocational Education Promotion Bill and to promote vocational education in general. This bill established the Vocational Education

Commission under the Ministry of Education, and authorized the dispatch of public employees in charge of vocational education guidance to each city and province. Vocational and technical training institutions were established in important industrial institutions, the national treasury covered half the costs for facilities, infrastructure, experiments and hands-on learning, vocational-technical bonus pay was granted to national government-affiliated teachers in charge of vocational and technical education (30% of their salaries), earnings were allowed from sales of products created by national government-established institutions to be used by the schools that created them, class fees were reduced for vocational students at national government-established schools (less than half of non-vocational schools), and books teaching practical skills to private school students were provided free of charge. However, the conditions of the time did not permit this bill to be enacted into law.

9) Enactment & Implementation of Abacus Skill Evaluation Regulations

Regulations on evaluation of abacus skills were enacted to improve the practical abilities of commerce high school students (May 19, 1955. Ministry of Education Ordinance, Article 40). Between 1955 and 1957 a total of 3,372 students completed grades 1–7 (Jo Seong-hee, 1991: 66).

B. Vocational Education in the Age of Industrialization (from President Park Chung-hee to President Chun Doo-hwan) (1961–1987)

1) The Park Chung-hee Administration's Vocational Education Policies (1961–1979): The Age of Establishment of a Foundation for Vocational Education & Qualitative Growth

A) Secondary Vocational Education Policy & Characteristics

The Park Chung-hee administration promoted economic development through a series of 5-year plans beginning in 1962. To foster a strong desire in Koreans to improve living conditions in the country, a desire impelled by the Saemaeul (New Village) Movement, the government exercised strong leadership in developing economic plans that would propel national economic growth. After the 1950s era of farming and manual industry, the first and second 5-year economic development periods in the 1960s were brought about on the back of labor-intensive light industry. In this decade development of the cement, oil refining, fertilizer and other key national industries became

a priority. Other light industries for export goods such as wigs, footwear and textiles were also developed. Within the third and fourth 5-year plans carried out in the 1970s, steel, chemicals, nonferrous metals, machinery, shipbuilding, automobiles, and electronic engineering were developed (Jeong Ji-seon et al., 2013: 6-8).

Contemporaneous to industrial development was the rapid increase in demand for technically skilled human resources as shown in <Table 1-2> and <Table 1-3>. This increase in demand magnified the importance of vocational and technical education.

<Table 1-2> Demand (by No. of Persons) for Technically-Skilled Personnel per Year (1962–1966)

(Unit: persons)

Type		1961 (Base Year)	1962	1963	1964	1965	1966
Total	Persons	299,414	349,436	418,164	495,632	549,768	601,763
	Rate of Increase (%)	100	117	140	166	184	201
Engineers	Persons	8,616	10,994	12,814	15,032	17,055	19,411
	Rate of Increase (%)	100	128	149	174	198	225
Technicians	Persons	11,128	55,509	66,219	78,266	87,739	97,059
	Rate of Increase (%)	100	499	595	703	788	872
Craftsmen	Persons	279,670	282,933	339,131	402,334	444,974	485,293
	Rate of Increase (%)	100	101	121	144	159	174

Source: Republic of Korea Government (1962), First 5-year Technical Skill Promotion Plan: 1962–1966; Reproduced from Kim Yoon-tae (2002), p. 56

<Table 1-3> Demand (by No. of Persons) for Personnel with Skills in Science & Technology per Year (1967–1971)

(Units: 1,000 persons, %)

Type	Total	1967	1968	1969	1970	1971
Total	315.1	61.1	62.2	64.3	63.8	62.7
	(400.1)	(68.0)	(73.4)	(85.7)	(86.5)	(86.5)
Scientific Engineers & the Professions	93.0	18.0	17.9	19.6	19.3	18.2
	(144.1)	(27.0)	(29.3)	(29.8)	(29.0)	(29.0)
Technicians	57.1	9.5	10.4	11.3	12.4	13.5
	(32.7)	(5.2)	(5.9)	(6.3)	(7.6)	(7.7)
Craftsmen	165.0	34.6	33.9	33.4	32.1	31.0
	(233.3)	(35.8)	(38.2)	(49.6)	(49.9)	(49.8)

※ Numbers within ( ) represent current educational institution supply capabilities.

Source: Republic of Korea Government (1966), Second 5-year Technical Skill Promotion Plan: 1967–1971; Reproduced from Kim Yoon-tae (2002), p. 62

In order to promote the development of these industrial human resources there was a long-sustained policy of enhancing vocational education by increasing the number of schools based on a 3:7 general school-vocational school ratio. This led to the number of vocational schools surpassing that of general schools by 1968. However, the high school standardization policy of 1974 led to the establishment of many new general high schools and their subsequent increase in overall number (Jo Seong-hee, 1991: 67).

As the Ministry of Education implemented a multilateral vocational education policy, a foundation for such education was constructed and considerable results realized. The policies that most represent vocational education in the 1960s and 1970s were: establishment and promulgation of a vocational high school curriculum; establishment of the Vocational Teacher Education Department; implementation of the vocational education budget included in the special account for economic development; mandatory national government support of experiment and hands-on learning costs; enactment of the Industrial Education Promotion Act; invigoration of cooperation between industries and schools through this Act, including the expansion of industry-school sisterhood partnerships; normal implementation of educational curricula and practical skill

competitions; establishment of a 5-year plan to promote science and technology education; increase in the variety of technical high schools and designation of model agricultural high schools for development of technically-skilled personnel required by each industry; support for establishment of technical high schools by large companies; preferential treatment for those seeking entrance into universities in the same field as their high schools; military service benefits; financial support for establishing a farm after graduation and the sending overseas of those inheriting farms to learn new skills; increasing the number of vocational high school teachers and students; loans for expanding educational facilities and infrastructure; creation of a national technical qualifications system; and establishment of industry-affiliated middle schools and high schools along with special classes (Im Cheon-sun et al., 1999; reproduced from Lee Mu-keun, 2006: 88).

However, some drawbacks during this period were the lack of a system to attract outstanding students and practical course teachers, insufficient funding for education, an imbalance in policies between vocational high school fields, a lack of consistency in the development of vocational teachers, and negligence in education-related factors when deciding upon vocational education policies (Lee Mu-keun, 2006: 88).

The following is a more concrete discussion of some of the main types of these policies.

B) Vocational Education Promotion Policy (1963)

According to the Korea Research Institute for Vocational Education & Training (1998), the Park Chung-hee administration announced and began implementing vocational education promotion policy in 1963 to develop technical skills in personnel needed to bring about the goals in the aforementioned two 5-year economic development plans. The policy contained the following 6 measures:

1) More vocational schools were established and vocational skill training institutions became affiliated with general manufacturing businesses to enable short-term training of the craftsmen needed to carry out the first 5-year Economic Development Plan.

2) In-service education for teachers of agricultural, technical, and fisheries courses to increase their proficiency was emphasized.

3) The Vocational Education Commission was established within the Ministry of Education and the costs of hands-on learning were covered for students at national technical high schools and fisheries high schools, while the time spent on practical hands-on learning was extended and more practical course teachers dispatched to schools.

4) Four vocational schools across the country were reformed into professional schools (such as 5-year vocational high schools) to serve as central technician training institutions.

5) In order to secure the technically-skilled human resources needed to successfully implement the first 5-year Economic Development Plan, the Industrial Education Promotion Act was passed by the Supreme Council.

6) A curriculum for vocational high schools was announced, and clear goals and guidelines were presented.

C) Policy to Increase Enrollment Quotas at Vocational High Schools & Universities

As stated previously, the demand for skilled human resources sharply increased in the 1960s and 1970s. As shown in <Table 1-4>, this led to a great increase in the number of students attending vocational high schools, including technical and commerce high schools. The ratio of general high schools to vocational high schools changed from 55.2:44.8 in 1963 to 48.4:51.6 in 1969, 55.8:44.2 in 1979, and 64.8:35.2 in 1989. The ratio of general high school students to vocational high school students changed from 58.7:41.3 in 1963 to 55.5:44.5 in 1969, 56.7:43.3 in 1979, and 64.1:35.9 in 1989. A look at these changes shows that the ratio of students attending general high schools to students attending vocational high schools reached its peak in terms of balance in 1980 at 55:45. By 1989 64.1% of students were in general high schools while the number of vocational high school students had dropped to 35.9%. Further examination shows that the number of agricultural high schools continued to increase after the government first established them, reaching a peak in 1969, only to begin declining in 1971, representing a 51.3% decrease in the number of these schools by 1989 over the number in 1962. The number of technical high schools continued to

increase to the point that there were 216.7% more by 1989 then there were in 1962. Commerce high schools also showed a 224.2% increase in number over 1962 (Jo Seong-hee, 1991: 147, Appendix 4).

An examination also shows that the number of agricultural high school students reached a peak between 1982 and 1983, which shows a 158% increase over 1962, falling back to a 125.7% increase by 1989. The number of technical high school students continued to increase to the point that there were 582.9% more students in them by 1989 over 1962. During this same period, the number of commerce high school students increased the most: by 847.5% (Jo Seong-hee, 1991: Appendix 4, 9-10).

To attract outstanding students to vocational high schools, class fees were reduced to 10–20% lower than general school students. Student loans were also granted for vocational high school students with this in mind, with the scope of those eligible and the amount of financial support provided gradually increasing (Jo Seong-hee, 1991: 146).

<Table 1-4> Changes in No. of High Schools & Students per Field

(Unit: number of schools, persons)

Year	General [1]		Vocational								Student Ratio (%) (General: Vocational)
	No. of Schools (A)	No. of Students (B)	Agricultural High Schools		Technical High Schools		Commerce High Schools		Total [2]		
			A	B	A	B	A	B	A	B	
1962	338	199,352	115	35,281	48	33,812	91	44,508	-	124,341	61.6:38.4
1963	364	213,931	113	41,042	39	36,848	96	52,984	296	150,382	58.7:41.3
1964	396	236,951	118	45,059	43	38,293	98	61,739	306	162,666	59.3:40.7
1965	389	254,095	114	42,853	42	36,980	100	67,614	312	172,436	59.6:40.4
1966	408	259,922	121	41,859	46	40,333	106	70,434	327	174,898	59.8:40.2
1967	413	259,084	128	39,951	49	42,584	112	71,823	368	182,862	58.6:41.4
1968	415	273,612	129	38,409	54	49,411	137	80,782	425	207,882	56.8:43.2
1969	417	294,292	133	41,720	55	55,850	142	89,510	444	235,809	55.5:44.5
1970	408	315,367	123	41,178	59	68,367	154	100,636	481	275,015	53.4:46.6
1971	398	337,125	115	39,788	59	71,798	157	114,181	500	310,055	52.1:47.9
1972	403	369,508	108	40,068	61	82,223	168	128,703	539	360,275	50.6:49.4
1973	452	428,212	66	35,236	64	88,311	169	143,420	563	428,212	49.0:51.0
1974	613	530,177	68	38,748	70	106,082	191	171,265	476	451,032	54.0:46.0
1975	673	648,149	69	42,011	72	123,571	182	190,208	479	474,868	57.7:42.3
1976	714	746,246	62	42,405	73	138,145	184	208,141	484	507,430	59.5:40.5
1977	716	795,107	62	47,428	77	149,317	189	232,723	499	555,493	58.9:41.1
1978	717	839,603	61	48,968	90	175,630	202	256,263	536	614,773	57.7:42.3
1979	724	887,531	59	50,340	96	183,374	213	285,456	574	677,824	56.7:43.3
1980	748	932,605	75	53,678	197	200,367	432	323,316	605	764,187	55.0:45.0
1981	781	1,006,313	56	55,105	100	220,304	232	347,645	621	816,726	55.2:44.8
1982	810	1,068,849	58	56,028	100	199,899	234	368,145	626	853,372	55.6:44.4
1983	855	1,132,249	60	55,952	101	201,975	235	380,596	639	880,797	56.2:43.8
1984	905	1,200,448	61	55,121	101	200,794	237	382,786	644	891,953	57.4:42.6
1985	967	1,266,840	61	51,842	102	198,354	227	380,267	635	885,962	58.8:41.2
1986	996	1,345,414	61	49,271	101	202,730	224	412,975	631	916,983	59.5:40.5
1987	1,030	1,397,359	62	48,034	101	194,960	208	372,162	594	840,265	62.4:37.6
1988	1,063	1,457,617	62	46,568	102	197,731	205	376,346	590	842,965	63.4:36.6
1989	1,084	1,490,846	59	44,356	104	197,080	204	377,218	588	835,216	64.1:35.9

Notes: 1) Includes humanities in science, art, and comprehensive high schools.

2) Includes all vocational fields in fisheries & maritime, vocational, and comprehensive high schools.

* The statistics on school numbers for each field from 1980 are not completely reliable.

Source: Education Statistical Year Book (from each year); Reproduced from Jo Seong-hee (1991), p. 4

<Table 1-5> Vocational High School Student Quota Achievement Rate, Drop-Out Rate, Graduation Rate, Employment Rate, Employment in Field of Major Rate, University Enrollment Rate, Vocational High School Teacher Ratio, No. of Students per Teacher, Growth Rate in the Number of Graduates

(Unit: persons, %)

Year	Quota Achievement Rate1) (%)	Midway Dropout Rate 2)	Graduation Rate3)	Employment Rate4)	Employment Rate in Field of Major 5)	University Enrollment Rate6)	Ratio of Vocational Teachers7)	Students per Teacher8)	Rate of Growth in Number of Graduates9)
1962	-					15.2	42.9	26.2	100
1963	-			23.9		16.4	45.0	27.6	112.7
1964	92.9			21.3		20.9	44.7	27.9	112.8
1965	-			-		-	44.0	27.7	-
1966	-	12.1	87.9	37.5		14.1	46.0	26.0	196.2
1967	-	6.9	93.1	41.2	85.1	14.1	47.9	25.1	205.5
1968	-	10.5	89.5	38.6	76.4	12.2	49.2	25.3	207.3
1969	92.7	9.1	90.9	47.9	83.4	9.6	49.3	26.3	210.8
1970	96.1	7.8	92.2	50.2	84.8	9.6	50.4	27.5	232.3
1971	96.7	7.4	92.6	49.5	84.6	10.3	52.1	26.7	296.3
1972	100.5	5.9	94.1	42.5	84.5	11.5	52.9	27.8	317.0
1973	99.9	2.7	97.3	43.2	83.7	12.2	53.5	28.7	384.3
1974	100.1	4.5	95.5	48.8	82.4	10.6	44.4	32.2	434.4
1975	98.6	10.3	89.7	50.3	84.6	8.8	42.9	31.0	466.2
1976	98.9	17.4	82.6	52.8	86.5	8.1	42.4	30.7	506.8
1977	100.1	6.8	93.2	56.6	88.3	8.3	42.4	31.3	555.4
1978	99.5	6.0	94.0	59.3	89.7	9.4	43.4	31.9	607.5
1979	100.8	4.8	95.2	61.0	87.1	9.8	44.5	32.0	672.4
1980	-	3.1	96.9	51.1	81.4	12.4	46.1	32.6	743.1
1981	98.1	3.3	96.7	46.6	81.4	15.3	45.7	31.9	805.7
1982	97.7	4.5	95.5	44.5	88.6	15.8	45.9	31.4	908.6
1983	94.5	7.7	92.3	43.2	86.9	16.9	45.4	30.7	971.4
1984	97.4	9.2	90.8	49.3	86.6	15.2	44.2	30.5	1,003.5
1985	96.1	11.0	89.0	51.8	85.5	13.3	42.4	30.0	1,022.1
1986	96.9	10.2	89.8	55.7	84.5	12.6	41.3	30.5	1,037.9
1987	98.3	15.8	84.2	-	83.0	11.1	39.5	28.0	1,002.7
1988	97.0	15.1	84.9	71.6	82.0	10.2	38.4	27.1	962.1
1989	97.5	18.5	81.5	74.5	82.8	9.5	37.7	25.4	960.2

Notes: 1) Quota achievement rate = No. of enrollees / enrollment quota × 100

2) 100 - No. of graduates / No. of enrollees 3 years prior × 100

3) No. of graduates / No. of enrollees 3 years prior × 100

4) No. of employed persons / No. of graduates × 100

5) Total No. of vocational high schools / Total No. of employed persons × 100

6) No. of enrollees / No. of graduates × 100

7) No. of vocational high school teachers / No. of all high school teachers × 100

8) No. of students / No. of teachers

9) Growth rate (%) = No. of graduates (No. of teachers) / No. of graduates in base year (No. of teachers) × 100 (base year: 1962)

Source: Jo Seong-hee (1991), pp. 7, 13, 15-17, 20, 23, 24, 28

In addition, to attract outstanding students, the system for selecting students based on academic background that had been applied to vocational high schools up to that point was abolished, and the Education Act enacted on February 13, 1981, investing principals with the power to choose students in a manner that considered their personal aptitudes without using tests. That said, as shown in <Table 1-5>, in the 30 years spanning from the beginning of the 1960s to the end of the 1980s, the number of students enrolled only surpassed 100% of the quota four times, while in every other year there was an enrollment shortfall. For half of that 30-year span the graduation rate was 90%, and 80% for the other half. The number of students per teacher hovered around 30, with that number steadily increasing over the years. The number of graduates also steadily increased, to nearly 10 times higher by the end of the 1980s (Jo Seong-hee, 1991: 109, 161-162).

D) Establishment & Promulgation of a Vocational High School Curriculum

In 1963, the Ministry of Education established and began implementing a vocational high school curriculum that could be taught in a manner distinct from general high schools (February 15, 1963. Ministry of Education Ordinance, Article 122), thereby systematizing vocational and technical education curricula and clearly presenting the unique goals and guidelines for vocational high schools. Among other measures, professional courses to total course load was also extended from 30% to 50%, and a basic framework for implementing vocational education curricula was established by allocating 40% of course time for professional subjects to classroom study and 60% to hands-on learning, among other measures. Even after this, as the education curriculum continued to be revised (1966, 1969, 1971, 1976, 1977), vocational education policy was implemented in a manner that corresponded with the development of technical skills in the personnel needed for modernization of the industrial structure and towards export-oriented economic growth. It thus continued to garner high praise (Ministry of Education, 1998a: 551-552).

E) Establishing Vocational Teacher Education Courses & an Attempt to Develop Related Incentives

According to the Korea Research Institute for Vocational Education & Training (1998), even up to the early 1960s, there were still no institutions where professional training was available to teachers responsible for professional courses at vocational high schools. Only secondary education

teacher training institutions established and operating in vocational universities were able to offer such programs.

However, this system alone was unable to satisfy the demand for vocational teachers, so those with a bachelor's degree in an applicable field were able to receive secondary teacher qualifications without completing a course in education or completing a testing process of any kind. Even with these efforts, it remained difficult to secure enough teachers for professional courses at vocational high schools.

To resolve this problem and develop outstanding vocational teachers at the same time, a technical education department was established at Seoul National University's technical college and an agricultural education department at its agricultural college in 1962, while a fisheries education department was established at Pusan National University's fisheries college (Lee Mu-keun, 1969; Reproduced from Korea Research Institute for Vocational Education & Training, 1998: 704-708). Dr. Shin Guk-beom and Dr. Baek Dae-hyeon, both of whom worked in the US at USOM (United States Operations Mission) at the time, helped establish the vocational teacher education department (Shin Guk-beom, 2012: 97-102). After this time, outstanding vocational teachers were being educated in universities throughout the country with the establishment of agricultural, technical, commerce, and fisheries education departments.

These departments were focused not only on the development of teachers for each major field, but also played a significant role in enhancing the capabilities of vocational teachers through hands-on training. Most notably, a master's curriculum was established in the 1970s and a doctorate curriculum in the 1980s, which contributed greatly to the educating of scholars, professionals, education administrators, professors and others working in the vocational education field.

At the time, graduates of the technical education department at Seoul National University's technical college were much sought after and many obtained jobs in their field of study at businesses that paid high salaries. This resulted in a low number of people entering the field of technical education for schools, which offered lower salaries. This led to a rapid increase in the demand for technical teachers.

In order to resolve this new issue, in 1977 Chungnam National University's technical college was restructured into a technical education college and began specializing in vocational teacher education. This brought about a turning point in such education, combining both theory and

practice. However, the fact that universities across the country were educating a large number of teachers to administer technical education meant that there were sometimes discrepancies between demand for teachers and the available graduates, creating a considerably long-term issue. A look at <Table 1-6>, which shows the changes in the number of technical high school students and teachers at the time, enables one to easily imagine the rapid changes to and difficulty in managing the supply and demand dynamics for teachers.

<Table 1-6> Changes in the No. of Technical High School Teachers & Students; Teacher-Student Ratio (1962–1979)

Type	1962	1963	1964	1965	1966	1967	1968	1969	1970
No. of Students	33,812	36,848	35,699	36,980	40,333	42,584	49,441	55,850	68,367
No. of Teachers	1,214	1,365	1,200	1,305	1,510	1,620	1,950	2,115	2,426
Teachers-to-Students	1:27.9	1:27.0	1:29.7	1:28.3	1:26.7	1:26.3	1:25.3	1:26.4	1:28.2
Type	**1971**	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**
No. of Students	71,798	82,223	88,311	106,082	123,571	138,145	149,317	175,630	183,374
No. of Teachers	2,684	3,036	3,309	3,858	4,296	4,666	5,056	5,633	6,239
Teachers-to-Students	1:26.8	1:27.1	1:26.7	1:27.5	1:28.8	1:29.6	1:29.5	1:31.2	1:29.4

Source: Kim Yong-ik (1997); Reproduced from Korea Research Institute for Vocational Education & Training (1998), p. 404

The above table shows that not only were there issues with technical teacher education and supply and demand, there were also difficulties training teachers for technology courses. About six months after a new overall curriculum was announced through which ‘technology courses’ were established and made mandatory in middle and high schools (September 4, 1969) hands-on classroom study began (March 1970) to the day hands-on classroom study began (March 1970). Within this short period of time, new textbooks had to be created, published and distributed, and teachers for these courses trained and assigned.

To secure the teachers for these technology courses, the Ministry of Education at the time established temporary secondary teacher training centers at Gyeonggi Technical College, Daejeon Technical College, Busan Technical College, Jeonbuk University Technical College and other locations in June that year, holding a total of 16 weeks of training (8 each during summer and 8

winter vacation) for teachers with teacher qualifications outside of agricultural and commerce. Those who completed this training were given qualified technology teacher certificates.

Although training of already-employed technology teachers continued after that time, training of new teachers ceased for a span of 10 years until in 1981 the Chungnam National University Technical Education College established a Technical & Technological Education Department (renamed the Technological Education Department in 1982) and laid a solid foundation for the training of such teachers. In 1992 a technological education department was also established at Korea National University of Education, more or less leading to a steady supply of outstanding technology teachers.

However, despite the fact that there 3,276 technology teachers in middle schools and 877 in high schools (for a total of 4,153) by 1997, just 699 of them had graduated from Chungnam National University's Department of Technological Education and 60 from Korea National University of Education, accounting for only 16.9% of all technology teachers at the time. Technology courses that could serve as the foundation for training the human capital needed by the heavy and chemical industry in particular were established in accordance with the 5-year Economic Development Plan of the time, but for roughly 10 years the supply of technology teachers depended solely on qualifications training. A further problem was the lack of policy for establishing departments of technological education to train outstanding teachers and for teacher training in general.

In April 1963, the first Korean graduate school of education was established at Seoul National University. Through this department, students who had graduated from all types of universities (not only vocational education), and who completed their undergraduate degree could take teaching courses and education courses in their undergraduate field during their master's degree studies to become qualified teachers or education administrators. One of the 12 departments established was the Vocational Education Department (with majors in technical, agricultural and commerce education) through which the training of vocational teachers began. Within the College of Education, fields that lacked official majors or departments (agriculture, technical, commerce and home education, music and art) were assigned to the related colleges for the training. The Graduate School of Education was eventually closed, however, in accordance with the integration plans for Seoul National University in 1975 (50-year History of Seoul National University Editing Committee, 1997: 161). Graduate schools of education were subsequently established within the

majority of colleges of education throughout the country. These graduate schools provided both hands-on training to improve the professional quality of existing teachers and general teacher training. However, the 26 graduate schools of education of 1980 have become 130 such schools today. This expansive growth is criticized as a 'reckless competition.' In particular, though the overall drop in student population and the number of vocational high schools led to a decrease in the number of vocational teacher training departments, teachers were still being trained who could not be guaranteed employment and the glut began to be viewed as a social problem (Seo Jeong-hwa, 2016: 4).

Despite continued efforts to train outstanding vocational teachers as mentioned above, the turnover rate was high as a result of an inadequate program in the education system to attract teachers. An approach to resolving this issue was the enactment of regulations to provide special compensation for practical course teachers (July 9, 1968), which also included a practical course bonus.

F) Establishment of the 5-year Plan to Promote Science & Technology Education (1967–1971)

According to the Korea Research Institute for Vocational Education & Training (1998), the main aim of this plan was to correct an imbalance in the supply of skilled human resources for each industry by modifying the personnel quotas per sector. The desired objectives were to support the policy of promoting both agriculture and industry through installation of technical departments within agricultural schools located in industrial complexes, to improve the quality and treatment of practical course teachers, to improve curricula suitable for industrial growth and publication of practical course textbooks, to develop audio-visual education centers, to enact laws on standards for experiment and hands-on learning facilities and encourage investment in such facilities through industry-school cooperation, to increase state funding for experiment and hands-on learning facilities, to provide support for private vocational schools, and to increase the amount of student loans and expand the range of benefits offered. However, due to a lack of measures to increase funding, this plan ultimately failed. This plan aimed to train and supply technically-skilled human resources according to a 1 professional engineer to 5 technicians to 25 craftsmen ratio.

G) The High School Vocational Education System & Plans to Increase the Variety of Education Types

In the 1960s and 1970s, the secondary vocational education system featured a great deal of variety in order to train the skilled personnel demanded by industry at the time. The categories of high school vocational education institutions and programs included vocational high schools, vocational courses within general high schools, schools of various types, technology schools and secondary technology schools to provide vocational education to students who failed to enter middle schools and high schools, youth vocational schools affiliated with vocational high schools to provide vocational education to those who were unable to enroll in (or dropped out of) middle schools and high schools, vocational skill training institutes affiliated with vocational high schools offering 1 year programs to students who failed to graduate from high school, special schools for improving the academic records of working youth, and middle and high schools affiliated with industry (Lee Mu-keun, 2016: 13-14).

There were many different categories of vocational high schools, which had become key to the secondary vocational education system, including agricultural, technical, commerce, comprehensive, fisheries-maritime, and art-special purpose high schools. The term ‘vocational cluster high school’ here refers to all schools that were established and operated with vocational subjects making up at least 30% of all courses. High schools in which a general and a vocational curriculum were both taught can be called ‘comprehensive high schools’, while schools with two or more distinct vocational curricula were also able to call themselves ‘vocational high schools’ (Lee Mu-keun, 1982a: 56-57).

In the 1970s in particular, there was a prohibitive lack of technically-skilled personnel ready to work in the heavy and chemical industry and Middle East construction sites. Moreover, there was high demand for trained human resources that could immediately be put to work in industrial fields upon graduation from high school. As such, the government separated technical high schools into the four categories of specialized machine-technical high schools, trial technical high schools, specialized technical high schools, and general technical high schools for focused development of students (Lee Mu-keun, 1982a: 56-57).

Research from the Korea Research Institute for Vocational Education & Training (1998) shows that specialized machine-technical high schools produced precision technicians needed for development of the defense and machinery industries. Trial technical high schools were

instrumental in satisfying the demand for irregular special human resources such as overseas craftsmen, while specialized technical high schools produced trained craftsmen for employment in electricity, chemical engineering, construction, steelwork, railways, and other specific industrial fields. For their part, general technical high schools were responsible for producing craftsmen that could work in non-specific industrial fields.

At this time, specialized technical high schools provided general courses and professional courses at a 30:70 ratio to ensure students acquired the professional knowledge and skills that would allow them to perform effectively in industrial settings. Professional courses placed great importance on hands-on practice, which made up 70% of the learning, with theory making up the rest. However, there was flexibility in the manner curricula could be implemented, as shown by the 40:60 ratio of general technical high schools, so that a variety of personnel would be trained to meet varying industrial demands. Cooperation from industry was also encouraged through sisterhood relationships between schools and businesses, among other approaches, which proved to be of great help in improving educational integrity.

The ability to emphasize technical education and operate with stability has been attributed to President Park Chung-hee's personal interest in vocational education and leadership of the president's second chief economy secretary and who was responsible for promoting the heavy and chemical industries.

In terms of agricultural education policy, comprehensive evaluations of agricultural high school operations throughout the country suspended in 1962 were revived, and in 1966 practical skill competitions began to be held between agricultural high schools, contributing to the promotion of practical skills. Agricultural technical high schools were developed in 1968 to meet the policy requirements of promoting both agriculture and industry and agricultural mechanization. In coordination with the policy to develop the heavy and chemical industries, in 1970 the government implemented the agricultural education policy to encourage the training of skilled technicians able to efficiently modernize the industry and implement projects designed to increase farm worker incomes. The representative policy here was the joint Ministry of Education and Ministry of Agriculture and Forestry's plan to selecting a total of 13 institutions as model agricultural high schools across the country (1–2 for each province) with the eventual aim to develop self-reliant farmers.

Despite being a vocational high school policy, commerce education policy was treated the same as

general high school policy and was therefore neglected by Ministry of Education's vocational education policy. However, private organizations became the locus for implementation of assessment tests on abacus office skills, with financial institutions and each university holding abacus competitions, leading to an increase in such skills and public interest in the field. In 1971, the commerce high school curriculum was revised and general electronic computation was made a compulsory course. Representative of this initiative were such newly established elective subjects as programming, FORTRAN programming, assembly programming, and electronic computation tasks.

An examination shows that policy planning and decision-making were not limited to secondary vocational education policy. Goal setting always prioritized national or economic growth by focusing on development of human resources that met the demands of the country or industry, rather than considering such policies from the perspective of the actual recipients of education: the students. As a result, education was comparatively lacking when it came to assisting students with preparation for employment or university enrollment based on their aptitudes, talents and abilities, and in aiding their career planning, promoting the basic refinement of students into democratic citizens or advancing their fundamental vocational abilities. This meant that education curricula were too narrowly focused on building the vocational capabilities needed by industry. As such, technical high schools of the time concentrated too heavily on industry-demanded development, which led to criticism that what was being provided was more akin to vocational training heavily bent on specific skill acquisition than vocational education that promoted both student refinement and fundamental capabilities related to the students' major areas of study.

H) The Financing Program for Expansion of Industrial Education Facilities & Infrastructure

According to Jeong Bong-geun (1991), between 1950 and the mid-1960s, Korea was able to expand experiment and hands-on learning facilities and infrastructure for vocational high schools through aid from the Korean Civil Assistance Command (CAC), the United Nations Korean Reconstruction Agency (UNKRA), the Armed Forces Assistance to Korea (AFAK), the Agency for International Development (AID), the Institute of Cultural Affairs (ICA), the American-Korean Foundation (AKF), the Cooperative for Assistance and Relief Everywhere (CARE), the Fullbright Scholarship Commission, the Asia Foundation and other similar institutions.

As financial aid ceased in 1967, the Ministry of Education ran into a situation where they were

unable to receive almost any funding support to procure experiment and hands-on learning facilities and equipment for vocational high schools, community colleges and colleges in the fields of science and technology. In response, the government established and directly implemented a policy of securing the funding for these facilities and equipment for vocational high schools and vocational education programs at community colleges, natural sciences and engineering colleges and medical and dental colleges. Part of this funding would come from Korean property claims against Japan while the majority would come from education loan projects.

According to Jeong Bo-geun (1991), since agreement for the first round of education loans in June 1969 to the 9th round of education loans at the beginning of the 1990s, a total of USD 864.07 million was injected into vocational education to provide stability. As shown in <Table 1-7> and <Table 1-8>, the securing of facilities, infrastructure and equipment through education loans played an essential role in the improvement of education within Korean vocational high schools, community colleges, natural sciences and engineering fields as well as medical and dental programs at universities, colleges and universities of education, correspondence universities, and special education schools.

A loan project department was established to handle education loans and was run by the Korean government with the cooperation of loan providers to avoid work interruptions as a result of personnel turnover and other such issues and to maintain a level of expertise among the related workers. In relation to this, the Ministry of Education required a department to take charge of projects related to foreign capital. Sometimes one department was established, while other times a supervisory office was established with two or three departments that could be expanded or reduced for the sake of operational flexibility. In addition, to promote administrative efficiency, professionals were hired from outside sources (beyond those qualified for the civil service) to serve as considerably effective loan project staff.

Korea’s status has changed from being a recipient nation of OECD economic support to an Official Development Assistance (ODA) nation providing economic support to developing countries. This has been the case for 20 years. A systematic approach to ODA project policy is still considered lacking, from the planning and decision-making stage to the execution and result evaluation stage. It is clear that Korea’s experience in education loan projects over more than 20 years of activity will prove to be of great benefit if included in the nation’s ODA education project policy.

<Table 1-7> Loan Support by Vocational High School Field (1990)

(Unit: USD 1,000)

Type / Field	State-funded	Privately Funded
Natural Sciences	6,333	1,781
Industry	42,541	16.389
Agriculture	3,259	
Commerce	454	
Fisheries-Maritime	6,896	
Special Education	1,298	3,252
Total	60,781	21,422

Source: Jeong Bo-geun (1991), pp. 170–171

<Table 1-8> Loan Amount by Type & Project Length; Institutions Targeted for Investment

(Unit: USD 1,000)

Loan	Loan Amount	Project Length	Institutions Targeted for Investment	Remarks
1st IDA (June 4, 1969)	14,800	1969–1976	Vocational high schools (27), professional schools (5), agricultural college agriculture education (1), science education of college of education (3)	
2nd IDA/IBRD (June 13, 1973)	20,000/ 23,000	1973–1979	Vocational high schools (33), professional schools (6) / nursing colleges (4) universities of education (1), colleges of education (10), fisheries-maritime colleges (1), technical colleges (9), natural science colleges (9)	
3rd IBRD (February 21, 1980)	11.400	1975–1980	Vocational high schools (4), community colleges (4), fisheries colleges (1)	
5th IBRD (February 21, 1980)	99,855	1980–1985	Technical community colleges (23), technical colleges (37)	
6th IBRD (June 15, 1984)	78.000	1984–1988	Fisheries high schools (5), fisheries colleges (3)	
1st OECF (February 21, 1980)	10 billion yen	1980–1984	Technical colleges (1), private colleges of medicine & affiliated hospitals (24)	
2nd OECF (February 27, 1981)	JPY 6 billion	1981–1985	Private natural sciences universities (25)	
3rd OECF (December 25, 1985)	JPY 15.2 billion	1986–1989	Medical & dental colleges (25) and graduate schools (23), medical & dental college hospitals (6), regional foothold universities (4), research institutes (1)	
EXIM (November 19, 1979)	98,684	1979–1983	Technical high schools (95), technical community colleges (1), national colleges of medicine & affiliated hospitals (20), other (1)	

<Table continued>

Loan	Loan Amount	Project Length	Institutions Targeted for Investment	Remarks
1st ADB (December 22, 1978)	4,542	1979–1984	Fisheries high schools (5), fisheries colleges (3)	
ECGD (July 16, 1982)	GBP 16.35 million	1982–1985	National colleges of pharmacy (6), national colleges of agriculture (10), fisheries-maritime colleges (3)	
4th OECF (August 18, 1987)	JPY 12.09 billion	1988–1991	Engineering (29), pharmacy (12), agriculture (16), special education schools (100), university-affiliated hospitals (14)	
2nd ADB (August 18, 1987)	53,000	1987–1990	Universities (4), community colleges (2), fisheries high schools (1), training boats (7 classes, 8 boats)	
5th OECF (June 22, 1988)	JPY 5.92 billion	1988–1992	Universities (12), colleges of broadcasting and communications, KEDI, community colleges (19), open collages (3)	
7th OECF (October 31, 1990)	JPY 2.16 billion	1990–1992	Graduate schools (36), research institutes (19), colleges of education (11)	
7th IBRD (October 31, 1990)	45,000	1991–1995	Universities (4), community colleges (2), fisheries high schools (1)	

Source: Jeong Bo-geun (1991), pp. 163–171

I) Policy to Expand Funding

According to Research for Evaluating Korean Vocational Education Policy (Jo Seong-hee, 1991), vocational high schools have consumed a vastly greater amount of funding than general high schools. There are many costs involved including securing, managing and maintaining internal and external facilities and infrastructure, expenses related to experiments and hands-on learning, personnel expenses, and administrative costs. These costs are difficult for schools to deal with independently. Technical high schools in particular require a huge investment for establishment and operation. Costs run anywhere from five times general technical high schools to eight times specialized machine-technical high schools in primary regions. There is also a great difference in costs related to facility management and security between the two types of schools.

In light of this, the Ministry of Education increases the vocational education budget each year. <Table 1-9> shows the percentage of the Ministry's budget accounted for by vocational education costs. Spending on vocational education as a percentage of total education expenses increased continually in the 1960s and 1970s, from 0.8% in 1965 to 2.9% in 1970, 3.8% in 1975, and 4.1% in 1979. Entering the 1980s, the percentage of Ministry of Education spending allocated to vocational education was lower, coming in at 3.2% in 1980, 3.5% in 1985, and 3.4% in 1988 (Kim Yeong-hwa et al., 1990: pp. 75, 78, 87).

<Table 1-9> Ministry of Education Spending on Vocational Education (as % of Total Education Spending) & Cost Increases

Type / Year	Ministry of Education Spending (A)[1)]	Vocational Education Costs (B)[1)]	Vocational Education Costs (%)[2)]
1962			
1963			
1964			
1965	-	-	0.8
1966	59.0	278.1	1.9
1967	27.2	47.8	2.2
1968	41.3	58.3	2.5
1969	33.2	57.7	3.0
1970	31.5	29.0	2.9
1971	27.1	1.1	2.3
1972	20.6	-11.4	1.7
1973	1.5	72.7	2.9
1974	27.9	28.1	3.8
1975	44.7	87.3	3.8
1976	55.0	40.3	3.4*
1977	36.2	86.3	4.6
1978	31.4	43.3	5.1
1979	36.6	10.2	4.1
1980	30.8	2.6	3.2
1981	30.2	63.0	4.0
1982	30.5	15.4	3.6
1983	12.7	-1.8	3.1
1984	5.4	16.6	3.4
1985	10.1	11.1	3.5
1986	11.0	14.1	3.6
1987	13.2	12.6	3.5
1988	18.2	12.9	3.4
1989	-	-	-

Notes: 1) Amount / amount from previous year x 100 - 100 (written using the above data)
2) Vocational education costs / Ministry of Education spending total x 100 (assumed from the above data)
* Amount is the regular for that year.

Source: Kim Yeong-hwa et al. (1990), pp. 75, 78, 87

J) Creation of a National Technical Qualification System

The 1973 enactment of the National Technical Qualifications Act (December 31, 1973, Law No. 2672) established a system by which the state would uniformly recognize the qualifications of those skilled workers and technicians whose skills and technical abilities were evaluated to have reached a set standard. This system aims to efficiently support the advanced industrialization policy of the national government through the following: ① establishment of an evaluation system with a set standard for skills and technical abilities to enhance the qualifications of skilled workers and improve confidence in qualifications across society, ② expansion of preference given to those who obtain technical skill qualifications to maximize and promote the status and application of technically-skilled persons, ③ use of the technical qualifications system as a means to improve and develop technical training to meet the demands of industry, ④ organization and systematization of sporadically-applied existing qualification systems of varying standards based on a reasonable national standard to improve the efficiency of management and implementation (Korea Institute for Industrial Economics & Trade, 2002: 67).

It was anticipated in particular that this system would help boost the morale of students acquiring industrial skills in vocational schools and improve the level of the skills they acquire (Kim Jong-cheol, 1989: 247-265).

K) Enhancing Industry-School Cooperative Education

Law 1403 led to enactment of the Industrial Education Promotion Act on September 19, 1963. This Act aimed to promote industrial education and stipulated the measures for support by the national government, local governments and schools. An ordinance enacted on June 8, 1965 concretely laid out details of the proper implementation of professional courses, expansion and maintenance of experiment and field practice facilities, implementation of teacher training and in-service education, hands-on learning and employment guidance to strengthen connections with regional society, developing workers who are capable of running small businesses, and systematic follow-up guidance for graduates. The Industrial Education Promotion Act laid the legal foundation for promoting vocational education while proving to be groundbreaking towards development of a basis for related policy (Jo Seong-hee, 1991: 78).

According to the Korea Research Institute for Vocational Education & Training (1998), after the

Ministry of Education enacted the Industry Education Promotion Act on February 22, 1973, students of schools and colleges implementing vocational education were required to complete field practice for a certain period of time while enrolled. The Minister of Education could request that presidents of central administrative agencies overseeing industries to designate businesses to provide hands-on learning opportunities to students, and notify the Minister upon announcing such designations. The ordinance connected to this Act clearly stipulated the requirements for cooperation from the businesses and defined the field practice time requirements for each sector.

In order for the Ministry of Education to actively promote its industry-school cooperation it underwent a restructuring on December 8, 1973 and established an Industry-School Cooperation Division and put it in charge of such cooperation, educational planning for the heavy and chemical industries, operation of the Central Industrial Education Commission and other tasks. Not only did establishment of the Industry-School Cooperation Department serve as an opportunity to reveal the government's desire to foster cooperation between industry and schools, it also contributed greatly to real outcomes. That said, the system making field practice mandatory in vocational high schools, community colleges and universities carrying out vocational education was abolished in 1975 due to a wide lack of adequate supporting conditions.

Multilateral approaches to industry-school cooperation, however, were still carried out. For example, the Human Resources Development Service of Korea (affiliated with the Ministry of Labor) implemented a 0.6 + 0.6, 1 + 1, 1.6 + 1.6 system program between vocational institutes and businesses in the 1980s, and in the 1990s the Ministry of Education introduced and ran a dual program (2+1) of Specialized Technical high school. However, these systems were also unable to sustain operations for more than ten years

According to research by Im Chang-bin (2009), the Kim Dae-jung government at the beginning of the 2000s decided to make national human resource development a main policy project for the administration and made industry-school cooperation one of its 16 main policy tasks. This not only served to promote such cooperation in terms of joint educational initiatives, it also served to expand the organic cooperative relationship between businesses and schools through exchanges of all available resources (human, physical, etc.) in order to promote the development of both industrial and academic sectors.

Industry-school cooperation policy received particular focus during the Roh Moo-hyun

administration, which established such policy as one of its central tasks. The "Participatory Government Vision & Strategy for Promoting Industry-School Cooperation" was developed in September 2003 to aid in the construction of national and regional innovation systems based on the efficient creation, sharing and expansion of knowledge and technical skills through such cooperation. This led not only to the promotion of high school and community college standards, but on a university level it led to the expansion of industry-school cooperation up to and including the accumulation of technical experience, research skills, educational facilities and financing for both the academic and industrial sectors and even exchanges. In order to provide systematic backing for this, the Industrial Education Enhancement and Industry-School-Research Cooperation Promotion Act was enacted in 2003 (May 27, 2003). This established the legal foundation for a system of cooperation between industry and schools, including cooperation organizations, special cooperation teachers, university-based businesses, cooperative research institutes, and more.

The Lee Myung-bak government strengthened the construction of the "Employment first, University later" Meister high school system centered on professional high schools. The Park Geun-hye administration also continued to promote vocational education policy through industry-school cooperation between specialized high schools, community colleges and businesses in the form of such projects as the Employment Guaranteed High School-Community College Comprehensive Education Development Project (Uni-Tech) between businesses, the industrial site experience program through the career-experience semester for middle school students, and other related projects of cooperation.

To provide systematic backing for these policies, the current Ministry of Education has established the Vocational Education Policy Department, the Job Competency Policy Department, the Career Education Policy Department, the University Support Office-affiliated Community College Policy Department, and the Industry-School Cooperation Department under its Lifelong & Vocational Education Bureau.

2) Vocational Education Policy under the Chun Doo-hwan Administration (1980–1987)

A) Enhancing Foundational High School Vocational Education Competencies

In 1980, as industry in Korea advanced, the training designed to produce highly-skilled workforces also advanced at vocational community colleges and natural sciences and engineering universities.

On the other hand, vocational high school education focused on providing the basic study and technical skill tutelage that would help students easily adapt to the needs of a specific job cluster. This was based on the premise that, as the development of industrial technology accelerated and industrial skills became more advanced, the technical skills needed at industrial sites would be fostered in workers through education and training provided by businesses themselves after the graduates were hired. Therefore, while on the surface this was an age where the secondary vocational education system was being modified and reformed to reflect societal and industrial demands, internally, human resource development had moved on from the high school stage to the higher education stage. As a result, vocational high school education policy was, in reality, neglected. As shown above in <Table 1-9> (Rate of Ministry of Education Spending and Vocational Education Cost Increases), this led to the issue of a rapid reduction in education funding.

