KNOWLEDGE SHARING PROGRAM

2011 Modularization of Korea's Development Experience:

Vocational Training System for a Skilled Workforce

2012

Ministry of Employment and Labor

KRIVET Korea Research Institute for Vocational Education & Training

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Vocational Training System for a Skilled Workforce

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Preface

The study of Korea's economic and social transformation offers a unique opportunity to better understand the factors that drive development. Within one generation, Korea had transformed itself from a poor agrarian society to a modern industrial nation, a feat never seen before. What makes Korea's experience so unique is that its rapid economic development was relatively broad-based, meaning that the fruits of Korea's rapid growth were shared by many. The challenge of course is unlocking the secrets behind Korea's rapid and broad-based development, which can offer invaluable insights and lessons and knowledge that can be shared with the rest of the international community.

Recognizing this, the Korean Ministry of Strategy and Finance (MOSF) and the Korea Development Institute (KDI) launched the Knowledge Sharing Program (KSP) in 2004 to share Korea's development experience and to assist its developing country partners. The body of work presented in this volume is part of a greater initiative launched in 2007 to systemically research and document Korea's development experience and to deliver standardized content as case studies. The goal of this undertaking is to offer a deeper and wider understanding of Korea's development experience with the hope that Korea's past can offer lessons for developing countries in search of sustainable and broad-based development. This is a continuation of a multi-year undertaking to study and document Korea's development experience, and it builds on the 20 case studies completed in 2010. Here, we present 40 new studies that explore various development-oriented themes such as industrialization, energy, human capital development, government administration, Information and Communication Technology (ICT), agricultural development, land development and environment.

In presenting these new studies, I would like to take this opportunity to express my gratitude to all those involved in this great undertaking. It was through their hard work and commitment that made this possible. Foremost, I would like to thank the Ministry of Strategy and Finance for their encouragement and full support of this project. I especially would like to thank the KSP Executive Committee, composed of related ministries/departments, and the various Korean research institutes, for their involvement and the invaluable role they played in bringing this project together. I would also like to thank all the former public officials and senior practitioners for lending their time and keen insights and expertise in preparation of the case studies.

Indeed, the successful completion of the case studies was made possible by the dedication of the researchers from the public sector and academia involved in conducting the studies, which I believe will go a long way in advancing knowledge on not only Korea's own development but also development in general. Lastly, I would like to express my gratitude to Professor Joon-Kyung Kim for his stewardship of this enterprise, and to his team including Professor Jin Park at the KDI School of Public Policy and Management, for their hard work and dedication in successfully managing and completing this project.

As always, the views and opinions expressed by the authors in the body of work presented here do not necessary represent those of KDI School of Public Policy and Management.

May 2012

Oh-Seok Hyun

President

KDI School of Public Policy and Management

Contents | LIST OF CHAPTERS

Chapter 3

Contents | LIST OF CHAPTERS

Contents | LIST OF TABLES

Chapter 1

Chapter 2

Contents | LIST OF TABLES

Chapter 3

Chapter 4

Contents | LIST OF FIGURES

Chapter 1

Chapter 2

Chapter 4

Contents | LIST OF BOXES

Chapter 2

Chapter 4

Summary

Vocational training system for a skilled workforce has been highlighted as one of the key driving forces behind Korea's economic development. Korea is well-known for adopting a government-led vocational training strategy to assure the supply of a skilled industrial workforce, according to the 1st-6th Korea Economic Development Plans.

This paper examines the main features and evolution of this strategy, from the 1960s to the 1990s. In particular, it discusses how vocational training policies have contributed to Korea's economic development. The findings in the paper highlight a set of important lessons for the design and implementation of vocational training policies, which maybe useful for other developing countries.

This paper consists of five parts.

Firstly, we explain the background of introducing the vocational training system for a skilled workforce as a sub-part of Korea Economic Development Plans. At the early stage of industrialization, we designed vocational training provision by defining the class and level of manpower needed in industry. In short, the vocational training system focused supply of a skilled workforce. Also, we designed the National Technical Qualification system for encouraging youth to participate in vocational training courses. We institutionalized the vocational training levy system in order to promote employer's in-plant training provisions. Assistance from advanced countries was also useful for establishing public training centers, since the Korean government was suffering from financial shortages and a lack of technical expertise in vocational training policies.

Secondly, we summarize the evolution of the vocational training system, including Korea's economic background at the time, as well as the labor market situation, and the main policies and strategies employed to address it. The in-plant training obligation policy and the optional training levy system were introduced in the 1970s, in order to meet the need for a skilled workforce for new industries. Public training facilities were also established with

foreign grants, credits and loans. When the oil shocks in the 1980's triggered an economic slowdown and sharply diminished skilled workforce demands, the government changed the in-plant training obligation criteria from the number of employees to one based on the payroll tax. The public training institutions maintain the level of training activities with a long-term perspective. In the 1990's, the in-plant training obligation policy was converted into a training levy-grant(rebate) system, as part of Employment Insurance(EI) System.