The representative secondary vocational education policy actions of the 1980s were the training designed to create self-reliance in farmers through establishment and operation of the Independent Farmer Department and the development of self-reliant systems at agricultural high schools, normalization of technical high school education that led to a transition from unbalanced curricula implemented simply to prepare students for qualification evaluations to a more appropriate education-oriented curricula, and the enhancement of education on advanced computer skills.

B) Test-free School Recommended Admission Policy

Although up to that time selection of students for vocational high schools was based on academic background, with enactment of the Education Act (February 13, 1982) this was converted to a test-free recommended admission system under the authority of school principals in 1982 (Jo Seong-hee, 1991: 109-110).

C) Curricula Reform to Develop Whole-person Education

According to Education Curriculum Reform at a Glance (Lee Eun-cheol, 2015), the 4th education curriculum (December 31, 1981, Ministry of Education notification 442) comprehensively revised the curriculum based on the 1980 ‘education normalization policy’ and began implementation in 1884. This curriculum was characterized by its aim to encourage whole-person education through

integration of high school curricula, strengthening basic and general education, reducing the total number of required classes, and enhancing special activities. As a result, based on the premise that vocational high school goals must be oriented toward whole-person education, goals per field were presented and general and vocational education pursued concurrently in preparation for industrial settings.

Most notably in 1982, regulations were put in place related to course textbooks and a (government) vocational textbook was decided upon for all schools that had been developed, produced and distributed with state funds. This improved the quality of the textbook and lowered its cost, reducing the burden on students.

In 1988 a new view on education was accepted as a result of industrial development and this permitted a revision of textbooks and their content, and ultimately a restructuring of educational curricula to prepare for future society.

D) Establishment of Provincial Public Vocational Education Practice Centers to Bring Sustainability to Technical High School Education

Beginning in 1982, provincial public vocational education practice centers were established in each region to provide research information on approaches to developing efficient leadership through the promotion of student abilities to adapt to work environments, enhancement of teacher abilities to teach professional skills, and industry's rapid introduction of skills and information. Provincial public vocational education practice centers continued to be established and expanded throughout the country under both Roh Tae-woo and Kim Young-sam and, as shown in <Table 1-10>, by 1996 there were 28 vocational education centers in technical high schools and 9 in agricultural high schools, for a total of 37 nationwide (Lee Jong-seong et al. 1998: 287).

<Table 1-10> Public Vocational Education Practice Centers by Province

Region	School Name (year established)	Region	School Name (year established)
Seoul	Gyeonggi Technical High School (′82), Seoul Technical High School (′91)	Chungbuk	Cheongju Technical High School (′93), Chungbuk Technical High School (′94), Cheongju Agricultural High School (′91)
Busan	Busan Technical High School (′88), Busan Electrician High School (′92)	Chungnam	Yeongu Technical High School (′94)
Daegu	Daegu Technical High School (′85), Gyeongbuk Technical High School (′94)	Jeonbuk	Iri Technical High School (′89), Samrye Technical High School (′94), Jeonju Technical High School (′97), Gimje Agricultural High School (′90)
Incheon	Incheon Technical High School (′89)	Jeonnam	Damyang Technical High School (′91), Mokpo Technical High School (′94), Suncheon Technical High School (′94)
Gwangju	Gwangju Technical High School (′86)	Gyeongbuk	Gyeongju Technical High School (′94), Gyeongsan Technical High School (′96), Andong Agricultural High School (′90)
Daejeon	Chungnam Technical High School (′87)	Gyeongnam	Changwon Technical High School (′90), Jeonju Technical High School (′94), Ulsan Technical High School (′94), Gyeongnam Farm Management High School (′91)
Gyeonggi	Icheon Vocational High School (′93), Yeoju Natural Agricultural High School (′92)	Jeju	Hanllim Technical High School (′94), Jeju Agricultural High School (′92)
Gangwon	Chuncheon Technical High School (′92), Taebaek Technical High School (′94), Gangneung Agricultural High School (′95), Chongcheon Agricultural High School (′92)		

Source: Ministry of Education (1997); Reproduced from Lee Jong-seong et al. (1998), p. 287 <Table VII-25> and <Table VII-26>

E) Strengthening the Support System for Developing Self-reliance in Farmers

An agricultural high school development policy was implemented to create a system to develop self-reliance in future farm owners through focused funding investment of the farm product repayment system. Furthermore, an Independent Farmer Department was established to train key

farm inheritors and activities to attract a variety of students were carried out, leading to concentrated investment. Based on an initiative by the Ministry of Agriculture, Forestry and Fisheries, a Farm Inheritor Promotion Fund was established (1980), and matched by such policies as the Comprehensive Farming & Fishery Community Plan (1986) and the Farmer & Fisherman Debt Alleviation Policy (1987) (Jo Seong-hee, 1991: 199-120).

F) Students Accepted into Agricultural Colleges Based on Recommendations by the City & Provincial Education Committees for Outstanding Agriculture Teacher Education

A higher number of graduate students from Seoul National University's technical education department and agricultural education department went on to do other kinds of work rather than entering the teaching profession. This caused a shortage in agricultural teachers. In 1980 and 1981 Seoul National University sought to resolve this problem by putting 100% of the incoming students recommended by provincial education committees (and coming from agricultural high schools) to work as agriculture teachers in their home province. In 1982, 11% of high school graduates were enrolled on a preferential enrollment basis. This rate fell to 8% in 1983 and the system was abolished in 1984. This led to another decline in graduates entering agricultural teaching as a result (Jo Seong-hee, 1991: 111).

<Table 1-11> shows the rate of graduates from the Agricultural Education Department at Seoul National University accepting employment as teachers.

<Table 1-11> Rate of Employment as Teachers among Graduates of Seoul National University's Agricultural Education Department

Graduation Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Employed as Teachers (%)	17.4	26,9	33.3	35.7	21.4	37.5	81.5	61.5	63.3	66.7

Source: Jo Seong-hee (1991), p. 111

The enrollment quota for Chungnam National University's technical education college was also increased to 900 in 1980. However, in 1988 this quota was reduced to 90, and this caused great changes to the training of technical and technology teachers and other resulting problems (Jo

Seong-hee, 1991: 111).

G) Enhancing Computer Education

In the 1980s the common theme for education reform in every major country of the world was the enhancement of computer education. In Korea the curriculum was strengthened in terms of information processing and development of business management skills. As part of this initiative, in 1984 information processing departments were set up at commerce high schools, followed by plans in 1987 to improve school computer education with the aim of eliminating computer illiteracy. In 1988 the curriculum was revised and ‘General Electronic Computation’ was made a compulsory course in 4 commerce high school departments, and 3 computer-related subjects were established as electives, thus expanding computer education throughout all commerce high schools (Jo Seong-hee, 1991: 108-109).

H) Strengthening the Support System for Developing Self-reliance in Fishermen Inheritors

In accordance with the Agriculture High School Development Policy initiated in the 1980s, government projects in support of the construction of independent school systems within agricultural high schools designated by the Independent Farmer Department were nearly complete in 1985, and the government established development plans for a fishery high school as part of the measures to promote vocational high schools, along with a comprehensive policy on farming and fishing villages. At the time of establishment of these plans, there was an urgent need for policy to address the declining number of people involved in fisheries, the fact that fisheries high school application rates among middle aged and young adult fishing workers had reached a low point, the high dropout rate from these schools, the low numbers of graduates settling in fishing villages, the lack of adequate businesses and laboratories, and the lack of a system to attract qualified students. At this, the Ministry of Education established the Independent Fishery Department to develop self-reliance in fishery inheritors and develop a foundation for a system of self-reliance. It then established 4 Independent Fishery Department schools (1 on the east coast, 1 on the west coast, 2 on the south coast) to focus on development of regional society in fishing villages (Korea Research Institute for Vocational Training & Education, 1998: 733-735).

I) Reduction of Funding

Entering the 1980s, the center of vocational education was transferred away from vocational high schools to community colleges and colleges of science and engineering, leading to a reduction in funding. As such, as shown in <Table 1-9> (Rate of Ministry of Education Spending and Vocational Education Cost Increases), vocational high school funding support accounted for a steady 4.1% of Ministry of Education spending throughout the 1970s, but fell to 3.6% in the 1980s (Jo Seong-hee, 1991: 117-118).

C. Vocational Education Policy under the Roh Tae-woo Administration (1988–1993)

1) Policy to Increase Vocational High School Student Quota

At a press conference to begin the new year (January 10, 1990) President Roh Tae-woo declared education reform to be one of the five urgent policy tasks for his administration. As part of this education reform, a goal was set to raise the 68:32 ratio of general high school students to vocational high school students to 50:50 by 1995. In order to bring this about, a vocational school expansion project was initiated (Korea Research Institute for Vocational Education & Training, 1998: 157).

This policy has been viewed as a comprehensive approach to resolving the university entry bottleneck that left the majority of high school graduates behind while expanding the amount of skilled high school graduates needed by industry. However, limited funding for vocational high schools led to issues with their establishment and expansion, increasing student quotas, and teacher supply. At the same time, other problems emerged such as the lack of high schools seeking to become technical high schools, and resistance from parents of general high school students, school alumni and regional citizens regarding conversion of their schools into technical schools. Meanwhile, although vocational high school education expanded in a quantitative sense, qualitative difficulties were encountered. The ratio of general high school students to vocational high school students rose to 56:44, but this expansion has had a negative impact on the development of vocational high school education today (Ministry of Education, 1998a: 566-572).

2) Building a Career and Vocational Education System

The Presidential Educational Policy Advisory Council of the Roh Tae-woo administration (February, 1991) emphasized the need to build a career education system and proposed career awareness education: (elementary school) → career exploration education (middle school) → career preparation education (high school). Furthermore, the government pushed curriculum development and implementation based on job analyses, field study-centered vocational teacher training, enhancement of industry-school cooperation and other measures to carry out vocational and technical education reform (Korea Research Institute for Vocational Education & Training, 1998: 87).

Meanwhile, the government presented measures for curriculum development and implementation based on job analyses, established and expanded vocational education centers, strengthened field study-centered vocational teacher training, and expanded the vocational education opportunities in general high schools. Further, to establish a continuing education system, the government also presented measures for implementing a variety of education programs to meet the demands of industry, and for strengthening local hands-on training programs based on industry-school cooperation (Korea Research Institute for Vocational Education & Training, 1998: 87).

3) Transferring Administrative Authority for Secondary Vocational Education Policy to Local Governments

The Roh Tae-woo administration transferred administrative authority for secondary vocational education policy to local governments. This led to local governments also being responsible for implementing the vocational education support system instead of the Ministry of Education.

D. Secondary Vocational Education Policy under the Kim Young-sam Administration (1993–1998)[1]

1) Background to the Kim Young-sam Administration's Secondary Vocational Education Policy

The Kim Young-sam administration was aware that the vocational education and training system was divorced from the needs of actual industrial sites due to the inability to properly accommodate

[1] Summarized by referencing Jang Gi-won (2001), pp. 11-19: Ministry of Education (1998a), pp. 3-10.

the demand for industry structure development and transformation, labor market restructuring, and individual work capacity-building (Ministry of Education, 1998b: 290). According to the Korea Research Institute for Vocational Education & Training (1998), the government planned to build a lifelong vocational education system to resolve these issues It aimed to establish a structure by which any citizen of Korea could receive vocational education at any point in their lives and to enable citizens to display their outstanding talents and aptitudes to their full potential. At the same time it planned to establish the conditions for training and supplying the quality personnel with the practical abilities needed in the world of work.

Furthermore, they set a practical target to guarantee the following by 2000: high school-level vocational education opportunities for all youth who would not be entering university, community college-level vocational education to all high school graduates who desire it, and vocational education and training opportunities to improve individual work skills to any adult.

According to the Korea Research Institute for Vocational Education & Training (1998), the government established the following seven vocational education policy tasks and 43 related goals on February 9, 1996:

① Expand the variety of vocational education offered at high schools (specialized high schools, comprehensive high schools, dual program (2+1) of Specialized Technical high school, strengthening career guidance) (9 goals)

② Invigorating vocational education in community colleges, open universities, and technical colleges (7 goals)

③ Introduce new colleges (technology colleges, company-affiliated colleges) (3 goals)

④ Introduce a degree system for professional jobs (specialist degree, industry degree) (1 goal)

⑤ Construct a foundation for lifelong vocational education (cyber universities) (10 goals)

⑥ Reform the qualifications system (4 goals)

⑦ Construct a vocational education and training-related administrative and funding support system (enact 3 vocational education laws and strengthen relevant organizations) (9 goals)

Of the above tasks, high school vocational education policy tasks and related main content are discussed in sections 2) to 8) below.

2) Expanding the Variety of High School Vocational Education through Specialized High Schools & the Dual Program (2+1) of Specialized Technical High School

For the majority of vocational high schools up to that time, major fields were established and operated without any special characteristics as if they were department stores with something for all customers. This led to ineffectiveness. Moreover, there was a need to construct a vocational education supply system that could flexibly respond to structural changes in industry and technological developments. In order to do so, the path needed to be opened for students to determine their careers early on based on their personal aptitudes and abilities. For this to happen, a specialized system was developed featuring high schools that focused on a variety of professional fields. Such schools included information high schools, design high schools, electronic communications high schools, popular music high schools and others. The Primary-Secondary Education Act Ordinance was enacted to serve as the legal basis for this (Presidential Order No. 15664, Feb. 24, 1998) (Lee Jong-seong et al., 1998).

At the same time, the ‘5-year Plan for a New Economy’ (1993–1997) was established and, in order to train the technically-skilled human resources needed to fulfill the plan, the technical high school ‘Two-plus-One system’ was introduced on a trial basis and then eventually fully implemented (1994–1998). Existing technical high school students were to be given 2 years of school education, then 1 year of field training at an industrial site. In doing so the enhancement of practical adaptability became the primary objective. However, this system proved to be unproductive and was halted in the mid-2000s. It failed because there was insufficient investigation of whether the technical school ‘Two-plus-One system’ was suitable for the education environment and industrial education conditions in Korea and a failure to make adequate preparations to ensure that it was adapted to such conditions. Further, despite the fact that the dual system of Germany had already been introduced by the Ministry of Labor in 1983 only to fail and be canceled in 1993, the government initiated it again without consultations, and without analysis of the causes for the previous failure or measures to prevent a similar outcome the second time around. The system was also viewed negatively by teachers at the time (Lee Yong-soon, 2001: 1-3, 6-34; Jeong Taek-su, 2008: 248-254; Ministry of Education, 1998a: 568-572).

3) The Integrated Implementation of High School Curricula

General high school and vocational high school students were given insufficient opportunity to take courses outside of their major field of study, and approximately 150,000 students were unskilled graduates who did not go on to university. To tackle this, the government integrated general and vocational curricula and, in doing so, minimized corequisite subjects, made it possible for students to select a variety of subjects from a variety of fields without distinction in their 2nd and 3rd years, and enabled schools to establish and implement a variety of elective courses depending on the circumstances of the region they were in and the situation of the school (Ministry of Education, 1998b).

4) Improving the Practical Adaptability of Vocational High School Education

According to the Ministry of Education (1998b), it became clear that vocational high school education needed to be improved due to a variety of issues including the establishment of curricula based on theory over practical considerations, the impracticality of vocational education implemented in high schools as a result of insufficient hands-on experience among teachers and general inability to instruct through practical applications, and a lack of awareness of the importance of industrial vocational education. The government began focusing on the hiring of teachers with industrial and academic experience, outstanding teachers and instructors, and other approaches to gain access to personnel with backgrounds in industry and a set level of talent who could competently handle professional subjects.

In addition, to bring stability to the dual program (2+1) of Specialized Technical high school, teaching materials that combined theory and practicality were developed based on job analysis done in cooperation with industry personnel, safe hands-on field study opportunities were provided, and comprehensive evaluations of the system were carried out. In order to improve the filed practice conditions, the Industrial Accident Compensation Insurance Act was revised in August 1997 to include hands-on field study students as of January 1, 1998. To guarantee the legal position of hands-on field study and to ensure its long-term sustainability, a standard memorandum of understanding was developed and announced that would serve as the criteria for a hands-on field study contract system (January 1998).

5) Modernization of Vocational High School Facilities & Infrastructure

Weak vocational high school support led to insufficient experiment and hands-on learning facilities and equipment and their deterioration over time, making it impossible to carry out vocational education that enhanced the practical adaptability of its students. These facilities, infrastructure and equipment were refurbished in a manner that made the most of the characteristics of each school and region. Towards modernization, the infrastructure was expanded from 1997 to 2002 and cutting-edge, high-priced equipment was installed within technical high schools in each region to ensure common utilization and thereby make the most out of the money invested. In addition, by 1999, multimedia rooms had been installed in 790 vocational high schools (1 for each school, including science high schools) to ensure access to the most recent domestic and foreign study materials and data. Further, from 1997 to 2001, the most up-to-date learning devices were installed in 17,570 classes and vocational education software was also developed and distributed (Ministry of Education, 1998b: 198-199).

6) Enhancing Funding

To attract outstanding students with aptitude for vocational skills to enroll in technical high schools, the provision of student loans was gradually expanded from 1996, and by 2000, 50% of all technical high school students (104,500 students) were eligible (Ministry of Education, 1998b: 199).

7) Provision of Lifelong Career Guidance & Career Information

According to the Origin of Education Reform (Ministry of Education, 1998b), the government was unable to introduce a career education system that could enable students to rationally explore and decide upon a career path because elementary, middle and high schools were too heavily focused on providing career guidance aiming at successful enrollment into advanced schools above all else. This situation emphasized the need for a career guidance program that could enable people to discover their individual talents and aptitudes at an early stage and systematically provide citizens with a variety of career information to prepare for the future information-oriented society, and in doing so modernize their abilities to plan their lives. In an effort to address this need, an attempt

was made to systematize career guidance by regularizing career counseling within each school grade, keeping career counseling records, and administering career aptitude evaluations to students. In addition, career counselor abilities were enhanced through the enactment of laws for a professional guidance counselor system (Elementary and Secondary Education Act, Article 21, Section 2), and expansion and strengthening of general training and qualifications training systems for career guidance. With this, career counseling records were begun in grade 4, and aptitude exploration began. At the same time, career counseling was regularized and aptitude evaluations implemented. In middle schools, an effort was made to improve the ability of students to select the appropriate type of high school by establishing career counseling rooms, dispatching career counseling directors to these schools, recommending that career information rooms be established and run separately, and enabling each and every student to make use of aptitude test results and career guidance records.

Career guidance rooms were also set up in high schools, career counseling directors sent, career aptitude tests conducted once a year, career education implemented through Career-Job courses and special activities, career guidance including parents regularized, and a Career Day designated for each grade in every school.

8) Improving the Qualifications System

Qualifications reform was carried out with four aims in mind. According to Research to Evaluate Vocational Education Policy (Jang Gi-won, 2001), the first set of aims was to enhance the linkage between education and the labor market, improve vocational education and standards, and improve competitive potential when it came to securing human resources. The second set of aims was to achieve flexibility in the qualifications system and invigorate private participation by dualizing authority to manage the system into both governmental and private spheres in consideration of the limitations of government administration when it came to creating greater variety in the qualifications system and, in doing so, enable national and private qualifications to supplement one another and simultaneously open the path for the establishment of a qualifications quality control system. The third aim was to combine existing national technical qualifications types and create the more simplified qualification grades of craftsman, industrial technician, engineer and professional engineer. The fourth aim was to ensure the practical applicability of vocational

education by strengthening connectivity between vocational education curricula and qualifications curricula. Though these above-mentioned reforms of the national qualifications system were carried out later than intended, they were able to establish a direction for education reform. The invigoration of private qualifications was particularly significant (Ahn Byeong-yeong, Ha Yeong-seop, 2015: 211-212).

Based on research by Jang Gi-won (2001), a summary of the results of our evaluation of vocational education policy is provided below. This evaluation looked at vocational education policy from three perspectives: the decision-making process, the execution process, and the policy results.

First, in terms of the vocational education policy decision-making process, although a proper direction for reform was established through appropriate responses in policy-making environments, there was insufficient linkage between the methods for carrying out policy and policy goals during the process of policy materialization. In addition, the potential to realize policy goals was generally low outside of funding. While there was general consistency with other policies, the decision-making process was not reasonable even though it was carried out democratically.

Second, in terms of the vocational education policy execution process, though policy execution planning was properly established, policy was not carried out as scheduled. Although revision of laws related to developing a basis for education reform was not carried out democratically, the reorganization of institutions for education reform was properly achieved. Goals for securing education finances and vocational education-related funding required for reform were not met initially, but a monitoring system was properly constructed.

Third, in terms of vocational education policy results, though expansion of opportunities for vocational education were achieved according to the aims of education reform, expansion of vocational training opportunities was not in line with the intentions of reform. While education conducted by businesses and that based on business requests at community colleges and industrial universities, reform of the national technical qualifications system and installation of school operation committees in institutions of secondary vocational education all had positive effects in terms of achieving connectivity between vocational education and the labor market, the hands-on learning of students, the introduction of a private qualifications system, and construction of a

vocational education training network did not prove adequately effective. The conditions for vertical linkage within vocational education were properly established, and this linkage resulted in positive benefits between vocational high schools and community colleges. Horizontal linkage between high school education institutions and high schools did not have the effects intended by education reform across the board.

The civilian government of Kim Young-sam was able to carry out vocational education reform beginning with enactment of the Vocational Education and Training Promotion Act, the Framework Act on Qualifications and the Korea Research Institute for Vocational Education and Training Act with a certain degree of consistency. This has been attributed to the fact that the tasks in vocational education reform were sustained until completion throughout the term of the president and with his complete confidence, and the fact that within this environment there was natural cooperation between the Minister of Education and Human Resource Development Ahn Byeong-yeong, who showed obvious conviction and leadership regarding vocational education policy, the Blue House's Chief Secretary Park Se-il, and the Education Reform Committee's standing committee member, Lee Myeong-hyeon.

At the same time, an examination of the reasons why vocational education policies were unable to attain the desired results reveals the following issues:

First, governments were unable to overcome their ministries' self-interests (Ministry of Education and Ministry of Labor) during the vocational education reform process. Second, education reform came too late, and the initiatives taken did not last long enough. Third, education reform was too narrow in scope. Fourth, there was insufficient investigation of the actual conditions affecting vocational education. Fifth, the governments were unable to encourage the active participation of groups targeted by policy.

We suggest the following resolutions: First, in terms of education reform, a thorough and detailed investigation is required to determine what approach needs to be taken to maximize reform efforts when preparing overall vocational education policies. Second, there is an urgent need to establish links between national human resources development policy and vocational education policy. Third, maintenance is required for vocational education and training-related legislation based on the education reform initiatives of the civilian governments. Fourth, there is a need for new revision of the vocational education and training network. In other words, the network between the

Vocational Education & Training Policy Council, the Steering Committee for Vocational Education & Training Institutions, and the Korea Research Institute for Vocational Education & Training needs to be strengthened, as do the regional society networks and networks between vocational education and training institutions. Fifth, sharing the responsibilities of and cooperation between the Ministry of Education and Human Resources Development and the Ministry of Labor regarding vocational education and training need to be strengthened. Sixth, a reevaluation of the vocational education system is required. Seventh, the qualifications system needs to be revised. Eighth, the evaluation abilities of the vocational education sector need to be strengthened. (Jang Gi-won, 2001: 202-208).

E. Secondary Vocational Education Policy under the Kim Dae-jung Administration (1998–2003)

Some characteristics of the Kim Dae-jung administration's vocational education policy were the legalization of company-affiliated colleges to expand the Basic Plan for National Human Resource Development and opportunities for higher education, as well as the enabling of distance education that used information communication media. In addition, the expansion of vocational high schools into specialized high schools and the strengthening of the Two-plus-Two link system between specialized high schools and community colleges can also be considered main elements of the administration's policy.

1) Basic Plan for National Human Resource Development

According to A Performance Assessment of the Industry-School Cooperation Policy (Im Chang-bin, 2009), although Korea envisioned crossing the threshold into the developed world after the per-capita income of the country reached USD 10,000 in 1995 and after gaining membership into the OECD, the Asian Financial Crisis made it clear that there were limits to traditional economic growth through labor and capital investment. The government therefore came to realize that the development of outstanding human resources would be critical to attaining developed country status and carrying out the transition toward a knowledge and information-based society.

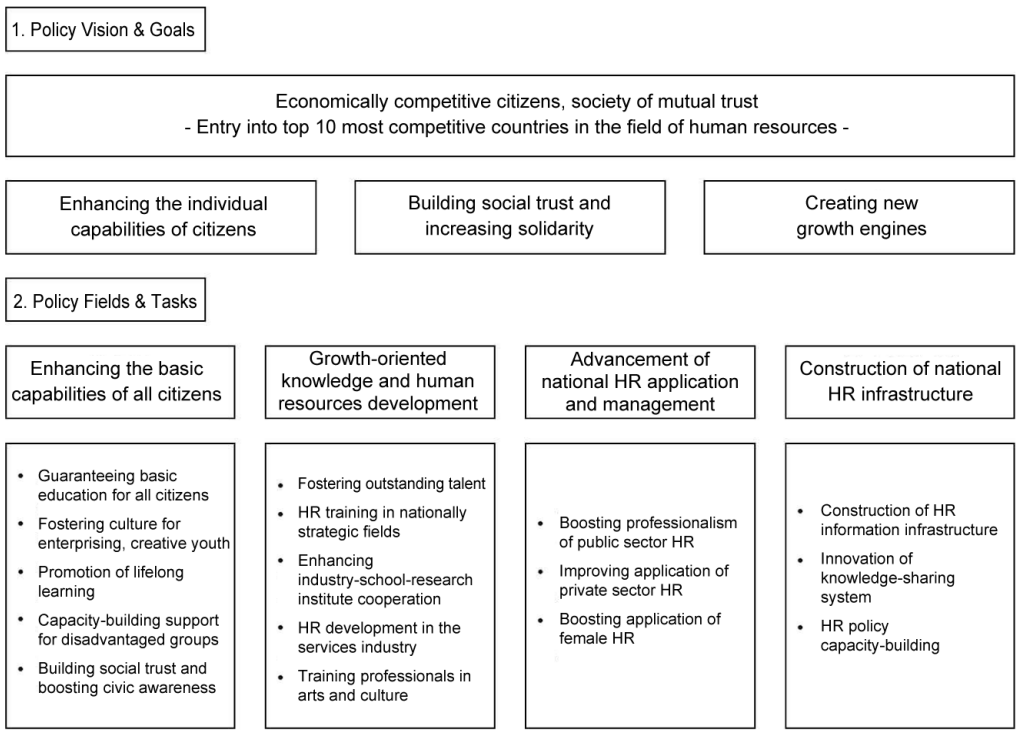
As such, in his New Year's address (January 3, 2000) President Kim announced, "I will promote the Minister of Education to the position of Deputy Prime Minister and promote the

comprehensive implementation of all human resource development policies encompassing education, training, culture, tourism, science, and information technology." On November 29, 2000, the National Government Organization Act was revised to reform the Ministry of Education into the Ministry of Education and Human Resources Development (MEHRD). With this, the main human resource training and supply tasks that had been administered by the Ministry of Education up to that time were placed under the jurisdiction of MEHRD, and additional policy focus placed on the application and management of human capital

In order to have Korea meet the standards of developed nations in terms of national resource (including human) development and application, MEHRD engaged in systematic planning and revision of the related policies being carried out on a national level by several governmental departments as well as an evaluation system. It announced in a 2001 presidential task report its Basic Plan for National Human Resource Development as a medium to long term goal in order to present the comprehensive goals and vision for current education and training and R&D-related policies (Ministry of Education and Human Resources Development, 2001; Reproduced from Im Chang-bin, 2009: 56).

After roughly 2 years and several stages of processing the final report to the president (December 17, 2001) was made and a firm Basic Plan for National Human Resource Development was defined under the title 'People & Knowledge,' which referred to establishing human capital as the core capacity enabling national development in the 21st century. This was the very first plan for comprehensive development of Korea's human resources and their application on a national level (Republic of Korea Government, 2001; Reproduced from Kim Yoon-tae, 2002: 41). [Image 1-2] shows the 4 areas and 16 tasks set for the vision and goals of national human resources development policy.

[Image 1-2] Basic Structure of National Human Resources Development Policy (2002–2005)



Source: Republic of Korea Government, 2001; Reproduced from Im Chang-bin (2009), p. 57

The main tasks of the Basic Plan for National Human Resource Development shown in [Image 1-2] were medium to long term projects that were carried out until 2005. As such, to ensure its effective execution, plans for implementation were established that designated the supervising and related departments for each task and specified the schedule and financial resources for implementation by each supervising department.

According to the Performance Assessment of the Industry-School Cooperation Policy (Im Chang-bin, 2009), this Basic Plan was a comprehensive and strategic medium to long term plan divided into 5-year segments that focused on achieving human resource policy goals and presenting policy tasks and strategies for implementation. As such, to guarantee the effectiveness of the Basic Plan, a concrete implementation plan was needed that established the institutions responsible for implementing policy, policy content, methods, schedules and other details. However, a legal basis

had not yet been developed to establish and carry out this plan. To resolve this issue, MEHRD enacted the Framework Act on the Development of Human Resources (August 2002) and a corresponding ordinance (February 2003), both of which came into effect on February 27, 2003.

2) Conversion of Vocational High Schools into Specialized High Schools, Strengthening Implementation of the Two-plus-Two Link Curriculum between Specialized High Schools & Community Colleges, Expanding University Enrollment Opportunities for Vocational High School Graduates

Contemporaneous to enactment of the Framework Act on the Development of Human Resources and its related ordinance coming into effect, the Kim Dae-jung administration converted the high school vocational education system into a specialized high school system. In addition, to enhance implementation of the Two-plus-Two link curriculum between specialized high schools and community colleges, middle level workers were educated and vocational high school graduates given expanded opportunities to go to university.

Moreover, to expand lifelong opportunities for advanced vocational education, a legal basis was established to enable companies to create their own affiliated colleges.

To further expand opportunities for vocational high school graduates, a set quota would be selected to enter a university if it matched their field of study.

F. Secondary Vocational Education Policy under the Roh Moo-hyun Administration (2003–2008)[2]

1) Launch of the Presidential Committee on Balanced National Development & Enhancing the Industry-School Cooperation System

According to Im Chang-bin (2009), with the launch of President Roh Moo-hyun's participatory government policy in 2003, balanced national development was made a top administrative task. With this, the Presidential Committee on Balanced National Development was established as an institution directly accountable to the president. As an organization for national planning and policy revision to enhance regional autonomy, it played a role in supporting the specialized

[2] Summarized by referencing Im Chang-bin (2009).

development of each region through agreed restructuring and cooperation with each government ministry.

The Presidential Committee had as its vision construction of a society in which the entire country could thrive independently through enhanced regional autonomy. The main tasks for achieving this vision were ① building regional systems of innovation to enhance regional autonomy, ② developing strategic regional industries and promoting the growth of industrial complexes, and ③ enacting related laws and improving relevant systems.

According to Im Chang-bin (2009), the regional innovation system for enhancing regional autonomy was comprised of a variety of actors to bring about such innovation, including regional governments, regional universities, businesses, NGOs, and regional press and research institutions. These actors would dynamically cooperate with one another in a variety of areas such as research and development, technological innovation, venture businesses, creation of new industries and improving existing ones, reforming the administration system, and cultural activities. In doing so, they would be making the first such attempt in the world to foster the creation of innovation and regional development. The creation of a system of close industry-school-research cooperation, with the help of regional universities, regional governments and businesses, would enhance the capacity for technological innovation on a regional scale and for the training of talented personnel, resulting in the improvement of existing industries and the creation of new ones. This would lead to regional growth and, ultimately, enhanced regional autonomy. In this context, the Presidential Committee on Balanced National Development, the Ministry of Education and Human Resources Development, the Ministry of Commerce, Industry and Energy, the Ministry of Science and Technology, the Ministry of Information and Communication, the Ministry of Culture and Tourism, and the Small and Medium Business Administration cooperated to establish the ‘Participatory Government’s Vision and Strategy for New Industry-School Cooperation: Industry-School Partnerships for Technological Innovation & Employment Creation’ (September 2003).

The ‘Participatory Government’s Vision & Strategy for New Industry-School Cooperation’ included the establishment of 4 task areas for such cooperation: human resource development based on demand, innovative technology development, technology transfers and guidance, and cutting-edge commercialization to support technology entrepreneurs. Further, 5 core policy tasks were selected: ① develop universities to serve as hubs for industry-school cooperation, ② improve

the university evaluation system to boost industry-school cooperation, ③permit universities to establish businesses and invest, ④ construct and apply an industry-school cooperation database, ⑤ and construct a private sector-government cooperation system.
<Table 1-12> offers a concrete overview of this initiative (Im Chang-bin, 2009: 72).

<Table 1-12> 5 Core Policy Tasks of New Industry-School Cooperation

Type	Detailed Policy Tasks
Develop universities to serve as hubs for industry-school cooperation	• Select 1–3 universities as main institutions for industry-school cooperation in each metropolitan city and province across the country • Restructure the university system to induce industry-school cooperation through professor and student evaluations, subject reforms, the hiring of professors, and administrative support, etc.
Improve the university evaluation system to boost industry-school cooperation	• Increase incentives for professors and students to engage in industry-school cooperation • Expand importance of industry-school cooperation in education and research • Professors sent to institutions of industry-school cooperation given permission to hold additional jobs and given preference during result-based evaluations
Permit universities to establish businesses and invest	• Introduce and operate customized departments (courses) to train HR desired by specific businesses
Construct and apply a national industry-school cooperation database	• Construct and apply an integrated national industry-school cooperation database • Secure technology TV channels
Construct a private system for industry-school cooperation	• Establish national and regional private-governmental cooperation organizations for industry-school cooperation

Source: Presidential Committee on Balanced National Development et al. (2003); Reproduced from Im Chang-bin (2009), p. 72

In the ‘Vision and Strategy for New Industry-School Cooperation’ (2003) policy tasks to develop industry-school cooperation were announced for each ministry, including the Ministry of Education and Human Resources Development, which set the following three basic aims to invigorate this cooperation: ① train human resources related to manpower supply and boost the standards for quality, ② construct relevant systems and infrastructure to ensure businesses and universities can mutually benefit, ③ promote industry-school cooperation for each specialized university in a manner related to the latter’s characteristics, educational conditions and regional development plans. In order to carry out these aims the following four tasks were presented: ①

support the restructuring of universities into joint industrial-academic universities, ② construct a closely integrated industrial-academic bachelor's degree administration system, ③ improve the system promoting industry-school cooperation, ④ construct an integrated management system centered on industry-school cooperation organizations.

As such, the basic direction and main tasks for promoting the government's policy in this area were set in 2001 onward according to the Basic Plan for National Human Resource Development (December 2001), the 'Integrated Policy for Promoting Industry-School Cooperation (February 2002), and the 'Participatory Government's Vision & Strategy for New Industry-School Cooperation (September 2003). <Table 1-13> presents the policies designated as the responsibility of MEHRD. The table shows that the basic and core plans for industry-school cooperation carried out by the Ministry were part of the Basic Plan for National Human Resources Development.

In order for MEHRD to construct the legal and systematic basis for industry-school cooperation organizations, school enterprises, and cooperative research institutes designated by the Basic Plan and the Integrated Policy for Promoting Industry-School Cooperation, the existing Industrial Education Promotion Act was revised and passed as the Industrial Education Enhancement and Industry-School-Research Cooperation Promotion Act on May 27, 2003 entering into force on September 1 of the same year.

<Table 1-13> Summary of Industry-School Cooperation Policy Administered by the Ministry of Education & Human Resources Development

Policy Tasks		Basic Plan for National Human Resource Development	Integrated Policy for Promoting Industry-School Cooperation	Participatory Government's Vision & Strategy for New Industry-School Cooperation
Introduce industry-school cooperation system	Establish and implement industry-school cooperation organizations	○	○	○
	Introduce and implement a system for professors involved in industry-school cooperation	○	○	○
	Promote establishment of school enterprises and entrepreneurship support centers	○	○	○
	Introduce a cooperative research institute system	○	○	
	Establish a legal and systematic basis for promoting university-based industry-school-research cooperation projects	○	○	○
Promote industry-university HR exchanges	Improve the system of hiring professors with business experience first	○		
	Emphasize importance of results of industry-school cooperation when evaluating professors and the need for support with research costs	○	○	○
	Increase the number of professors sent to industry sites, research year system, leave for industry employment	○	○	○
	Expand implementation of HR assignment program for industry-school-research institute cooperation		○	○
	Promote implementation of practical lectures and degree programs	○	○	○
Enhance the role of government	Establish and implement a policy consultative group with all ministries participating that are involved in revision of industry-school cooperation policy	○	○	
	Support development of university curricula appropriate to locale			○
	Communicate outstanding examples		○	
	Publish and distribute a white paper on industry-school cooperation	○	○	
	Classify industry-school cooperation forms at the university level to link policy and funding support (BK21, scholarship and research project creation, projects to enhance regional university capacity for innovation, university specialization projects, university projects centered on industry-school, community college specialization projects, etc.)			○

Source: Presidential Committee on Balanced National Development et al. (2003); Reproduced from Im Chang-bin (2009), p. 76

The main elements of the revised Industrial Education Enhancement and Industry-School-Research Cooperation Promotion Act are shown in <Table 1-14>.

<Table 1-14> Main Details of the Industrial Education Enhancement and Industry-School-Research Cooperation Promotion Act

Policy Tasks		Content of Law
Systematization	Establish and implement industry-school cooperation organizations	(Article 25) Establishment and implementation of industry-school cooperation organizations (Article 26) Articles of incorporation (Article 27) Tasks of industry-school cooperation organizations (Article 28) Directors of industry-school cooperation organizations (Article 29) Organizational structure of industry-school cooperation organizations (Article 30) Project year(s) (Article 31) Revenue (Article 32) Spending (Article 33) Accounting principles (Article 35) Acquisition of intellectual property rights
	Introduction & implementation of system for professors involved in industry-academic cooperation	(Article 34) Hiring researchers, etc.
	Promote establishment of school enterprises and entrepreneurship support centers	(Article 36) School enterprises
	Introduction of cooperative research institute system	(Article 37) Cooperative research institutes
	Establishing legal & systematic basis for promotion of university-based industry-school-research cooperation projects	(Article 1) Purpose (Article 2) Definitions (Article 4) National and local government duties (Article 24) Industry-school contracts (Article 39) Support for industry-school promotion (Article 40) Support for scholarly loan contracts
Promotion of HR exchanges between industry, universities and research institutes	Improve the system of hiring professors with business/research institute experience first	N/A
	Emphasize importance of industry-school cooperation results when evaluating professors & need for support with research expenses	(Article 12, Section 2) Evaluation and reflection of industry-school cooperation results
	Increase the number of professors sent to industry sites, research year system, leave for industry employment	N/A
	Expand implementation of HR assignment program for industry-school-research institute cooperation	N/A
	Promote implementation of practical lectures and degree programs	(Article 8) Establishment and implementation of contract-based vocational training curricula

Source: Im Chang-bin (2009), p. 82

The following is a summary of the outputs, results, and impacts of the people's government of Kim Dae-jung and the participatory government of Roh Moo-hyun based on the research of Im Chang-bin (2009).

First, the rate of introduction of industry-school cooperation organizations was very high, and the number of industry-cooperation organization workers and accountants expanded, which shows an achievement of the industry-cooperation organization promotion policy goals. However, the rate of introduction was low of new industry-school cooperation system elements such as special professors, school enterprises, and cooperative research institutes.

Second, the ratio of universities that improved their professor evaluation systems to reflect industry-school cooperation results was higher than other systems, showing that policy implementation was highly beneficial. However, not many systems were introduced that promoted industry-school human resource exchanges, including first hiring professors with experience working in business, cooperative industry-school-research institute HR assignments, and creation of contract-based vocational training curricula and customized departments (courses).

Third, the industry-school cooperation policy achieved a great deal in general terms. In particular, there was a great increase in such outcomes as agreements for industry-school cooperation and related research, as well as increases in domestic patent applications and registrations, and the number of technology transfers.

Fourth, the majority of industry-school cooperation organization directors perceived a great deal of changes at universities and an increased understanding of and interest in industry-school cooperation as a result of MEHRD policy. A comprehensive evaluation of the impact of that policy shows that while it was highly appropriate, it was marginally effective and satisfaction was low.

Fifth, a discussion of the mutual application of industry-school cooperation policy outputs, results and impacts shows that the industry-school cooperation organization, the professor evaluation system, government funding support, and the awareness of university administrators and teaching staff are factors that have an impact on results.

As shown above, establishment of industry-school cooperation organizations, improvement of professor evaluation systems and other approaches led to the creation of infrastructure that promoted cooperation between universities and industry. In addition, the MEHRD's funding and

implementation of industry-school cooperation projects successfully changed perception of the program among university administrators and teaching staff in a positive manner. This proved useful in the diversification of related duties of the industry-school cooperation organization, improvement of professor evaluation systems, and enactment of reward systems for inventions and other regulations related to management of intellectual property rights. Based on this perception change, industry-school cooperation policy was very successful.

2) Expanded Establishment & Stabilization of Specialized High Schools

Regarding secondary vocational education policy, the Roh Moo-hyun administration was particularly interested in expanding the number of specialized high schools and improving the stability of the specialized high school system. In addition, enhancement of these specialized high schools and industry-school cooperation at the university level was also a policy linked with balanced national development. In order to achieve its aims, the Industrial Education Promotion Act was reformed into the Industrial Education Enhancement and Industry-School-Research Cooperation Promotion Act.

The Educational Innovation Committee, the presidential advisory committee for education under President Roh Moo-hyun, announced an approach to innovation in high school vocational education. The main aspect of this approach to innovation was a vision of education that integrates work, study and life. The goals were vocational and career education for all, for talented people to gain vocational ability and to enable people to actively deal with the demands of society. As an approach toward innovation, the government decided upon the construction of an open system for cultivating successful workers by enabling them to engage in lifelong development of their work skills through fluid movement between school and work and from the work world back to school.

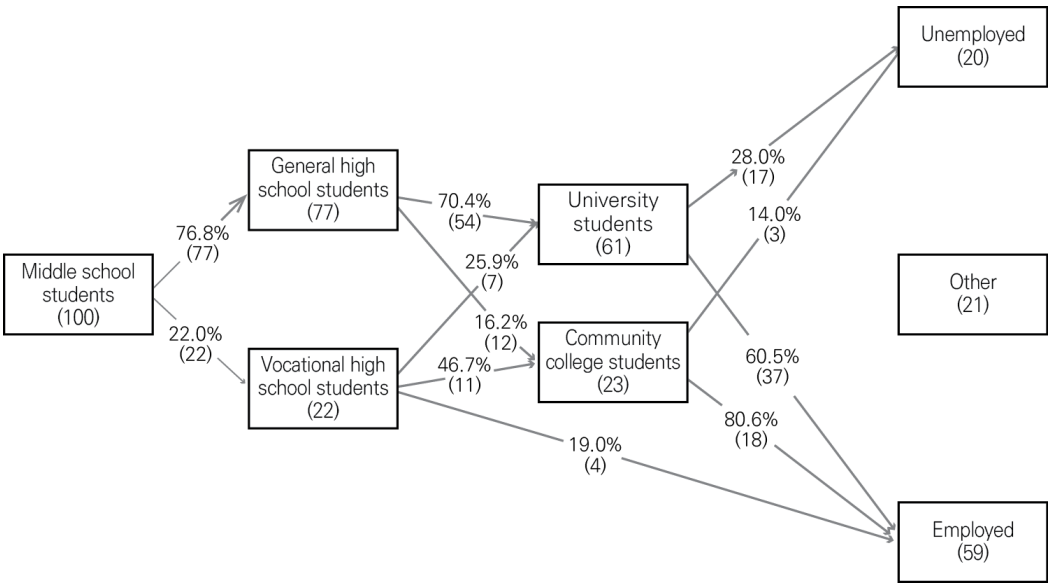
G. The Secondary Vocational Education Policy of the Lee Myung-bak Administration (2008–2013)

1) Reforming Vocational High Schools into Meister & Specialized High Schools

The Lee Myung-bak government’s high school vocational education policy focused on seeking a direction for solving what it recognized to be a severe problem: the low ratio of students able to enter the labor market in ways that matched their career plans (see [Image 1-3]). Assuming the

state of career education for each school grade in 2009 was maintained to this day, 22 of every 100 middle school graduates would have entered vocational high schools, and, of these, 11 would have enrolled in community colleges after graduation, while 7 would have entered a 4-year university, meaning that only 4 would have become employed directly after high school graduation. In other words, for every 100 middle school graduates, even if 20% completed vocational high school, they would not all have become employed (Lee Joo-ho et al., 2012: 113).

[Image 1-3] Career Pathways of Students from Secondary Education Level to Adult Education Level



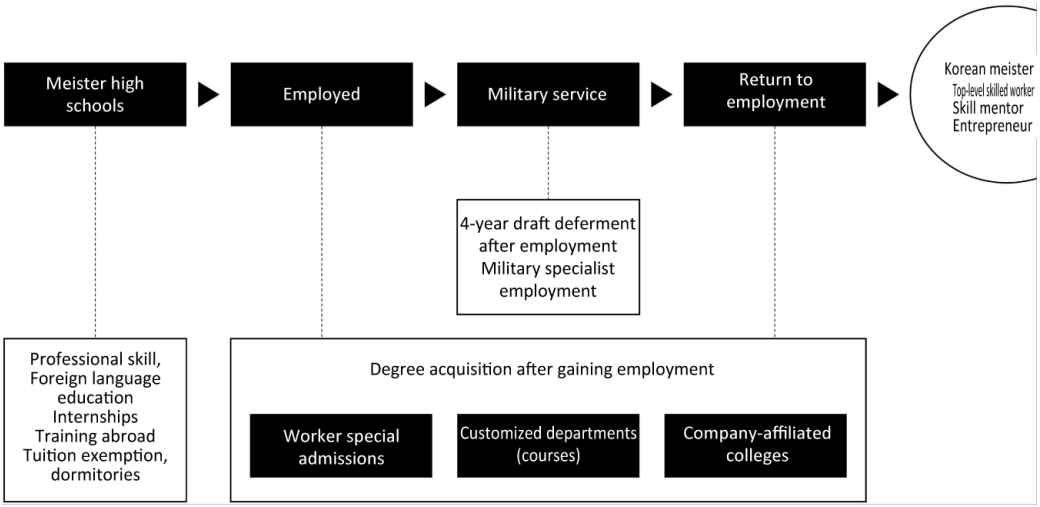
Source: Lee Joo-ho et al. (2012), p. 113

President Lee expressed his desire to establish Meister high schools to address this problem since his days as a presidential candidate in 2007, and as soon as he was elected he began to actively promote the Meister high school system, opening 1-2 such high schools every year.

The term ‘Meister high school’ (industry demand-oriented high school) refers to vocational schools that educate young ‘meisters’ for the specialized demands of promising industrial fields to

ensure they find stable employment and are therefore empowered to develop their careers.[3] As shown in [Image 1-4], according to the Ministry of Education, Science and Technology (2008), Meister high school students were taught expert knowledge and skills through professional skills training, foreign language education, internships, and overseas programs and were given exemption from tuition and offered dormitories to live in, along with other such benefits. At the same time, they were also given priority for hiring after graduation. Those who still wished to enroll in a university after gaining employment were given opportunities to do so through a special university admissions process for workers involving customized departments (courses) in universities and company-affiliated colleges. Military service could also be deferred for as long as 4 years, and specialist service was also possible within the military in relation to their degrees. Once a person completed military service, the system would enable them to return to work, continue to pursue their career, and ultimately become a Korean-style 'meister' trained as a top-level technician, possessor of technical skills, or entrepreneur (Lee Joo-ho et al. 2012: 119).

[Image 1-4] Career Pathway for Meister High School Students



Source: Lee Joo-ho et al. (2012), p. 119

[3] MEISTER SCHOOL (http://www.meister.go.kr/jsp/w010/w_school_L.jsp) (Accessed: June 30, 2016).

Meister high schools implemented a vocational education system with curricula tailored to the demands of industry that brought satisfaction to students, schools and the businesses involved. Concurrent work and study opportunities were offered through field work courses and cooperative businesses jointly developed by schools and industries, as well as special college admissions processes for workers. In particular, a cooperative industry-school education system was created in the process of implementing education curricula designed for industrial demand. This led to the development of classes suited to business that were difficult to implement in universities.

According to the Ministry of Education, Science and Technology (2008), examples of successful Meister high schools introduced in 2008 were promoted to other specialized high schools and, in order to reform all specialized high schools so they were more employment-centered, in May 2010, the 'Approach to High School Vocational Education Advancement' was announced. The main aims of this approach were to stabilize the Meister high school system and the professionalism and specialization of specialized high schools.

The Approach to High School Vocational Education Advancement shows that in 2010 the government planned to take the current 21 Meister high schools, the 40 special-purpose high schools, the 168 specialized high schools, the 275 general vocational high schools, the 187 comprehensive high schools and other such vocational high schools (691 in total) and convert 400 of them into 50 employment promotion Meister high schools and 350 industry-school cooperative specialized high schools by 2015 to promote the stability, elite nature, and professionalism of these schools. The remaining 291 would be converted into general high schools (Ministry of Education, Science and Technology, 2008; Park Dong-yeol et al., 2009).

According to the Ministry of Education, Science and Technology (2008), in order to successfully construct this system, the ability to implement curricula was enhanced, and an admission process for workers introduced to ensure the creation of the 'Employment first, University later' program. Scholarship projects and scholarly loan support programs were initiated, and degree acquisition opportunities were provided after gaining employment. An on-demand funding and evaluation management system was also established (with specialized high school reform annually accounting for KRW 49 billion, promotion of employment for specialized high school graduates for KRW 20 billion, and minor studies for professors and other special studies accounting for KRW 4 billion).

Meister and specialized high schools that operated through such support showed increasingly positive results with each year. As such, the percentage of specialized high school students gaining employment grew from 63.6% in 2011 to 89.7% by April 2012. Among these employed 2012 graduates, 75.7% were employed in permanent positions, showing that the percentage of graduates employed in 'quality positions' was also growing (Lee Joo-ho et al., 2012: 124-130).

Between 2011 and 2015, when management of the 50 Meister high schools and 350 specialized high schools planned by the Lee Myung-bak administration passed onto the Park Geun-hye administration, the number of Meister high schools grew from 21 to 40. At the same time, through an amendment of the Elementary and Secondary Education Act, 186 comprehensive high schools were converted into general high schools, while in 2015 the remaining 473 vocational high schools were all reformed into specialized high schools that had no connection with the originally-planned 350 specialized high schools.[4]

2) Enhancing the Career Education System

The Lee administration recognized the importance of career education and set the goal for the 2009 education curriculum amendment as 'individual development based on growth into well-rounded persons able to chart their own career'. Education content showed the importance of career education: for elementary schools, 'understanding the various types of work in the world' was made a priority, while emphasizing 'active career exploration' in middle school, and 'career planning' in high school. Notably, the 2009 education curriculum amendment included such content that enhanced career education as the new development of 'creative experience activities' that involved career activities and adopting 'careers and jobs' as an elective subject, etc. Further, a career project was announced in 2010 whereby career guidance counselors were to be sent to all middle and high schools in the country by 2014.

[4] MEISTER SCHOOL (http://www.meister.go.kr/jsp/w010/w_school_L.jsp) (Accessed: June 30, 2016).

H. Secondary Vocational Education Policy under the Park Geun-hye Administration (2013–present)

1) NCS-based Curriculum Development & Management for a Competency-based Society

The Park Geun-hye government established 75 administrative tasks to create the conditions necessary for a competency-based society. To carry out these tasks, a vocational education and training curriculum was developed based on the National Competency Standards (NCS) and applied to Meister high schools, specialized high schools and most community colleges. Application of the NCS was also encouraged to the development and implementation of university department curricula focused on professional training.

The National Competency Standards are the government's systematization of knowledge, skills, level of refinement and other elements demanded at work sites in the performance of duties (Framework Act on Qualifications, Article 11722, Section 2, Item 2). This means the NCS is the national level standardization of the abilities (knowledge, skills, attitude) needed to successfully carry out the tasks required on the job (Ministry of Education, National Research Foundation of Korea, 2015: 7).

The National Competency Standards refer to the practical abilities demanded for successfully carrying out the duties relevant to a certain job. The standards for a certain job encompass all types of skills related to implementing job tasks and are constructed within modules and developed with the leading participation of industrial groups. Therefore NCS-based curricula are a departure from subject-centered and supply-oriented curricula, replacing these and other traditional approaches with personalized, consumer-based education that is appropriate to learner aptitudes and focused on developing the abilities demanded by the world of work. To summarize this further, NCS-based curricula place importance not on what a learner knows, but what a learner can do (Ministry of Education, National Research Foundation of Korea, 2015: 7-25).

The NCS do not only apply to education. They are also recommended for public institutions and businesses as a standard for determining employee suitability. However, because the standards change quickly for knowledge and skills, the cycle is also quickly becoming shorter between creation of a job and its obsolescence. For this reason it is unreasonable to apply NCS-based curricula to every vocational education program. As long as the basic purpose of NCS-based education is sufficiently maintained, there needs to be flexibility in application of the NCS to courses or major fields.

2) Achieving Lifelong Learning through the Work-Learning Dual System

Since 2015, the Park Geun-hye government has been implementing the 5-year integrated education curriculum linking high schools, community colleges and businesses to guarantee employment after graduation, which is known as the Employment Guaranteed High School-Community College Comprehensive Education Development Project (Uni-Tech) with the aim of ensuring that middle school students receive vocational education and training suited to the needs of future occupations without entrance examination requirements to grow into.

This program serves as a system by which certain corporations or businesses in each region, which express the desire to participate in vocational training, can enter into a temporary agreement with specialized high schools and community colleges to develop and implement a 5-year program through an NCS-based curriculum (and hands-on learning activities) to train the needed personnel. A consortium will then be formed of the business, a specialized high school and a community college, with the community college serving as the lead consortium partner.

In 2015, 16 business groups were selected and a total of KRW 32 billion was committed as support for each business group with a maximum of KRW 1 billion for facilities and KRW
1 billion for operations (a total of KRW 2 billion). This project is expected to be implemented until 2019 (Ministry of Education, Ministry of Employment and Labor, National Research Foundation of Korea, National Research Foundation of Korea, July 14, 2015: 17-24).

3) Enhancing the Career Education System

The Park Geun-hye government enacted the Career Education Act (June 22, 2015), establishing a legal basis for the systematic implementation of career education in elementary and middle schools. Further, career counselors were dispatched for each grade in every school. As of 2016, the Career-Experience Semester promised by the President during her candidacy was introduced to middle schools to provide a variety of hands-on learning opportunities as a way of expanding the opportunities for career exploration activities. Moreover, in order to systematize career education and expand it to universities, the Ministry of Education announced a 5-year plan for career planning (2016–2020) (April 4, 2016), clearly displaying its intention to strengthen career education into the future.

2. Higher Vocational Education Policy

The question of how higher vocational education should be defined and what it should include is an extremely complicated and difficult one. Article 21 (Vocational Education) of the Framework Act on Education (enacted in 1997) stipulates that, "The national and local governments must establish and implement the policies required to ensure all citizens have access to education to develop the level of refinement and abilities related to employment through both school education and social education." Therefore, university students must also receive education on the refinement and abilities related to employment. Yet, the university types stipulated in article 2 (School Types) of the Higher Education Act include a variety of schools such as universities, industrial universities, community colleges, technology colleges, universities of education, and distance universities. All these different types cannot be dealt with here, so we will limit our focus to community colleges and lifelong vocational education institutions, both representative higher vocational education institutions.

The higher vocational education system centered on community colleges changed frequently after the initial enactment and implementation of the Education Act in December 1949. The system was diversified into a variety of different types as it developed over the years with junior colleges (1950–1977), five-year higher vocational schools (1963–1977), professional schools (1970–1978), community colleges (1979–present), open universities (1982–present) technology colleges (1998–present), and technical colleges (1998–present).

A. Higher Vocational Education Policy Post-independence (under the Syngman Rhee Administration 1945–1960)

1) The Birth of Junior Colleges

After independence in 1945, the demand for higher education increased sharply during the United States military government. To satisfy this demand, the professional schools established during Japanese occupation were upgraded to colleges. At the same time, new universities and junior colleges were established. However, political chaos and poverty forced many projects to be put off and the Republic of Korea Government was formed in 1948.

In the 6-year elementary, 3-year middle school, 3-year high school and 4-year university system

stipulated in the 1951 revision of the Education Act, there were three types of 'higher education': universities, colleges and junior colleges. Junior colleges could be established as single-department colleges. However, the Education Act clearly defined the educational goals of junior colleges separately. In terms of implementation of education curricula, only universities used a grading system, while junior colleges did not, and their exact nature and position in the higher education system were imprecise. Therefore, junior colleges of that era cannot be said to have played the proper role of higher vocational education institutions. There were 12 junior colleges in total by 1960 (Korean Council for University College Education, 1994: 17-22; Kim Jong-cheol and 5 others, 1989: 312-313).

It was expected that demand for core technically-skilled personnel would increase with implementation of the Park Chung-hee government's 5-year Economic Development Plan in 1962. At this time a meeting was held at the Ministry of Education that was attended by 25 vocational junior college directors from across the country, the Minister of Education, the Vice Minister, directors of related departments, USOM (United States Operations Mission) officers and others on February 8–9, 1963. At this meeting the vague educational purpose of the vocational junior college was replaced with a more precise purpose: "The educational purpose of vocational junior colleges is to provide complete education to train the middle level workers needed for economic revival and, as such, the goal is clearly to promote thorough acquisition of professional-level vocational skills. Therefore, these five-year higher vocational schools must educate in a manner that fosters the development of middle level workers that are trained at a higher vocational school." The curriculum was revised so that, of total class time, 75% or more would be made up of professional subjects and at least 50% of major-oriented experiment and hands-on learning. In addition, a variety of topics were also debated with the ultimate aim of further developing vocational junior colleges (Ministry of Education, March 21, 1963). With this, 15 of the 26 junior colleges of the time began operating as short-term higher vocational education institutions by the mid-1960s. Just before they were unified into community colleges in 1976, there were 10 junior colleges with 61 departments, 3,976 students, and 165 professors (Korean Council for University College Education, 1994: 20-22).

B. The Higher Vocational Education Policy of the Park Chung-hee Administration (1961–1979)

1) Establishment of Five-Year Higher Vocational Schools

According to the Ministry of Education (1965), the Park Chung-hee administration was only required to develop middle level workers with industrial skills needed in industrial society in order to successfully carry out its 5-year Economic Development Plan. The government restructured outstanding vocational high schools into five-year higher vocational schools in 1963 and made it so possessing a middle school diploma was the sole entry qualification. In 1966, it began to reform national vocational junior colleges into higher vocational schools. As a professional higher vocational education institution program to develop Korean industrial skills, this system became the impetus for the birth of the community colleges of today. In 1971 there were 34 five-year higher vocational schools with 145 departments, a student quota of 27,864, 1,436 teachers, 7,734 enrollees, and 3,635 graduates. Such rapid growth in the system allowed it to contribute greatly to the training of middle level workers with skills needed by industry (Korean Council for University College Education, 1994: 20-21; Lee Mu-keun, 2007: 152).

However, the five year higher vocational school system was a hasty imitation of Japan's system, and therefore presented many problems. While Japan limited the application of this system to industry, Korea also applied it to agriculture, fisheries and all other vocational fields. This led to supply and demand incongruities between the school system and industry. Japan's national economic revival was founded on such key technical industries as machinery, electricity, civil engineering and architecture, while Korea based its economic development heavily on private rather than national corporations and support from the national treasury was low, making it difficult to develop middle level workers with industrial skills. To this day, 90% of Japan's 60 or so five year higher vocational schools have been granted technical education certification by the Washington Accord, showing how trusted their system is to produce outstanding middle level workers. They are so highly regarded by industrial society that students are hired even before they graduate. However, Korea was not able to sustain this system for more than 10 years.

2) Establishment of Professional Schools

According to Research on the Implementation of Professional Schools & Measures for Improvement (Joo Soo-ung, 1977), the 5-year study term within the higher vocational school

system was overly long and led to an increasing number of dropouts. There were also issues with use of the facilities, issues related to the fact that high school and university students were on the same campus and difficulties with students gaining employment or entering university after graduation. In 1969, the IDA (International Development Agency) loan project group presented as a condition for financing that five-year higher vocational schools be divided into and separately managed as 3-year vocational high schools and 2-year professional schools. Min Gwan-sik, the Minister of Education at the time, agreed to these requirements. With this, the five-year higher vocational schools applying for IDA loan projects were restructured around a 2–3 year professional school system. This process led to the establishment of the vocational school system with the aim of training middle level workers with industrial skills (January 1, 1970).

Around this time there were 3-year nursing schools that accepted high school graduates and 2-year high schools that accepted middle school graduates. However, by 1971 these were reformed into 35 three-year professional nursing schools by 1976.

Meanwhile, beginning in 1969, a preliminary university entrance exam system was implemented, which was the sole requirement to apply for university. However, professional schools could only receive support if they offered entry to people with high school diplomas or some other corresponding qualifications. These schools therefore served as another path to enrollment in an institution of higher education for those who failed to pass the preliminary university entrance exam. The resulting high demand led to an increase in the number of professional schools to 61 in 1976, and several problems emerged.

3) Unification of Junior Colleges, Five Year Higher Vocational Schools & Vocational Schools into Community Colleges

According to Foundational Research for the Launch of Community Colleges (Park Byeong-yong, Jeong U-hyeon, 1991), in 1976 there were a total of 106 short-term higher education institutions in Korea, with 10 junior colleges (excluding colleges of education), 61 professional schools, and 36 professional nursing schools. However, several problems emerged in operation of the junior colleges, five-year higher vocational schools and professional schools tasked with training middle level workers with industrial skills. Among these were the similarities and discrepancies between the types of education offered by professional schools and junior colleges (which led to confusion

and ambiguity regarding what their standard nature should be), unbalanced establishment of short-term higher education institutions throughout the country, the failure to establish a career policy for graduates, insufficient number and quality of teachers, heavy class loads for teachers, problems with credit requirements, issues with the crediting and grade scoring system, issues with composition of general and vocational subjects, inability to organize curricula to adequately respond to the demands of industry, superficial implementation of industry-school cooperation, and lack of a short-term higher education institution permission system.

In order to bring stability to short-term higher education in industrial skills, the government carried out two projects: Research to Improve Korea's Short-term Higher Education System, and Research Committee Research to Improve the Vocational School Education System. From the research outcomes of these initiatives, the Ministry of Education established measures for improvement of short-term higher education institutions, amending relevant laws in 1977 and unifying junior colleges, five-year higher vocational schools, and professional schools into community colleges in 1979. This unification of institutional systems in 1979 led to increases in the number of schools and students (as shown in <Table 1-15>). The announced measures for improvement follow the table.

<Table 1-15> Increase in Schools & Students Resulting from Transformation of the Short-term Higher Vocational Education Institution System

(Unit: number of schools, persons)

Schools / Year	Junior Colleges		Five Year Higher Vocational Schools		Professional Schools		Community Colleges		Total	
	No. of Schools	No. of Students	No. of Schools	No. of Students	No. of Schools	No. of Students	No. of Schools	No. of Students	No. of Schools	No. of Students
1948	1								1	
1955	9	1,742							9	1,712
1960	125	4,889							12	4,889
1961	9	6,277							9	6,267
1962	26	10,968							26	10,958
1963	36	14,423	9						36	14,423
1964	36	14,871	9	4,374					45	19,245
1965	29	15,356	14	7,623					43	23,159
1966	29	17,603	16	10,546					45	27,609
1967	23	14,734	19	14,089					42	28,823
1968	22	10,708	23	17,069					41	27,777
1969	20	8,101	26	20,741					43	28,842
1970	14	4,907	21	23,440					40	28,347
1971	13	4,009	20	24,909	13	2,955			47	31,873
1972	12	3,884	20	25,066	24	7,938			56	35,898
1973	12	4,245	8	24,669	42	15,513			74	44,427
1974	11	3,798	1	22,818	78	27,510			97	54,125
1975	10	3,787		17,839	87	40,661			98	62,287
1976	10	3,976			96	55,627			105	59,603
1977	10	3,876			102	78,335			112	82,211
1978	10	4,803			112	107,199			122	114,948
1979	-	2,689			-	64,174	127	75,205	127	142,624
1980	-	394			-	13,112	128	15,199	128	165,051

Source: Korean Council for University College Education (2010), Reproduced from p. 73.: Yoon Jeong-ah, (2004)

(1) The educational goal of community colleges is to train workers for core industries, and are, by nature, short-term higher education institutions. As such, they are to have the three functions of terminal education, middle education and continuing education on the condition that they focus on providing terminal education for the time being since current circumstances require policy that could eliminate pressure to enroll in a 4-year university and at the same time respond to the human resource demands from industry.[5]

(2) The ratio of short-term higher education institutions grew from 13.4% in 1975 to around 40% by 1981.

(3) The variety of short-term higher education institutions specializing in certain fields was maintained on the condition that names would be simplified to ○○ College or ○○ Junior College, with the name of the field in the front.

(4) Study terms were, as a rule, 2–3 years, with specific periods determined according to the characteristics of each field.

(5) Only those who passed the preliminary university entrance exam were, as a rule, eligible for enrollment and transfers between colleges. However, holders of national government-implemented skill qualifications (level 2 craftsmen) were exempted.

(6) Curricula were transferred from the credit system to the grade scoring system, and the number of credits required for graduation was reduced to 70. Existing curricula were given a complete restructuring with consideration of applicability to the current social situation.

(7) Teaching experience was prioritized over research when hiring professors, and newly appointed professors were, as a rule, to have a master's degree at minimum. The amount of teaching time for which professors were responsible was also modified to a more appropriate level.

(8) Regarding the standards for establishment of community colleges and the approval system, through a review of the Decree on Standards for the Establishment of Universities and Colleges and the establishment of an evaluation committee, a process of deliberation occurred before new universities or departments were set up and existing short-term higher education

[5] Note: The content of (1)–(10) was derived from information presented by the Korean Council for University College Education (2010).

institutions were made subject to periodic operational evaluations. When granting approval for a school or department to be established, deliberators considered regional balance, regional characteristics, expansion of night and seasonal courses for workers, and the avoidance of excessive focus on a specific field.

(9) Active pursuit of a policy to promote employment of graduates.

(10) Reformation of current curricula and construction of systems to enhance the industry-school cooperation system.

Based on the findings indicated in Foundational Research for the Launch of Community Colleges, (Park Byeong-yong, Jeong U-hyeon, 1991: 694, 681-764), the outcomes of implementation of policy decisions to improve community college education can be summarized as follows.

(1) Community college educational goals were stipulated in the Education Act as "research on professional knowledge and theories relevant to each field in society for the purpose of training the core workforce needed to develop national society."

(2) To increase the ratio of short-term higher education institutions, the student body was increased 3.2 times within a span of 5 years, from 75,205 in 1979 to 242,114 in 1984.

(3) As a rule, community college names were to be limited to ○○ Community College, but in certain circumstances the specialization could be included at the front.

(4) Community college study terms were flexible at between 2 and 3 years.

(5) Also as a rule, only those who passed the preliminary university entrance exam could enroll at or transfer between community colleges.

(6) Curricula were transferred from the credit system to the grade scoring system, and the number of credits required for graduation was increased to 80 (120 for 3-year degrees). Curricula were established and implemented in accordance with job analyses to ensure students would receive training in the capabilities demanded by industry. The ratio of curricula for refinement and for professional courses was set at a 20:80 ratio. This was later amended to 20–40:60–80 in 1982, then 20–30:70–80 in 1989 to inject more flexibility.

(7) Professors were made to put more focus on teaching than research, and curricula were developed based on job analyses. Each year professors implemented classroom and field

training related to teaching-learning development as well as development of teaching materials appropriate to community college students.

(8) Strengthening the existing approval system for establishment of community colleges and creating an Evaluation Committee on the Validity of Establishment of Community Colleges comprised of outside personnel to make the granting of approval fairer.

(9) Improving career guidance, industry-school cooperation, and hands-on field study to increase employment of graduates.

(10) Based on the outcomes of Research on Enhancing the Links Between Community College Education & Practical Demands of Industry (Kim Sang-ho, Lee Mu-keun, Kim Yong-beom, 1981), in 1981, advisory committees were organized for industry-school cooperation, curricula was developed through this cooperation, and a professor training program was implemented on a trial basis using a community college department of information & communication model. This served as an impetus for promoting the composition and implementation of industry-school cooperation advisory committees for all departments in community colleges across the country.

C. Higher Vocational Education Policies under the Chun Doo-hwan Administration

1) Improvement of the Community College System

The fourth 5-year Economic Development Plan (1977–1981) shows that there was an anticipated increase in the demand for core technically-skilled human resources in the 1980s. Research on the improvement of short-term higher education in Korea shows that from mid-1970 to the beginning of 1980, the number of community college students increased, from 13.4% in 1975 to 40% by 1981, in accordance with the policy to increase their ratio within the existing higher education student population.

In particular, as the Chun Doo-hwan administration came to power, a graduation quota system came into effect as part of the July 30, 1980 education reform measures. With this the number of students increased further as the community college quota was set at 115% (130% for colleges). As a result, the community college student population increased by a factor of 3.2 in the span of 6 years, from 75,205 in 1979 to 242,114 in 1985 (Korean Council for University College Education,

2010: 81-86).

However, economic growth fell along with the sudden global economic slump brought on by the oil shock at the end of the 1970s. This led to a sudden decline in domestic demand for technically-skilled human resources as well as their overseas dispatch. To make matters worse, the assassination of President Park Chung-hee led to political and social turmoil. A rapid increase in community college enrollment quotas led to difficulties attracting enough students, especially to regional community colleges (a recruitment rate of 81.0% in 1981 and 84.2% in 1982). This led to several negative results, including unsavory press and broadcast reports, a considerable number of community college students who preferred transferring to universities rather than becoming technicians of the workforce (8.0% in 1975, 12.7% in 1980), a college entrance system that was disadvantageous for community colleges at the time, and a decline in rates of employment of graduates from community colleges (45.2% in 1975, 24.6% in 1980). Serious issues were encountered as a result around the time short-term higher education institutions were unified into community colleges so that educational innovation measures could be implemented in earnest (Korean Council for University College Education, 2010: 87-92).

Not long after the Chun Doo-hwan administration came to power, community colleges emerged as a social issue, leading the ministry to commission research on measures to enhance the quality of community colleges and presentation of an approach to invigorate and improve these colleges from the research findings.

According to Research on Measures to Enhance the Quality of Community Colleges (Lee Mu-keun et al, 1983), the main approaches presented for invigorating community colleges were:

(1) Promote the capacity of community colleges to serve as vocational education institutions;

(2) Enable community colleges to train middle level workers needed by industry;

(3) Provide youth and adult workers with continuing education opportunities.

Stabilizing the function of community colleges as vocational education institutions required recruitment of outstanding students, securing outstanding teachers and improving the quality of existing ones, supporting the securing of experiment and hands-on learning facilities, developing and implementing vocational education curricula that could satisfy the demands of vocational education, establishing research institutes specifically for community college education, ensuring

sustained and stable implementation of community college evaluations, and enhancing the conditions allowing community colleges to be established.

Concrete measures presented to strengthen industry-school cooperation included implementation of related connections (100 departments, 100 businesses), making the Korea Chamber of Commerce & Industry the central industry-school cooperation body, and promoting stability of hands-on learning programs.

Concrete measures in pursuit of a plan for career guidance for graduate students at community colleges included improved treatment of graduates, identification of ways to provide preferential treatment in military service for graduates, and expansion of opportunities for graduates continuing their education. In addition, an approach to link acquisition of national skill qualifications (engineer level 2) with community college education was presented.

Basic principles for and approaches to restructuring community colleges and matters to consider were also presented. Based on this, colleges and departments were restructured and student quotas were adjusted continuously. Some of the measures presented are as follows:

(1) Community colleges, which set middle level worker training as their educational purpose, recruited 115% above their student quota and had to find ways to get 15% drop out. However, since this was not in line with the goals of vocational education, the quota system needed more flexibility.

(2) Major departments that had at least 240 students and departments that met less than 50% of their student enrollment quota needed to modify their student quotas.

(3) When comparable departments existed within the same college or when there were too many of the same department in a single region, or when it was expected a certain type of department would be producing more personnel than needed for a certain industry, such departments needed to be merged or reduced.

(4) The number of community colleges were to be adjusted in the following manner: if the same corporate body established or was operating 2 community colleges in the same region these colleges needed to be merged quickly; if an affiliated community college was located in the same premises as its parent 4-year university, the community college needed to be merged into the 4-year university.

Policy decisions based on the above, which were derived from policy research, were directly implemented. The representative achievements of this were as follows:

(1) A greater number of departments needed for training middle level workers or technicians demanded by industry were developed and established decisively. While in 1979 there were 625 departments in 91 different categories, by 1984 there were 942 departments in 131 categories, representing a 51% increase in the number of departments and a 44% increase in the number of categories (Lee Mu-keun, 1985; Reproduced from Korea Council for University College Education, 2010: 84-89).

(2) Efforts were made to have the capacity to satisfy industry demands through development and management of curricula based on job analysis.

(3) Professor training was carried out each year, which achieved good results.

(4) Facilities and infrastructure were expanded through educational loan projects and overseas training for professors was promoted. Attempts were made to develop module-style teaching materials.

(5) In particular, in order to enhance community college faculty development and bring stability to the training program, the Industry & Education Director within the Ministry of Education, 1 community college director representing community colleges nationwide, 1 dean of academic affairs, and the author of this report were to form a team and travel the country during university vacation season each year to conduct training. This carried on throughout the entire decade of the 1980s (Ministry of Education, 1982: 153). There was eye-opening development at community colleges at the time as their professors also actively participated in training and in development of their employer institutions. For this reason, this faculty development program is considered to have greatly boosted the development of community colleges of the time.

According to Hong Gi-hoon (1995), the approach to amend the community college system from 1984 to 1987 resulted in 15 fewer schools (128 to 113) and 139 fewer departments (934 to 795). The quota for the number of graduates also reduced significantly from 104,570 to 84,010 (a reduction of 19.7%). Some details regarding these figures:

(1) Four community colleges and 5 departments, including Gunsan Vocational Community

College's vocational law department, that did not recruit students in 1982 and 1983 were shut down, leading to a quota reduction of 360 nationally.[6]

(2) Eighteen community colleges and 48 departments unable to meet 50% of their enrollment recruitment quotas in 1982 and 1983, including Yeongju Business Community College's trade department, saw their graduation quotas reduced by 50%, which accounted for 2,801 people.

(3) Four community colleges and 6 departments that had excessively large graduate quotas of 240 students or more per department, including Daelim Technical Community College's mechanics department, had their graduate quotas limited to 240 students, leading to a reduction of 280 students in total.

(4) Cases where identical department types were established in the same region to an extent far beyond the human resource demands of industry--like the administration departments of Songwol Vocational Community College (120 student quota), Dongsin Vocational Community College (80 student quota) and Seogang Vocational Community College (80 student quota) in the Gwangju region, the tax accounting departments of Hyejeon Vocational Community College (40 student quota), Chungnam Business Community College (80 student quota) and Junggyeong Technical Community College (80 student quota) and the Daejeon Vocational Community College (80 student quota) in the Daejeon region--not only contributed to the shortfall in meeting enrollment quotas, they also served as a waste of education funding investment and recommendations were therefore made that community colleges work together to revise and ultimately merge or eliminate such departments.

(5) The nursing colleges affiliated with the colleges of medicine at Jeonbuk University and Jeonnam University were both upgraded to departments of nursing, while the Gyeongnam Nursing Community College was closed down. These changes led to a reduction of 250 students in the overall student quota.

(6) The Seoul Cheoldo Hospital and the affiliated Cheoldo Nursing Community College were closed down, accounting for a reduction of 30 students.

(7) From 1984 to 1987, 6 community colleges and 66 departments were upgraded to open colleges, including Busan Technical Community College, Daejeon Technical Community

[6] Note: The content of (1)–(8) is from information presented by the Korean Council for University College Education (2010).

College and Gwangju Business Community College in 1984, reducing the entire student quota by 8,320 students.

(8) Recommendations were made that programs taught at such community colleges as Hongik Technical Community College, Inha Technical Community College, Sangji University's affiliated community college, Chosun National University's affiliated technical community college, Incheon Community College, and others established on the same campus as a 4-year university, have their curricula upgraded to a 4-year university level, be merged into the affiliated universities and then the community colleges be closed down. Such measures led to a reduction of 64 departments and 8,960 students.

2) Policy on Community College Student Quotas & the College Admission Process

A) Community College Student Quota Policy

Policy on community college enrollment quotas was greatly impacted by the question of how many middle level or paraprofessional workers or technicians were needed by industry. According to the Long-term Economic & Social Development (1977–1991) by the Korea Development Institute, as shown in <Table 1-16>, in 1991 a shortage was expected of 3.87 million technicians, meaning that community college graduates would be urgently needed.

<Table 1-16> Long-term Outlook on Excesses & Shortages of Technicians (Core Technically-Skilled Workers) Compared to Human Resource Supply & Demand

(Unit: 1,000 persons)

Type \ Year		1977–1981	1982–1986	1987–1991	Total
Technicians (Core technically-skilled workers)	Demand	164	213	299	676
	Supply	89	100	100	289
	Excess or Shortage	△75	△113	△199	△387

Source: Korea Development Institute (1977), p. 199

<Table 1-17> shows the outlook for all other human resources produced by community colleges.

As shown in <Table 1-17>, the supply of personnel completing community colleges continues to be inadequate. Therefore, with industrial development, these personnel have become very important.

<Table 1-17> Expected Supply & Demand for Personnel Graduating from Specific Fields at Community Colleges

(Unit: 1,000 persons)

Major Field		1976	1977–1981	1982–1986	1987–1991	1971–1991
Total	Needed Supply (A)	17.9	155.6	228.2	304.7	688.5
	Current Supply Capacity (B)	7.8	93.0	194.7	255.6	546.0
	Discrepancy between Supply & Demand(A - B)	10.1	32.6	30.8	49.1	142.5
Social Sciences	A	-	10.4	25.3	37.8	73.5
	B	0.1	4.6	12.8	16.9	34.3
	A-B	△0.1	5.8	12.5	20.9	39.2
Science & Engineering	A	10.4	74.7	117.5	169.3	361.5
	B	2.3	45.3	115.3	155.5	316.1
	A-B	8.1	29.4	2.2	13.8	45.4
Medicine & Pharmacy	A	0.1	18.1	20.8	17.6	56.5
	B	1.7	13.4	20.8	24.9	59.1
	A-B	△1.6	4.7	-	△7.3	△2.6
Education	A	0.4	8.8	18.1	35.8	62.7
	B	1.0	6.3	13.8	17.3	37.4
	A-B	△0.6	2.5	4.3	18.5	25.3
Others	A	7.0	43.6	46.5	44.2	134.3
	B	2.7	23.4	34.7	41.0	99.1
	A-B	4.3	20.2	11.8	3.2	35.2

Note: ∆ signifies supply surplus.

Source: Yoon Jeon-il et al (1979); Reproduced from Kim Guen -hak (1988), p. 40

As shown above, community college enrollment quotas continued to increase due to the socio-economic conditions of the time to the extent that the number of students registered increased by 1.8 times (78,455 to 141,090) in the roughly 10 years between 1979, when other schools were unified into community colleges, and 1991. Within the same period the size of the entire student body increased by 4.8 times, from 142,624 to 359,049. The number of departments per field also expanded from 91 to 208, thus enabling community colleges to greatly contribute to meeting the variety of demands from industry and the general population (See <Table 1-18>) (Go Seok-dal, 1992: 57-64, Appendix 4).

<Table 1-18> Changes in the Number of Community Colleges, Departments & Students

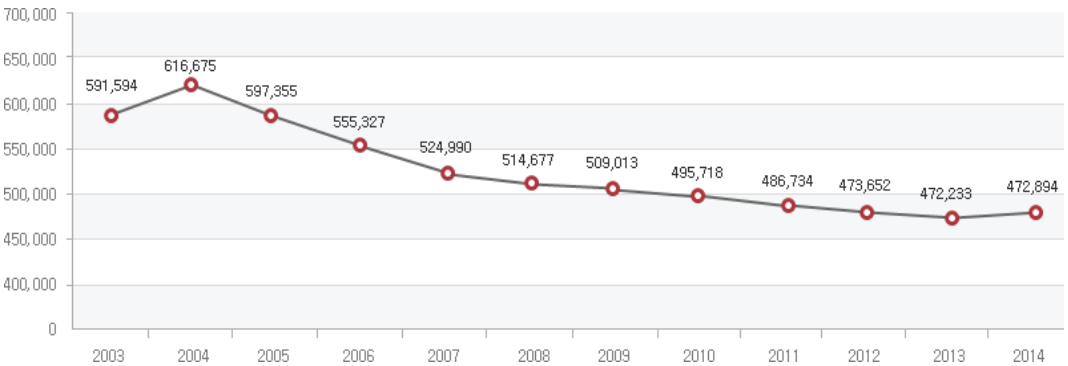
(Units: colleges, departments, students, %)

Type / Year	No. of Schools	vs. 1979	No. of Departments Established	vs. 1979	No. of Students (Total)	vs. 1979
1979	127	100.0	880	100.0	142,624	100.0
1980	128	100.8	961	109.2	165,051	219.4
1981	132	103.9	1,081	122.8	199,705	250.9
1982	128	100.8	1,205	136.9	218,210	281.1
1983	130	102.4	1,266	143.9	218,213	287.5
1984	122	96.1	1,332	151.4	230,354	306.2
1985	120	94.5	1,076	122.3	242,117	321.9
1986	120	94.5	986	112.0	250,652	333.3
1987	119	93.7	994	113.0	259,898	345.6
1988	119	93.7	1,059	120.3	266,844	354.8
1989	117	92.1	1,161	131.9	291,041	387.0
1990	117	92.1	1,264	143.6	323,825	430.6
1991	118	92.9	1,365	155.1	359,049	477.4

Source: Korea Educational Development Institute (1991); Reproduced from Go Seok-dal (1992), Appendix p. 4

As shown in [Image 1-5], once the first community colleges were established, the number of community college students continued to increase. This number reached a peak in 2004, and has gradually declined since.

[Image 1-5] Student Quota Changes per Year



Source: Korean Council for University College Education http://www.kcce.or.kr/web/collegeIntro/webOperateCurrent.do (Accessed: June 25, 2016).

Later in the 1990s, the number of community college students continued to increase, reaching a peak in 2002 with 963,129 students. The subsequent drop in national birth rate is expected to lead to a decline in the future school-aged population. Efforts continue to this day to reduce the community college enrollment quota to prepare for the anticipated impact this decline will have on community colleges (see <Table 1-19>).

<Table 1-19> Changes in the Number of Community College Students & Schools

(Unit: number of schools, persons)

Type / Year	Schools	Students					
		Total	Female	National		Private	
				Total	Female	Total	Female
1990	117	323,825	119,345	26,959	4,846	296,866	114,499
1991	118	359,049	131,414	26,676	5,338	332,373	126,076
1992	126	404,996	146,250	26,034	5,431	378,962	140,819
1993	128	456,227	165,567	21,462	4,648	434,765	160,919
1994	135	506,806	186,509	16,909	4,051	486,430	181,607
1995	145	569,820	214,310	13,046	4,134	548,347	208,251
1996	152	642,697	251,266	12,917	4,630	620,393	244,155
1997	155	724,741	277,658	13,419	5,269	699,914	269,126
1998	158	801,681	301,351	14,098	5,720	771,970	291,073
1999	161	859,547	319,687	14,857	5,782	824,991	308,068
2000	158	913,273	339,233	15,302	6,100	875,942	326,724
2001	158	952,649	351,080	13,775	4,516	915,109	339,756
2002	159	963,129	353,164	14,225	4,715	924,284	341,752
2003	158	925,963	335,108	14,423	4,691	886,926	323,791
2004	160	897,589	329,544	14,721	4,609	858,842	318,492
2005	158	853,089	316,326	13,405	4,137	816,936	306,215
2006	152	817,994	310,714	10,911	3,288	784,441	301,422
2007	148	795,519	308,453	7,757	1,900	765,147	300,285
2008	147	771,854	305,701	4,229	829	745,152	298,530
2009	146	760,929	301,395	2,731	406	735,681	294,661
2010	145	767,087	304,846	1,709	343	745,614	299,174
2011	147	776,738	310,247	2,774	492	757,948	305,770
2012	142	769,888	307,350	2,671	476	753,096	303,340
2013	140	757,721	303,169	2,536	465	741,702	299,296
2014	139	740,801	296,952	2,259	468	725,460	293,266
2015	138	720,466	290,941	2,257	529	706,138	287,392

Source: Korea Educational Development Institute (each year), Education Statistical Year Book.

Notes: 1) Ratio of teachers to degree type = (No. of teachers per degree type / total No. of teachers) x 100

2) Only deans (presidents) and full-time teachers are included in 'Teachers.' However, due to data limitations, emeritus professors and assistant teachers are included between 1980 and 1985, with assistant teachers included between 1990 and 1995.

The number of registered community college students continued to increase at a more rapid pace for roughly 20 years after 1979. There are several reasons for this. First, as industry developed, the demand for middle level workers increased and expanded. Second, beginning in 1979, most main national community colleges were reformed into open colleges (industrial colleges) or became part of a 4-year university, to the point that now 95% of community colleges are private colleges. As a result, the Republic of Korea became the only country in the world that relies almost completely on private schools to produce the middle level workers with the skills needed by the country and industry. At the same time, state support of private colleges has always been and remains scarce. In

1990, 21.0% of national community college revenue came from student tuitions and 76.7% from the national treasury. However, private colleges earned 83.8% of their revenue from tuition, receiving only 0.6% from the national treasury (Go Seok-dal, 1992: 63). Accordingly, private community colleges sought to increase their student numbers as a way of increasing their revenues. Third, the policy to grant autonomy to universities and colleges based on their student quotas enabled those meeting certain conditions to increase those quotas. As a result, a law was enacted enabling anyone to establish a university who had the assets to do so, resulting in the appearance of specialized community colleges smaller in size than in the past. As the number of these small community colleges increased, so, of course, did the number of total students. Fourth, the late 1990s also saw a continued increase in the general demand for higher education, with the doors to vocational high school students opening wider in particular, leading to an increase in the numbers registered at community colleges as well.

However, an ideal ratio of students in university to students in community college has never been established in Korea. The current community college enrollment quota is 36.7% of the general university quota. In addition, a reformation of the university and college structure is urgently needed to prepare for the coming reduction in the school-aged population. This is true for universities and community colleges alike.

B) Community College Admissions Policy

According to A Consideration of the Development Process of Korea's Short-term Higher Education Institutions (Kim Geu-hak, 1988) the community college enrollment screening system changed frequently without relation to administration changes. In the professional school period students were able to register at institutions of higher education without preliminary entrance exams and were required to take the 5 subjects of Korean language, English, mathematics, Korean history, and ethics and a choice of either physics or chemistry. The entire exam was scored out of 500.

According to the Korean Council for University College Education (2010), in 1979 after the restructuring toward community colleges, the main exams for each subject previously operated independently by each school were abolished and preliminary entrance exam scores and high school transcripts were made the standard form of admissions screening. However, those with certified level 2 craftsman qualifications or higher as well as those with 3 years or more experience

working in a certain industry were exempt from the preliminary entrance exams. At this time, the passing score for the preliminary university entrance exam differed by region. In Seoul anything above 199 was a pass, while in other regions passes varied by 57–83 points. This led to a student quota shortfall in Seoul area community colleges. Beginning in 1982, only those who passed the university entrance exam could apply for universities. Until 1981 the enrollment period was divided into the first and second half of the school year, but this changed in 1982 to a single registration period every school year. The application system was a ‘test first, apply later’ model.

Up to 70% of students were subject to the general admissions process, while at least 30% were selected through a special admissions process until 1982. After that, this changed to 50–80% selected through general admissions, and 20–50% through special admissions.

In terms of admissions consideration, in 1979 the ratio between preliminary entrance exams and school records was independently selected by each school. Since 1980, however, preliminary entrance exams have accounted for up to 90%, and school records at least 10%. In 1981, preliminary entrance exam scores were given 50% weighting or higher, and high school records 20% or higher. In 1982, university entrance exam scores were set at 50% or higher and school records at 30% or higher.

In addition, the graduation quota system that began in 1981 was changed to an enrollment quota system in 1987 while at the same time, the 115% graduation quota selection rate was converted to an enrollment quota.

While the graduation quota system was abolished in 1987, the admission selection support approach was changed to an ‘apply first, test later’ system in 1989. Until 1988 the test subjects were Korean language, Korean history, ethics, English, mathematics, social studies, science, and vocational studies--a system in line with 4-year universities. However, beginning in 1989 this was changed to Korean language, Korean history, ethics, English, and mathematics. At this time university entrance exams had a significant impact on the admissions process. However, depending on the institution, high school records could also be given various weightings as well. In addition, depending on the institution, graduates coming from a high school in the same field could also be given preference. Based on the National Technical Qualifications Act, applicants with level 2 craftsmen qualifications or higher were selected through a special admissions process within a set ratio of the recruitment quota (Jo Won-il, 1992: 24-27).

According to Lee In-gu, Lee Jeong-su and Choi Gye-ho (1993), the community college admissions system changed continuously even at the beginning of the 1990s. The basic approach to improving the entrance exam system presented by the Ministry of Education in its 1994 community college entrance exam policy included the following elements:

(1) Amend any independent entrance exam system so it suits the traits of each community college;

(2) Amend any entrance exam system so that it includes the vocational education system requirements while remaining suited for a higher education institution;

(3) Amend any entrance exam system to include enhanced links with high school education;

(4) Amend any entrance system that makes use of a special admissions program so that it takes advantage of the popularization of higher education;

(5) Amend any entrance system to ensure university autonomy.

Data for and elements of the 1994 community college entrance exam system developed in consideration of the above basic approach are shown in <Table 1-20>.

<Table 1-20> Elements & Data in the 1994 Community College Entrance Exam

Entrance Exam Elements	Entrance Exam Data	Application	Remarks
High school records	Subject records Attendance record Other activity records	Requisites (40% or higher)	
University math aptitude test (200 points)	Language domain (60 points) Math & science domain (100 points) Foreign language [English domain (40 points)]	Electives	Different weight could be assigned to each domain Test question management by the central education testing service (twice a year)
Exam scores per community college	Main exam per university Interview Aptitude evaluation Physical examination	Electives	Demonstration of art, music or physical ability Interview → essay testing possible Aptitude evaluation → aptitude test possible

Source: Lee In-gu, Lee Jeong-su, Choi Gye-ho (1993), pp. 86-95

Even into the 2000s, college admissions systems continued to change frequently, with most community colleges today seeking a multilateral admissions approach centered on non-scheduled and scheduled admissions.

3) The Education Reform Committee's Community College Promotion Plan[7]

President Chun Doo-hwan established and managed the Education Reform Committee as a presidential advisory body. Operating from 1985 to 1987, it presented a multitude of reform approaches across the entire education spectrum. The Committee presented a basic approach to promote community colleges, with the means to achieve this aim summarized below (Education Reform Committee, 1987).

A) Basic Approach to Promoting Community Colleges

Community colleges, which aim to train paraprofessional workers, have gradually played a greater role as the population of the industrial society has become increasingly educated through higher education and as training and HR supply processes become increasingly differentiated.

Further, variety in higher education is growing in emphasis around the world, so it is expected that the function of community colleges will also become more diversified in time. Considering the many problems faced by community colleges and the above-mentioned outlook for these institutions, it was pointed out that the basic approach to promoting community colleges needed to be implemented in such a way that it instilled variety into college functions and systems, improved the quality of education, increased autonomy in terms of administrative and funding management, and improved social conditions for these institutions.

B) Measures to Promote Community Colleges

The following measures were presented towards bringing success to the basic approach to promoting community colleges: correcting the community college functions and systems, revising curricula and enhancing stability of implementation, including flexibility into quota policy,

[7] Education Reform Committee (1987), Community College Promotion Plan, Policy Research III - 4, a summary of pp. ⅰ - ⅹ.

invigorating cooperation between industry and school, enhancing development of community college faculty, strengthening administrative and funding support, actions to enhance graduate careers, and improving social conditions.

However, these tasks were not properly implemented as they were introduced at the end of the Chun Doo-hwan administration and transferred to the next administration.

D. Community College Policy under the Roh Tae-woo Administration

As Roh Tae-woo came to power in 1988, his administration made an effort to promote community colleges and achieve their sustained development based on the Education Reform Committee's basic approach. In order to stabilize the education system, the Roh Tae-woo government thoroughly guided and oversaw community colleges, enhanced administrative and funding support for outstanding schools, secured outstanding professors and improved the quality of current teachers, strengthened the implementation of curricula, improved student potential for employment and provided guidance after jobs were landed, promoted the activities of the Industry-School Cooperation Committee, held exhibits of student products, and expanded facilities and infrastructure (Shin Hyeon-seok, 2000: 7-31).

1) Evaluation of Community Colleges

Various types of short-term institutions of higher vocational education were unified into community colleges in 1979. After that, it became an urgent task to make sure these colleges featured education conditions above a certain standard so they could execute the educational goals set for community colleges. As one approach to this and to promote stability in the educational system, the Ministry of Education began implementing institutional evaluations. These evaluations were carried out each year beginning in 1979, to which all schools were subject at the beginning. However, later targets for evaluation were selected in consideration of the characteristics of the fields and colleges in question. The results of these evaluations are shown in <Table 1-21>.

<Table 1-21> Schools Subject to Community College Evaluation in the 1980s (Unit: school)

Year / Type	1978–1979	1980	1981	1982	1983	1984	1985	1986	1987
Schools	127	128	132	128	128	120	120	120	119
No. of Evaluated Schools	127	68	103	108	81	68	47	31	8
Evaluated Fields	Total	Technical Vocational	Excluding Outstanding Schools	Excluding National Schools	Technical Vocational Health	Technical Vocational	Vocational Health	Technical	Agriculture

Source: Ministry of Education (1987a), p. 1

Evaluation methods included document reviews and on-site visits. Document reviews were conducted based on the standard stipulated by the Ministry of Education. Community colleges conducted their own evaluations, recorded the results on paper and submitted them to the government. On-site evaluations were carried out by an evaluator in accordance with the findings during the document review and carried out separately for each field.

Fields for evaluation differed somewhat depending on the field of the community college in question, and there were different criteria in each evaluation item (evaluation standards). These were clearly stipulated, and can be seen in <Table 1-22>. Colleges were given A, B, C, D, or F grades for each item.

<Table 1-22> Community College Evaluation Standards for the 1987 School Year

Evaluated Areas	Evaluated Items
How firmly vocational education is established	Relevance of curricula and teaching materials to actual work; Level of adaptation by teaching faculty to required tasks
Implementation of curricula	Methods for reflecting real job tasks in curricula; trustworthiness of curricula implementation; the level of effort made between related departments to link curricula
Educational activities	Degree of freedom for students to select course subjects; evaluation of study; use of audio-visual teaching materials; management of academic affairs
Superfluous faculty members	Status of the following: procurement of full-time teachers; procurement of assistant instructors; procurement of full-time teachers with degrees; full-time teacher research records (previous year); No. of courses taught per full-time teacher; No. of hours taught per week per full-time teacher

<Table continued>

Evaluated Areas	Evaluated Items
Student guidance	No. of students assigned for guidance per professor; student guidance plans and achievements; development of appropriate atmosphere for independent activities
Independent study atmosphere	Scholarships and reduction of school expenses; rate of available reading rooms and libraries; purchasing of books; library operations and environment
Experiment and hands-on study education	Level of experiment and hands-on study facilities procured (areas); status of experiment and hands-on study equipment per type; quality of experiment and hands-on study equipment; use of funding for experiment and hands-on study; status of experiment and hands-on study education; management of experiment and hands-on study materials; management of experiment and hands-on study equipment; conditions for experiment and hands-on study education; achievements of exhibits with hands-on study creations
Guidance with industry-school cooperation and employment	Whether an industry-school cooperation committee has been established; achievements of industry-school cooperation committee meetings; status of industry-school cooperation committee operations; industry personnel and common research records; results of attempts to improve system to expedite employment and efforts to improve efficiency
Educational facilities	Educational environment; procurement of school property; procurement of a main school building; availability of research rooms for professors; availability of welfare and other facilities
Educational funding	Rate of dependence on student tuitions; corporation basic for-profit asset procurement; transfer of basic for-profit assets

Source: Ministry of Education (1987b), pp. 1-20

The above community college evaluations were based on the Ministry of Education stipulations in the 1980s and were implemented until 1994. Each community college was therefore required to have a certain standard of educational conditions. Subsequently, in 1988 the Korean Council for University College Education was given foundation approval and in 1995 the Korean Council for University College Education Act was enacted and implemented. As a result, since 1998 community college evaluations have been conducted under the authority of the Korean Council for University College Education. At this time, community college evaluations were converted from comprehensive institutional evaluations to department (field) evaluations. This was because community colleges were smaller in size, so it was determined that there was a need to induce specialization of main department groups through these evaluations. Department evaluations occur every 5 years, and through voluntary participation a focus is being placed on diagnosing academic affairs issues (Korean Council for University College Education, 2010: 103).

2) Enactment of Regulations for Approval to Establish Community Colleges

In 1989 the Ministry of Education enacted the School Establishment Permissions Regulations that stipulated the various processes and measures to be taken regarding granting approval for a community college to be established (Ministry of Education Ordinance, Article 581, December 20, 1989). With this, when someone wished to establish a community college, the Ministry of Education had to conduct a survey and research prior to granting approval. To enable such a process they created a Community College Establishment Validity Survey & Research Committee in 1989. This committee conducted in-depth evaluations with the assistance of relevant experts and professors. The Ministry of Education made the final decision based on the results of the committee's research and communicated to the applicant whether or not they had gained approval. This increased the fairness of the establishment review process (Lee Mu-keun et al., 1989: 31-34; Lee Mu-keun et al., 1992: 22-37).

Around this time in the 1990s the Ministry of Education placed greater focus on the establish ment of technical community colleges with the aim of expanding the base of core technically-skilled personnel that were needed by the manufacturing industry. As such, universities applyi ng to establish their own community colleges needed to have at least 60% of their entire stud ent quota in existing departments comprised of students in technical fields (Ministry of Educa tion, 1992).

<Table 1-23> A Comparison of the Decree on Standards for the Establishment of Universities & Colleges and the Permissive College & University Establishment Standards

Type		Decree on Standards for the Establishment of Universities & Colleges	Permissive College & University Establishment Standards
1. Scale of Establishment	Total Quota	University: 5,000 Open college: 3,200 (day and night) Community college: 1,280	School building standards: 400 student quota standard (graduate school: 100) Teacher standards: 200 student quota standard (graduate school: 100)
	Departments established	University: 25 Open college: 10 Community college: 8	No minimum number of departments to be established.

<Table continued>

Type		Decree on Standards for the Establishment of Universities & Colleges	Permissive College & University Establishment Standards
2. Standards for Procurement of Facilities & Infrastructure	School property	Universities 336,765m2 (101,871 pyeong) Open colleges 63,435m2 (19,189 pyeong) Community Colleges 85,000m2 (25,712 pyeong)	Student quota Less than 400 students: at least the building area of school buildings 400–1,000 students: at least the standard building area of school buildings More than 1,000 students: at least 2 times the standard building area of school buildings ※ 1. "Student quota" standard based on year establishment is complete 2. "Building area" refers to the building area stipulated in Article 119, Section 1, Item 2 of the Enforcement Decree to the Building Act (floor area).
	School buildings	University 112,255m2 (33,957 pyeong) Open college 30,207m2 (9,137 pyeong) Community Colleges 19,700m2 (5,959 pyeong)	School buildings standard per student Liberal arts and social sciences: 12 m2; natural sciences: 17 m2 Engineering: 20㎡; art and physical education: 19 m2; medical: 20 m2 ※ 70% of community college school buildings standard area
3. Financial Scale		(Not including school property) University: KRW 120.2 billion Open college: KRW 37.7 billion Community college: KRW 20.3 billion	School property, buildings must be 100% procured prior to university establishment evaluation and all standards must be satisfied
4. Basic for-profit Assets		School operation expenses x10	The basic for-profit assets of the value applicable to the total university account management profits must be secured. Assets must be at least 3.5% of total asset annual income.
5. Faculty		Decree on Standards for the Establishment of Universities and Colleges, Article 3 applies Teacher quota set per department	No. of students per 1 teacher Liberal arts and social sciences: 25; natural sciences: 20 Engineering: 20; art and physical education: 20; medical: 8 ※ For graduate schools teaching faculty must be 2x the number of graduate students. When university and graduate school are established on the same premises, teaching faculty must be 1.5x the number of graduate students
6. Lab & Practice Facilities & Equipment		Procured based on the University and College Experiment and Hands-on Learning Facilities Standards Decree and necessary funds clearly stated	Eliminated the University and College Experiment and Hands-on Learning Facilities Standards Decree and clearly stated the facilities related to basic education, support, research, and adjunct facilities in the university charter according to university characteristics.

Source: 1) University Establishment Standards & Rules Enactment Committee (1995), pp. 19-24
2) Education Law Book Compilation Committee (2004), pp. 1228-1233

The University & College Establishment Standards under the Roh Tae-woo government were in place until 1996 (the Kim Young-sam administration) when they were converted to the Permissive College & University Establishment Application Standards in 1997. <Table 1-23> compares the differences between the two. As shown in <Table 1-23>, until 1995 the Decree on Standards for the Establishment of Universities and Colleges stipulated that universities needed to meet the minimum standard of a 5,000 total student quota and KRW 120.2 billion in assets (excluding school property); open colleges needed to meet the minimum standard of a 3,200 total student quota and KRW 37.7 billion in assets (excluding school property); community colleges needed to meet the minimum standard of a 1,280 total student quota and KRW 20.3 billion in assets (excluding school property). These immense physical and human resource requirements made it so higher education institutions could only be established on a large-scale something-for-everyone comprehensive college (university) level (University Establishment Standards & Rules Enactment Committee, 1995).

However, according to the 1993 survey and research on validity of higher education institution establishment, there were so many large-scale comprehensive universities established throughout the country due to the above decree that more were no longer needed. Therefore an advanced notice of university establishment system was also introduced to limit applications within certain regions for several years. Moreover, by the beginning of the 2000s it was predicted that a reversal in the number of would-be university students and student quotas was on the horizon. It became easy to deduce from this that the establishment of a variety of small-scale specialized universities would be more appropriate than the continued development of large-scale, something-for-everyone comprehensive universities (Kim Sin-bok et al., 1993: 110).

According to Lee Mu-keun (2004), the permissive approach to university establishment was pursued as a way to improve on the unrealistic permission standards of such an outdated system and the social reaction against the application of such standards. The new system aimed for small-scale specialized universities whereby institutions would have a total student quota of 400 and single department graduate schools could have a minimum of 100 students, with a quota under these numbers still being acceptable. There would be no minimum number of departments to be established either. This would promote the development of various small-scale colleges.

With the introduction of the Permissive University Establishment System a mechanism was

created for the establishment of small-scale universities with enrollment quotas of less than 50 students, institutions which would be in and of themselves impossible to develop through the approval system stipulated in the Decree on Standards for the Establishment of Universities and Colleges. At the same time, the new standards made it difficult to establish any more large-scale universities as they required a huge investment. With this the road was open to establishing the specialized universities desperately needed to meet the social and economic demands of the nation, carry out national policies, and satisfy the right to freely establish a higher education institution guaranteed under the constitution. This also marked the introduction of a means for controlling the quantitative growth of universities.

3) Expanding Opportunities for Industry Workers to Enroll in University or College

The Roh Tae-woo administration expanded special admissions for industry workers, providing them with opportunities to enroll in higher education institutions.

E. The Community College Policy of the Kim Young-sam Administration

1) Community College Education Reform Policy Stipulated in the Approach for Reform toward Establishment of a New Education System (II)

The practical measures for carrying out the community college education reform policy stipulated in the 1996 Approach for Reform toward Establishment of a New Education System (II) were as follows:

First, community colleges needed to be linked with the education provided in high school to train the core semi-professional workers needed by small and medium-sized enterprises (SMEs) and other elements of industry, and needed to be developed into pivotal institutions that could provide continuing vocational education opportunities meeting the standards of higher education (Kim Yoon-tae, 2002: 192).

According to Im Cheon-soon et al. (1999) the following measures were taken to realize these goals: ① Development of joint high school-community college (Two-plus-Two), community college-open college or general university (Two-plus-Two), community college-correspondence university education programs; ② Granting of professional college degrees (associate degrees) to

community college graduates; ③ Establishment of a special process for workers and the general population; ④ Easing of the relevant regulations to promote industry-school cooperation and business-commissioned education; ⑤ Establishment of a maximum 1-year intensive curricula; ⑥ Provision of opportunities to participate in establishment of new universities and implementation of consortia.

Second, the establishment of small-scale specialized community colleges comprised of 1 or 2 departments was enabled in order to flexibly respond to rapid industry structure changes and job type differentiation and diversification (e.g.: animation community colleges, fashion design community colleges, advertising community colleges, automobile community colleges, cooking community colleges, etc.). The Education Reform Committee did the following to carry out this initiative: ① Stipulated standards for establishment of specialized community colleges; ② Permitted metropolitan city governments like Seoul to establish such institutions; ③ Enhanced autonomy of specialized community colleges to establish or close down departments and manage student quotas; ④ Hired as teachers persons of experience with an outstanding record in hands-on work; ⑤ Enabled distance education for liberal arts courses.

Third, the community college student selection process was improved as a way of opening the door to higher vocational education to those who completed such a curriculum at the high school level. To carry out this aim, in 1997 the government enabled national community colleges to independently select students within a designated range and gave complete autonomy to private community colleges to select as many students as they wished, though their admissions methods were subject to evaluation that determined levels of administrative and funding support.

Fourth, community college personnel were trained to improve their hands-on application of tasks in order to enhance the quality of higher vocational education. To implement this initiative, the Education Reform Committee introduced the ‘training semester system’ for teachers to engage in work in an industry and, when hiring teachers, those who had experience working in an applicable business or industry were given priority.

The above-mentioned community college education reform measures stipulated in the Approach for Reform toward Establishment of a New Education System (II) are as follows (Ministry of Education, University Education Support Department, 1996; Reproduced from Ministry of Education, 1998c: 189-210):

(1) Community colleges that feature outstanding education environments were selected as institutions that could autonomously decide student quotas;

(2) In 1996 the system for providing on-demand education was introduced, promoting industry-school cooperation

(3) The cooperated curriculum between vocational high school and community college began to be implemented on a trial basis in 1997;

(4) The university admissions system was improved so that as of 1997 vocational high school graduates were given expanded university enrollment opportunities, the criteria for determining who was subject to special admissions standards were relaxed, and the ratio of admissions granted to the agriculture and fishery community was expanded;

(5) The training semester system for teachers to receive field training at a work site and the field training semester for students to engage in hands-on learning at an industry workplace were introduced;

(6) Beginning in 1997, community college graduates became eligible for professional college degrees through stipulations in the Higher Education Act. On December 24, 1997 it was stipulated in Law 5475, the Technical College Act (Article 13) that those who completed a multi-function and skill curriculum in a technical college could receive a professional college degree (associate degree) the equivalent industrial degree.

2) Revision of Community College Educational Goals

Despite several changes made to the system after the initial establishment of short-term higher education institutions, educational goals of community colleges remained to train mid-level workers, semi-professionals, para-professionals and technicians. Unlike universities, the educational goals of junior colleges were never stipulated in the Education Act of 1951. However, in a conference of junior college directors in 1963 it was determined that the goal of such institutions was to ‘provide a kind of complete education to train the core technically-skilled human resources needed by industry.’ The educational goal of five-year higher vocational schools was to ‘instill the professional knowledge and skills needed by industry and to polish these attributes further to train the core technically-skilled human resources needed for industrial

development' The educational goal of professional schools and community colleges was stipulated in the Education Act as 'teaching and research on the professional knowledge and skills of each social field and polishing of talent to train the mid-level workers or semi-professionals needed for the development of national society.'

However, in 1997 the educational goal of community colleges was revised from 'training para-professional workers' to 'training professionals' (Lee Mu-keun, 2015b: 39-42). This indicated that there needed to be a great change in the way community colleges trained people to become the ideal human resources for industry. However, the following points show that there is doubt as to whether the revision of the community college educational goal to 'educate professionals' was appropriate and whether this new goal was even attainable.

A) The Definition of 'Profession'

A profession is an occupation that requires a comparatively vaster theoretical and systematic knowledge and set of skills than a normal job, and involves a unique vocational structure, ethics, and culture. Moreover, professions are occupations oriented toward providing services to society, and are guaranteed a higher level of vocational autonomy on a social level than normal jobs. For this reason, workers who are employed in professional positions show a much higher level of satisfaction with their jobs and feel a greater sense of reward from their work and, as such, the term 'profession' tends to refer to jobs that are judged to carry a higher degree of social status, income, and authority (Park Jong-yeon, 1993: 221).

B) Standards for Determining a Profession

There are various criteria for determining whether something is a profession, including the existence of professional theory, knowledge and skills; independence during the process of carrying out one's duties; the requirement of a long period of education; whether it is a lifelong position; the existence of a group representing the profession; the existence of professional ethics; the existence of standards and a licensing system; whether it provides a social service or involves a sense of public duty; and a high level of income, social trust and respect, and social impact (Kim Hyeon-su, Kim Mi-suk, 2003).

C) Classification of Professions

(A) Degree of perceived power

Traditional positions considered to carry a high degree of authority include doctors, pharmacists, legal experts (lawyers, judges, prosecutors), clergy, professors, and scientists.

(B) New specialized positions granting authority, independence and a high income

Engineers, accountants, architects, newspaper journalists, broadcasters, computer experts, etc.

(C) Semi-professionals with a comparative lack of independence compared to new specialized positions that are characteristically largely occupied by women

Nurses, librarians, professional assistants, etc.

Recently some occupations are trending toward losing their status as professions.

<Table 1-24> Korean Job Classification Standards [announced on February 12, 2007; enacted on October 1, 2007.]

(Unit: EA)

Year	Major Classification	Intermediate Classification	Sub Classification	Detailed Classification	Sub-detailed Classification
2000 (5th round)	11	46	162	447	1,404
2007 (6th round)	10	52	149	426	1,206

Note: Major Classifications 5th Round 1: Professionals 2: Technicians and semi-professionals.
: Major Classifications 6th Round 2: Professionals and related workers.
21: Science professionals and related positions, 22: Government communications professionals and technical positions,
23: Engineering professionals and technical positions, 24: Health and social welfare and religious positions,
25: Education professionals and related positions, 26: Law and administration professions,
27: Business management, financial professionals and related positions,
28: Culture, art, sports professionals and related positions,
Source: National Statistics Office (2007), cited from p. 11

One difference in the 5th and 6th rounds of the Korean Job Classification Standards is the reduction from 11 major classified professions to 10. The 5th round of major classifications stated '1: Professionals', '2: Technicians and semi-professionals', but 1 and 2 were combined into a single category in the 6th round as '1: Professionals and related workers' (See <Table 1-24>). Therefore, from the perspective of the Korean Job Classification Standards, if the educational

goals of community colleges also changed from ‘training professionals’ to ‘training professionals and related workers’, it would be easier to explain the reason for changing these educational goals and these changes would also become more realistic.

However, the revision of community college educational goals from training mid-level workers or semi-professionals to training professionals is generally said to have been done to reflect the changing demands of education recipients and suppliers in the face of the changing trends of modern society in the last 30 years of education. It is also said that the term was changed because stating that the training of mid-level workers or semi-professionals was the goal of such establishments was not appropriate because there existed the misconception that people who graduate from a community college are nothing more than mid-level skilled workers in industrial society (Korean Council for University College Education, 2010: 134). The same opinion was presented in Jeong Tae-yong et al. in their research on approaches to development of the community college education system, and they have suggested that ‘training middle level workers’ in Article 128, Section 2 of the Education Act should be changed to ‘training professionals’ (Jeong Tae-yong et al., 1995: 57-59, 159).

The above-cited reasons for changing the educational goals of community colleges have logical contradictions and have brought confusion to the identity of community colleges today. There are several reasons for this.

First, the educational goal of community colleges is primarily the training of mid-level workers or semi-professionals and cannot primarily become the training of doctors, lawyers, pharmacists, teachers, engineers, chartered accountants, patent attorneys and other professionals. Second, if the goal is to emphasize the term ‘profession’, there must be consistency in the terms used to describe college degrees, professional workers and community colleges to firmly establish the identity of community colleges. However, while changing the educational goal from ‘training para-professional workers’ to ‘training professionals’, they additionally changed the name of most community colleges by deleting ‘community’ and simply terming them as ‘colleges’. This is inconsistent with their stated aims. Third, there are a variety of institutions in the Higher Education Act including universities, industrial colleges, community colleges, technology colleges, distance universities, and universities of education and these institutions have various purposes. The development approach for the community college education system recommended by current

community colleges is nearly identical to the aims of the ‘industrial colleges’ defined in the current Education Act. This process seems to be a repetition of the industrial college restructuring process that occurred 15 years ago. Industrial colleges are not the only institutions established to provide continuing education opportunities for community college graduates. Besides the existence of broadcasting and communications colleges and cyber universities, general universities also allow such students to transfer their credits into their system. In addition, there are a variety of other higher education opportunities including technology colleges, company-affiliated colleges, polytechnic colleges, the academic credit bank system, bachelor’s degree examinations for self-education, and college degree programs through advanced curricula in community colleges. As such, it is hard to argue that there are few opportunities available for community college graduates to receive continuing education. Therefore, this leaves the impression that community colleges are aiming to become Korea’s comprehensive colleges that represent all types of universities. Community colleges now making the training of professionals their educational goal as a result of this logic now tend to be duplicating the educational aims and roles of other types of colleges, generating the possibility that their identity and competitive ability may weaken over time. There are also instances where community colleges have changed their names from ‘college’ to ‘university’, only further adding to the confusion regarding their identity.

When considering the above points, it appears there is a need to change the current educational goal of community colleges from that stipulated in the Higher Education Act, which states, ‘The educational goal of community colleges is the teaching of and research on the professional knowledge and skills in each social field and polishing of talent to train the professionals needed for the development of national society’ (Higher Education Act, Article 47), to, ‘The educational goal of community colleges is the teaching of and research on the professional knowledge and skills in each social field and polishing of talent to train the professionals and related workers needed for the development of national society,’ and for community colleges to establish their own specialized identity.

3) Policy on Liberalization of Community College Names

In order to establish a clear identity for universities and colleges, it is important that they establish clear and achievable educational goals, establish well-defined roles, develop and implement

curricula that correspond with these goals and their roles, and have names that unambiguously highlight their qualities.

In 1996, during the Kim Young-sam administration, the Ministry of Education recommended that universities and colleges be allowed to create their own names in the process of establishing and implementing an approach for fostering community college growth through the new vocational education system. However, allowing this did not assist the development of schools in any practical sense and only served to cause confusion among the population. Development of community colleges into specialized institutions through differentiation from universities corresponded with the goals of educational reform and, therefore, even if a retraction of the autonomy to create school names damaged the trustworthiness of policy to a certain degree, it was determined as more appropriate for schools to be required to use the 'community college' label in their names as is currently the case, and an action plan requiring this was established (Ministry of Education, University Education Support Department, 1996: 7-8). However, ultimately, in March 1998 the use of 'community' in 'community college' was made optional, and in 2011 the title 'community college (university)' became possible.

As such, confusion surrounded the identity of community colleges as the names of institutions became more diverse. In other words, most community colleges removed the title 'community' from their name and fashioned themselves with titles of '○○ College'. Recently, a considerable number of community colleges have named themselves '○○ University'. In extremely rare cases, some community colleges even call themselves 'university colleges'. In the Higher Education Act, the educational goals of different types of higher education institutions are defined as unique from one another. It is a significant stretch for community colleges to name themselves '○○ University' or '○○ University College'. This led to visible cases where Korean community colleges naming themselves '○○ University' have been confused by foreign 4-year universities as general 4-year universities.

Of course, in some countries the terms 'college' and 'university' can mean the same thing, while in others they signify different types of institutions, so it is difficult to show an example where these terms have been made to take on uniform meaning. However, as institutions, colleges and universities have various differences in terms of linguistics, nature, types of degrees and standards, time required for acquiring a degree, program value, and more (Lee Mu-keun, 2015a: 18-26).

Therefore when considering the differences in the conception of the terms ‘college’ and ‘university’ and the changes undergone in Korean higher education over the last half century, naming community colleges ○○ College (Polytechnic) or ○○ Community College (Junior College, Technical College) rather than ○○ University would be more appropriate in terms of their educational goals and in terms of universality of usage. It would also emphasize the identity of community colleges in contrast to the other higher education institutions stipulated in the Higher Education Act.

4) Establishment of Public Community Colleges

With the approach of the 1990s, the population of regional farming and fishing communities was rapidly declining, which was accompanied by a prohibitive shortage of students from these communities to attend high school. This led to the inevitable merger or closure of institutions in a number of places throughout the country where several types of middle and high schools were established.

At the same time, there was high demand from local governments for the central government to establish national community colleges in order to construct a system for providing continuing education for the promotion of regional industries and expansion of vocational education opportunities for regional high school graduates. This was done to tailor to local conditions the implementation of the human resource development projects from the regional agriculture and fishery community development initiatives of the Uruguay Round.

According to the Ministry of Education and the Community College Administrative Department (1994), an analysis of the status of community colleges in the major countries of Southeast Asia at the time (as of 1994) shows that 5.9% of Korea’s 135 community colleges were national institutions, while 0.8% were public and the vast majority (93.3%) were private. In contrast, of Japan’s 655 short-term higher education institutions, 14.5% were national, 9.0% were public, and 76.5% were private as of 1991, while of Taiwan’s 75 such institutions, 14.6% were national, 2.7% were public, and 82.7% were private. This shows that Korea’s ratio of national community colleges was significantly low in comparison.

Considering the above points, the Kim Young-sam administration included in its election platform

a promise to establish national community colleges in 9 locations between 1996 and 1998 (Jumunjin, Gangwon Province; Okcheon, Gwesan and Jincheon, Chungbok Province; Damyang, Jeonnam Province; Yecheon, Gyeongbuk Province; and Namhae, Geochang and Ulsan, Gyeongnam Province).

However, financial circumstances in the country made the establishment of these institutions impossible and this led to the restructuring of existing high schools into national community colleges at the behest of local government leaders (city mayors and provincial governors), making them provincial institutions. A certain amount of funding support for these initiatives to be provided by the national government was cooperatively agreed to by the Ministry of Finance and Economy and the Ministry of Education.

Based on this agreement, the two Ministries set funding support at KRW 3 billion a year for each applicable institution for facilities (remodeling and repairs of existing buildings and new construction, purchases of hands-on learning equipment), amounting to KRW 12 billion over a 4-year span. After the opening of such institutions, operational funding was also agreed to the tune of KRW 500–600 million each year over a 5-year span (30% of operational costs) for a total of KRW 3 billion.

In accordance with this plan, public community colleges with enrollment quotas set at a maximum of 1,000 students were established in Geochang, Namhae, Damyang, Jumunjin, Okcheon, Cheongyang, and Jangheung based around local industry (Ministry of Education and Human Resources Development, University Support Office, University Policy Department, 1994, 1997) (See <Table 1-25>).

<Table 1-25> Establishment of Public Community Colleges

Province	Type	Institution Name	Year Opened	Location	Remarks
Gangwon	Public	Gangwon Provincial College	March 1998	Jumunjin-eup, Gangwon Province	Restructuring of Jumunjin Fisheries Technical High School
Gyeonggi	National	Korea National College of Welfare	March 2002	Pyeongtaek, Gyeonggi Province	Newly established
Chungbuk	Public	Chungbuk Provincial College	March 1998	Okcheon-eup, Chungbuk Province	Restructuring of Okcheon Technical High School
Chungnam	Public	Chungnam Provincial College	March 1998	Cheongyang-eup, Chungnam	Newly established
Jeonbuk	Public	Iksan College	March 1992	Iksan, Jeonbuk Province	Restructuring of Iri Agricultural High School, merged with Chonbuk National University in 2008
Jeonnam	Public	Jeonnam Provincial College	March 1998 Establishment of Damyang campus	Damyang-eup, Jeonnam Province	Restructuring of Damyang Chuseong High School and Damyang Girls′ Middle School
			March 1999 Establishment of Jangheung campus	Jangheung, Jeonnam Province	Newly established
Gyeongbuk	Public	Gyeongbuk Provincial College	1997	Yecheon-eup, Gyeongbuk Province	Restructuring of Yecheon Comprehensive High School
Gyeongnam	Public	Gyeongnam Provincial Geochang College	1996	Geochang-eup, Gyeongnam Province	Restructuring of Geochang Comprehensive High School
		Gyeongnam Provincial Namhae College	1996	Namhae-eup, Gyeongnam	Restructuring of Namhae Comprehensive High School

Source: history of each institution presented on institution websites and conversations with representatives in 2016.

F. Community College Policy under the Kim Dae-jung Administration

After reflecting on the achievements and deficiencies of higher vocational education institutions since the 1979 unification policy and with an outlook on the future movement toward a knowledge-based society and changes in the work world, on January 1, 2001 the Kim Dae-jung administration announced a basic approach for development of future education at community colleges and a plan for their development.

The basic approach for development included improving education, training practical human resources with professional technical skills, implementing a cooperative specialization strategy, and orienting community colleges toward operation as lifelong vocational learning institutions guaranteed by society.

Plans for development included improvement of the educational quality of professional vocational skill-building, construction of a continuing education system, balanced support for growth based on each institution's particular characteristics (region, manner of establishment, type of institution), and improvement of the effectiveness of government funding support. A more concrete look at these community college education development approaches follows (Ministry of Education, Community College Support Department, 2001: 1-37).

1) Improving the Quality of Professional Vocational Skill Education[8]

A) Flexible Implementation of Study Periods

In order to train professional vocational human resources able to meet the needs of an advanced industrial society, each college was permitted to implement flexible study periods within a maximum span of 3 years. This was to be limited to departments requiring such flexibility.

B) Boosting Morale & Research Abilities of Community College Professors

This included the unification of qualifications and payment systems for community college and general university professors into a single standard, expanding research and class funding support as well as industrial field and overseas training opportunities for community college professors, and participation in government committees on industry-school cooperation.

C) Promoting On-demand Education & Expanding Implementation

In order to train the skilled human resources capable of adapting to work environments needed by industry and business (the consumers), on-demand educational programs obtained through competition were expanded and implementation of education to train and elevate students was optimized, while support for study costs was made more cost-effective.

In order to enhance the effectiveness of vocational education, higher education institutions were guaranteed the freedom to select students as they wished so they could determine the number to

[8] The content of (1)–(4) was derived from information presented by the Ministry of Education, Community College Support Department (2001).

recruit for each specific major for on-demand education linked to vocational high schools or same-major education programs. In addition, approaches were pursued to offer expanded enrollment opportunities to high school graduates who completed a general high school vocational curriculum and for industry workers.

2) Construction of a Continuing Education System

A) Support for Implementation of Advanced Major Courses

This involved the relaxation of regulations on the establishment and implementation of advanced major courses to enable study periods to be anywhere from 1 to 2 years, the elimination of enrollment criteria whereby only those with work experience in an industry were eligible, and permission for advanced major courses in newly established departments to have 3-year study periods.

It also included improvements to the academic credit management system by eliminating the evaluation certification process for community college advanced major courses and allowing such courses to be recognized by the standard education curriculum based on the academic credit bank system.

A review was also conducted on whether advanced major courses could be reformed and implemented as degree curricula, as is the case with Japanese short-term colleges and higher vocational schools.

B) Enhancing Linked Education with Other Educational Institutions

The establishment of linked curricula was induced between community college departments and industrial colleges, and implementation of joint curricula permitted between community colleges and foreign universities.

C) Expansion of Lifelong Learning Opportunities for Disadvantaged Social Groups

Support was provided for establishing various short-term education programs for disadvantaged social groups.

3) Balanced Development Based on Characteristics (Region, Establishment Method, Type of Institution)

A) Reasonable Establishment of Community Colleges & Quota Policy

This was a review to strengthen regulations beyond the permissive approach to university establishment to prevent the proliferation of inadequate universities and colleges and strengthen quota autonomy policy standards. Quota reductions were induced for large community colleges and those in metropolitan cities, introducing policy to promote autonomy in managing academic affairs and related quota reductions.

B) Promoting Regional Community Colleges

New and expanded establishment of higher education institutions was suppressed and quotas reduced to promote development of existing regional community colleges, structural modifications and regional cooperation were enhanced for regional community colleges, and funding support approaches revised to increase overall support.

C) Promoting Public Community Colleges

Comprehensive development was ensured for each national community college, then active administrative and funding support was provided towards the development of leading community colleges.

D) Bringing Sustainability to Private Community Colleges

The sustainability of private community colleges was enhanced by increasing their financial earnings and establishing an innovative administrative system based on self-help structural modification, while also promoting clear and open financial management and accounting. In addition, temporary directors were assigned to certain selected private institutions and to universities that could not meet their goals due to the lack of a director, with the aim of determining an approach towards better management.

4) Boosting Efficiency of Government Funding Support

A) Revised Budget Management to Align with Support Goals

Segmented tasks were grouped into holistic projects to simplify budgeting, with 6 varied and specialized promotion projects combined into 3, and placing on-demand education support projects into a separate category.

B) Review Conducted towards Establishing a Specific Group for Evaluation of Funding Support Systematization

Funding support tasks were systematized by stage and a review conducted on establishment and operation of a specific group to evaluate funding support for community colleges.

C) Revised Support Methods for Each Project

Support methods were revised for each project (including those for outstanding industrial fields, foothold support projects based on traditional rural industries, and specialized program support projects) and other projects modified, such as introduction of a support budget spending limit for single-department colleges, and expansion of support for regional community colleges in smaller cities.

D) Standardization & Systematization of Evaluation Indicators Promoted

Standardization and systematization of evaluation indicators was promoted by ensuring indicator appropriateness, guaranteeing autonomy and variation for universities, developing indicators that provided feedback regarding university development and achievements, and general classification of evaluation indicators into common and project goal indicators.

E) Increased Effectiveness of Funding Support Management & Implementation

Funding support management and operation was made more effective through the introduction of evaluation periods, funding support periods, production and distribution of a community college handbook, and continuous thorough management.

Efforts were made to establish plans for implementation that would achieve the goals for each field of development by 2003.

G. Community College Policy under the Roh Moo-hyun Administration[9]

1) Introduction of the University Information Disclosure System and Enhancing the Teacher Procurement Rate

In 2004, the Ministry of Education announced a university assistance reform in response to the rapid decline in university enrollment. According to The 30-year History of Community Colleges in Korea (Korean Council for University College Education, 2010), higher education institutions achieved quantitative growth, but qualitative growth remained lacking. Thoughtless development of comprehensive universities made the role and character of each university unclear and ended up duplicating their function, ultimately leading to inefficient use of financial investments. In addition, it was expected that there would be an increasing inability to meet university student quotas. There was also increased demand for the publication of university information that was brought about through the increased role of regional universities for regional innovation, as well as increased demand for the same from students, parents, regional society, and businesses.

With structural university reform, focus was placed on the introduction of a University Information Disclosure System that would notify people about university conditions and the status of school operations (including results of university evaluations), and measures were advanced to improve educational conditions and the institutional specialization. For community colleges, there were requirements to communicate university information, achieve a 50% full-time teacher procurement rate by 2009, set up various connections between institutions, and reduce enrollment quotas by 60% when reforming community colleges into 4-year universities.

2) Uniformity in Salary for Community College & 4-year University Teachers, Revisions to Travel Expense Regulations

One of the Roh administration's representative community college policies was the one on

[9] The content of (1)–(3) was derived from information presented by the Korean Council for University College Education (2010).

improving the welfare of community college teachers through salaries equivalent to their 4-year university counterparts and revision of travel expense regulations.

3) The Vocational Education System: Improvement & Innovation

During the Roh administration, the Presidential Advisory Committee on Education Reform announced the "Vocational Education System Reform Plan" in 2005. According to The 30-year History of Community Colleges in Korea (Korean Council for University College Education, 2010), this plan presented the two initiatives of 'vocational education for all that integrates work, study, and life', and 'an open vocational education system for promoting work capacity'.

Policy directly related to community colleges can be classified into vocational education system improvement and vocational education innovation. The government worked to improve the vocational education system by making the community college system more centered on consumers, strengthening the links between school levels (vocational high schools and community colleges) and between education-training institutions through the construction of lifelong vocational education systems, insufficient at the time. It also promoted fluid movement in work-to-school transitions.

For its vocational education innovation policy, the administration presented the 'introduction of a vocational high school-community college-business contract department system', strengthened the role of 'community colleges as continuing education centers for regional society', and increased the specialization of community colleges with the participation of government ministries. In addition, the government also stipulated the introduction of a worker scholarship system for community college students and the implementation of an overseas internship program.

H. Community College Policy under the Lee Myung-bak Administration[10]

1) Promotion of Professionally-Skilled Human Resources Development through Competency-building Initiative

To meet the needs of the knowledge and information society in which human resources training

[10] Summarized by referencing Lee Joo-ho et al. (2012), pp.411-415.

serves as the impetus for national development, beginning in 2008 the Lee administration converted its community college specialization policy emphasized throughout its tenure to the ‘Community College Education Competency-building Initiative’ to advance the overall educational capabilities of colleges. As such, a leading policy of the government up to that time was to allow universities the freedom to choose their own paths to development and recognize their authority over the discretionary investment of resources. This led to the transition of policy toward an overall funding distribution approach that would boost the autonomy of universities (Korean Council for University College Education, 2013: 18). Although this contributed to enhancing the capacity of universities to provide education (the essential function of these institutions), a single quantitative indicator was used to evaluate all universities despite the fact these institutions varied by nature. This induced homogeneity among universities and it was argued that it prevented them from sufficiently specializing.

2) Developing World Class Community Colleges

WCC (World Class College) was a policy implemented to reform the higher education system towards developing outstanding community colleges. As a plan to classify the top 15% (21) of schools as outstanding community colleges and engage in their intensive development, institutions were selected over a span of 3 years (2011–2013). While Meister high schools represented the secondary education level, WCC would take on the leading role at the tertiary education level to promote the overall perception and competitiveness of vocational education. In 2011, Koje College, Daejeon Health Institute of Technology, Yeongnam University of Science and Technology, Yeongjin College, Ulsan College, and Cheju Halla University were selected. In 2012, Gyeonggi College of Science & Technology, Kyungbuk College, Ajou Motor College, and Hallym Polytechnic University were selected, for a total of 11 community colleges designated as WCC: the top community colleges in Korea with the capacity to become global institutions. These 11 WCC were selected through 4 stages of evaluation (on requirements, financial stability, institutional competency, and customer feedback) and in 2012 they featured a 71% average graduate employment rate, which was significantly higher than the average graduate employment rate of 60.9% at overall community colleges. In addition, professionally-skilled human resources are trained for specialized fields in regional industries through education programs distinct from

those of other institutions

Along with the honor of being recognized as the top community colleges in Korea, institutions selected as WCC receive a total of KRW 7 billion in funding support (an average of KRW 500 million per institution) through capacity-building projects for community college education. These schools are also given much wider freedom than general community colleges in terms of creation of intensive major courses for college degrees and business-commissioned education, and each institution operates a WCC specialization program to develop a specialized development model.

3) Promoting Development of Institutions Leading in Industry-School Cooperation

After 2000, general support projects were gradually reduced and several projects combined to place focus on goal-oriented specialized projects. During the 12-year implementation of specialization projects from 1997 to 2008, market-oriented funding support methods promoted inter-university competition for fair distribution of a limited amount of funding support. This increased the efficiency of funding and boosted the quality of university education (Korean Council for University College Education, 2013: 26).

Industry-school cooperation is developed around the goal of higher vocational education to ensure students at universities can attain employment after graduation. Based on the need for education founded on such industry-school cooperation, the 'Industry-School Cooperation-centric University Promotion Project' was implemented as support for 4 years between September 2005 and June 2009. After the first round of this project ended, a second round was carried out from July 2009 to December 2011. This project's name was changed to Leaders in INdustry-university (college) Cooperation (LINC) and a total of KRW 12 billion in funding support was provided each year for 5 years from 2012 to 2016. Through the LINC project, a variety of industry-school cooperation programs are being implemented including on-demand education, a hands-on learning academic credit system, and the creative integrated blueprint (Capstone Design). This has strengthened the vocational skill education of community colleges intimately connected with regional industries, enabling the supply of outstanding and technically-skilled human resources to regional SMEs

These projects have enabled the systematic construction and improvement of the overall industry-school cooperation program, which has facilitated the establishment of a college system oriented toward such cooperation and has proven productive in terms of training human resources

customized for industry-school cooperation.

I. Community College Policy under the Park Geun-hye Administration[11]

1) Focused Development of 100 Specialized Community Colleges

The Park Geun-hye administration is establishing and promoting a variety of policies to carry out Administrative Task 71, "Focused promotion of community colleges as higher vocational education-centric institutions", and the presidential order to "expand community college support to train a great deal of customized talent needed at industrial sites" (March 28, 2013).

In order to carry out focused development of 100 specialized community colleges, the plan is to classify them into 4 different types and provide KRW 290 billion in funding support each year over 5 years (2014–2018). As of 2016, 84 colleges have been selected for this project. Accordingly the following 4 types of specialization projects are underway: national strategic industry or regional strategic industry-related specialized universities (single focus fields 70%: Type 1), national strategic industry or regional strategic industry-related specialized universities (dual focus fields 70%: Type II), total college specialized field program (on-demand education) or program specialization centered on certain departments (total college or department-specific program: Type III), conversion of general community colleges into lifelong vocational education colleges operated as adult-centered 100% hands-on learning in non-degree and degree courses (Type IV) (Ministry of Education, 2013: 12).

2) Development & Management of Curriculum based on National Competency Standards (NCS) towards a Competency-based Society

NCS-based curricula are organized and operated with the aim of training the talent needed at industrial work sites through systematic provision of content based on a national standard for each industrial field that includes knowledge, skills, refinement and other forms of training required to carry out the tasks demanded in the field. The NCS can be seen as a standardized model of education curricula for each industrial field and job type at a national level, based on job analyses

[11] The content of (1)–(4) was derived from information presented by the Ministry of Education (2013).

derived from the Developing A Curriculum (DACUM) method commonly employed in Korea. NCS-based curricula are given great importance in terms of selection standards for specialized community college development to enable implementation there.

3) Promoting the “Into the World” Project

In order to promote the global employability of community college students and enhance the training and supply of outstanding human resources for Korean companies that have penetrated global markets, plans has been established to have more than 600 people trained and supplied to the labor market through 20 project groups on an annual basis. To achieve this goal, the government has been establishing and implementing overseas employment programs designed for community college students, programs customized for foreign students (including foreign Korean nationals), and education programs designed for overseas Korean business employees (Ministry of Education, 2013: 36-44).

4) Implementing the Employment Guaranteed High School-Community College Comprehensive Education Development Project (Uni-Tech)

By providing middle school students with customized vocational education related to jobs of the future without the burden of university entrance exams or concerns about finding a job, these students can be supported to grow into technically-skilled workers and provided the opportunity to develop a new career path based on vocational education that enables them to become employed.

With this system, specialized high schools, community colleges and businesses will create consortia through which students will complete a curriculum spanning 3 years of specialized high school, 2 years of community college (a total of 5 years) and hands-on learning activities at industrial work sites during vacation when needed. This is a comprehensive high school-community college education system that guarantees employment at the time of graduation, when students will be hired by a business as agreed upon in the consortium arrangement. Currently, 91 business are participating in 16 project groups (16 community colleges, 16 high schools) (Ministry of Employment and Labor, Ministry of Education, Human Resources Development Service of Korea, 2015: 9).

J. Community College Curricula, Industry-School Cooperation & Funding Support Policy

1) Transforming Community College Curricula

A) Community College Curricula under the Park Chung-hee, Chun Doo-hwan, & Roh Tae-woo Administrations (I) (1979–1997)[12]

By the end of the Park Chung-hee administration in 1979, higher vocational education institutions were unified into community colleges. After this, standards for curricula as well as experiment and hands-on learning facilities were enacted and completion standards were converted from the credit to the grade scoring system. With this, at least 80 credits were needed for graduation (at least 120 for 3-year programs), with 3 credits given for single subjects each semester. Model curricula were developed and implemented, and while the ratio between liberal arts courses and professional courses was originally set at 20:80, this changed to 20-40:60-80 in 1982, then 20-30:70-80 in 1989, showing the flexibility that existed in curricula implementation. Korean history, ethics, school military training, and physical education were eliminated, and professional subjects were set at 50% theory and 50% hands-on learning (Lee Mu-keun, 2015b: 39-41).

Later two amendments were made to the Education Act on February 24, 1993 and February 28, 1995, enabling each community college to determine its own completion requirements and courses, and the minimum credits needed for graduation.

The NCS were developed to help bring about a competency-based society, where ability is considered over academic background, and emphasized by the Park Geun-hye administration. When looking at the current NCS-induced transformation process of community college curricula, one can see continuity with the curricula development process based on the use of ‘job analysis (mainly DACUM methods)’ of the 1980s (post-community college restructuring of 1979) to transition from curricula centered on intellectual subjects and a ‘What do you know?’ focus to a competency-based curricula focused on ‘What can you do?’. This is true even if there are some differences based on the current universities and majors involved compared to that time (Choi Hong-yeong, 1986: 32-59).

Development of competency-based vocational education curricula based on job analysis and asking ‘What do you know?’ rather than ‘What can you do?’ began in the United States in the

[12] Adapted from Lee Mu-keun (1982b), pp. 41-102; Lee Mu-keun & Won Sang-bong (2000), pp.48-57.

1940s during World War II when, in order to efficiently educate new recruits who had serious differences in academic backgrounds, curricula were developed and implemented after conducting job analysis for each military branch.

Job analysis-based curricula development was introduced in 1960 through the work of Robert F. Mager in his book Developing Vocational Instruction (1968), in which he discussed the theories and facts around development and implementation of vocational education curricula. In the 1970s, the Competency-Based Vocational Teacher Education program was developed comprised of 10 fields and 100 study modules. This program saw widespread application. Later in the 1980s, a variety of books on the subject of Curriculum Development for Competency-Based Education were published and research was actively conducted on this field. The Developing A Curriculum (DACUM) model still widely in use today emerged at this time. Korea's community colleges also placed a great deal of effort on curricula development and implementation based on job analysis at the time. Representative curricula developed according to job analyses included office automation, welding, mechanics, automobiles, horticulture, animal husbandry, and landscaping. In particular, the DACUM method was widely used as a curriculum model for the development of curricula based on industry-school cooperation for communications and office automation (Kim Sang-ho et al., 1983: 11-35). In addition, at the beginning of the 1980s models for 157 fields beyond the welding course curriculum were developed in community colleges, spreading nationwide by 1987, and 108 types of teaching material packages and modules were developed and applied. Even into the 1990s, DACUM-based curricula development continued in certain universities (Kang Gyeong-jong, 1999: 17-263).

B) Curricula Policy under the Kim Young-sam, Kim Dae-jung, Roh Moo-hyun, Lee Myung-bak, and Park Geun-hye Administrations (II) (1997–Present)[13]

(1) Educational Goals

In 1997, the educational goal of community colleges was reestablished as teaching and research on the professional knowledge and theories of each social field and polishing of talent to train the professionals needed for the development of national society (Higher Education Act, Article 47,

[13] Adapted from the Korean Council for University College Education, 2010, pp. 220-254.

enacted December 13, 1997, partially revised, August 31, 1999). With this, the educational goal changed from the ‘training of semi-professional workers’ of 1979 to the ‘training of professionals’ in 1997.

(2) Curricula

The ‘Regulations on Community College Experiment & Practice Learning Facilities Standards’ enacted in August 1973 were eliminated in the ‘University and Community College Experiment & Practice Standards Abolition’ order of January 1997, granting community colleges the freedom to independently manage their own experiment and practice facilities.

In addition, based on Articles 21, 48, 49 and 50 of the Higher Education Act and Articles 58, 58.2 of the Higher Education Act Enforcement Ordinance, community colleges were empowered to manage their own curricula independently according to their own rules.

After the revision of educational goals from training mid-level workers or semi-professionals to training professionals, community colleges became able to go beyond college degree curricula to confer bachelor degrees as of 2008 with the new establishment of advanced major courses (degree and non-degree curricula) and 4-year programs to train health care workers.

Starting in 1994, a great variety of programs were developed and implemented. These included business-commissioned education and army-commissioned student education programs, the multi-semester system and the field training semester, a college system (categorization) or major course for on-demand curriculum developed based on the DACUM method with the establishment of contract and special contact departments, special curriculum programs, and internationalized programs, as well as management of vocational high school + community college (Two-plus-Two) programs.

Since the 2014 school year, it has been mandatory (excluding some majors) for institutions selected for the specialized community college promotion project to develop and implement NCS-based curricula. Other community colleges have also been advised to develop and operate their curricula based on NCS as well (Ministry of Education, National Research Foundation of Korea, 2015: 295).

Community colleges have established lifelong education centers and are developing and

implementing a variety of programs through these institutions to offer better educational opportunities to citizens in regional communities.

In addition, community colleges are playing a greater role as higher learning institutions for regional communities by developing and implementing hands-on learning and experience programs and providing other such career experience programs as part of the Career-Experience Semester for middle school students.

2) Policy on Industry-School Cooperation at the Community College Level

Community college hands-on learning was enabled through the Industrial Education Promotion Act enacted in 1963 and amended in 1973 (both during the Park Chung-hee administration), after which came the implementation of hands-on learning and field study programs at business and industrial sites. The Chun Doo-hwan administration promoted more development and implementation of curricula through industry-school cooperation for each major in the 1980s. At the end of that decade, the Roh Tae-woo administration was promoting hands-on field study programs through the development and implementation of a hands-on field study manual (Lee Mu-keun et al., 1989: 320). In the 1990s and during the Kim Young-sam administration, many community colleges took part in an industry-school-research institute consortium, an industry-school cooperation project headed by the Small and Medium Business Administration, which became actively utilized as a means for promoting technology development transfers, support for technology bottlenecks, hands-on learning, and employment promotion, thereby further invigorating similar forms of cooperation.

One characteristic of the Kim Dae-jung administration at the beginning of the 2000s was the expansion of industry-school cooperation beyond vocational high schools and community colleges to include 4-year universities as well, thereby spanning the entire spectrum of higher education institutions.

To provide systematic backing for this initiative, the Ministry of Education under the Roh Moo-hyun government revised the Industrial Education Enhancement and Industry-School-Research Cooperation Promotion Act in 2003 to create a legal basis for systems related to initiatives through industry-school cooperation, including the establishment of cooperation organizations, special

cooperation professors, school enterprises and cooperative research institutes in universities, the introduction of contract-based department-vocational training curricula, the granting of authority to school principals and directors to enter into industry-school cooperation contracts, the creation of cooperation committees for each field and region as well as the provision of funding support for these committees (Im Chang-bin, 2009: 1-3).

According to the Korean Council for University College Education (2010), community colleges initiated a variety of forms of industry-school cooperation programs on this legal basis. Ministry of Education funding support projects included the specialization program project, support for outstanding research institutes, support with promotion of industry-school cooperation, community college overseas internships, community college work-study programs, on-demand education projects, assistance with the establishment and implementation of entrepreneurship support centers, and rural foothold community college promotion projects.

During the Kim Dae-jung administration, the Ministry of Education supported these projects with funding for each field from 1999 to 2003, and these projects spurred universities to initiate related cooperation activities while also promoting the sustainability of vocational education through the training of human resources with practical skills.

Government funded projects continued to receive support from 2004 to 2008 as integrated specialization projects. More than 190 universities and colleges received funding support that included per-field specialization projects, on-demand education, employment contract systems for industry-school cooperation, and assistance with experiment and hands-on learning costs.

The university project promoting industry-school cooperation was initiated in 2004 during the Roh Moo-hyun administration. When the first stage of the project (2004–2008) came to an end, the Lee Myung-bak government carried out the second stage until 2013. The 1st stage included establishment and implementation of on-demand education, contract-based majors, business-commissioned curricula, teacher hiring and evaluation system improvements, special industry-school cooperation professors, industry-school human resource exchanges, Capstone Design, an engineering education certification system, and hiring of professors from industrial fields. The 2nd stage focused on curriculum reform and employment-linkage strategies through the university and community college industry-school cooperation promotion project and other projects, as well as construction of a network for industry-school cooperation.

The Lee Myung-bak government also implemented the Leaders in INdustry-university (college) Cooperation (LINC) project. The Park Geun-hye administration continued to promote vocational education policy through industry-school cooperation between specialized high schools, community colleges and businesses in the form of such projects as the Employment Guaranteed High School-Community College Comprehensive Education Development Project (Uni-Tech) between businesses, implemented customized curricula through customized departments (courses) and on-demand courses, the PRIME project for matching university education with the demands of business, the industrial site experience program through the Career-Experience Semester for the vocational education of middle school students, and other projects towards cooperation between industry and schools.

In order to provide systematic backing for these policies, the current Ministry of Education established the Vocational Education Policy Department, the Job Competency Policy Department, the Career Education Policy Department, the University Support Office-affiliated Community College Policy Department, and the Industry-School Cooperation Department under its Lifelong & Vocational Education Bureau.

Although diversified efforts are under way to promote and bring sustainability to human resource development initiatives through industry-school cooperation, positive results have been lacking. What is the reason for this relative lack of success? At the beginning of the 1970s the agriculture, technical, fisheries and maritime high schools, community colleges and universities providing vocational education were required to provide hands-on field study opportunities within a set period of time. However, in reality there were no major-related businesses available where that many vocational high school, community college and university students could engage in hands-on field study. Moreover, there were almost no businesses that were prepared to actually carry out hands-on study education. For this reason the mandatory hands-on field study system was discontinued after just 2 years. Another reason for the dismal results was the failure to perform a proper prior investigation of whether there were sufficient hands-on learning facilities or locations. There was a central industry-school cooperation deliberation committee at the time, but it failed to reflect prior agreements and demands of businesses and industry. This was because the government amended laws without consultation and, equipped with nothing more than desire, plans were implemented on the school front without any concrete agreement from the major players, such as industry and business.

In the 1980s, the Chun Doo-hwan and Roh Tae-woo administrations attempted to implement a one-plus-one system in vocational institutes of the Human Resource Development Service of Korea (affiliated with the Ministry of Labor) modeled upon the German Dual System. One school was added each year starting in 1983 as part of a trial run, but by 1989 only the Incheon Vocational Training Institute remained, while the industry-school cooperation curricula for the other 4 vocational training institutions were canceled. In 1991, new types of industry-school cooperative training systems were introduced in the form of a general, professional, and advanced training curricula. The general curriculum was to train level 2 craftsmen, and its 1-year training period began with 6 months of collective training and ended with 6 months of on-the-job training at a business. The professional training curriculum was to train level 1 craftsmen. Its 2-year training period began with 1 year of collective training and ended with 1 year of on-the-job training. The advanced training curriculum was also designed to train level 1 craftsmen, with its 3-year training period beginning with 18 months of collective training and ending with 18 months of on-the-job training. In addition, the first year of vocational students from general high schools was on liberal arts education, followed by a year of hands-on study (based on the theory of their major field) at a vocational training institution, followed by practical application study in an industrial setting in the 3rd year. There were a variety of industry-school cooperation programs in curricula for general high school graduates, including one where the 1st year students completed major field-related theory and basic study at a vocational training institute and then practical application study in an industrial setting in their 2nd year. However, several problems emerged, leading to the cancellation of all such cooperative vocational training programs in 1994 and their conversion back to a human resource training system based on collective training approaches of the past (Seo Sang-seon, 2002; reproduced from Jeon Taek-soo, 2008: 193-195)

The following <Table 1-26> compares the industry-school cooperation systems of Germany and Korea and shows, to a certain extent, why it was difficult for the Dual System to achieve success in Korea.

<Table 1-26> Comparison of German & Korean Industry-School Cooperation Systems

Type	Germany	South Korea
Student selection and education type	○ Business-oriented - Students supported and selected by business	○ School-oriented - Students supported and selected by school ○ Issues - Caused discord during business commission stage - Negative impact on results of on-site training.
Education implementation	○ Because students are educated in both business and school environments they are able to acquire balanced capabilities	○ There is no link between theory and practice because they complete theory-based school education first without any practical application before they are put in the position to acquire technical skills ○ Because 3rd year high school students are sent to business training institutions, they tend to have the perception that they have already graduated, making it hard to manage them
On-the-job training at a business	○ Of the services provided by hands-on field training institutions, training for adaptability at production sites is provided through business facilities.	○ Students begin hands-on field training without having learned skills that can contribute to the production process, so they are unable to work independently and are constantly forced to depend on workers at the site.
Teachers responsible for on-the-job training	○ Teachers in charge of hands-on training are sent for training to business-affiliated training institutions ○ Qualifications: those with master craftsman or technician certification (must be a community college graduate) with 5 years of relevant work experience + completion of education program (160 hours) + passed a Chamber of Commerce & Industry or Manual Industry Association-directed test	○ Those in possession of most level 1 or level 2 craftsman certificates (irrespective of academic background) + 3–5 years of work experience + education program student (40 hours)

Source: Kim Deok-ho (1996); reproduced from Lee Jong-seong et al. (1998), p. 156

Later, during the Kim Young-sam administration, the Ministry of Education launched a dual program (2+1) of Specialized Technical high school through which students would study for two years at school and 1 year at an industrial site. This was implemented on a trial basis from 1994 to 1998, after which it was fully rolled out. However, this was done without any analysis of the reasons for the failure of the 10 years of various industry-school cooperation programs modeled after the German Dual System by the Ministry of Labor, and without any comprehensive planning. Ultimately, it was discontinued in the 2000s, not 10 years after its introduction.

The following is a summary of the problematic aspects of the dual program (2+1) of Specialized Technical high school pointed to by Lee Jong-seong et al. (1998). First, without feeling a great need for securing or training technically-skilled human resources, major corporations formally responded to the mandatory vocational education and training system but without any regard for efficiency. This proved to be a waste of money. Second, due to insufficient basic education for technical high school students, hands-on field study capabilities were not up to the standards expected by businesses, representing a failure to gain the intended benefits of the project. Third, more than 70% of businesses lacked the proper conditions to carry out on-the-job training-related education, making it difficult to find enough that were suitable.

Therefore a future industry-school cooperation system should not be hastily modeled after foreign initiatives. Even if it takes some time, such a system needs to be gradually constructed so it reflects the realities of the Korean education environment and business culture.

3) Community College Funding Support Policy

A) Financial Importance of Government-Funded Support Projects

Government-funded support for community colleges can be divided into the two categories of general funding support and special-purpose funding support. General funding support aims to improve educational conditions by helping with the procurement of equipment for experiment and hands-on learning and providing financial support for the costs associated to that learning. Special-purpose funding support refers to the various levels of funding granted after evaluating the capabilities of community colleges to independently train and supply the outstanding mid-level workers or semi-professionals demanded by industry. Such funding is used to support restructuring of community colleges, promotion of technical community colleges, by-request and specialized on-demand curriculum programs and other specialized programs, promotion of rural industry-based foothold community colleges, outstanding industrial research institutes, high school-linked curricula, promoting the development of an educational culture for newly-emerging job types, outstanding industry-school cooperation projects, and more.

Ministry of Education funding support for community colleges was carried out through a policy of uniform and equal distribution in the form of general funding until the mid-1990s. Notably, prior to this, support with hands-on learning equipment costs was provided for the development of

technical industry fields in proportion to the number of students studying therein. Community college funding support policies can be said to have begun in earnest in the mid-1990s. After this, in order to boost the quality of higher education based on inter-university competition, the government began to link funding support with evaluation results, and in 1997 the community college specialization project began. Later came the education capacity-building project beginning in 2009 and the specialized community college development program in 2014. These measures were vehicles for sustaining special-purpose funding support (Korean Council for University College Education, 2013: 18).

The scale of community college funding support expanded over the years, beginning with KRW 98.8 billion in 1997 during the Kim Young-sam administration (and during which specialization projects began), then growing to KRW 170 billion in 2000 during the Kim Dae-jung administration, KRW 212 billion in 2008 during the Roh Moo-hyun administration, KRW 270 billion in 2011 during the Lee Myung-bak administration, and reaching KRW 290 billion in 2014 during the Park Geun-hye administration (Lee Mu-keun, 2016: 36). Almost no funding support came from other ministries and, although compared to general universities the total scale of support per community college and per student was very low, it played an extremely important role in enhancing the quality of community college education because such institutions have no additional external support and depend greatly on already-low tuition for funding.

B) The Strategic Importance of Government-Funded Support Projects

During the Kim Dae-jung administration after 2000, general support projects were gradually reduced and several combined to place focus on specialized goal-oriented projects. During the 12-year implementation of specialization projects from 1997 to 2008, market-oriented methods promoted inter-university competition for the fair distribution of a limited amount of funding support. This increased the efficiency of funding implementation and boosted the quality of university education (Korean Council for University College Education, 2013: 18, 26).

According to Lee Mu-keun (2016), based on the need for education oriented towards industry-school cooperation suitable to the characteristics of higher vocational education (which aimed to promote the employment of students in businesses after graduation), the ‘Industry-School Cooperation-centered University Promotion Project’ was carried out between September 2005 and

June 2009: a 4-year period spanning parts of both the Roh Moo-hyun and Lee Myung-bak administrations. After the first phase of this project, a second phase was carried out for a 2 ½ -year period from July 2009 to December 2011 (Lee Mu-keun, 2016: 37). The project's name was then changed to Leaders in INdustry-university (college) Cooperation (LINC) and was implemented for the 5-year period from 2012 to 2016 with an infusion of KRW 12 billion in funding support each year. These projects have enabled the systematic construction and improvement of the overall industry-school cooperation program. This has facilitated the establishment of a college system oriented toward such cooperation and has proven productive in terms of the training of human resources customized for industry-school cooperation.

In recognizing the importance of education as a means of training the human resources needed to serve as the impetus for national development in the emerging knowledge and information society, beginning in 2008, the Lee Myung-bak administration shifted the specialization-centered policy initiative emphasized up to that time into policy to strengthen the educational capabilities of all colleges, referring to this policy as the 'Community College Education Capacity-Building Project' (Korean Council for University College Education, 2013: 18).

In order to address the issues involved and deal with the factors leading to the crisis of a rapidly-declining student enrollment, the Park Geun-hye government initiated the 'focused promotion of community colleges as higher education institutions centered on vocational skills' (Administrative Task 71). On July 18, 2013, the administration began implementing 5 core tasks towards realization of a competency-based society with a 70% employment rate: the development of 100 specialized community colleges to promote overall community college quality, the diversification of community college class terms and degree curricula, the establishment and promotion of industrial skill/master craftsman graduate schools, promotion of lifelong vocational education colleges, and the Into the World Project (Ministry of Education, 2013: 46). Of these, a 5-year specialized community college promotion initiative is being carried out (scheduled from 2014 to 2018) to provide KRW 290 billion in internal and external funding to secure the financial support needed for the 'development of 100 specialized community colleges' and the 'promotion of lifelong vocational education colleges' projects. By 2016, 84 community colleges were designated as specialized, and through NCS-based curricula development, training began to produce the professionals and related workers suited to the demands of industry and the ultimate goal of a

competency-based society.[14]

As such, the community college funding support policy uses funding as motivation to affect changes in community colleges so they can respond to the changing domestic and international education environment as well as the future outlook for education overall.

However, using <Table 1-27> to <Table 1-30>, which collectively present a comparison of the government funding support situation for general 4-year universities and community colleges, and <Table 1-31> to <Table 1-33>, which collectively present the situation for 4-year universities and community colleges, shows that, because community college funding support is much smaller than for general universities from a number of schools and student quota perspective, major funding increases and diversified funding support procurement policies are urgently needed.

<Table 1-27> Comparison of No. of Schools & Enrollment Quotas (2013 School Year)

(Unit: persons) (total calculated by author on May 20, 2013)

Type	General Universities	Community Colleges
No. of Schools	189 (57.6%)	139 (42.4%)
Role of Technology	343,652 (63.3%)	199,559 (36.7%)

Notes: 1) General universities: higher education institutions with 4-year curricula including normal universities, education colleges, and industrial colleges.
2) Community colleges make up 42% of all higher education institutions and account for 36.7% of student enrollment quotas.
Source: Ministry of Education (2013), p. 45

<Table 1-28> Distribution of Enrollment per Community College Curriculum Type (2013 School Year)

(Unit: persons) (total calculated by author on May 20, 2013)

Type	2-year	3-year	4-year	Total
No. of Students	143,450	50,859	5,250	199,559
Rate	71.9%	25.5%	2.6%	100%

Source: Ministry of Education (2013), p. 45

[14] Final selection of institutions for the specialized community college promotion project includes 27 reintroduced and new schools of the 84 universities (June 16, 2016), Daily UNN (Accessed: September 10, 2016).

<Table 1-29> Comparison of No. of Graduates (2012 School Year)

(Unit: persons)

Type	General Universities	Community Colleges
No. of Graduates	318,546 (63.3%)	184,817 (36.7%)

Note: 1) 2012 school year graduates: graduated in August 2012 and February 2013.
2) Total No. of community college graduate output (since 1979): 5,215,417
Source: Ministry of Education (2013), p. 45

<Table 1-30> Comparison of Employment Rates (Based on Health Insurance Database)

Year	General Universities	Community Colleges
2011	55.2%	60.7%
2012	56.9%	60.9%

Note: 2013 survey conducted on June 1, 2013 (expected to be disclosed in August 2013).
Source: Ministry of Education (2013), p. 45

<Table 1-31> Funding Support for All Higher Education Institutions vs. General Universities

(Unit: KRW million)

Year	Support Amount for all Higher Education Institutions	General Universities (national, public, private)		Private General Universities	
		Support Amount	Vs. all higher education institutions Support ratio (%)	Support Amount	Vs. all higher education institutions Support ratio (%)
2011	6,726,833	6,233,864	92.67	1,897,430	28.21
2010	5,618,357	4,317,424	76.84	1,438,009	25.59
2009	5,446,474	4,235,157	77.76	1,274,286	23.40
2008	4,517,366	3,589,923	79.47	1,019,775	22.57
2007	3,795,031	3,173,792	83.63	846,487	22.31

Note: All higher education institutions: universities, graduate schools, community colleges, cyber universities, special universities, etc. (excludes overseas universities, lifelong education institutes and credit bank system).
Source: Ministry of Education (2013), p. 46

<Table 1-32> Funding Support for All Higher Education Institutions vs. Community Colleges

(Unit: KRW million)

Year	Support Amount for all Higher Education Institutions	Community Colleges (national, public, private)		Private Community Colleges	
		Support Amount	Vs. all higher education institutions Support ratio (%)	Support Amount	Vs. all higher education institutions Support ratio (%)
2011	6,726,833	492,785	7.32	641,659	6.86
2010	5,618,357	393,765	7.01	361,159	6.43
2009	5,446,474	375,170	6.89	344,582	6.33
2008	4,517,366	291,934	6.46	257,783	5.71
2007	3,765,031	210,169	5.54	179,611	4.73

Note: amount of 2011 private community college funding (KRW 458.9 billion) [Education capacity-building (KRW 260 billion), scholarships (KRW 148.4 billion), LINC (KRW 7.6 billion), school enterprise support (KRW 5.3 billion), global field study program (KRW 4.8 billion), etc.]

Source: Ministry of Education (2013), p. 46

<Table 1-33> Rate of Support for Private General Universities vs. Private Community Colleges

(Unit: KRW)

Per year	Private General Universities	Private Community Colleges	Rate (%)*
2011	1,897,430	461,659	19.6
2010	1,438,009	361,159	20.1
2009	1,274,286	344,582	21.3.
2008	1,019,775	257,783	20.2
2007	846,487	179,611	17.5

Note: percentage of total support funding for private universities designated for community colleges

Source: Ministry of Education (2013), p. 46

Chapter Ⅱ

Analysis of Vocational Education Policy Over 70 Years After Independence: Past & Present

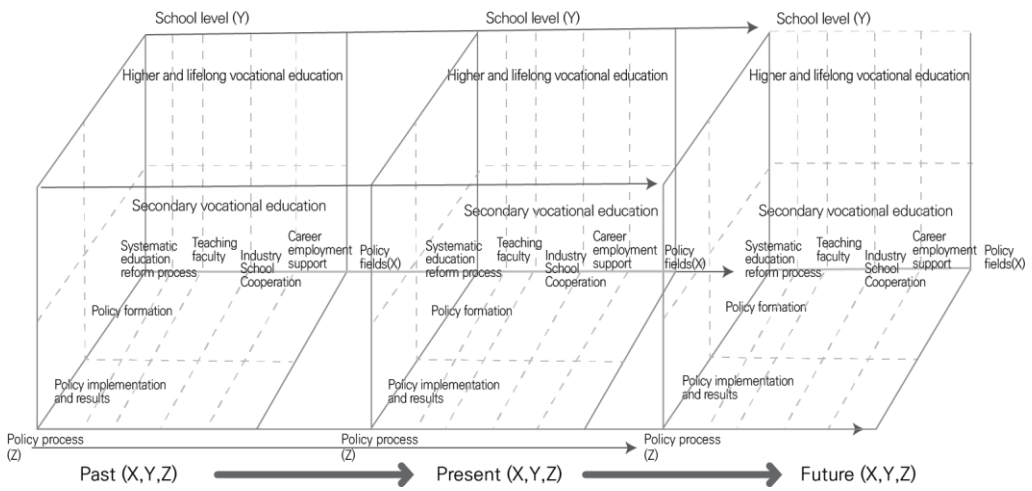
Analysis of Vocational Education Policy Over 70 Years After Independence: Past & Present

Section 1. Pursuit of a Framework for Analysis of Vocational Education Policy

1. A Framework for Analysis of Vocational Education Policy

In order to analyze the changes in vocational education policy, as shown in [Image 2-1], we have constructed a 4-dimensional framework based on the following three main standards of measurement: (1) Policy by era/administration; (2) Policy by stage of decision-making, implementation, and evaluation; (3) Policy by vocational education category (by school level, by policy content).

[Image 2-1] Framework for Analysis of Vocational Education Policy

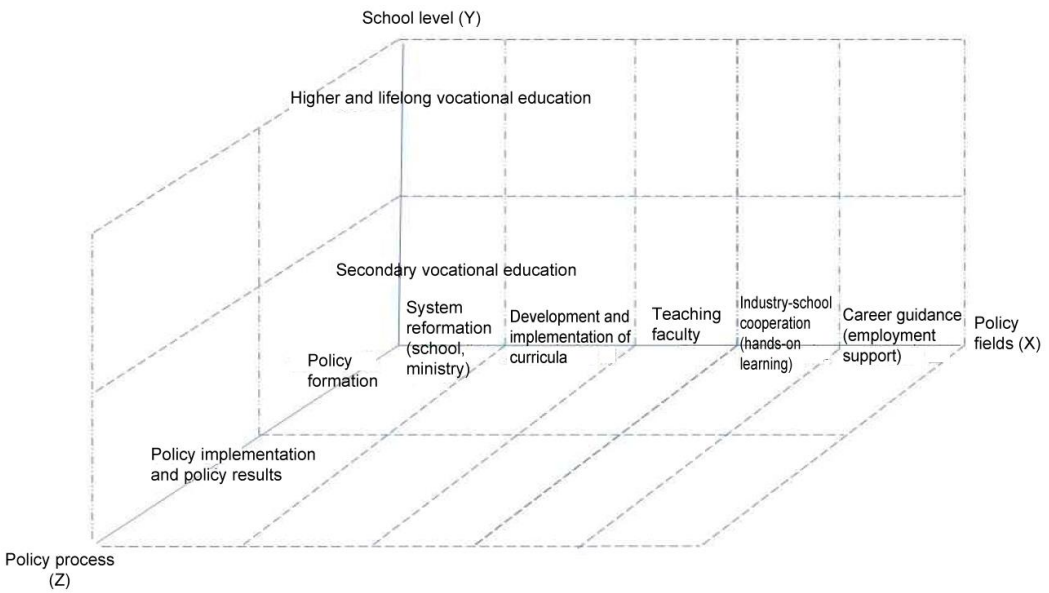


The first standard for analysis is classified by era/administration to determine the trends of vocational education policy over time: Post-independence–1960 (1945–1960), the Park Chung-hee administration (1961–1979), the Chun Doo-hwan administration (1980–1987), the Roh Tae-woo administration (1988–1993), the Kim Young-sam administration (1993–1998), the Kim Dae-jung administration (1998–2003), the Roh Moo-hyun administration (2003–2008), the Lee Myung-bak administration (2008–2013), and the Park Geun-hye administration (2013–present).

The second standard for analysis uses a standard public policy evaluation model to classify vocational education policy into decision-making, implementation and achievement stages while taking into consideration research period and data access limitations in order to perform a policy-centered analysis linked with current vocational education policy.

The third standard for analysis is an analysis of trends in implementation of vocational education policy by school level (secondary vocational education, higher vocational education) and by field of vocational education policy (system reform, curricula development and management, teachers, industry-school cooperation, career guidance) (see [Image 2-2]).

[Image 2-2] Vocational Education Policy Analysis by School Level & Policy Field



In addition, a Delphi survey was carried out to deduce the main content of each vocational education policy field. The results enabled construction of a framework for analysis of vocational education policy, comprised of 5 main categories and 12 sub- and detailed categories (see [Table 2-1]).

<Table 2-1> Summary of Detailed Analysis of Vocational Education Policy by Field

Vocational Education Policy Fields	Detailed Analysis Items	Main Content
System Reform	Academic Credit Reform	- Academic system, importance of vocational education, department reform
	Vocational Education Organizational Structure & Methods	- Central organizations, vocational education legislation
	Environment External to Education	- Labor market, industry structure
Development & Implementation of Curricula	Curricula Formation	- Ideal human resources, goals, importance of certain fields, principle establisher, connectivity between classes
	Curricula Quality Control	- Student evaluations, consumer demands, No. of students per teacher
	Textbooks, Facilities & Equipment	- Textbooks, experiment and hands-on learning equipment
Teachers	Teacher Training	- Teacher training methods, teacher qualification (subjects, types)
	Teacher Improvement Training	- Teacher training institutions, practical abilities of teachers
Industry-School Cooperation	HR Exchanges	- Hands-on field study, use of experts from business
	Information Exchanges	- R&D (support with technology bottlenecks), HR information
Career Guidance	Employment Support	- Employment support program, qualification certificates
	Academic Enrollment Support	- University enrollment (post-recruitment enrollment)

Source: Park Dong-yeol, Lee Mu-keun (2016).

2. Results of Analysis of the Perception of Vocational Education Policy

The following <Table 2-2> shows the results of a Delphi survey of 19 experts from vocational education policy, academia, business, and industry to analyze their opinions on what the future vision and goals for vocational education should be.

<Table 2-2> Opinions on a Future Vision for Vocational Education

Vocational Education Vision	Main Content
Realizing a competency-based society (45.1%)	Competency-based society Professional human resources Vocational capacity-building Industrial demand Upward mobility, paths for success
Social-economic contribution (28.0%)	National competitiveness Economic development Industrial development Global
Individual achievement (26.9%)	Self-realization Quality of life Talent / aptitude Career selection

Regarding a worthy vision for vocational education, 45.1% of respondents answered building a competency-based society, 28.0% said contributing to society, and 26.9% said individual achievement, showing that the largest group believed a competency-based society ought to be the main vision for vocational education.

<Table 2-3> also shows the results of the Delphi survey regarding the considerations that must be prioritized in decision-making on vocational education policy.

<Table 2-3> Priority Considerations during Decision-making on Vocational Education Policy (additional responses allowed)

Considerations	Frequency (%)	Content
Outlook on future and environmental changes	8 (42.1%)	- Consideration of the outlook for future changes (population, technology, globalization, resources/energy/environment, society/culture, labor market, education) - Policy decisions needed at a national level for HR development and application in crucial fields - The need to reflect MOOC and other rapid technological development in vocational education
Definite policy goals and beneficiaries	7 (36.8%)	- Clear definition of mid-to-long term vocational education policies - Development towards a second career after initial job selection and throughout one's lifetime - Appropriateness of established vocational education goals - Prioritizing the development of vocational education policies serving as a social safety net for the disadvantaged - Measures to create jobs and improve work environments for high school graduates
Analysis of demand and reflection in policy	6 (31.6%)	- National / support / individual-level HR training demand - Attention to and reflection of the needs of businesses / vocational education targets / other items related to vocational education - Participation of concerned parties (stakeholders, vocational education administrators, businesses and industry, students, workers) - Construction of a system to analyze industrial demand and reflect in the vocational education system
Cooperation between ministries and departments	4 (21.1%)	- Reorganization of vocational education policy governance structures to achieve consistent and integrated approaches to vocational education, training, qualifications and employment policy between the Ministry of Education and the Ministry of Employment and Labor - There must be a suitable level of interconnection between various policy-related decision makers. - Construction of a system facilitating cooperation and interconnectivity between ministries involved in vocational education policy (Ministry of Education, Ministry of Employment and Labor, etc.) - Establishment of measures towards building a solid industry-school cooperation infrastructure
Restructuring of the education system	4 (21.1%)	- Establish appropriate scale and system reform that considers the coming reduction in school-aged population - Inspire a vocational mindset in all citizens and establish educational support programs through a regulated educational system - Improve system to reduce dependence on private institutions and increase the perceived value of education, and establish an evaluation system - Construct an educational system that includes education curricula, teachers, hands-on learning programs, etc. that reflect the demands of industry
Funding procurement	4 (21.1%)	- Measures to obtain vocational education funding - Gradual enhancement of free education - Whether vocational education infrastructure has been established (teacher training, facility-infrastructure expansion, etc.)
Social impact and effectiveness of policy	3 (15.8%)	- Scientific review of vocational education effectiveness - Social impact of policy - Improve links with past policies when establishing new policies, thereby boosting effectiveness of education
Improving social perceptions	3 (15.8%)	- Establish measures to improve social perceptions of vocational education - Foster entrepreneurial spirit and understanding of small and medium-sized enterprises (SMEs) - Establish measures to build a society where abilities are valued over resume credentials

In the survey, the 19 experts in vocational education policy and from academia, business and industry and other fields were also asked about what considerations should be prioritized in the decision-making on vocational education policy. Respondents pointed to 8 different considerations: outlook on environmental changes and the future in general (42.1%), definite policy goals and beneficiaries (36.8%), analysis of demand and reflection in policy (31.6%), cooperation between ministries and departments (21.1%), restructuring of education policies (21.1%), procurement of funding (21.1%), social impact and effectiveness of policy (15.8%), and improving social perception (15.8%).

The following is an examination of the reason for a high frequency of respondents answering ‘outlook on environmental changes and the future in general’, ‘definite policy goals and beneficiaries’, and ‘analysis of demand and reflection in policy’.

Regarding the outlook on environmental changes and the future in general, respondents emphasized the need to establish future-oriented vocational education policies, indicating the following points: ① It is crucial that outlook on such rapid changes be taken into account during decision-making on vocational education policy; ② The outlook for the types of jobs that will be in demand nationally and by industry and businesses must be determined and reflected in the training of human resources; ③ In order to enhance the effectiveness of vocational education, MOOC and other domestic and international technological developments and economic changes must be reflected in relevant policy.

Respondents felt that policy goals and intended beneficiaries must be made more concrete, as this is necessary to move beyond short-term training of human resources solely to enhance their productive capacity. As ways to making policy goals and intended beneficiaries more concrete, respondents emphasized the following: ① The mid- to long term vocational education policy must be clearly and appropriately established; ② The lifelong vocational education system must be firmly established through a framework of career development for a second career after initial job selection and throughout one’s lifetime; ③ After defining the prioritized beneficiaries of vocational education policy, the range of beneficiaries must be gradually expanded.

To go along with this, the need to ensure the practical applicability of vocational education policies through the use of demand analysis was emphasized. In order to accomplish these recommendations, respondents stressed that the following were needed: ① Analysis of training

demand at national, regional, and individual levels; ② Appropriate reflection of the opinions of business and industry and the recipients of vocational education, ③ Establishment of a system that can build capacity at a national, regional and individual level to train personnel so they are capable of satisfying the demand for skills and knowledge in the world of work; ④Construction of a system to analyze and reflect the demands of industry.

<Table 2-4> also presents the results of the Delphi survey.

<Table 2-4> Factors for Success of Vocational Education Policy (additional responses allowed)

Factors for Success	Frequency (%)	Content
Centralized governance of policy implementation	17 (94.4%)	- Establishment of a powerful governance system in the short term to implement policy - Existence of an administrative system for centralized vocational education - Interest and support from the president - Existence of national policy research institutions for professional research on vocational education policy - Efficiency of policy implementation governance
Desire of recipients for education and changes in the perception of vocational education	7 (38.9%)	- Efforts from recipients of vocational education - Conversion of the popular mindset toward pragmatism - Promotion of the participation of disadvantaged groups to satisfy their desire for vocational success - Active participation in policy implementation by businesses and schools - Improvement of specialized high schools through expanded financial investment, etc. - Implementation of vocational education policy that inspires interest among on-site teachers
Communication and feedback regarding implementation of vocational education and results	7 (38.9%)	- Constant oversight and monitoring of the implementation of vocational education and results - Inter-ministry cooperation for the success of related policy - Change and effort of parties involved in vocational education - Effort to construct communication systems to facilitate cooperation between governmental agencies, industry and schools, and central and regional institutions involved in vocational education, and social and employment-related fields
Implementation of policy that takes social changes into consideration	6 (33.3%)	- Vocational education policy that efficiently reflects the expected reduction of the school-aged population and other social phenomena - Flexible policy implementation based on environmental changes - Success of a large-scale human resource development system appropriate for factor input advanced growth periods

- <Table continued>

Factors for Success	Frequency (%)	Content
Introduction and interconnection of a variety of policies	4 (22.2%)	- Gradual promotion through selection and concentration - Increased potential for success through adoption of and experimentation with various vocational education policies - Expanded links between economic development planning and industry promotion planning

Regarding factors that they felt have led to successful vocational education policy in Korea, respondents answered the following: centralized policy implementation governance (94.4%), desire of recipients for education and change in perception of vocational education (38.9%), communication and feedback regarding implementation of vocational education and results (38.9%), implementation of policy that takes social changes into consideration (33.3%), introduction and interconnection of a variety of policies (22.2%).

In terms of the reason for the particularly common selection of centralized policy implementation governance as a success factor, respondents indicated that such policy governance had the following results: ① Increased efficiency of governance that made it possible to quickly carry out policy at vocational education sites; ② More focused administrative and funding support, in accordance with the determination of the government to carry out the policies; ③ Greater effectiveness in the short term; ④ Facilitation of the training and input of human resources being carried out when the time was right.

Regarding the desire of recipients for education and the change in perception of vocational education, respondents indicated that education fields were also impacted by an expanded social desire to select the fields where jobs are available, and based on that noted the following phenomena: ① Improvement of specialized high schools through expanded financial investment to convert the student guidance paradigm from the pursuit of university enrollment to the pursuit of employment; ② As vocational education became more obvious as an alternative path to success in life for those from disadvantaged groups who have difficulty getting into university, active participation from education providers and industrial society during policy implementation serve as backing for vocational education development; ③ As perception of vocational education changed in this way, the strong desire and passion for education among the recipients of vocational education became the basis for success of policy implementation.

Respondents also pointed to communication and feedback regarding the implementation of vocational education and its results as another factor for success. This included: ① Efforts to provide feedback based on constant oversight and monitoring of the implementation and achievements of vocational education at the national, regional, and individual school levels; ② Efforts to establish a sense of 'common cause' through the sharing of educational goals by a variety of actors, including those in the education and industrial fields; ③ The selfless efforts of those involved in policy also contributed to the effective reflection of the range of opinions gathered.

Some respondents were skeptical that Korea's vocational education policy has been successful and expressed the hope that this survey would serve as a vehicle for critical analysis of the current realities of vocational education policy and identify solutions.

In this context, <Table 2-5> displays the results of the survey regarding what improvements are needed in the processing of establishing, implementing and evaluating vocational education policy.

There were 9 areas identified as problematic during the establishment, implementation and evaluation of vocational education policy: lack of social awareness (42.1%), insufficient initiative at vocational education sites (31.6%), confusion arising from thoughtless policy introduction (26.3%), lack of mid- to long term policies (26.3%), lack of a system for cooperation between ministries and departments (21.1%), insufficient understanding among policymakers of relevant issues (21.1%), difficulty securing funding (15.8%), lack of a quality assurance system (15.8%), and insufficient response to changing times (10.5%).

Lack of social awareness, confusion arising from thoughtless policy introduction, and lack of mid-to long term policies were particularly common responses regarding problematic areas during the policy establishment stage.

<Table 2-5> Problematic Areas during the Establishment, Implementation, & Evaluation of Vocational Education Policy

Problematic Areas	Frequency (%)	Content
Lack of social awareness	8 (42.1%)	- Low social awareness of vocational education and avoidance of participation - Insufficient understanding of vocational education in the education community (especially among school parents) - Imbalance between vocational education and general education
Insufficient initiative at vocational education sites	6 (31.6%)	- Establish measures to increase accountability for teachers responsible for vocational education - Education site changes are still being implemented mainly by external actors - Insufficient active participation in policymaking by industry - Evasion of responsibility to invest in vocational education by private businesses
Confusion arising from thoughtless policy introduction	5 (26.3%)	- Lack of policy consistency as a result of policy changes with each new administration, leading to confusion at education sites - Difficulties caused by introduction of foreign vocational education and training systems that are inappropriate for local settings in Korea - Lack of flexibility with consideration for environmental changes and internal conditions
Lack of mid- to long term policies	5 (26.3%)	- Implementation of policy aiming for short-term results and effects - Mid- to long term vocational education policies needed that are linked with the vision of the national government - Philosophy and ideology on vocational education policy needed that are unique to Korea - Pursuit of quantity-based outcomes needs to be rejected
Lack of a system for cooperation between ministries and departments	4 (21.1%)	- Clashes between related ministries as a result of separate categorization of each policy beneficiary group - Insufficient cooperative links between vocational schools (affiliated with the Ministry of Education) and economic departments - Lack of cooperative systems between locales and insufficient connections
Insufficient understanding among policymakers of relevant issues	4 (21.1%)	- Greater understanding of local circumstances needed by government officials involved in the policy decision and implementation stages - Insufficient interest and understanding among policymakers of vocational education policy and those carrying it out - Common perception that policy is merely a vehicle for funding support
Difficulty securing funding	3 (15.8%)	- Comparative lack of administrative and funding support for vocational education
Lack of a quality assurance system	3 (15.8%)	- Problems with measures for vocational education quality assurance - Lack of a system for providing feedback regarding policy implementation and results
Insufficient response to changing times	2 (10.5%)	- Changes needed more promptly - Vocational education environment needed that can rapidly respond to changing industry demands - Effective response needed to the uncertainties of future societal change

In listing ‘lack of social awareness’ as a problematic area for vocational education policy, respondents indicated several details: ① Lack of policies to improve awareness in response to the fact that high school graduates are discriminated against in favor of university graduates in society; ② Insufficient policies on improving the awareness school parents have regarding vocational education; ③ A social environment in which vocational education is perceived as a form of education second to general education has an impact on vocational education promotion, securing of funding, and industry-school linkage policies; ④ The actual social and economic disparity between university and high school graduates instills a sense of deprivation among vocational high school students and leads to the avoidance of vocational education, leading to reduced industrial momentum and human resource supply issues. These results run counter to the afore-mentioned high response rate for the ‘desire of recipients for education and the change in perception of vocational education’, indicating that an in-depth survey on the social perception of vocational education is required.

Next, respondents indicated the following as reasons why they selected ‘insufficient initiative at vocational education sites’ as another problematic area: ① Lack of active participation in policy in the industrial sphere based on national government-led policy establishment and implementation; ② Growing social costs emerging due to vocational education expenses as a result of avoidance of responsibility to invest in vocational education; ③ Tepid attitude of government and industry when it comes to constructing infrastructure for facilitating industry-school cooperation; ④ Lack of willingness to initiate internal change by schools involved in vocational education provision; ⑤ Insufficient practical application activities in vocational education curricula.

Regarding the reasons for selecting ‘confusion arising from thoughtless policy introduction’ as a problematic area, respondents pointed to the following: ① As a result of the policy changes between administrations, governments tend to focus on policy that brings short-term results within their term of office without any particular philosophy involved; ② As a result of the thoughtless introduction of foreign vocational education and training systems inappropriate to the local conditions within Korea or consistent with the national government’s vision for education, there is a decreased ability of education sites to respond to policy; ③ Confusion arising from policy establishment and implementation without any clear vision or goals at the national-level results in ineffective policy.

The following is a summary of what respondents considered to be top priorities in terms of improvements needed in vocational education policy:

① Promote elementary and secondary vocational education and sustained expansion of the importance of vocational high schools to reduce the university enrollment rate and implement education customized to the demands of industry; ② Improve the social perception of vocational education and inspire active participation at vocational education sites through discovery and broad communication of examples of successful industry-school cooperation;
③ Develop in an organized manner a system for quality assurance through innovative management of academic affairs, including increasing the number of professors hired, managing teaching hours, and maintaining small class sizes to ultimately strengthen project classes; ④ Implement policy that reflects the changing times by restructuring university student evaluation indicators (that currently place too much weight on the maintenance of student numbers) so that actual work capacity is valued; ⑤ Establish linkage between the Korean Qualifications Framework (KQF) and qualifications system and curricula to overcome the gulf between local demand and policy as well as policy disruptions and to establish and implement policy within a mid- to long term single overarching framework; ⑥ At the same time, increase administrative and funding support to establish incentives for encouraging the active participation of those demanding high school graduate workforces in the local application of vocational education.

<Table 2-6> displays the results of an analysis of the examples of outstanding policy over 70 years of vocational education after independence.

<Table 2-6> Outstanding Vocational Education Policy Examples Over 70 Years After Independence

Type	Administration	Policy Name
Secondary Vocational Education	Park Chung-hee Administration	- Enactment and implementation of 1963 vocational high school curricula - Enactment of Industrial Education Promotion Act
		- Heavy and chemical industry promotion policy - Differentiation of technical high school system in the 1970s - Promotion of special-purpose high schools for vocational education
		Creation of National Technical Qualifications System
	Kim Young-sam Administration	- Construction of lifelong vocational education system - Enactment of 3 vocational education laws - Operation of linked curricula for vocational high schools and community colleges
	Roh Moo-hyun Administration	Specialized high school promotion
		Measures for innovation of vocational education system
	Lee Myung-bak Administration	Measures for advancement of high school vocational education (including promotion of Meister high schools)
	Park Geun-hye Administration	Industry-school apprenticeship school system
Higher Vocational Education (community college)	Park Chung-hee Administration	Establishment of measures for innovation of community college education
	Kim Young-sam Administration	- Promotion of vocational education in community, open, and technical colleges - Establishment of technology and company-affiliated colleges as new universities within companies - Cooperated curriculum between vocational high school and technical college - Freedom granted for institutions to adjust length of study terms to a maximum of 3 years - Establishment of intensive major courses for a college degree
	Kim Dae-jung administration	- Outstanding community colleges for industry-school cooperation - On-demand education
	Roh Moo-hyun administration	Merger of technical and polytechnic colleges
	Lee Myung-bak administration	Leaders in INdustry-university (college) Cooperation (LINC)
	Park Geun-hye Administration	Promotion policy for specialized community colleges
		Introduction of NCS system
		University structural reform
		Measures for comprehensive development of higher education

Respondents pointed to the Lee Myung-bak administration's Meister high school promotion policy, Park Chung-hee's technical high school education system and Kim Young-sam's linked vocational high school-community college curricula as examples of outstanding secondary vocational education policy over the 70 years since independence. Policies that promoted the vocational high school system received high evaluations in general.

Respondents ranked the following as examples of outstanding higher vocational education policy over the 70 years since independence (in the order given): Kim Young-sam's community college education reform, Lee Myung-bak's Leaders in INdustry-university (college) Cooperation (LINC), and Park Geun-hye's introduction of the NCS system. Higher vocational education policy oriented toward industry-school cooperation was pointed to as outstanding.

For vocational education policy at the secondary level, outstanding examples included measures to promote Meister high schools, the differentiation of the technical high school education system, and curricula linking vocational high schools and community colleges. The following is a summary of why the selections were made as they were.

Measures promoting the Meister high schools (secondary vocational education policy) under Lee Myung-bak were selected as an outstanding example of uniform application of policy from the decision-making stage to the application and results stages for the following reasons: ① Active interest was displayed at the national level in promoting high school technically-skilled human resource training; ② An implementation and support system for participation by government ministries was constructed at the very beginning of the policy decision-making stage; ③ The identity of vocational high school education was reestablished to reflect the socio-economic climate and changes within it; ④ The practical applicability of vocational education was enhanced; ⑤ Consistency was maintained with the policies implemented during the previous 10 years of prior governments; ⑥ Attempts were made to change the social importance placed on academic background to be placed on actual competency; ⑦ Attempts were made to change the social perception of specialized high schools and attract interest in the 'Employment first, study later' approach.

The Park Chung-hee administration's differentiation of the technical high school system was selected as an outstanding example mainly for its part in training the human resources needed for development due to the appropriateness of the following to circumstances of the time: ① Policy

reflected the reality of those days, when development of the heavy and chemical industries was the central focus; ② Models were presented for special-purpose high schools through focused funding support at the national level; ③ A path was provided for upward mobility in society for those to whom education policy applied.

The linking of curricula between vocational high schools and community colleges under Kim young-sam was chosen as an especially outstanding example mainly for its policy decisions to give advanced training to talented personnel. In more detail: ① It differentiated the vocational high school education system; ② It constructed a lifelong vocational education system through the establishment of intensive courses at community colleges, as well as technology colleges within businesses and company-affiliated colleges; ③ It strengthened the links between vocational education and vocational training through the enactment of 3 laws on vocational education; ④ It established a national research institution for vocational education and training and related qualifications; ⑤ It improved the effectiveness of educational funding by establishing links between secondary and higher levels of vocational education.

Respondents pointed to community college education reform, Leaders in INdustry-university (college) Cooperation (LINC), and introduction of the NCS system as outstanding examples of vocational education policy at the higher education level. The following is a summary of why the selections were made as they were.

The positive aspects of the community college education reform policy (a higher vocational education policy) under Kim Young-sam included: ① It attempted to make the academic system more flexible through cooperated curriculum between vocational high school and technical college; ② It reduced the separation of vocational education from general education through the continuing education system; ③ It promoted the establishment and implementation of specialized community colleges; ④ It conferred community college and industry degrees to community college and technical college graduates; ⑤ It reduced redundancies in education curricula and served as an example of positive implementation of policy on training human resources for industry.

The positive aspects pointed to regarding the LINC project under Lee Myung-bak included: ① It expanded the university-level industry-school cooperation base; ② It reflected the importance of actual industry-school cooperation achievements such as related activities when evaluating

professor performance.

The reasons Park Geun-hye's introduction of the NCS system was pointed to as an outstanding example included: ① Establishment of National Competency Standards (NCS); ② It presented a national standard for work capacity in terms of active curricula implementation at the community college level.

Section 2: Results of Analysis of Vocational Education Policy Over 70 Years After Independence

1. Summary of Vocational Education Policy Changes by Era

<Table 3-10> presents the changes and characteristics of vocational education policy throughout the 70 years of Korean independence using three major measurement standards within a vocational education policy analysis framework (Lee Mu-keun, 2016; Park Dong-yeol and Lee Mu-keun, 2016).

First, establishment and implementation of vocational education policy was intimately linked with the socio-economic changes over time. For example, during the Park Chung-hee administration, in response to the sudden increase in demand for technically-skilled human resources, the government established policy to increase the student quota for vocational high schools and also carried out corresponding policy for establishment of a vocational education infrastructure through increased funding support and enactment of the Industrial Education Promotion Act (Lee Mu-keun, 2016).

Second, the paradigm for vocational education policy goals has shifted from ‘fostering national development through the training of human resources for industry’ to ‘realizing a competency-based society’. From independence until the Roh Tae-woo government, the main vocational education policy goal was to ‘boost the competitive capacity of the nation and businesses through the training of human resources for industry’. This changed beginning with the Kim Young-sam administration to the ‘building of an alternative path for career success through vocational education’ in reflection of the demands of the country, businesses, and individual citizens, as part of the effort to promote the development of a competency-based society (Lee Mu-keun, 2016).

Third, the main factors for the success of Korea’s vocational education policy can be viewed as ‘the efficiency of governance for policy implementation’, ‘the flexibility of policy implementation in response to changing circumstances’, ‘short-term effectiveness of policy implementation,’ and ‘the consistency and continuity of policy’.

In response to changing labor market demands and industrial structures, the central government established comprehensive vocational education plans and set main achievement goals for each

stage of policy implementation, implementing policy in order to achieve such goals within each stipulated time period, while at the same time also seeking out outstanding examples of past government policy for continuity. Such measures can be considered outstanding approaches. For instance, the current government's policy to expand the ratio of secondary vocational education students, the joint industry-school apprenticeship schools policy, the policy introducing NCS-based curricula, and policy promoting training for small and medium-sized enterprises (SMEs) can be seen as examples that show consistency and continuity with past policies (Park Dong-yeol and Lee Mu-keun, 2016).

<Table 2-7> Characteristics & Main Aspects of Vocational Education Policy by Era

Administration	US military government to Syngman Rhee (Post-independence to 1960)	Park Chung-hee (1961–1979)	Chun Doo-hwan (1980-1987)	Roh Tae-woo (1988-1993)	Kim Young-sam (1993-1998)	Kim Dae-jung (1998-2003)	Roh Moo-hyun (2003-2008)	Lee Myung-bak (2008-2013)	Park Geun-hye (2013–present)
Socio-economic Situation		• Per capita GDP (USD 100) • Establishment & implementation of 5-year economic plan • Increased supply of and demand for technically-skilled HR	• Industrial advancement • Need for political stability despite changing administrations • Avoidance of '3D' (dirty, dangerous, difficult) jobs and severe lack of technically-skilled HR	• Slowdown in economic growth	• The Asian Financial Crisis of 1997 and structural adjustment	• Knowledge-based economy	• Changes in science and technology • Aging society		• Creative economy • Low birth rates • Changes to jobs
Development Stage	• Introduction of vocational education	• Expansion of vocational education base • Quantitative vocational education growth	• Vocational education Qualitative Growth Period	• Vocational education Transition Period	• Construction of lifelong vocational education system	• Restructuring of vocational education			
Policy Perspective		• National economic development through training of HR with industrial skills			• Lifelong vocational education reflecting personal demands and careers	• Human resource development	• Industry-school cooperation for balanced national development	• 'Employment first, University later' career-vocational education	• Realization of a competency-based society
Vocational Education Policy Category									
Secondary Vocational Education Policy	• Emphasis of One-man, One-skill Education • Expansion of vocational high schools • Expansion of administrative mechanisms for vocational education support • Enhancement of in-service education of vocational instructors • Enactment of a standard for allocation of curriculum time • 5-year Vocational & Technical Education Plan • Decision to establish vocational education promotion bill • Enactment and implementation of regulations for abacus skill evaluations	• Expansion of vocational high schools and student quotas • Establishment of vocational high school curricula • Training and placement of vocational teachers in the education field • Differentiation of vocational high school types • Implementation of loan projects to procure facilities and infrastructure • Expansion of funding support • Creation of National Technical Qualifications System • Strengthening of industry-school cooperation • Enactment of Industrial Education Promotion Act	• Transition of vocational education from the high school stage to the higher education stage • Enhancement of foundational competencies • Restructuring of curricula to produce well-rounded students • Test-free university enrollment • Enhancement of the system for training self-reliant farm owners • Enhancement of commercial high school computer education • Reduction of funding support	• Expansion of vocational high schools and student quotas • Transference of administrative authority over secondary vocational education policy to local governments	• Variation of the promotion of high school vocational education • Expansion of specialized high schools • Implementation of the dual program (2+1) of Specialized Technical high school • Integrated implementation of high school curricula • Expansion of funding support • Enactment of Article 21 (Vocational Education) of the Framework Act on Education • Enactment of 3 vocational education laws: Vocational Education and Training Promotion Act, the Framework Act on Qualifications, and the Korea Research Institute for Vocational Education and Training Act • Enhancement of fundamental vocational abilities	• Strengthening of specialized high school system based on the Framework Act on the Development of Human Resources • Linking of Two-plus-Two curriculum between specialized high schools and community colleges • Enactment of Framework Act on the Development of Human Resources	• Expanded establishment of specialized high schools • Strengthening of industry-school cooperation • Enactment of the Industrial Education Enhancement and Industry-School-Research Cooperation Promotion Act	• Specialization of vocational high schools into Meister and specialized high schools	• Curricula development based on NCS • Achievement of a lifelong learning system through the Work-Learning Dual System

<Table continued>

	US military government to Syngman Rhee (Post-independence to 1960)	Park Chung-hee (1961–1979)	Chun Doo-hwan (1980-1987)	Roh Tae-woo (1988-1993)	Kim Young-sam (1993-1998)	Kim Dae-jung (1998-2003)	Roh Moo-hyun (2003-2008)	Lee Myung-bak (2008-2013)	Park Geun-hye (2013–present)
Higher Vocational Education Policy (community college)	• The birth of junior colleges	• The establishment of five-year higher vocational schools • Establishment of professional schools • Unification of junior colleges, higher vocational schools, and vocational schools into community colleges • Establishment and implementation of plans for community college development • Enactment of curricula and standards for experiment and hands-on learning	• Improvements and structural adjustments to the community college system • Expansion of community college enrollment quotas • Recruitment of 115% of graduation quota	• Conferment of college degrees for community colleges • Expansion of enrollment opportunities for people working in a business	• Revision of the goal for community college education from training 'core workers' to training 'professionals' • Freedom given to community colleges to change their names • Strengthening of industry-school cooperation • Funding support through implementation of specialization projects • Implementation of business-commissioned and army-commissioned education programs • Implementation of on-demand curricula and major course system • Community college degree conferment for community college graduates	• Expansion of industry-school cooperation project universities • Funding support through specialization projects	• Uniformity in salaries for community college and 4-year university teachers • Implementation of the promotion project for universities centered on industry-school cooperation	• Freedom to use 'college' or 'university' in school name • Funding support through projects to build community college education capacity • Conferment of college degrees for intensive majors	• Funding support through promotion of specialized community colleges • Development and implementation of NCS-based curricula • Employment Guaranteed High School-Community College Comprehensive Education Development Project (Uni-Tech)

Source: Lee Mu-keun (2016), p. 34

2. Analysis of Secondary Vocational Education Policy Changes

After independence, changes to secondary vocational education policy can largely be divided into two stages. The first was the vocational education policy that placed great emphasis on the training of human resources for industries vital to national development. This applies to the policies of the governments led by Syngman Rhee, Park Chung-hee, Chun Doo-hwan and Roh Tae-woo. Transition to the second stage occurred within the context of the rapid technological changes of the emerging era of globalization and informatization. A foundation was constructed for training personnel with the foundational vocational capabilities required for adaptation to the new jobs within this climate and for lifelong vocational education. Vocational education thus focused on developing work capacity for jobs selected according to individual aptitude and ability. This applies to the vocational education policies under Kim Young-sam, Kim Dae-jung, Roh Moo-hyun, Lee Myung-bak and Park Geun-hye. Whether in the first or second stage, presidents always planned, carried out and sought to achieve results for vocational education policy while considering the demands and conditions of the period in which they were in office.

Following is a summary of the representative characteristics of vocational education policy of these past presidents. The period of the Syngman Rhee government, in power from the beginning of independence (1945) to 1960, can be called the era of vocational education introduction. Rhee's government policies included emphasis of the One-man, One-Skill Education program, expansion of vocational high schools, establishment of administrative mechanisms in support of vocational education, enhancement of vocational teacher in-service education, enactment and implementation of standards regarding allocation of curricula time, establishment of a 5-year Vocational & Technical Education Plan, passing of a vocational education promotion bill, and enactment and implementation of regulations on abacus skill evaluations.

With the dawn of Korea's industrialization (1961–1979), vocational education entered what can be described as the era of quantitative growth during which the Park Chung-hee administration focused on expansion of vocational high schools and enrollment quotas, development and implementation of vocational high school curricula, training and placement of vocational education teachers and attempts to implement vocational teacher incentive policies, differentiation of vocational high school types, promotion of loan projects towards expansion of industrial education facilities and infrastructure, expansion of funding support policy, creation of a national

skill qualification system, and strengthening of industry-school cooperative education through enactment and implementation of the Industry-School Cooperation Act.

Chun Doo-hwan's term in office (1980–1987) can be described as the era of qualitative growth for vocational education in that characteristic government policy included enhancing the foundational capacity to provide vocational education in high schools, enrollment policy based on a lottery system and not on entrance tests, selection of students for enrollment in Seoul National University's agricultural education department based on the recommendations of city and provincial education committees, restructuring of curricula to produce well-rounded individuals, and strengthening of the support system for training future farmers to be self-reliant. However, the Chun Doo-hwan government lacked interest in secondary vocational education, so funding support was smaller than previous governments.

During the Roh Tae-woo administration (1988–1993), an era marked by Korea's democratization, vocational education policy was mainly characterized by the conversion of the ratio of students between general high schools and vocational high schools from 68:32 to 50:50 by 1995, promotion of job analysis-based curricula development and implementation, construction of a career-job education system, and the transfer of administrative authority over secondary vocational education policy to local governments.

The years of the Kim Young-sam administration (1993–1998) can be described as the era of transition for vocational education policy. It was marked by the expansion of specialized high schools, differentiation of vocational high school education through the dual program (2+1) of Specialized Technical high school, integration of high school curricula, modernization of vocational high school facilities and infrastructure, enhanced funding support, provision of lifelong career guidance and career information, improvement of the qualifications system, and the enactment of Article 21 (Vocational Education) of the Framework Act on Education and 3 other vocational education laws (the Vocational Education and Training Promotion Act, the Framework Act on Qualifications, and the Korea Research Institute for Vocational Education and Training Act).

The Kim Dae-jung administration (1998–2003) was characterized by informatization and globalization. Its vocational education policy was largely centered on converting the high school vocational education system into the specialized high school system and improving the Two-plus-

Two system linking high school vocational education with community college education.

The Roh Moo-hyun administration (2003–2008) focused its vocational education policy on increasing the number of specialized high schools and promoting the specialized high school system.

Vocational education policy under the Lee Myung-bak administration (2008–2013), which can be called a period of restructuring or differentiation and advancement of vocational education, was characterized by the conversion of 691 vocational high schools into 50 Meister high schools, 350 specialized high schools and 291 general high schools. This era also featured enhancement of industry-school cooperation and career education (the curriculum goals amended in 2009 were designed to help people establish their career paths).

The vocational education policy under Park Geun-hye (2013–present) was characterized by development and implementation of NCS-based curricula, construction of the lifelong learning system known as the Work-Learning Dual System, and enhancement of the career education system to help bring about a competency-based society.

An examination of the vocational education policy planning and decision-making process during previous administrations shows that it was mostly done at the national level and during the first stage of vocational education that focused on the training of human resources needed by industry at a time when Korea was industrializing.

Following is a discussion of the positive and negative aspects of the vocational education policies of these previous administrations.

A look at the vocational education policy planning and decision-making process in the past shows that, in Korea’s age of industrialization when the first stage of vocational education focused on training human resources needed by industry, related policy goal setting was not determined by the demands of students receiving education or by other educational factors, but was the result of rapid decision-making based on the short-term realities and changes to the supply of and demand for personnel and political, economic, social and other needs external to actual education conditions. As such, even technical high schools of the time concentrated too much on development of the skills demanded by industry, which led to criticism that what they were providing was more akin to vocational training heavily bent on specific skill acquisition than vocational education that

promoted both student refinement and the development of fundamental capabilities.

However, in the informatization and globalization age that brought about the second stage of vocational education, policy was influenced by presidential advisory committees on education policy, various academic committees and associations related to vocational education, policy advisory committees under the Ministry of Education and city and provincial education offices, experts, academics, representatives of industry and other actors.

The Park Chung-hee, Kim Young-sam and Lee Myung-bak governments were the most active when it came to secondary vocational education. The presidents and education ministers of these three administrations all had interest in secondary vocational education, and the Blue House secretaries joined them in possessing strong initiative in the area. The leadership of Oh Won-cheol, the Blue House secretary during the Park Chung-hee administration, and the president's personal interest in vocational education were also judged to have had a significant impact. The civilian government of Kim Young-sam was able to carry out reform with a certain degree of consistency, beginning with the enactment of 3 laws on vocational education. This has been attributed to the fact that the tasks related to vocational education reform were completed with the president's complete confidence, and the fact that within this environment there was natural cooperation between Minister of Education Ahn Byeong-yeong, who showed obvious conviction and leadership, the Blue House's Chief Secretary Park Se-il, and the Education Reform Committee's standing committee member Lee Myeong-hyeon. During the Lee Myung-bak administration, the president's intense devotion and Minister of Education Lee Joo-ho's initiative regarding the establishment and implementation of the Meister high schools gave strong impetus to the program.

<Table 2-8> presents an overview of the main aspects of vocational education policy by administration and category.

<Table 2-8 > History of Changes to Secondary Vocational Education (Vocational High Schools/Specialized High Schools) Over 70 Years After Independence

	Syngman Rhee Administration (1948–1961)	Park Chung-hee Administration (1961–1972)	Chun Doo-hwan Administration (1980–1988)	Roh Tae-woo Administration (1988–1993)	Kim Young-sam Administration (1993–1998)	Kim Dae-jung Administration (1998–2003)	Roh Moo-hyun Administration (2003–2008)	Lee Myung-bak Administration (2008–2013)	Park Geun-hye Administration (2013–present)
Educational Goals	- Train core skilled workers - Humanitarianism - 5-year Vocational & Technical Education Plan	- Promote a skilled citizenry - Enhancing personality education - Reform knowledge and skill education	- Perform role of a member of society - Emphasize national spirit - Refine talent needed for career development	- Develop talent and capabilities - needed for work - Cultivate creativity in the population - Reform education for the 21st - century	- Develop determined citizens with a community spirit - Career planning based on aptitude and ability - Encourage the national community spirit	- Train skilled human resources - Globalization and informatization for the 21st century - Develop independence and creativity in Koreans	- Promote talent befitting global citizenry - Career planning based on student aptitude	- Career planning based on aptitude and ability - Promote talent befitting global citizenry - Promote education for ‘green’ growth	- Encourage consideration and sharing - Train creative talent - Develop career for employability
Curriculum	- Develop vocational courses - Revise curricula separately (completion of other vocational subjects) - 1st school year = 315 hours - 2nd/3rd school years = at least 385 hours each - Present single curriculum - Center curricula around subjects - Emphasize One-man, One-skill Education	- Revise vocational high school curricula separately - Improve outline and details of curriculum (experiment and hands-on learning 50% or more / hands-on field study, etc.) - Revise vocational high school curricula through special policy 4 - 100 credits for vocational elective courses - Emphasize flexibility in credit system-time allotment planning - Center curricula around life experience	- Vocational community college special policy (outline and details) 7 and 2 of 7 amendments - Integrate subjects to reduce burden on students - Implement curricula and credit distribution standards - Education Act, Article 107, Section 4 (special enrollment for youth workers and implementation of industry-affiliated high school curricula) - Reduce vocational credits to 204-216 - Human-centric curricula	- Include vocational high schools within general outline for high school curricula (vocational high school credit distribution, reform vocational subjects for each field and present separately points of concern regarding curricula management) - Credits required for completion = 204-216 - Vocational subjects (3 years, 82-122 credits to complete) - Requisites (38-74 credits), electives (44-84 credits)	- Revise outline and details for dual program (2+1) of Specialized Technical high school - Completion of electives from other fields - Vocational subjects (at least 82 credits) - Vocational experiment and hands-on learning (50%) - Include vocational high schools in outline for elementary and middle schools (details special policies 19-23)	- Emphasize curricula revision - Student selection-centered curricula - Education for independent and creative students - Curricula per level	- Cancel the dual program (2+1) of Specialized Technical high school - Include vocational high schools in outline for elementary and middle schools (details special policies 19-23) - Expand autonomy for discretionary activities - Modify credits for completion of vocational subjects - Manage increases/decreases in class teaching time	- Introduce subject-centered completion system - Approve establishment/adjustment of elective subjects - Unify high school electives - Strengthen career education - Revise curriculum subjects based on the ‘2009 Education Curriculum Amendment’ (vocational high school details revised through special policies 21-25) - Partially amend outline through the ‘2009 Education Curriculum Amendment’ (specialized high school credit allotment presented separately, amendment of emphasis placed on establishment/implementation and support items)(details maintained through the 2011 revised special policies 21-25) - Subject (group) 180 credits (72 credits)	- Enhance core capacity for subject restructuring - Implement elective curricula for all high schools - Greatly expand rights to establish career-focused subjects - Restructure subjects per level

<Table continued>

	Syngman Rhee Administration (1948–1961)	Park Chung-hee Administration (1961–1972)	Chun Doo-hwan Administration (1980–1988)	Roh Tae-woo Administration (1988–1993)	Kim Young-sam Administration (1993–1998)	Kim Dae-jung Administration (1998–2003)	Roh Moo-hyun Administration (2003–2008)	Lee Myung-bak Administration (2008–2013)	Park Geun-hye Administration (2013–present)
Teachers	- Provide vocational teacher training opportunities - Deal with tendency to neglect vocational education - Establish training centers for secondary vocational education teachers	- Level 1 craftsman (teacher training instructors) - Junior colleges / Five-year higher vocational schools - 6 years of work experience after graduating from vocational high school - 9 years of work experience after graduating from middle school - 12 years of work experience after finishing elementary school - Vocational training teachers, type 1 and 2 (1973)	- General teacher/practical teachers (1982) - Vocational teacher, type 1 and type 2 - National central vocational training institutions teacher training task inheritance (1982)	- Hands-on training teachers - Vocational teachers - General teachers	- Industrial teachers (Education Act, Article 73) - Regular teachers (level 1 and 2) - Vocational guidance teachers (level 1 and 2) - Practical teachers (level 1 and 2) * Refer to the attached Table 2. Qualification standards - Teachers with additional position in industry	- Regular teachers (level 1 and 2) - Vocational guidance teachers (level 1 and 2) - Practical teachers (level 1 and 2) * Refer to the attached Table 2. Qualification standards - Industrial teachers (Elementary and Secondary Education Act, Article 19 and Higher Education Act, Article 14)	- Traveling vocational guidance teachers - Teachers with additional position in industry - Regular teachers (level 1 and 2) - Practical teachers (level 1 and 2) * Refer to the attached Table 2. Qualification standards - Industrial teachers (Elementary and Secondary Education Act, Article 19 and Higher Education Act, Article 14)	- Regular teachers (level 1 and 2) - Vocational guidance traveling teachers (level 1 and 2) - Practical teachers (level 1 and 2) * Refer to the attached Table 2. Qualification standards - Teachers with additional position in industry - Advanced skill teachers (Public Educational Officials Act, Article 2, Section 1, Items 2 and 3)	- Placement of traveling vocational guidance teachers - Teachers with additional position in industry - Regular teachers (level 1 and 2) - Vocational guidance teachers (level 1 and 2) - Practical teachers (level 1 and 2) * Refer to the attached Table 2. Qualification standards - Planning and establishment of teacher training for each school level
Field Practice	- Insufficient facilities-teachers	- Announcement of heavy and chemical industry policy (1971) - Enactment of Industrial Education Promotion Act	- Hands-on learning subjects replaced with field practice - Enabled reduction of 3-year study periods by 1/3 - Strengthened hands-on education	- Establishment/implementation of evaluation standards and methods based on school circumstances	- Vocational subjects can be replaced with hands-on learning courses - Implementation of final year mentoring - Hands-on learning businesses - Established hands-on learning plans for industrial education	- Boosted procurement rate for experiment and hands-on learning equipment to 70% - Facility modernization support - Support for expanding acquisition of multimedia equipment	- Implementation of various types of hands-on learning - Evaluation standards and methods reflecting school circumstances	- Promotion of hands-on learning - Administrative and funding support - Establishment and implementation of industry cooperative subjects	- Boosting adaptability through hands-on vocational experience - Evaluations of school-industry curricula and results - Implementation of various types
Career guidance	- Foundation for industrial skill education	- Financial/real estate/manufacturing (1964) - Agriculture and fisheries/manufacturing (1966) - Employment in manufacturing/social and individual service industry - Student practical skill competitions	- Efforts to promote vocational high school education - Establishment of Korea Vocational Training Management Corporation - Systematic implementation of job analyses	- Increased support for experiment and hands-on learning costs to 50% - Established 2 vocational education centers - centers	- Establishment and implementation of career leadership policy - Development of reserve master craftsmen and master craftsmen	- Renamed Human Resources Development Service of Korea	- Establishment and implementation of career leadership policy	- Enhancement of education climate for practical learning - Focus on career selection ability and attitude	- Skill refinement - Job and career education

It has been pointed out that an issue during planning and implementation of the secondary vocational education policy was the lack of continuity as policy was discontinued with each change of administration, lasting only 5 years before a new cycle of policies emerged. In addition, the lack of a systematic evaluation process for vocational education policies meant that each new administration brought in new policies without any formal review process of the issues and results of prior efforts. Some of these included policies that had been attempted and met with failure in the past. There were also instances where foreign cases were studied and introduced without any review of their suitability to Korean education conditions and the cultural climate, and these policies ultimately failed to bear fruit.

The Kim Young-sam administration can be used as a means to examine such issues and potential measures for improvement (Jang Gi-won, 2001). The first reason this administration was unable to achieve its desired aims for secondary vocational education policy was the fact that the ministries (the Ministry of Education and the Ministry of Labor) were unable to move past their own self-interest during the reform process. Second, education reform came too late, and the initiatives taken did not last long. Third, education reform was too narrow in scope. Fourth, there was insufficient investigation of the actual conditions affecting vocational education. Fifth, there was an insufficient level of active participation by policy-target groups.

We suggest the following measures would have resolved these issues: First, in terms of education reform, a thorough and detailed investigation is required to determine what approach is needed to maximize efforts for reform when preparing overall vocational education policies. Second, there is an urgent need to establish links between national human resources development policy and vocational education policy. Third, maintenance is required for vocational education and training-related legislation based on the education reform initiatives of the civilian governments. Fourth, there is a need for new revision of the vocational education and training network. In other words, the network between the Vocational Education & Training Policy Council, the Steering Committee for Vocational Education & Training Institutions, and the Korea Research Institute for Vocational Education & Training needs to be strengthened, as do the regional society networks and networks between vocational education and training institutions. Fifth, sharing the responsibilities of and cooperation between the Ministry of Education and Human Resources Development and the Ministry of Labor regarding vocational education and training need to be strengthened. Sixth, a

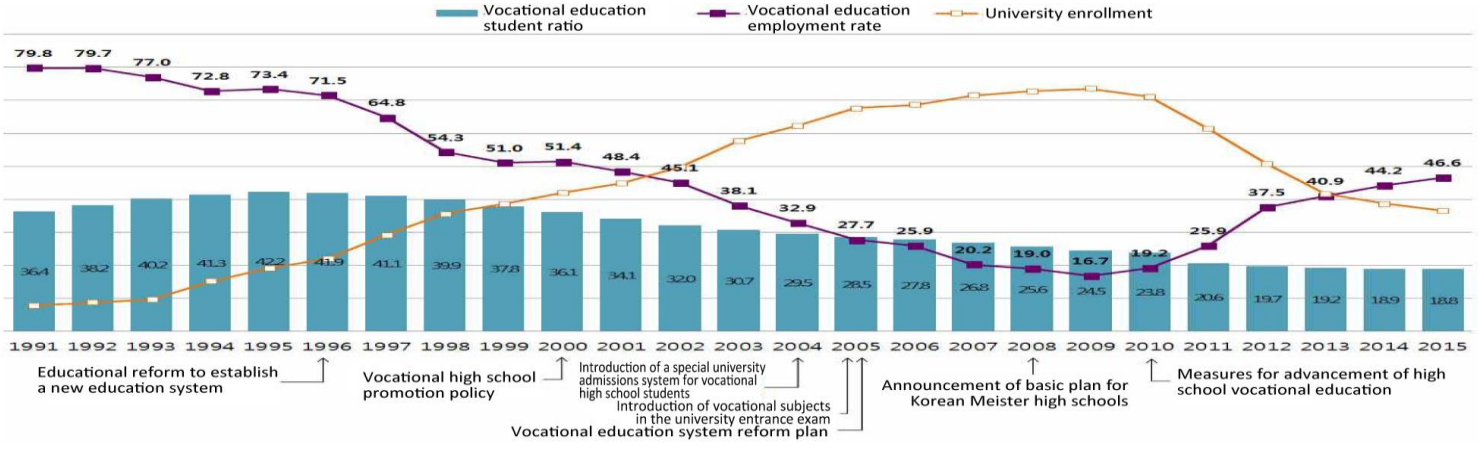
reevaluation of the vocational education system is required. Seventh, the qualifications system needs to be revised. Eighth, the evaluation capacity of the vocational education sector needs to be strengthened.

Because vocational education policies are as heavily influenced by external factors as they are by internal factors, special attention is needed to resolve these external problems. A representative example of this is the severe wage gap that exists by academic background, between genders, and between permanent and temporary positions.

There is a need to consider the above-presented issues in policies on secondary vocational education of past administrations and potential measures for improvement to deduce some key approaches for development of future policy.

[Image 2-3] outlines the relationship between secondary vocational education policy and secondary vocational education student ratios, employment rates and college enrollment rates.

[Image 2-3] Relationship Between Secondary Vocational Education Policy & Secondary Vocational Education Student Ratios, Employment Rates and College Enrollment Rates



Independence–1995	1996–1999	2000–2005	2006–2010	2011–present
• Vocational Education Promotion Policy (1963) • 5-year Vocational and Technical Education Plan • Vocational high school enrollment quota policy • Creation of national skill system • 50:50 Conversion Plan	• Measures to reform education towards establishment of a new education system (1996) • Support measures for introducing specialized high schools and alternative schools through introduction of the Permissive High School Establishment System (1997) • 5-year Educational Development Plan (1999)	• Vocational High School Promotion Policy (2000) • Introduction of special university admissions for vocational high schools (2004) • Introduction of vocational subjects in the university entrance exam (2005) • Innovation of the vocational education system (2005)	• Government ministry project to promote specialized vocational high schools (2007) • Announcement of Basic Plan for Korean Meister High Schools (2008) • High School Vocational Education Improvement Plan (2010)	• Plans to construct system for parallel work and study (2011) • Plans to expand and promote special admissions for workers (2011) • Plans to establish an open employment society for mutually beneficial development (2011) • Plans to improve the specialized high school hands-on learning system (2012) • Employment first, University later' program and enhancement of open employment (2012) • High School Graduate Employment Promotion Plan (inter-ministry cooperative project) (2014) • Joint Industry-School Vocational Education Promotion Plan (2014) • Competency-based Society Promotion Plan (2014) • Plans for promotion of suitable human resources for each industrial complex (2015)

Note: 1970–1990 employment rate: 50.2–76.6%.

Source: 1) Choi Dong-seon (2014).

2) Education Statistical Year Book (each year).

Starting with the Kim Young-sam administration, administrative authority over secondary vocational education was transferred from the Minister of Education to city and provincial education superintendents. However, in reality the basic direction of secondary vocational education continued to be determined by the Ministry of Education. The status of secondary vocational education is also shown through the name changes undergone by the department in charge of such education under the Ministry of Education. Initially known as the Science Education Bureau, its name changed from the Technology Education Department to the General Education Department, then to the Science Education Bureau to the Industrial Education Department, followed by the General Education Department, the Science Education Bureau, the Regional Education Support Group, and the Lifelong Education Department before it became the Lifelong Vocational Education Department. Ultimately, the goals and status of vocational education are visible through this department's name changes.

3. Changes to Higher Vocational Education Policy

According to the Korean Council for University College Education (2013), community colleges could be considered the representative higher vocational education institution of the various types of schools stipulated in Article 2 of the Higher Education Act. Although there were no official higher vocational education institutions in the community college system between independence and the end of the Syngman Rhee administration in 1960, there were 2-year junior colleges. Subsequently, during the Park Chung-hee administration (1961–1979), existing junior colleges remained while the government also established new five-year higher vocational schools in 1963 that would require a middle school diploma for admission as part of its goal to train para-professional workers with industrial skills as stipulated in the 5-year Economic Development Plan. However, many problems emerged, leading to the establishment of 2-year professional schools in 1970 that required a high school diploma for enrollment. As a result, in the 1970s the 3 types of higher vocational education institutions (junior colleges, higher vocational schools, and professional schools) were established and operated without any special characteristics or differentiation in terms of educational goals, departments, and curricula. This led to confusion between the different types of higher vocational education institutions. In order to resolve this, legal amendments were made in 1977, and by 1979, junior colleges, higher vocational schools, and

professional schools were unified into community colleges, and a development plan then established and implemented.

However, the economic slump at the end of the 1970s as a result of the oil shock, the political and social turmoil after Park Chung-hee's assassination, and uncertainties in the implementation of the 4th 5-year Economic Development Plan (1977–1981) led to a setback in the implementation of plans for community college development. To make matters worse, the policy for excessive community college student quota increases at the beginning of the 1980s led to student recruitment shortages, difficulties with community college graduates finding employment due to the economic downturn, and other mounting issues for community colleges.

The Chun Doo-hwan government (1980–1988) established multiple policies to resolve these problems. The community college student population increased by a factor of 3.2 in the span of 6 years, from 75,205 in 1979 to 242,114 in 1985 and various departments were established to meet the demands of industry for the training of core workers to the extent that the number of departments increased by 51% and the number of department categories increased by 44% during the 1979–1984 5-year Plan. In addition, in order to train workers with the capabilities demanded by industry, educational curricula were established and implemented based on job analyses, domestic and foreign teacher training programs were strengthened, and education loan projects carried out for expansion of facilities and infrastructure.

Later during the Roh Tae-woo administration (1988–1993), the community college student quota increases were continued and a system for conferring degrees to community college graduates was implemented. Workers in industry were also given expanded opportunities to enroll in higher education institutions through a special admissions program.

The Kim Young-sam administration (1993–1998) then amended the goal of community college education from 'training para-professional workers' to 'training professionals' and permitted community colleges the freedom to decide whether to use the term 'community' in their institution title. In conjunction came the Two-plus-Two link system between vocational high schools and community colleges for lifelong learning The efforts to promote industry-school cooperation were sustained by all subsequent administrations after Kim Young-sam, from the Kim Dae-jung government to those of Roh Moo-hyun, Lee Myung-bak, and Park Geun-hye.

Prior to 1990, community college funding support policies came in the form of general funding for

the procurement of experiment and hands-on learning equipment for the promotion of industry, and was dependent on the number of students studying in industrial fields. Beginning in the 1990s, however, funding support was linked to evaluation results in order to improve the quality of university education through inter-university competition and the community college specialization project began in 1997, with the subsequent implementation of special purpose funding.

The scale of community college funding support expanded over the years, beginning with KRW 98.8 billion in 1997 during the Kim Young-sam administration during which specialization projects began, then growing to KRW 170 billion in 2000 during the Kim Dae-jung administration, KRW 212 billion in 2008 during the Roh Moo-hyun administration, and KRW 270 billion in 2011 during the Lee Myung-bak administration. The Park Geun-hye government is currently promoting a 5-year support plan for the specialized community college project, aiming to infuse KRW 290 billion into the project between 2014 and 2018.

One of the representative community college policies under Roh Moo-hyun was the improvement of salaries for community college teachers (making them equivalent to 4-year university teacher salaries) and revisions to travel expense regulations.

In 2011, the Lee Myung-bak government allowed the free use of the term ‘university’. Current educational goals for community colleges have been changed from ‘training semi-professional workers’ to ‘training professionals’ with the majority removing the designation ‘community’ from their names and choosing ‘university’ instead of ‘college’, bringing confusion to the very identity of community colleges.

In order to bring about a competency-based society, the Park Geun-hye government is working hard to develop and implement NCS-based curricula, boost the employment rate through the Work-Learning Dual System under the ‘Employment first, University later’ program and establish a lifelong vocational education system.

As shown above, past administrations established and implemented community college policy based on the changes of respective eras in order to best be able to train the semi-professional workers of various fields needed by industry. In particular, the efforts and achievements of community colleges must be highly evaluated considering the fact that 95% of them were private institutions.

Short-term higher vocational education institutions in their many forms and in operation since independence were unified into community colleges in 1979. Even after this time, it can be said that community colleges were still managed by the government until an actual system for these institutions was constructed. However, after the Chun Doo-hwan government created the Presidential Advisory Committee on Education Reform, each subsequent president organized their own such Presidential Advisory Committee, and by the start of the 1990s, the Korean Community College-School Education Conference and the Korea Research Institute for Vocational Education & Training were set up, and active participation by vocational academic committee members and industry personnel served as a great boon to the establishment and implementation of community college policy (see <Table 2-9>).

<Table 2-9> Main Changes to Community College Education Policy by Category (Goals, Curricula, Teachers, Industry-School Cooperation, Career Guidance) and by Era

	Syngman Rhee Administration (1948–1961)	Park Chung-hee Administration (1961–1972)	Chun Doo-hwan Administration (1980–1988)	Roh Tae-woo Administration (1988–1993)	Kim Young-sam Administration (1993–1998)	Kim Dae-jung Administration (1998–2003)	Roh Moo-hyun Administration (2003–2008)	Lee Myung-bak Administration (2008–2013)	Park Geun-hye Administration (2013–present)
Educational Goals	- Train skilled workers needed for industrial development	- Train core HR with industrial skills - Combine personal refinement and character development - Grant vocational education enrollment opportunities	- Train core workers - Improve professionalism of vocational education - Train middle class leaders	- Continue education for adults - Establish social education	- Train professionals - Innovation and advancement - Globalization and informatization New Education System	- Promotion of industry-school cooperation - Comprehensive development of community colleges	- Enhancement of higher vocational education system - Measures for innovation of vocational education system - Measures for university structural reform (2004)	- Construction of an advanced vocational education system linking education and work - Enhancement of competitive potential of universities	- Knowledge-based society - Training workers with professional knowledge
Curriculum	- Liberal arts 40%, major studies 60% - Major experiment and hands-on learning: at least 50% - Grade scoring system - Lack of time spent on experiments and hands-on learning	- (1 credit: 1 hour per week, 17 week course) - 368 completion credits (330 required graduation credits), 35-39 hours per week - 136-164 liberal art subject credits (37-45% of 368 credits, 122 requisite liberal arts credits, 14-42 elective liberal arts credits) - 204-232 vocational education credits (at least 55% of 368 credits) - Three-plus-Two system / credit system - Special Policy 7 for five-year higher vocational schools - Increased time for experiments and hands-on learning	- 152 completion credits (137 required graduation credits), 36-40 hours per week - 3 years, 228 credits (205 credits required for graduation) - 20-30 liberal arts subject credits (3 years, 26-44 credits) - 122-132 vocational education credits (more than 80% of 152 credits, 3 years - 184-202 credits) - Changed from credit system to grade scoring system - Implementation of multi-semester system and the field training semester - The July 30 Education Reform Graduation Quota (1981)	- Vocational education credits: 40–80% of completion credits (at least 50% of the vocational education credits to be experiment and hands-on learning) - General education credits: 20–60% of completion credits	- Consumer-centered college education - Enhanced efficiency of college education - 2nd May 31 Education Reform Measures - Intensification of vocational-professional education - Business-commissioned education - Implementation of cooperated curriculum between vocational high school and community college - The February 9 Education Reform Plan (1996)	- Promotion of technical community colleges - Implementation of vocational high school+community college (Two-plus-Two) program - Implementation of multi-semester system and the field training semester - Business-commissioned education - Implementation of 3-year curricula for 6.1% of enrollment	- 21st century globalization and informatization - Emphasize curricula revision - Fostering creativity, information gathering ability - Business-commissioned education - Colleges focusing on training HR with industrial skills - National worker scholarship system (2005)	- Total of 66 credits in 1st year - Total of 80 (major) credits complete in 2nd year - General subjects as 12-70% of completion credits - Vocational subjects as 30-88% of completion credits (40% experiment and hands-on learning) - Business-commissioned education	- Enhancing practicality of education - Differentiation of education types - NCS curricula focusing on practical application

<Table continued>

	Syngman Rhee Administration (1948–1961)	Park Chung-hee Administration (1961–1972)	Chun Doo-hwan Administration (1980–1988)	Roh Tae-woo Administration (1988–1993)	Kim Young-sam Administration (1993–1998)	Kim Dae-jung Administration (1998–2003)	Roh Moo-hyun Administration (2003–2008)	Lee Myung-bak Administration (2008–2013)	Park Geun-hye Administration (2013–present)
Teachers	- Temporary teacher training centers	- 25 students per 1 teacher (1978) - 1,385 community college teachers	- Training of existing technical vocational teachers - Extensive training for community college faculty - 4,327 community college teacher	- Hiring of professors with an additional position at a business (1980) - Introduction of professor evaluations in1991	- Community college directors - Professors/associate professors/assistant professors/full-time instructors - Teachers with additional positions/emeritus professors/part-time instructors - Instructors (professional engineers/master craftsmen/engineer level 1) - Emergence of necessity to hire professors - Qualification conditions based on the Higher Education Act	- Professors/associate professors/assistant professors/full-time instructors - Professors with additional positions/visiting professors/part-time instructors - Peak No. of community college teachers (2002) - Enactment of 3 separate education laws - Application of the same salary and qualification system as those in 4-year universities - Aug. 31, March 1998 Public Educational Officials Act - Teacher business training (1998) - Increased overseas training - Teaching and education method competitions - Korea Association of Community College Education Research	- Community college directors - Professors/associate professors/assistant professors/full-time instructors - Professors with additional positions/visiting professors/part-time instructors - Professor exchange system - Unification of the salary regulations within the 2-year and 4-year systems	- Presidents/directors - Professors/associate professors/assistant professors/full-time instructors - Teachers with additional positions/emeritus professors/part-time instructors - Increased No. of female teachers - (2008) - 41.8 students per full-time professor - Increase in faculty with experience working in a business or industry	- Professors/associate professors/assistant professors/full-time instructors - Teachers with additional positions/emeritus professors/part-time instructors

<Table continued>

	Syngman Rhee Administration (1948–1961)	Park Chung-hee Administration (1961–1972)	Chun Doo-hwan Administration (1980–1988)	Roh Tae-woo Administration (1988–1993)	Kim Young-sam Administration (1993–1998)	Kim Dae-jung Administration (1998–2003)	Roh Moo-hyun Administration (2003–2008)	Lee Myung-bak Administration (2008–2013)	Park Geun-hye Administration (2013–present)
Governance	Ministry of Education	Ministry of Education Ordinance - Five-year higher vocational schools (1964)	Ministry of Education - Integrated institution names under the singular 'community college' label - 4-year open college restructuring	Ministry of Education	Ministry of Education (city and provincial education superintendents) - Rapid increase of female student enrollment - Community college growth and development stage	Ministry of Education and Human Resources Development/City and provincial education superintendents - Community college evaluation (1998) - Liberalization of school name restrictions	Ministry of Education and Human Resources Development City and provincial education superintendents - Community College Innovation Movement (2005)	City and provincial education superintendents - Community college innovation and advancement - 42.4% of all higher education institutions	City and provincial education superintendents
Field practice	- Insufficient hands-on learning facilities and instructor personnel	- Completion of agriculture, fisheries, technical hands-on learning - Establishment of hands-on learning plans (industry-school cooperation) - Enactment of Industrial Education Promotion Act (1963) - Launch of Industry-School Cooperation Foundation (1974)	- Can be replaced with vocational subjects - Academic credit given for hands-on learning (1984) - Hands-on learning evaluation of schools and businesses - Based on guidelines for implementation of hands-on learning (1978) - 100 departments and 100 businesses (1983)	- Development and distribution of booklet on hands-on learning guidelines - Completion of at least 32 hands-on learning course hours	- Vocational subjects can be replaced with hands-on learning courses - Implementation of final year mentoring - Business-commissioned education - Entrepreneurship support centers (1995)	- Provision of hands-on learning and field trip opportunities - Industry-school cooperative education system - Industry-school curriculum consultation	- Implementation of various types of hands-on learning - Evaluation standards and methods reflecting school circumstances - Industry-school cooperation - School Enterprise Support Project (2004)	- Promotion of hands-on learning - Administrative and funding support - Establishment and implementation of industry cooperative subjects - Investing authority to establish industry-school cooperation contracts	- Developing refinement and capabilities related to work (vocational education) through school and social education
Career guidance	- Foundation for skill education	- National Technical Qualifications System (78) - Daejeon Vocational Junior College (intensification of career guidance/education specialization)	- The July 30 Education Reform measures - Increased employment rate as compared to 4-year universities - Conferment of college degrees for community colleges (1979)	- Increased support for experiment and hands-on learning costs to 50% - Established 2 additional vocational education centers - Renamed Human Resources Development and Management Service of Korea	- Establishment and implementation of basic plan vocational education and training - Integrated management by the Korea Research Institute for Vocational Education & Training - Commissioning of vocational education and training - Specialized support project - 1st outstanding research institute support project	- 2nd outstanding research institute support project - Technical leadership university project	- Establishment and implementation of career leadership policy - Overseas internships (2005) - Employment contract system (2006) - Promotion of universities centered on industry-school cooperation	- Employment of community college graduates in 21 foreign countries - 100,000 global youth leaders	- University career education - National Career Development Center - Regional career development centers - Regional career education societies - Career experience support

<Table 2-10> presents a summary of the changes related to the government's community college education policy over the years.

<Table 2-10> History of Changes in Government Policy on Community College Education

Type	Measures for promoting community colleges	Main Policy
Ministry of Education plan to unify the various types of short-term higher vocational education institutions into community colleges (1979)	Unification of short-term higher vocational education institutions into community colleges	• Unification of junior colleges, higher vocational schools, and professional schools into community colleges • Establishing community college educational goal as 'training middle level workers' (Education Act, Article 47) • By nature, institutions that provide terminal education, middle education and continuing education, on the condition that they focus on providing terminal education for the time being. • Study periods of 2–3 years. • Those who wished to enroll or transfer were required to pass the college entrance exam. • Curricula transferred to a grade scoring system rather than a credit system • Professors valued more for their teaching ability than their research potential. • Strengthening industry-school cooperation system • Active pursuit of a policy to promote graduate employment
Ministry of Education's Community College Quality Enhancement Plan (1984)	• Firmly establish the functionality of community colleges as vocational education institutions • Enable community colleges to train the middle level workers needed by businesses. • Provide continuing education opportunities to youth and adults	• Attract more outstanding students to enroll • Secure outstanding teachers and improve quality of existing ones • Procure and support experiment and hands-on learning facilities • Enhance curricula development through job analysis • Promote community college evaluations • Improve the requirements for establishing community colleges • Strengthen industry-school cooperation • Improve career planning for graduating students • Restructure community colleges
Presidential Advisory Committee on Education Reform (1987)	• Instill greater variety into community college functions and system • Improve quality of community college education • Increase autonomy to run administrative and financial affairs • Improve social conditions	• Establish community college functions and systems • Promote curricula revision and implementation • Bring flexibility to quota policy • Invigorate industry-school cooperation • Promote community college teaching curricula • Enhance support system • Improve career planning for graduating students • Improve social conditions

<Table continued>

Type	Measures for promoting community colleges	Main Policy
Presidential Advisory Committee on Education Policy (1992)	Promote development of vocational technical education institutions into continuing education institutions	• Establishment of a multi-level vocational education system: vocational high schools-community colleges-universities • Implement open system • Vertical curricula linkage and corresponding skill qualifications
Presidential Advisory Committee on Education Reform (1996)	Foster development as pivotal higher vocational education institutions	• Implementation of high school + community college (Two-plus-Two) linked curricula • Community college + open college and general universities (Two-plus-Two)) • Community colleges + broadcasting colleges • Establishment of small-scale specialized community colleges • New universities: industrial degree course (Two-plus-Two), degree course (Two-plus-Two)
Ministry of Education's 5-year Education Development Plan (1999)	Specialization as a pivotal institution for training human resources in professional technical skills	• Vocational high school and community college (Two-plus-Two) • Vocational high school + community college + general university (Two-plus-Two-plus-Two) • Merging of universities, departments within universities and common professor management system • Adjustment of the human and physical structures towards management of demand-centered curricula
Presidential Advisory Committee on New Education Community (2000)	Community college flexibility and pluralistic management	• Academic credit bank system, multi-semester system, and intensive implementation of major courses • Vocational education curricula (general high school), linked curricula (vocational high school), implementation of vocational education curricula (business)
Measures by the Ministry of Education towards development of community college education (2001)	Boost social status of community college education, promote as institutions providing training for practical and technically skilled workers, promotion of collaborative specialization, carry out duties as a lifelong vocational education institution	• Improving the quality of professional vocational skill education • Construction of continuing education system • Balanced development based on characteristics (region, type of establishment and institution) • Boosting effectiveness of government funding support
Presidential Advisory Committee on Education and Human Resource Policy (2001)	No special comment.	• Professional vocational education outstanding program certification for improving education quality • University quota restrictions in metropolitan cities
Ministry of Education's University Structural Reform (2004)	Community college structural reform	• Introduction of university information notification system • Adhering to community college full-time teacher recruitment rate: 50% by 2009 • Mergers of various universities • 60% enrollment quota reduction when community college converts to 4-year university

<Table continued>

Type	Measures for promoting community colleges	Main Policy
Measures towards innovation in the vocational education system by the Presidential Advisory Committee on Educational Innovation (2005)	Strengthen role as a lifelong vocational education institution for regional society	• Establishment and implementation of vocational high school/community college-industry contract department • Promotion of 'industrial skill education complex' linked to regional industry-community colleges • Enhancing worker reeducation, continuing education • Expanding funding support for employment insurance to be part of the vocational training curricula
Ministry of Education's Specialized Community College Promotion Plan (2013)	Promotion of development of community colleges as institutions focused on providing higher vocational education	• Categorization of specialized community colleges into 4 types, promoting development of 100 specialized community colleges • Curriculum development based on the National Competency Standards (NCS) and management to achieve a competency-based society • Implementation of the Into the World Project • Employment Guaranteed High School & Community College Comprehensive Education Development Project (Uni-Tech)

Source: 1) Park Byeong-yong and Jeong Woo-hyeeon (1991), pp.681-764
2) Lee Mu-keun et al. (1983).
3) Education Reform Committee (1987), III-4, pp. i-x
4) Korean Council for University College Education (2010), p.128
5) The Community College Support Department of the Ministry of Education (2001), pp.1-37

However, the all too frequent reformation of the community college system caused difficulties in laying a solid foundation for short-term vocational education institutions. Japan's more than sixty 5-year higher vocational schools that were first established in 1962 are still recognized internationally as training institutions that produce outstanding core technically-skilled human resources to this day. Korea's 5-year higher vocational schools established in 1963 were unable to sustain operations for even 10 years, shutting down completely by 1970.

By the end of the 1970s, outstanding national community colleges had been established and were in operation in each city and province in Korea. These institutions became sturdy pillars for the training of core technically-skilled human resources. However, at the beginning of the 1980s, national community colleges began to be restructured into open colleges. About 20 years later they had all been restructured or merged into general universities. Even after these colleges were restructured, they maintained most of the major departments they had as community colleges,

leading to the criticism that 4-year universities were teaching major curricula more suitable to community colleges. Subsequently, in the mid-1990s, 1–2 public provincial community colleges with enrollment quotas of less than 1,000 students were established in each province. However, the role and characteristics of national public community colleges were insufficiently defined. This is why almost all (95%) short-term higher vocational education institutions in Korea are operated as private institutions. It would appear that there needs to be a long-term, consistent higher vocational education policy for achieving more balanced development of national and private community colleges.

Community college-related funding support is far lower proportionally to universities when considering the number of schools and students involved. The total number of community colleges represents 42.4% that of universities, while the total enrollment quota is 36.7%. Yet, total community college funding support amounts to just 7.3% of that given to universities. Funding support for private community colleges is no more than 19.6% of that received by private universities. As such, a monumental increase in government funding support for community colleges and a diverse array of funding support measures need to be urgently implemented.

Private community colleges have addressed their difficulty procuring funding through excessive student recruitment quota increases. However, the current lack of students available for enrollment in each region has now led to difficulties. An array of structural reforms are currently called for, beginning with the reduction of student quotas. In the long term, an ideal student ratio for universities and community colleges must be determined.

The identity of community colleges within the higher education sphere is becoming muddied with the educational goal of such institutions changing from ‘training semi-professional workers’ (1979) to ‘training professionals’ (1997) and the subsequent permission for community colleges to change their designation from ‘college’ to ‘university’ (2011). Their international competitiveness has been weakened as a result. This has led to demands for the establishment of policy that can enable the development of community colleges with specialized and clear identities, roles and educational goals that are different from those of universities.

With this in mind, the best approach would appear to be for community colleges to establish and implement curricula based on the NCS to focus on the training of workers with outstanding capabilities towards meeting the demands of industry and ultimately bring about the growth of a

competency-based society.

Moving forward, the most pressing issue regarding community colleges may very well be finding ways to resolve such difficulties as the declining school-aged population, the lack of planning for changes looming in the future, unstable access to funding support and the wage gap according to one's level of academic achievement (see <Table 2-11>).

<Table 2-11> Wage Gap Trends by Year & Level of Academic Achievement

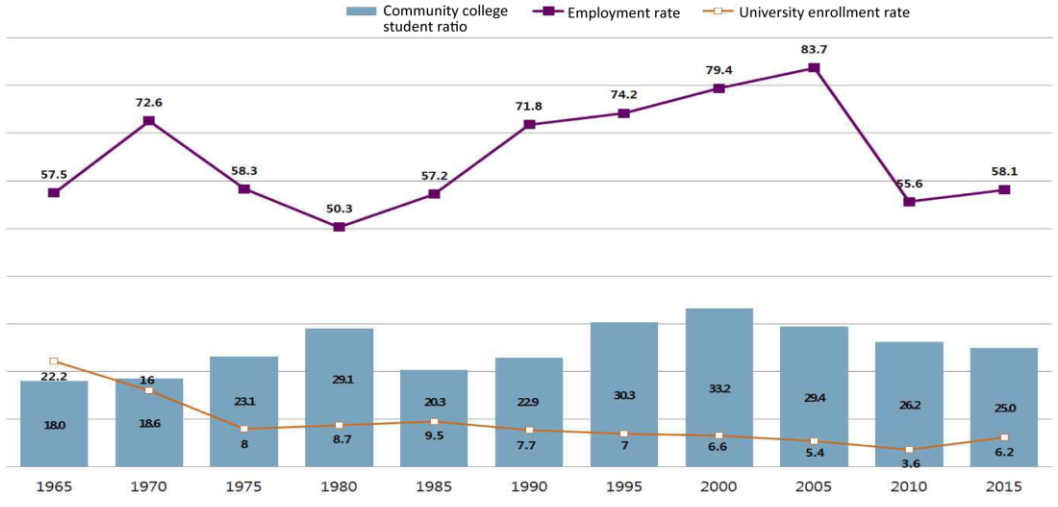
(Unit: %)

Type	All Academic Backgrounds	Middle school graduate or lower	High school graduate	Community college graduate	University graduate or higher
1975	83.3	57.2	100.0	136.2	214.4
1980	96.9	72.7	100.0	145.7	217.3
1985	104.5	79.3	100.0	129.5	214.7
1990	108.0	87.7	100.0	116.7	174.7
1995		91.0	100.0	109.0	147.0
1998		88.0	100.0	107.0	149.0
2006	112.8	87.9	100.0	108.0	155.4
2010	105.2	92.7	100.0	117.6	150.7
2015	124.7	84.8	100.0	110.9	145.7

Source: Ministry of Employment and Labor, Report on the Basic Wage Structure Statistics Survey (each year) (Accessed: August 10, 2016).

In 1979 as junior colleges and five-year higher vocational schools were unified into community colleges the employment rate of community college graduates increased. However, in 2005 the employment rate began to decrease. This is thought to be a result of a change in the way the employment rate has been calculated and verified (see [Image 3-1]).

[Image 2-4] Relation Between Community College Policy and the Ratio, Employment Rate, and University Transfer Rate of Community College Students



1979–2005	2006–2010	2011–present
Unification into community colleges Community College Quality Enhancement Plan (1984) 5-year Educational Development Plan (1999) Measures for Development of Community College Education (2001) University Structural Reform (2004)	2009 School Year Community College Business-commissioned Education (2008) 2010 School Year Plan to Implement Degree Major Intensive Courses (2010)	Basic Plan for the Community College Education Capacity-building Project (2013) Measures for Promotion of Community Colleges (2013) Approach for Implementation of Community College Policy (2013)

Note: 1) Reason for less than 55.6%: employment rate calculated based on health insurance database

Source: Korea Educational Development Institute. Education Statistical Year Book (applicable years) (Accessed: October 10, 2016).

Higher vocational education is the responsibility of the Ministry of Education. The division of duties and titles of the organization in charge of community college affairs has been changed over the years.

The name of this organization has changed as follows: Higher Education Department → Industrial Education Department → Social and Vocational Education Department → Science Education Bureau → College Policy Group → College Policy Support Department → Higher Education Group → Lifelong Education Department → College Support Group. As the importance of fostering stronger links between secondary and higher vocational education grows, it is necessary to consider the development of an umbrella organization that can carry out comprehensive vocational education policy that encompasses both secondary and higher vocational education in an integrated manner.

ChapterⅢ

Vocational Education 4.0: The Future

Section 1. Outlook on Future Changes to the Vocational Education Environment

Section 2. Policy Direction for Future Vocational Education

Section 3. Policy Tasks towards Future-oriented Vocational Education

Vocational Education 4.0: The Future

Section 1. Outlook on Future Changes to the Vocational Education Environment

Recent transformations such as technological development, changes in the structure of the productive population and the transition toward knowledge-based industries are not only leading to a reduction of the need for simple skill jobs in the labor market, but also to a rise in demand for high-skill positions, raising questions as to whether Korea's vocational education system has the ability to respond. In particular, as we enter the era of artificial intelligence, the Internet of Things, 3D printing and other information technologies, the students entering the labor market now are being selected based on whether they possess the ability to recognize situations and come up with solutions, coupled with the agility to respond to rapidly-changing environments, and moreover will be judged, not on what skills they possess, but on what results can they produce with those skills (Park Dong-yeol, 2016b). The outlook presented at the Davos Forum in 2016 was that jobs relying on simple repetitive activity are destined to disappear in the future. Ultimately, businesses need highly-skilled human resources capable of creating value in the present, and preparing for the future as well (Park Dong-yeol, 2016b).

Further, although many jobs will disappear in the coming Fourth Industrial Revolution, it is anticipated that many positions will be created in new fields. But what are these newly emerging fields? Futurist Thomas Frey expects new jobs to be created in fields that haven't even been created yet, or fields that haven't yet formed a market; experiments are currently being carried out to train the human resources demanded by newly-emerging fields in a short period of time.

Reflection on what Korea is doing in terms of vocational education to prepare for future industrial and population changes leads to the conclusion that a great deal of innovation is still required.

In this context, the following <Table 3-1> shows the results of a survey of 19 experts (in the fields of vocational education policy, academia, business, and industry) as to their opinions on what the vision and goals of vocational education should be for the year 2025.

<Table 3-1> Opinions on a Future Vision for Vocational Education

Vocational Education Vision	Main Content
Vocational education to realize a competency-based society (45.1%)	Competency-based society Professional human resources Vocational capacity-building Industrial demand Upward mobility, paths for success
Vocational education for socio-economic contributions (28.0%)	National competitiveness Economic development Industrial development Global
Vocational education for individual achievement (26.9%)	Self-realization Quality of life Talent / aptitude Career selection

Regarding a worthy future vision for vocational education, 45.1% of respondents answered that building a competency-based society was of most importance, 28.0% said socio-economic contributions should come first, and 26.9% leaned toward individual achievement.

But just what is a competency-based society? The Korea Research Institute for Vocational Education and Training states that a competency-based society refers to “A society that allows all individuals to make use of their talents, without discrimination and through the recognition of individual ability, by considering a variety of elements other than academic background or academic records, while still providing equal and fair opportunity for all members of society to develop their abilities and ultimately employing personnel based on those abilities” (Heo Yeong-joon, Park Dong-yeol et al., 2014: 4).

<Table 3-2> shows the internal and external environmental changes that may impact vocational education in the next 10 years.

<Table 3-2> Internal & External Environmental Changes that May Impact Vocational Education in the Next 10 Years (additional responses allowed)

Changes	Frequency (%)	Emerging phenomena
Population Changes (Low birth rate and aging population)	18 (94.7)	- Issues with procurement of vocational education resources resulting from a reduction in the population of school-aged children - Increased employment-centered vocational education resulting from reduced youth employment and job reductions - Imbalances in human resource supply and demand as a result of a reduced productive population arising from low birth rates and an aging society - Expanded use of foreign workers as a result of the reduced productive population, with the ensuing competition between foreign and domestic human resources
Increased utilization of information technology	16 (84.2)	- Fewer low-skill jobs and more high-skill jobs resulting from utilization of 3D printing - Creation of new jobs in new growth fields as a result of convergence technology - Emphasis on creative capacity resulting from automation technology and artificial intelligence - Increased demand for multi-functional skilled HR resulting from a fusion of the manufacturing and service industries - Pursuit of human-centric hyperconnectivity resulting from the development of network technology
Globalization	8 (42.1)	- Active international HR movement through expansion of systems for international division of labor - Accelerated job changes through intensified competition - Increased demand of vocational education oriented toward new fields as a result of industrial restructuring
Social Sciences Culture	8 (42.1)	- Transition from a single culture to a multicultural society - Rapid change in value perceptions in both society and culture regarding jobs, work, etc. - Expanded use of foreign HR in the labor market

As shown in the table, external and internal changes that could impact vocational education in the next 10 years are expected to include population changes (94.7%), utilization of information technology (84.2%), globalization (42.1%), and socio-cultural changes (42.1%), showing that low birth rates, societal aging and other population changes are expected to have the greatest impact on vocational education.

Phenomena arising from population changes brought the greatest response rate for the following main reasons: ① Issues with procurement of vocational education resources resulting from the

reduction of the school-aged population; ② Increased employment-centered education resulting from reduced youth employment and job reductions; ③ Imbalances in HR supply and demand as a result of the reduced productive population; ④ Expanded use of foreign workers and the ensuing competition between foreign and domestic human resources.

The phenomena arising from the increased utilization of information technology received the second highest rate of response for the following reasons: ① Fewer low-skill jobs and more high-skill jobs resulting from utilization of 3D printing; ② Creation of jobs in new growth fields as a result of convergence technology; ③ Emphasis on creative capacity resulting from automation technology and artificial intelligence; ④ Increased demand for multi-functional skilled HR resulting from a fusion of the manufacturing and service industries; ⑤ Pursuit of human-centric hyperconnectivity resulting from the development of network technology; ⑥ Increased demand for highly-skilled human resources resulting from the development of information technology.

Meanwhile, globalization is expected to lead to the following: ① Increased international HR movement through expansion of systems for an international division of labor; ② Accelerated job transformation resulting from intensified economic competition; ③ Increased demand for vocational education oriented toward new fields as a result of industrial restructuring. Respondents also pointed out that socio-economic changes are expected to yield the following phenomena: ① Transition from a single culture society to one that is multicultural; ② Rapid changes in the value perception in society and culture regarding jobs, work, etc.; ③ Expanded use of foreign workers in the labor market, resulting in the international movement of human resources and cultures, with the ensuing changes to existing industrial structures and values, as well as greater diversification in the labor market.

<Table 3-3> shows that population changes are expected to have both a positive and a negative impact on five policy fields: the vocational education system, curricula, teaching faculty, industry-school cooperation and career guidance.

<Table 3-3> Impact of Demographic Changes on Vocational Education Policy by Field

Changes	Change areas	Positive phenomena	Negative phenomena
Issues with procurement of vocational education resources resulting from a reduction of the school-aged population	Vocational Education System	- Enhanced competitive ability of vocational education institutions resulting from the preference for seeking employment over attending university - Diversification of university and college admissions system and improved selection standards - Enhanced small-scale qualitative education	- Reduced student resources - Reduced number of vocational education institutions - Confusion regarding identity and status of vocational education institutions
	Curriculum	- Enhanced capacity for curricula implementation reflecting student requirements	- Difficulty forming classes to establish and implement curricula
	Teachers	- Reduced student/teacher ratios - Promotion of student guidance	- Emergence of excess teachers resulting in a reduction in the overall number of teachers - Changes in the role of teachers and reduced number of total teaching faculty
	Industry-school cooperation	- Expanded opportunities for systematic hands-on learning experiences in small, elite groups	
	Career guidance	- Implementation of a systematic career guidance program that considers the special characteristics of each individual	
Reduced productive population as a result of the low birth rate and aging society	Industry-school cooperation	- Input of foreign workers and increased demand for education for foreign HR	- Weakened competitive potential of domestic HR resulting from increased input of foreign workers
- Increased demand for employment-centered vocational education resulting from reduced youth employment and job reductions	Curriculum	- Increased improvement of vocational education curricula - Strengthening and promoting practicality of education curricula	- Problems with curricula quality assurance
	Teachers	- Emphasizing the importance of teacher expertise	
	Industry-school cooperation	- Emphasizing the importance of employment-centered education	
	Career guidance	- Amendment of the employment and career guidance systems for lifelong career development support	- Emergence of the tendency in career guidance to focus solely on employment results

The population changes have had the following main positive impacts on the vocational education system: ① Despite the decline of the school-aged population, preference for employment over university enrollment has led to increased competitiveness among vocational education institutions; ② Diversification of the university and college admissions systems and improved selection standards; ③ Enhanced small-scale qualitative education; ④ Diversification of the vocational education system resulting from an increased demand for education for foreign workers due to the increased input of foreign HR. In terms of negative impacts due to the decline in school-aged population: ① Reduced student resources; ② Reduced number of vocational education institutions; ③ Confusion regarding the identity and status of vocational education institutions, giving rise to fears of the possibility of reduced institution functionality and scale.

Some potential positive impacts population changes might have on education curricula: ① Enhanced potential for reflecting the demands of students in curricula implementation; ② Establishment of employment-centered vocational education curricula and the strengthening and promotion of the practicality of such curricula; ③ Development and implementation of curricula for lifelong vocational education and customized for local demands through the restructuring of long-term curricula and expansion of reeducation facilities. The following represent some potential negative impacts: ① Difficulty in forming classes for the establishment and implementation of curricula; ② Increased demand for employment-centered vocational education, leading to potential quality assurance issues.

The following are the expected potential positive impacts of demographic changes on teaching faculty: ① Youth unemployment and job reductions leading to an increased emphasis of the importance of teacher expertise in fostering the employability of students; ② A reduction of the student/teacher ratio. The following are potential negative impacts: ① Student reductions leading to excess teachers, ② Changes in the role of teachers and the accompanying reduction in their overall number.

Potential positive impacts of population changes regarding industry-school cooperation include: ① Expanded opportunities for systematic hands-on learning experiences in small, elite groups; ② Emphasis on the importance of employment-centered education, ultimately leading to the invigoration of industry-school cooperation and hands-on learning. Negative impacts resulting from the decline of the productive population are expected to be the expansion of foreign worker

input and the ensuing decline of domestic worker income, competition between skilled foreign and domestic workers, and a weakening competitiveness of domestic human resources.

The following are anticipated positive impacts of population changes on career education: ① Implementation of a systematic career guidance program that considers the unique characteristics of each individual; ② Amendments of the employment and career guidance systems for lifelong career development support, with increased employment-centered vocational education. In terms of negative impacts, there is an emerging trend in career guidance whereby focus is placed solely on short-term employment results through an increase in employment-centered vocational education, making it difficult to pursue lifelong career building.

<Table 3-4> presents the factors impacting vocational education policy per field as a result of the increased use of information technology.

<Table 3-4> Factors Impacting Vocational Education Policy Resulting from the Increased Use of Information Technology (by field)

Changes	Change areas	Positive phenomena	Negative phenomena
Emergence and application of convergence technology	Vocational Education System	- Emergence of various forms of vocational education and qualitative innovation - Restructuring of the vocational education system to produce highly-skilled, functional HR	- Incapacitation of existing vocational education and training system - Increased demand for HR with simple skills
	Curriculum	- Establishment of new departments and expanded support funding	- Difficulty establishing and implementing curricula reflecting necessary changes
	Teachers	- Expanded opportunities for continuing training of professional subject teachers - Expanded discretionary power of teachers resulting from the increased importance of student creativity	- Insufficient local adaptability of teachers to respond to changes - Difficulty recruiting professional teachers

<Table continued>

Changes	Change areas	Positive phenomena	Negative phenomena
	Industry-school cooperation	- Increased demand from business for support with bottleneck technology - Emphasis on the importance of industrial site capacity-building as a result of ICT development - Increased opportunity to participate in worker improvement training	- Lack of effective government-led industry-school cooperation policies for the Fourth Industrial Revolution - Lack of systems for responding to various industry-school cooperation demands
	Career guidance	- Enabling guidance regarding new and niche jobs when students engage in job searches - Expansion of a post-enrollment program for new job fields - Increased potential for development and application of a career system utilizing AI and big data	- Difficulties in guidance resulting from emergence of new jobs, reduction of job life cycle
Application of 3D, VR	Curriculum	- Development of curricula focused on training highly-skilled HR - Utilization of innovative tools in information technology classes	- Increased costs for the procurement of most cutting-edge facilities and equipment
Fusion of the manufacturing and service sectors	Curriculum	- Emphasis on capability in multiple fields	

In terms of the positive impacts the increased utilization of information technology will have on vocational education, there are high expectations that convergence technology will lead to qualitative innovation through the following: ① Emergence of new forms of vocational education and qualitative innovation; ② Restructuring of the vocational education system to produce highly-functional human resources. On the other hand, the following are anticipated negative impacts: ① Incapacitation of the existing vocational education and training system; ② Increased demand for human resources with simple skills.

The following are anticipated positive impacts the utilization of information technology will have on education curricula: ① Establishment of new departments and expanded support funding resulting from the emergence and application of convergence technology; ② Development of curricula focused on training highly-skilled HR through the utilization of 3D printers, VR and other technologies, coupled with an innovative use of information technology as a tool in

classroom settings; ③ Emphasis on competency-based education in various fields as a result of a fusion of the manufacturing and service sectors. Regarding the negative impact of 3D printers, VR and other such technology, there is a fear of the following: ① Increased costs for procurement of most cutting-edge facilities and equipment; ② Accompanying difficulty in establishing and implementing curricula reflecting changes in knowledge and technology.

Regarding the positive impacts of the increased utilization of information technology in the field of teaching, the following outcomes are expected: ① Expanded opportunities for continuing teacher training regarding professional subjects through rapid knowledge and technology changes; ② Expanded discretionary power of teachers as a result of the increased importance of student creativity. In terms of negative outcomes, the following difficulties are anticipated: ① Insufficient local adaptability of teachers to respond to rapid technological changes; ② Difficulty recruiting qualified teachers as a result of the emergence and increased utilization of convergence technology.

In terms of the positive impact of information technology on industry-school cooperation, the following outcomes are anticipated: ① Increased demand from business for support with bottleneck technology with the emergence and utilization of convergence technologies, ② Emphasis on the importance of industrial site capacity-building as a result of ICT development, and a simultaneous increased opportunity to participate in worker improvement training. Regarding negative impacts, there is concern about the following potential outcomes: ① Lack of effective government-led Industry-School Cooperation policies for the Fourth Industrial Revolution, ② Lack of systems within schools for responding to various industry-school cooperation demands, leading to conversion to an industry-centered vocational education system.

In terms of positive impacts on career guidance, the following outcomes are expected with the utilization of convergence technology: ① Guidance possible regarding not only existing jobs, but new and niche jobs when students engage in job searches; ② Expansion of a post-enrollment program in new job fields; ③ Increasing potential for development and application of a career system utilizing AS and big data. Regarding negative impacts, difficulties are anticipated in guidance resulting from the emergence of new jobs and the reduction of job life cycles.

<Table 3-5> presents the factors impacting vocational education policy per field as a result of increased globalization.

Regarding the positive impact of globalization on vocational education through the international movement of human resources, the following outcomes are anticipated: ① Promotion of a vocational education system for aiding student overseas employment; ② Increased need for construction of KQF (Korean Qualifications Framework); ③ Expanded range of recruitment targets for vocational education; ④ Construction of a vocational education system for training experts that can find employment in international organizations, take part in ODA projects, and serve as advisors for developing nations; ⑤ Expanded sources of demand for vocational education with the emergence of new job fields as a result of the increased international movement of human resources and industrial restructuring. The following are anticipated negative impacts of the international movement of HR: ① Difficulties with changing the vocational education system; ② Increased importance of linguistics ahead of capabilities related to one's major, leading to a transition toward a system overly-focused on international capacity development.

<Table 3-5> Factors Impacting Vocational Education Policy as a Result of Globalization (by field)

Changes	Change areas	Positive phenomena	Negative phenomena
Active international HR movement	Vocational Education System	- Promotion of a vocational education system for assisting students with overseas employment - Increased need for construction of KQF - Expanded range of recruitment targets for vocational education - Construction of a vocational education system for training experts that can find employment in international organizations, take part in ODA projects, and serve as advisors for developing nations	- Difficulties with changing the vocational education system - Increased importance of linguistics ahead of capabilities related to one's major
	Curriculum	- Development of curricula corresponding to international standards	
	Teachers	- Diversification of training methods and internationalization of training system - Increased potential for international and domestic cooperative exchanges	

<Table continued>

Changes	Change areas	Positive phenomena	Negative phenomena
	Industry-school cooperation	- Enhanced industry-school cooperation to meet international standards - Expanded overseas internship opportunities - Expanded opportunities for cooperative research between countries	- Intensified drain of outstanding talent to foreign countries
	Career guidance	- Integration of career guidance information, including overseas employment and career development opportunities	
Increased competition resulting from globalization	Curriculum		- Decreased competitiveness of domestic education curricula with the arrival of overseas education and training systems - Increased educational content required within limited class hours (credits)
- Increased demand of jobs in new fields as a result of industrial restructuring	Teachers		- Difficulty recruiting outstanding teachers with international competitive abilities - Lack of funding support for expansion of a global mindset
	Industry-school cooperation		- Reduction of domestic jobs with the relocation of domestic companies overseas

One positive impact in particular on education curricula, resulting from globalization and the international movement of human resources, would be the development and implementation of education curricula corresponding to international standards. However, in terms of negative impacts of globalization, the following outcomes are anticipated: ① Decreased competitiveness of domestic education curricula with the arrival of overseas education and training systems; ② Increased educational content (profession-specific classes, foreign languages) required within limited class hours (credits) leading to difficulty establishing and implementing domestic curricula for vocational courses and enhancing fundamental vocational capabilities.

In terms of the positive impacts of globalization on the teaching field, it is expected the international movement of human resources will lead to: ① Diversification of training methods; ②

Increased potential for international and domestic cooperative exchanges, leading to the internationalization of teacher training systems. A negative impact of globalization will be the increase in demand for jobs in new fields emerging with the restructuring of industry, which could lead to the following negative outcomes: ① Difficulties recruiting outstanding teachers with international competitive abilities; ② Insufficient funding support for fostering a global mindset in teachers, resulting in inadequate infrastructure for their international capacity-building.

Globalization is expected to have a positive impact on industry-school cooperation through the active international movement of human resources, leading to enhanced cooperation meeting international standards, and expanded overseas internship opportunities, leading to expanded opportunities for cooperative research between countries. On the other hand, some expected negative impacts of increased international human resource movement are the intensified drain of outstanding talent to foreign countries and the reduction of domestic jobs with the relocation of domestic companies overseas.

In terms of positive impacts of globalization and the ensuing human resource movement, when it comes to career guidance, the expansion of career guidance information to include information on overseas employment and career development opportunities is anticipated.

Finally, <Table 3-6> presents the factors impacting vocational education policy per field as a result of social and cultural changes.

<Table 3-6> Factors Impacting Vocational Education Policy as a Result of Social & Cultural Changes (by field)

Changes	Change areas	Positive phenomena	Negative phenomena
Increased demand for vocational education oriented toward new fields as a result of industrial restructuring	Vocational Education System	- Strengthening competitiveness - Promotion of flexibility in the academic system	- Funding consumption resulting from the development of new fields - Difficulty for existing vocational education institutions to convert to new fields
	Teachers	- Teacher training and development of growth programs for enhancing expertise in new fields - Expanded authority of teachers through increased autonomy and creativity	
	Industry-school cooperation	- Emergence of implementation models for new forms of Industry-school cooperation	- Difficulty recruiting personnel for industries in new fields - Emergence of mismatches in the demands of new and old fields regarding industry-school cooperation
Transition to a multicultural society	Vocational Education System	- Strengthening human-centered education for basic character building, etc. - Expanded multicultural education	
	Curriculum	- Increased need for vocational education for foreigners - Expansion of integrated academic federations - Potential for establishment and implementation throughout the academic system of a skill-centered educational curriculum	
	Career guidance	- Implementation of a career guidance system for multicultural students	- Career guidance difficulties related to new fields
Rapid change in value perceptions in society and culture regarding jobs, work, etc.	Vocational Education System		- Difficulty in accepting work and group-oriented values among the young leisure-oriented generation - Ambiguity between school education and informal & non-formal learning experience
	Curriculum	- Accelerating efforts to cease implementing skill-oriented educational curricula - Enhanced cultural leisure education	- Concern that education will become sub-standard due to indiscriminate changes
	Teachers	- Difficulty forming personal connections between teachers and students due to accelerated individualism - Increased sense of powerlessness among teachers	- Difficulty recruiting capable teachers due to the reduction of the teaching merit system
	Career guidance	- Expanded value-oriented career program	- Emergence of polarized vocational ethics

In terms of social and cultural changes having a positive impact on vocational education systems, the following outcomes are expected due to increased demand for such systems related to new fields: ① Enhanced competitive potential of vocational education systems; ② Promotion of flexibility in the academic system and transition from a single to a multi-cultural society; ③ Strengthening human-centered education for basic character building, etc.; ④ Expanding multicultural education. As for the negative impact of social and cultural changes on vocational education systems, the following outcomes are expected due to increased demand for such systems related to new fields: ① Funding consumption resulting from the development of new fields; ② Difficulty for existing vocational education institutions to convert to new fields; ③ Difficulty accepting work and group-oriented values among the young leisure-oriented generation; ④ Ambiguity between school education and informal & non-formal learning experience, making it difficult for the current school system to adapt to modern requirements.

In terms of the positive impact of socio-cultural changes on educational curricula, the following outcomes are expected: ① Accelerated efforts to do away with skill-oriented education curricula as a result of the rapid change in perceived values in society and culture regarding work and jobs; ② Increased need for vocational education among foreigners as Korean society becomes more multicultural; ③ Expansion of integrated academic federations leading to the operation of a skill-centered education curriculum throughout the academic system. On the other hand, some are warning of the possibility that education will become sub-standard due to indiscriminate reaction to the rapid changes in social and cultural values.

Regarding the positive impact on the teaching field from social and cultural changes, it is anticipated that there will be greater development of teacher training and growth programs for enhancing expertise in new fields, while at the same time teachers will gain more authority through increased autonomy and creativity. However, the following are the expected negative impacts: ① Difficulty forming personal connections between teachers and students due to acceleration of individualism and the ensuing increased sense of powerlessness among teachers; ② Difficulty recruiting capable teachers due to the diminishing of a teaching merit system as a result of the rapid change in value perception in society and culture regarding jobs and work.

Regarding the positive impacts of social and cultural changes in terms of industry-school cooperation, there is an anticipated increased demand for vocational education oriented toward

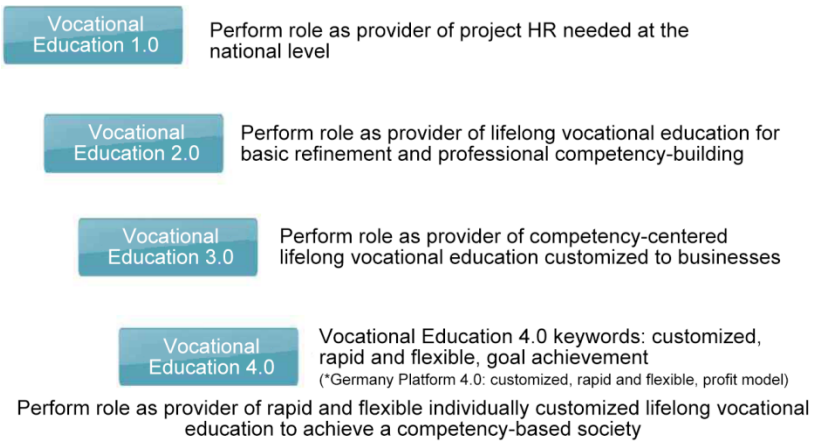
new fields as a result of industrial restructuring and the ensuing emergence of implementation models for new forms of cooperation. However, in terms of negative impacts, industrial restructuring is expected to lead to difficulty recruiting personnel for new-field industries and the emergence of mismatches in demand regarding industry-school cooperation in these new fields.

In terms of the positive impacts of social and cultural changes when it comes to career guidance, there will be a need for a career guidance system for multicultural students, while the expansion of value-oriented career programs will result in an expanded range of those programs. In terms of negative impacts, the transition toward a multicultural society is expected to lead to the following outcomes: ① Career guidance difficulties related to new fields; ② Difficulty establishing a career guidance system for the new fields due to the emergence of polarized vocational ethics based on changes in traditional values.

Section 2. Policy Direction for Future Vocational Education

[Image 3-1] shows the stages of vocational education policy from the past to the future, based on the results of an analysis of past and present policy changes and an outlook toward future environmental transitions.

[Image 3-1] Main Characteristics of Vocational Education Policy by Stage



The goal of Vocational Education 1.0 could be defined as serving as a provider of needed human resources for industry at a national level, while Vocational Education 2.0 emphasized lifelong learning for basic refinement and promotion of the professional abilities of students. Vocational Education 3.0 stressed lifelong vocational education policies customized to the needs of business and focused on fostering ability in students, based on the National Competency Standards (NCS). Vocational Education 4.0 is a departure from these previous versions in that it focuses on 'realizing a competency-based society based on rapid and flexible lifelong vocational education customized for each individual.' In other words, the key phrases describing future vocational education in preparation for the next 10 years could be said to be 'a competency-based society', 'individuals and individual businesses', 'rapid and flexible', and 'goal achievement (= work, jobs)'.

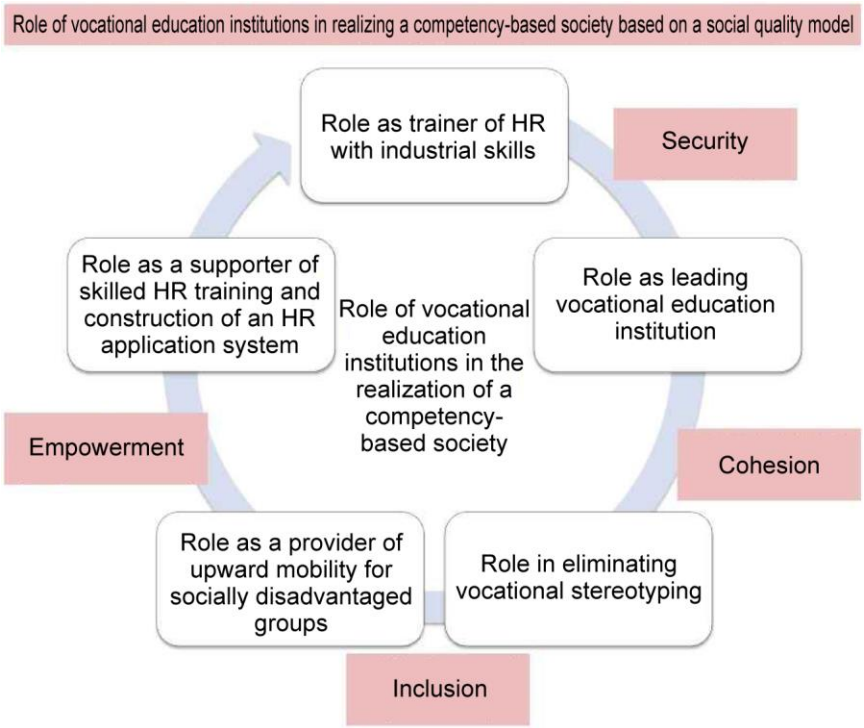
A competency-based society refers to "A society that allows all individuals to make use of their talents without discrimination, through the recognition of individual talent by comprehensively considering a variety of elements beyond academic background or academic records, while providing equal and fair opportunity for all members of society to develop their abilities, and ultimately, employing personnel based on these abilities". Establishing the main elements comprising a competency-based society based on a quality-of-life model will be a great boon to the achievement of such a society. These elements are social security, social cohesion, social inclusion, and social empowerment (Heo Yeong-joon, Park Dong-yeol et al. 2014: 40).

In promoting this policy, students must be supported through vocational education to ensure they can seek out a career path that will bring them happiness in life. For example, by expanding the importance of vocational education in high school, students will be guaranteed the opportunity to participate in quality education suited to their individual talents and, by expanding the joint industry-school apprenticeship and long-term hands-on learning programs, students will be able to experience work appropriate to their abilities while still in school and eventually gain employment in applicable fields. Furthermore, with the expansion of the 'Employment first, University later' parallel work-study program, an effort is being made to allow high school graduate workers to engage in personal development throughout their entire lives and receive opportunities to use their skills to aid society.

At the same time, though the term 'competency-based society' has been used as a slogan without an official definition for some time, the competency-based society definition using the 'Quality of

Society' model mentioned above redefines the role of vocational education institutions as follows (see [Image 3-2]):

[Image 3-2] Role of Vocational Education Institutions in the Realization of a Competency-based Society



Source: Park Dong-yeol, Lee Mu-keun (2016), p.292

First, in order to achieve a competency-based society, vocational education institutions must not only integrate general and vocational education, general high schools and universities must take a leading role in the provision of vocational education. For example, vocational education institutions have experience managing community college on-demand curricula and specialized high school vocational education promotion. These experiences are relevant to general university industry-school cooperation enhancement policies and implementation of vocational curricula at

general high schools. Therefore, vocational education institutions must aim for practicality and stability in their curricula, while at the same time opportunities for participation in vocational education must be provided to general high schools.

Second, vocational education institutions must work to eliminate stereotypes and prejudice regarding certain jobs. In the past, vocational education was stigmatized as a second-class education. Yet, with upward mobility through secondary education becoming less common recently, vocational education is taking on a new identity and status. That said, there is still a negative image affixed to vocational education and this has led to stereotypes and prejudicial views toward certain types of jobs. As such, vocational education institutions must employ a variety of public relations tactics aimed at not only students, but all of society, to reconstitute their image as leading education institutions for realizing a competency-based society, while at the same time, they must make an effort to resolve the prejudices and stereotypes regarding technical and mechanical work.

Third, with a significant portion of secondary and higher vocational education students coming from socially-disadvantaged strata, these institutions must build an alternative path for career success through vocational education beyond the traditional approach of graduating from general high school to attend an outstanding university.

Fourth, an examination of Korea's system for training and utilizing technically-skilled human resources reveals the existence of a vicious cycle characterized by the following: negative social perception of technical skill-based jobs → poor social and economic compensation → avoidance of skill-based jobs by students → quantitative shortage of technically-skilled human resources and reduced quality of available HR → expanded usage of foreign HR in low-skilled domestic jobs → increased skill and wage competitiveness of foreign workers as a result of their long-term employment → domestic skilled HR participating in low-value labor and competing with foreign HR. Therefore vocational education institutions must utilize competency-based education or NCS education to increase student skill levels. At the same time, they must strive to contribute to the conversion of this vicious cycle into a virtuous cycle (Park Dong-yeol, 2016a: 2).

Some additional key words for describing future vocational education can be briefly stated as 'individuals and individual businesses', 'rapid and flexible', and 'goal achievement (= work, jobs)'.

First, the key words 'individuals and individual businesses' are intimately related with the Fourth

Industrial Revolution. In the current form, called Vocational Education 3.0, a variety of policies have been established and are being implemented in order to institute an NCS-based vocational education. The new paradigm being referred to as the Fourth Industrial Revolution demands completely different vocational education policies. To put it differently, while the NCS is an inventory of the abilities needed to carry out the tasks at most businesses, Vocational Education 4.0 will emphasize the skills needed at individual businesses.

Ultimately, Vocational Education 4.0 will be set apart from 3.0 in terms of goals, curricula, classes, and evaluations in the following ways: ① Educational goals will be focused on fostering the abilities demanded by individual businesses, which will be intimately linked with vocational qualification certification. ② Curricula will be comprised of NCS-based regulated curricula and regulated curricula for informal & non-formal learning experience, to cultivate the skills needed by individual businesses. Problem solving, communication, fundamental vocational abilities, learning agility, computational thinking, a healthy outlook towards work, and other attributes will be particularly emphasized. ③ The expanded use of virtual experience tools as a method for teaching and learning at educational institutions is also leading to a preference for projects, simulations and discussions over simple lecturing. Though the benefits of e-learning in vocational education have been limited up to now, the use of virtual experience tools for classes, evaluations and other applications is expected for future education.

Second, the phrases ‘rapid and flexible’ and ‘goal achievement’ indicate the flexibility and range of the future lifelong vocational education system. It is anticipated that the Fourth Industrial Revolution will lead to the elimination of a great many jobs in a short span of time, while also concurrently generating many new jobs. There has been some doubt cast as to whether the current vocational education system can properly adapt to these changes. Therefore, it is clear that Vocational Education 4.0 must include the establishment of policy measures to enable the education system’s flexible and rapid operation in order to respond to external changes.

Vocational Education 4.0 must also include ‘sustainable human resource training and application’ within its policy goals. Put differently, 4.0 policy must enable a fluid school-to-work, work-to-school transition within the process of human resource training. The main factors impacting Vocational Education 4.0 as it relates to the low birth rate and aging society are anticipated to be an increased elderly population and a rapid increase in the use of foreign human resources. Therefore, policies related to these two factors need to be included.

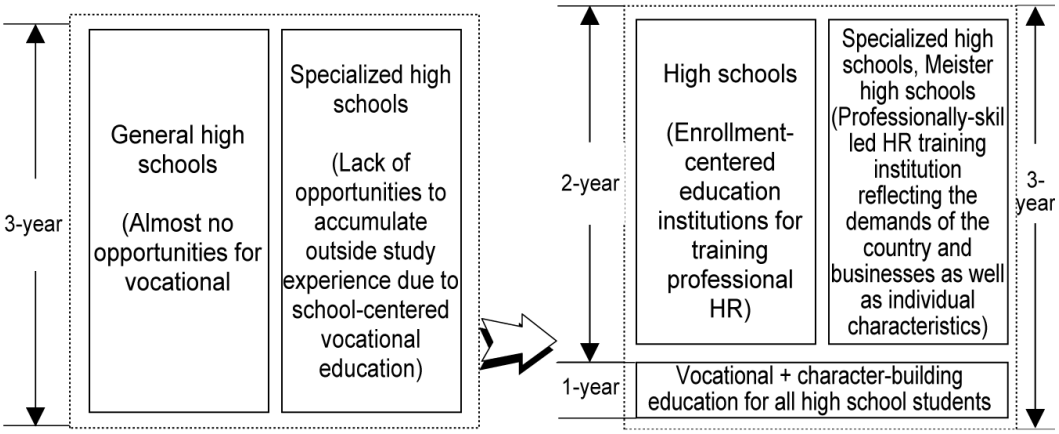
Section 3. Policy Tasks towards Future-oriented Vocational Education

1. Reformation of the School System Centered on Future-oriented Programs

With the transition toward a low birth rate and aging society, a paradigm shift toward low-quantity multi-variety products is underway, and considering the lack of certainty regarding the job fields that will emerge as a result of the Fourth Industrial Revolution, it would appear that the current school-centered vocational education system needs to be converted to an employment-centric business + school cooperative education system. To put it differently, the business + school cooperative education system refers to a system for providing secondary level vocational education opportunities to all high school students while training them to become the skilled human resources demanded by the country and by business. At the same time, the system will be centered on a Korean Qualifications Framework-based program that works at the bachelor degree level, to provide all university students with vocational education opportunities to enhance their employability. Moreover, it has been pointed out that at the graduate school level, the entire degree system should be reformed by strengthening the academic master's degree system and the Korean Qualifications Framework-based school education system to provide workers with more practical lifelong learning opportunities and by basing study results more on the tasks carried out at actual industry sites (Park Dong-yeol et al., 2006: 154).

[Image 3-3] presents the measures for providing all higher education students with vocational education opportunities while at the same time reforming the secondary vocational education system into one that trains the skilled human resources demanded by businesses.

[Image 3-3] Measures for Reforming the Secondary Vocational Education System



Source: Park Dong-yeol et al. (2006), p.154. Presented as a modified version of [Image Ⅴ-4].

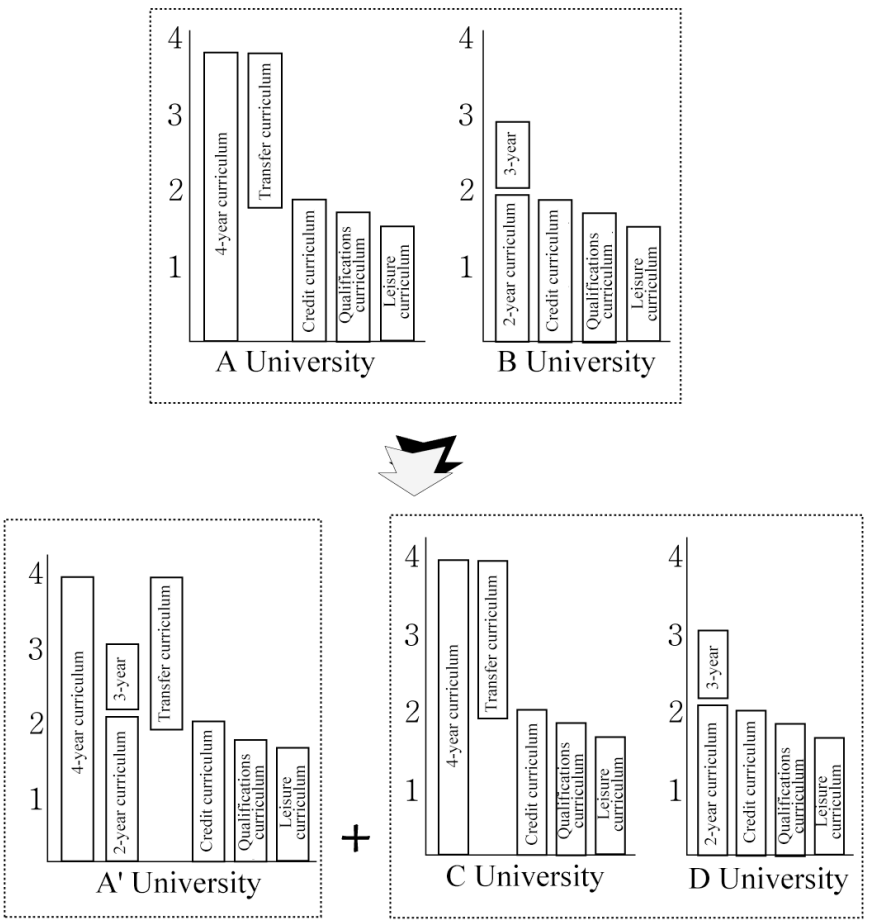
The issues with the current secondary vocational education system when it comes to preparing for the Fourth Industrial Revolution paradigm shift are, firstly, that education is uniformly centered on university enrollment and thereby stifles the development of creative talent. The rigidity of the secondary education system makes it difficult to provide students with opportunities to experience vocational education and prepare for finding employment. Within the next 10 years workers will be required to have the ability to convert necessary knowledge and skills into results, rather than simply possessing the knowledge. In particular, in Vocational Education 4.0 the limits of school-centered secondary vocational education will be dispensed with in the conversion to an industry-school cooperative secondary education system.

As such, there must be consideration for introducing a secondary education system whereby middle school students are able to seek out new dreams and discover their personal aptitudes through a Career-Experience Semester conducted in the 1st semester and, based on the results, then take part in character-building education during the 1st year or 1st semester of high school through job experience or taking part in hands-on learning related to a career of their choice, after which they would then participate in vocational education suited to their career choice from the 2nd year of high school. A secondary education system needs to be established whereby students who have been unable to accrue sufficient study results in elementary school are able to take part

in a focused 1-year academic record improvement curriculum in high school, to support them in constructing a variety of success paths through technical education.

At the same time, the higher vocational education system needs to be reformed into one centered on KQF-based programs in order to boost the employability of university graduates by granting current students the opportunity to take part in vocational education. This measure is described in [Image 3-4].

[Image 3-4] Approach to a Higher Vocational Education System at the Bachelor Degree Level



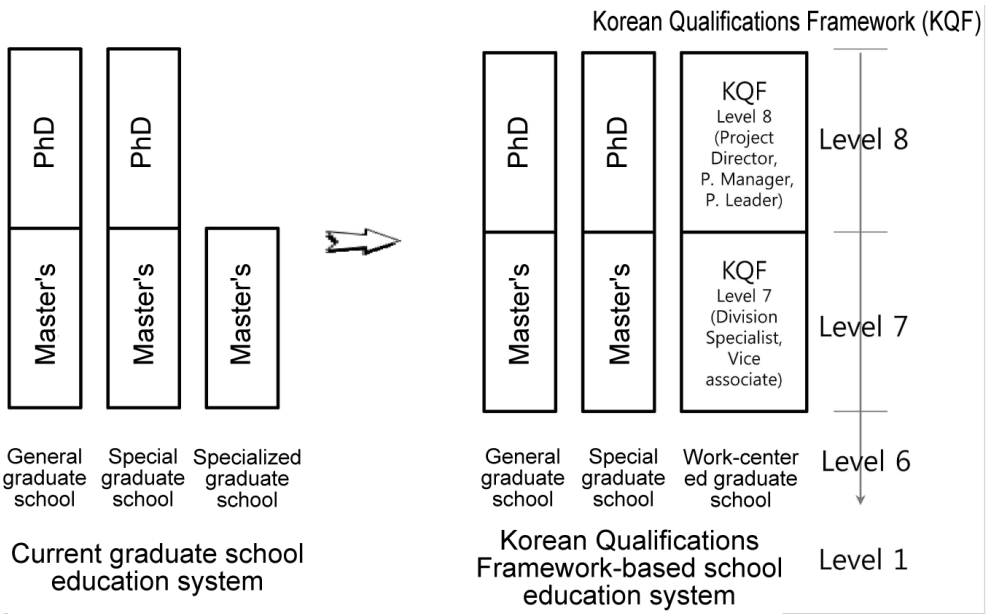
Source: Park Dong-yeol et al. (2006), p.156. Presented as a modified version of [Image Ⅴ-5].

It is a fact that the current bachelor degree level higher vocational education system will struggle to adapt to the changing paradigm of the Fourth Industrial Revolution. The problems facing the current bachelor degree system are the current limitations when it comes to producing the creative and challenge-embracing professional human resources demanded by industry today, the lack of specialization for each field, leading to the uniform training of human resources and increased costs incurred by businesses to reeducate such individuals, the inability of the higher education system to reflect the demands for continuing education from the older population and those hoping to transition to another job, and the stratification and prejudice between academic universities and vocational universities resulting in the reduced competitiveness of all such higher education institutions (Park Dong-yeol et al., 2006: 157-158).

By converting the current study term-centric higher education system into one centered on KQF-based programs, Korea will be able to meet the demand for higher education from various sources and engage in a range of efforts to improve the competitiveness of universities in areas of specialization, differentiation, pursuit of efficiency, etc.

Finally, there is a need to change the current academic-centered graduate school degree system to the Korean Qualifications Framework-based school education system. Particularly now with the expectation of rapid changes in the future industrial and vocational structure, the Korean Qualifications Framework-based school education system will be able to reflect the urgent demands of individuals and businesses and provide lifelong learning opportunities to workers to develop practical skills (see [Image 3-5]).

[Image 3-5] Measures for Reform Toward a KQF-based Job-centered Graduate School Education System



Source: Park Dong-yeol et al. (2006), p.159. Presented as a modified version of [Image Ⅴ-6].

It has been pointed out that the current graduate school system has a variety of issues when it comes to preparing for future society. Among them are the rejection of domestic universities by outstanding talent and their drain to foreign countries, the rising costs of HR reeducation due to the production of workers ill-suited to the demands of industry, the avoidance of foundational academic fields leading to the long-term weakening of national competitiveness and HR supply and demand imbalances, insufficient research and education opportunities through integration of different academic systems due to intensified exclusiveness, and insufficient Korean Qualifications Framework-based school education opportunities for personal development and career management.

Therefore, the specialized graduate school system should be reformed into a Korean Qualifications Framework-based school education system and policy measures must be developed to boost the potential for workers to engage in lifelong career development and transfer jobs or careers in

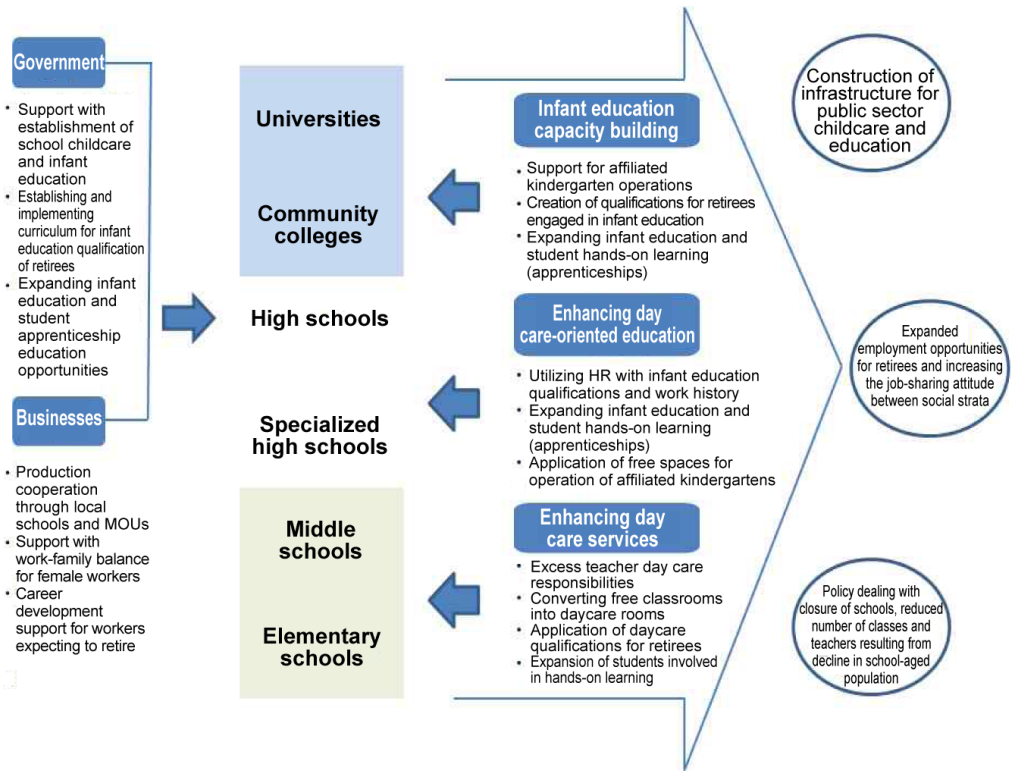
response to rapid industry and labor market structural changes.

In terms of the positive aspects of the specialized graduate school system transforming into the Korean Qualifications Framework-based school education system mentioned above, the following outcomes can be expected: ① Graduate school curriculum improvement will empower individuals and businesses to adapt to rapid technological and labor market changes, in that the schools will be managed as training institutions for fostering the development of professional human resources; ② Steps will be presented for professional HR career development paths, inducing work capacity-building and business productivity improvements; ③ Work-centered academic records will serve as a signaling mechanism enabling objective worker ability evaluation and personnel management.

2. Strengthening the Childcare Education Function of Schools in Response to a Lower School-aged Population

The expansion of childcare and infant education infrastructure is one policy measure for dealing with low birthrates, and demand exists for expanded infant education and childcare in the public sector. Moving forward, one way to make use of the expected decline in the school-aged population (which will lead to a reduced number of schools and classrooms and excess teachers), will be to expand the function of elementary and middle school-affiliated infant care facilities by making use of the increased availability of space and personnel in these institutions, along with increased daycare-oriented infant education services within high school institutions and university-affiliated kindergartens (see [Image 3-6]).

[Image 3-6] Measures for Enhancing Childcare and Infant Education Functions by School Level & Expected Benefits



This needs to be considered not only as a measure to prevent the reduction in school sizes, but also as a means for providing older workers with jobs as well as training opportunities for childcare and infant education majors.

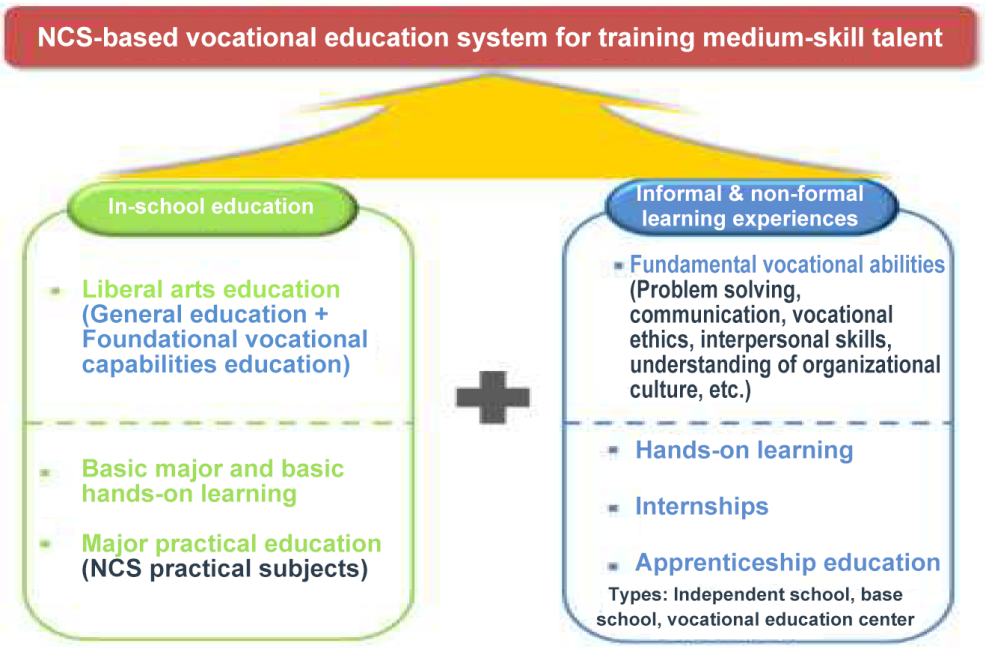
3. Reforming School Education to 'Systematize Informal & Non-Formal Learning Experience'

Because vocational education is expected to become more emphasized the low birthrates and aging society take their toll on Korea, school-centered vocational education alone will not be sufficient to instill in students the work ability demanded by businesses. To address these limitations, Korea

has promoted the implementation of hands-on learning programs with the aim of enhancing the training levels and practical work capacities of students through informal & non-formal learning experience. However, there are still issues that need to be resolved and are presented below: ① Programs have been implemented more to address the shortage of human resources among businesses than for the hands-on learning of students; ② There remains a lack of systematic educational content for the entirety of the hands-on learning period; ③ Not enough instructors have been recruited to direct hands-on learning within businesses; ④ The lack of incentives for business participation has made it difficult to promote active participation; ⑤ There is almost no linkage between school curricula and the informal & non-formal learning experience; ⑥ The role of school teachers during the hands-on learning period is ambiguous and there is no support for participation; ⑦ A system for evaluating and managing student capacity-building through hands-on learning has yet to be fully established.

NCS-based vocational education needs to be implemented for the training of medium-skill workers demanded by businesses, and in order to do so, organic linkages need to be established between school education and informal & non-formal learning experiences (see [Image 3-7]). This linkage must not be limited to integration of vocational education and hands-on learning or apprenticeship courses. It should include connections between general education subjects and foundational vocational ability subjects (successful work life, etc.) offered in schools and systematic ability-related learning experiences offered within businesses.

[Image 3-7] Linkage of School Education and Informal & Non-Formal Learning Experience for the Implementation of NCS-based Vocational Education

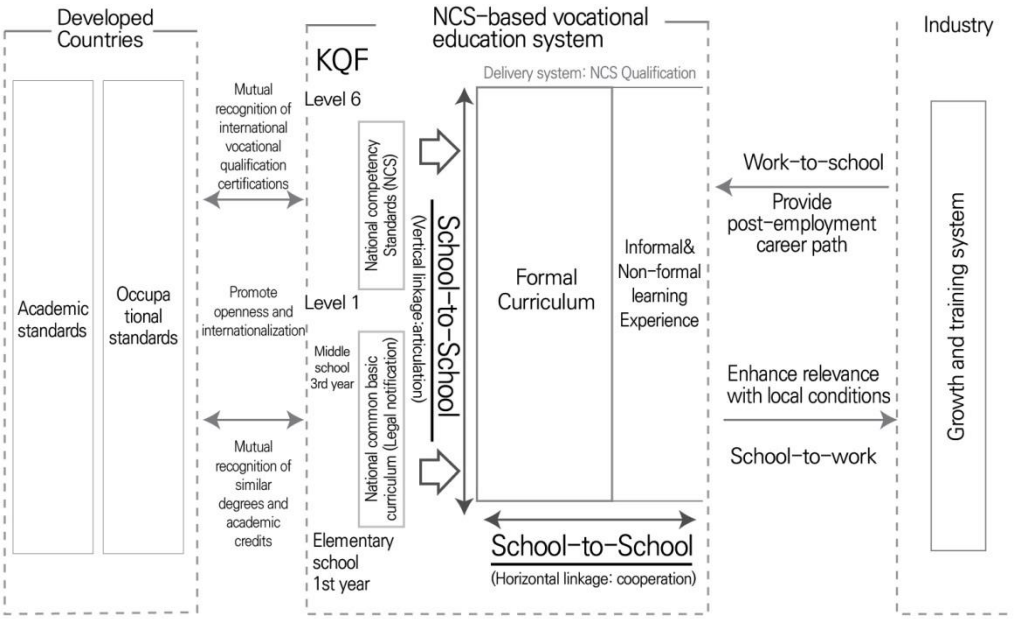


Source: Park Dong-yeol et al. (2016a), p. 18.

To apply NCS-based vocational education in particular, a comprehensive education system must be realized that pursues both the ability development of individuals and enhanced productivity of businesses through the organic interaction of KQF-based education providers (schools) and recipients (businesses and students) (Park Dong-yeol et al., 2010a). In term of strategies to make this to happen, advocates have pointed to the need for local practical application, autonomy, and responsibility (in terms of quality assurance), as well as the following measures that need to be undertaken for these strategies: ① In terms of local practical application, the participation of industries and businesses must be increased from the NCS-based curricula development and implementation stages to the trained HR application stage; ② In terms of autonomy, NCS-based curricula must be diversified and flexibly implemented based on school conditions and characteristics of individual students; ③ In terms of responsibility, implementation of competency-based education centered on hands-on learning must be encouraged along with the delivery of

student ability evaluation results to businesses through objective signaling mechanisms and the application of these human resources as planned (Jang Myeong-hee et al., 2014: 68).

[Image 3-8] Lifelong Vocational Education System Established through the Linkage of NCS-based School Curricula and Informal & Non-Formal Learning Experience



Source: Park Dong-yeol (2016a: pp. 19-20).

Ultimately, NCS-based vocational education is largely founded upon the KQF for the following purposes: ① Interlinking of school education curricula and informal & non-formal learning experience; ② To serve as a mechanism for NCS-based qualifications. We must also improve upon the limitations of hands-on learning experiences presently provided and emphasize the importance of joint industry-school apprenticeship courses at not only the secondary stage, but also the higher education stage for training medium-skill human resources (Park Dong-yeol et al., 2016a: pp. 19-20).

As shown in [Image 3-8] worker abilities can largely be divided into the following two categories: ① The skills defined by the achievement standards needed to carry out applicable tasks demanded by most businesses (NCS); ② The skills defined by the achievement standards needed to carry out

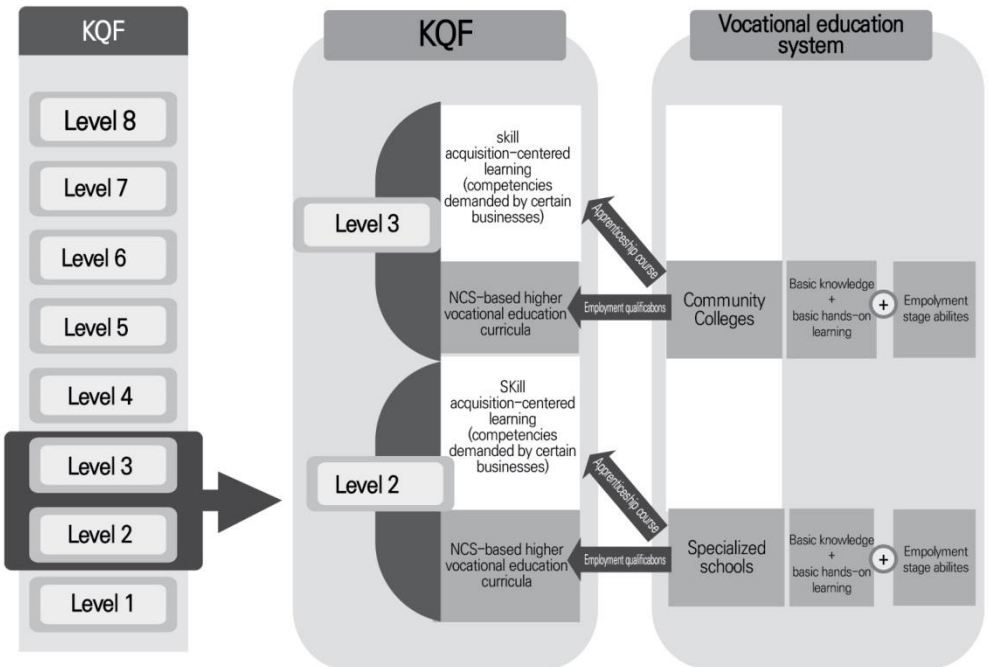
applicable tasks in specific businesses (firm-specific competencies) (Park Dong-yeol et al., 2016a). These categories refer to the achievement standards (comprised of knowledge, skills, attitudes, etc.) traditionally or generally required for carrying out tasks in most companies at the NCS development stage and the achievement standards for carrying out tasks in a specific business that are realistically difficult to include in the NCS (Korea Research Institute for Vocational Education & Training, 2016: 68).

With that in mind, why is it that businesses are still dissatisfied with the quality of vocational education institutions (including universities), and why is competency-based education still being administered to new employees within businesses?

According to the Korea Research Institute for Vocational Education & Training (2016), though there are several complicated elements involved, from a curricula standpoint these can be divided into two categories: ① Differences in educational content; ② Differences in the skills involved in learning the content. If worker competency is largely divided into two categories as discussed above, school-centered education has no recourse but to place its focus on study for the competencies required for recruitment in the labor market.

To improve upon these limitations while developing and implementing education tailored for employment within vocational education institutions, we must consider the expansion of the NCS-based curricula currently being promoted, and at the same time increase the number of apprenticeship courses focused on pertinent skill acquisition. A schema of this is shown in [Image 3-9] below.

[Image 3-9] The Role of Vocational Education Institutions in Providing Curricula for Employment



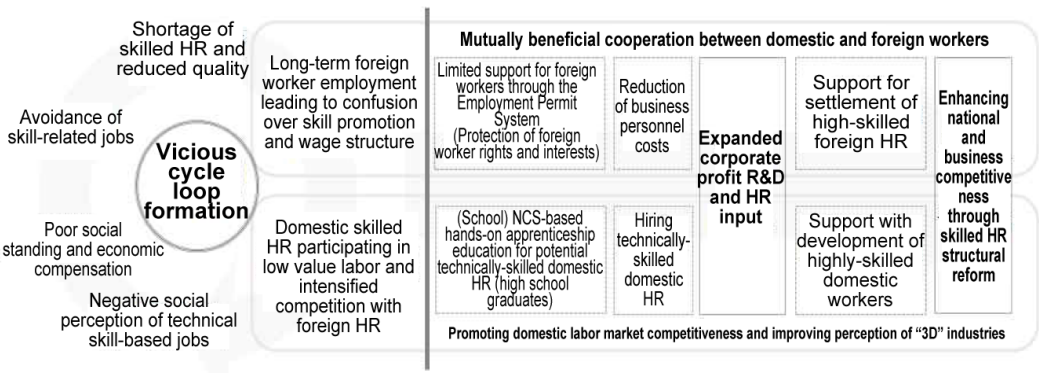
Source: Park Dong-yeol et al. (2016b).

If vocational education institutions introduce such apprenticeship courses, the following outcomes can be expected: ① Specialized high school graduate workers will be trained to acquire the relevant capacities; ② Improvements in the limits of school-centered vocational education curricula for employment will be enabled; ③ The skill levels in study content can be improved and potential learning opportunities for experiencing the culture of businesses can be provided through on-the-job training (the core element of apprenticeship courses); ④ The time needed for new workers to adapt to jobs will be minimized, leading to reduced training costs for businesses which need to cultivate firm-specific competencies.

4. Conversion toward a Policy for Utilizing Foreign Human Resources with the Transition to a Multicultural Society

The future will bring myriad changes including the results of low birth rates and an aging population. In order to respond to these changes, foreign human resources are currently being introduced in a uniform manner. Foreign human resources contribute to the revitalization of the domestic economy. While there must be consideration for improving the treatment of these workers, at the same time, the impact of foreign HR on the competitiveness of the domestic labor market should be kept in mind (see [Image 3-10]).

[Image 3-10] An Approach for Improving Foreign HR Utilization Policies



Source: Park Dong-yeol (2016a), p. 22

Permitting long-term sojourns of foreign workers will threaten some domestic medium-skill workers and bring changes to the labor market in the manufacturing sector. These changes could serve as yet another barrier to employment for domestic workers who complete secondary or higher vocational education and wish to enter the labor market as skilled human resources. In the long term, domestic workers could be restricted in their efforts to develop into highly-skilled workers. Moreover, foreign human resources with a certain level of skills or technical ability who return to their home country will not simply lead to the loss of human resources, but may also foster an intensified skill drain and potential international competition.

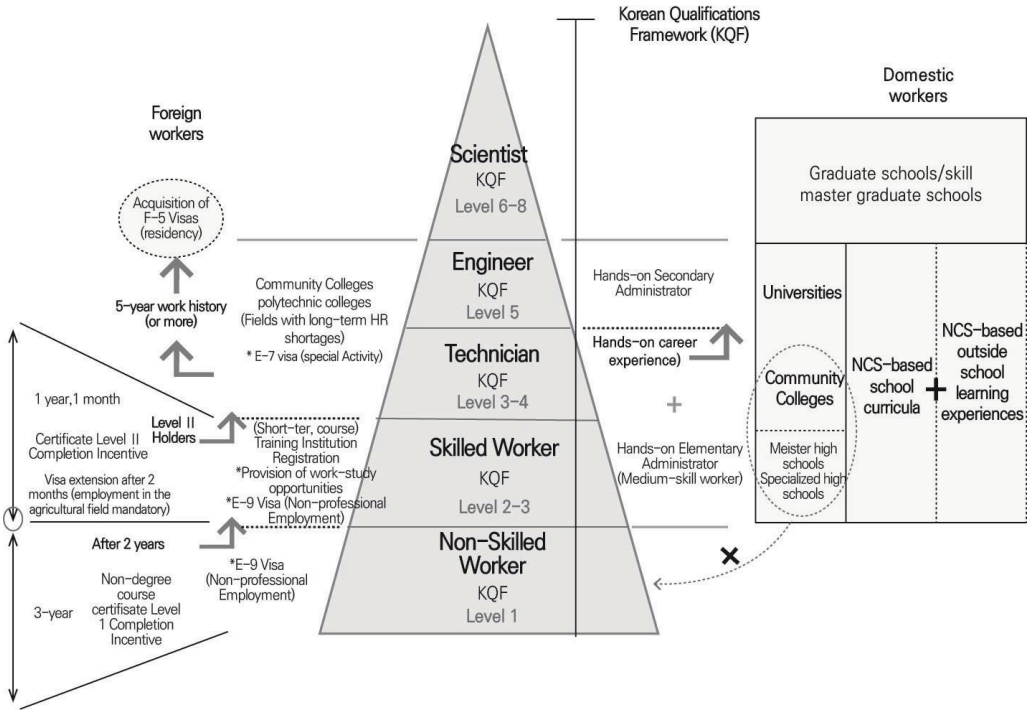
Various efforts are therefore needed to convert existing skilled human resources training and

utilization from a vicious cycle to a virtuous cycle.

Given the recent decline of the productive population due to low birth rates, granting permanent residency to skilled foreign human resources in specific industrial fields has been considered a positive approach. However, as mentioned above, this method must be accompanied with complementary rules to ensure it is only carried out to supplement the domestic labor market and to ensure industrial restructuring is prevented. In this context, the KQF and NCS being implemented to promote the organic linkage of work, study and qualifications indicate what needs to be done to improve the virtuous cycle of skilled human resources training and utilization and reform foreign worker policies (see [Image 3-11]).

First, as Korea transitions into a low birth rate, aging society, the economically-active population is being expanded through the introduction of foreign workers. At the same time, policies for utilizing foreign human resources must be established in terms of the procurement of high-level and technically-skilled workers. It is a fact that, given the difficulty of providing permanent residency to most foreign human resources, the effort to grant such workers with permanent residency remains low. From this perspective, an education service industry revitalization and outstanding skilled worker utilization system must be devised for the provision of KQF-based vocational qualification curricula and degree curricula completion, and this must be made a condition for providing permanent residency to foreign workers, in order to use them in fields facing long-term human resource shortages and the 6 main national industries.

[Image 3-11] Virtuous Cycle Technically-skilled HR Training System Utilizing KQF



Source: Heo Yeong-joon, Park Dong-yeol et al. (2014); Reproduced from Park Dong-yeol (2016a), p.25

Second, while there is the positive element of revenue accrued through the foreign human resource industry, the fact is that this can have a negative impact on parts of the domestic labor market. Various policies for the use of foreign human resources need to be put in place to ensure that specialized high school or community college graduates in particular are not forced to compete with foreign human resources when it comes to finding employment. A personnel management system that incorporates the KQF as an objective mechanism is needed to ensure that specialized high school graduates in particular are not employed in low wage/low skill/simple-task jobs. Although some businesses are introducing personnel management systems based on the KQF and NCS, measures need to be drawn up to systematically expand this practice.

The following are three measures that are required for constructing a virtuous technically-skilled human resources training and application system.

First, the foreigner policy committee's role as overseer must be strengthened, along with the participation of the Ministry of Education in services for the strategic input and permanent residency of foreign workers.

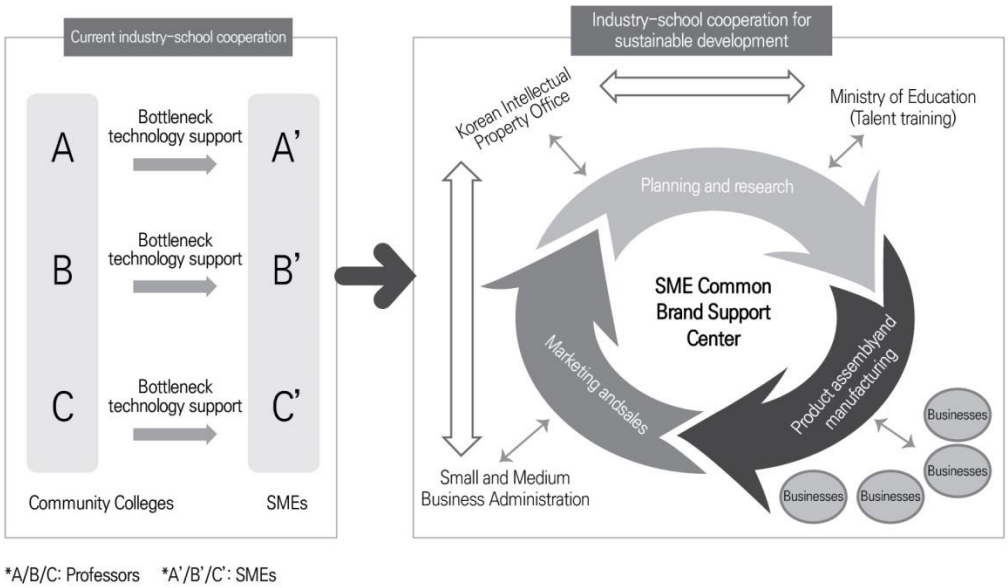
Second, Australia is resolving its inadequacy of its productive human resources in the agricultural field with the expansion of an education service market that utilizes the AQF. Korea must also establish measures for utilizing the NCS and KQF to expand its own education and training service market and at the same time address the lack of human resources in the agriculture production sector.

Third, considering that there are about 210,000 jobs in skilled fields occupied by foreign workers that could be considered decent jobs and that pay at least KRW 2 million per month, it has been judged that it would be possible to induce youth to take these positions under the premise that they are being trained to a certain level of skill. In particular, NCS-based curricula recently developed and implemented in specialized high schools, community colleges, and vocational training institutions in an attempt to boost the skill levels of graduates, require reform in order to integrate foreign human resource policies.

5. Enhancing Industry-School Cooperation for Sustainable Development

A look at the current status of industry-school cooperation between vocational education institutions and businesses shows that (as depicted in [Image 3-12]) university professors with expertise in applicable fields are managing their own separate cooperation relationships with individual businesses according to their unique needs.

[Image 3-12] Overview of Construction of System for Industry-School Cooperation Relationships for Sustainable Development



Source: Park Dong-yeol et al. (2012). p. 119 content was revised

However, in the era of the Fourth Industrial Revolution, there is demand for a transition from case-by-case industry-school cooperation relationships to comprehensive one-stop cooperation relationships. This refers to a mutually beneficial cooperation relationship for small and medium-sized enterprises (SMEs) in particular, aimed at comprehensively solving all difficulties met in the operation of a business, from the planning and research stage to the manufacturing and production stage, and on to the marketing and sales stage.

An SME common brand support center needs to be established to construct this one-stop cooperation relationship with community colleges at the forefront. After this common brand support center is established, with a base community college at the center, surrounding community colleges need to work together to develop a comprehensive plan to support SMEs with bottleneck technologies demanded at the planning and research stage, support measures for making factory operations more efficient at the manufacturing and production stage, and provide assistance all the way up to the marketing and distributor-discovery stage. Businesses that receive consulting

support must then provide hands-on learning opportunities for community college students as well as employment opportunities for outstanding skilled talent.

Ultimately, this common brand support center will become an avenue for maximizing business profits while at the same time offering students the opportunity to engage in hands-on learning, and become a cooperation mechanism that will be beneficial for both community colleges and businesses.

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