Thirdly, we analyze how one can implement a vocational training policy through a legal foundation, funding and training delivery system. From the enactment of the Vocational Training Act(1967) and the subsequent revision from the Basic Vocational Training Act(1976), to the integration to the Employment Insurance Act(1995) supported a coherent government-led vocation training policy and strategy. Over the years the funding schemes have evolved from training subsidies to training levies. In managing training programs, the main responsibility of public training provision was delegated to the Agency, separate from in-plant training provisions administered by employers.

Fourthly, we identify some key lessons from Korea's vocational training system to develop a skilled workforce: connection between the National Economic Development plan and the Vocational Training System; division of roles played by the government and private sector; adjustment of training supply to meet industrial demand; appropriate vocational training funding strategies; parallel development of vocational training and the national technical qualification system; and complementary policies between vocational education and vocational training. We add issues and limits of Korea vocational training system.

Finally, we suggest several implications of Korean experiences forother developing countries that are trying to implement vocational training policies.

2011 Modularization of Korea's Development Experience
Vocational Training System for a Skilled Workforce

Chapter 1

Background

1. Post-Korean War Economic and the Labor Market Situation in 1960s
2. Need for Vocational Training System

Background

1. Post-Korean War Economic and the Labor Market Situation in 1960s

After the Korean War, Korea remained an under developed agricultural economy until the early 1960s. Its industrial structure stayed unsophisticated, in terms of composition and scale. Light and manual industries that could only manufacture or process daily necessities essential for people's lives made up the largest part of the economy. At that time, the Korean economy was almost fully dependent on US aid, and its standard-of-living was among the world's lowest (Sang-sun Suh, 2002).

In such a difficult situation, Korea launched its first five-year economic development plan in 1962. In the first five-year economic development plan, the government adopted an export-led strategy for creating a foundation by processing raw materials imported from overseas markets, and then re-exporting the resulting goods, given Korea's weak domestic demand and lack of natural resources. Generally speaking, this strategy has enabled the Korean economy to achieve rapid growth after the war (Kil-sang Yoo, 2009).

Meanwhile, the rapid population growth and mass migration from rural to urban areas in the early years of economic development led to an unlimited supply of abundant rural labor to non-farm sectors in cities, resulting in very high unemployment rates. As shown in <Table 1-1>, industrial workforce demand was not high in Korea until the early 1960s, because it had remained an agricultural country, where more than 60% of workers were engaged in the primary industry.

At that time, the government thought that there was an abundant and available, but untapped, workforce as a result of the rural-to-urban migration. As such, it did not consider introducing any policy to develop skills, such as implementing a vocational training system, apart from measures to train only part of the entire workforce through scholastic education.

The vocational training policies implemented during that period were established to address various social problems that had worsened due to the rapid population growth and urban concentration following the Korean War, rather than to support an industrialization policy. Their aim was to rehabilitate the disabled and welfare recipients, and to provide vocational guidance and job security for women from poor households, and youths housed in social welfare facilities. The training fields covered all industrial areas from barber and beauticians, to carpentry, agriculture and stockbreeding, accounting and clerical work, printing, electricity and to machinery. In accordance with the 'Craftsman Training Ordinance', a subordinate statute of the Labor Standards Act, and the Industrial Education Promotion Act, skilled workers began working, albeit in fairly modest numbers. Under the 'Craftsman Training Ordinance', employers could voluntarily train the necessary workforce through apprenticeships at their production sites. Thus, the provision of training was largely contingent on each employer's willingness to implement such programs. And under the Industrial Education Promotion Act, technical training institutes set up by vocational high schools or junior colleges selected people aged under 30 and with a high school diploma, and provided them with a one-year skills training course in one of eight trades-machinery, electricity, civil engineering, automobiles, wireless communications, chemical engineering and metal working. But these course supplied just 480 skilled workers annually. During the initial stage of economic development, when the per capita income was $80, in Korea, there was almost no awareness about the importance of training workers.

Table 1-1 | Employment Trend by Industry (1953-1963)

(Unit: 1,000 persons)

Year	Employment by industry				Proportion (%)		
	Total	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
1953	6,536	4,928 (-)	321 (-)	1,287 (-)	75.40	4.91	19.69
1954	6,550	4,865 (-1.3)	353 (+10.0)	1,332 (+3.5)	74.27	5.39	20.34
1955	6,578	4,811 (-1.1)	386 (+9.3)	1,381 (+3.7)	73.14	5.87	20.99
1956	6,628	4,767 (-1.0)	424 (+9.8)	1,437 (+4.1)	71.92	6.40	21.68
1957	6,700	4,736 (-0.7)	466 (+9.9)	1,498 (+4.2)	70.69	6.96	22.35
1958	6,798	4,716 (-0.5)	515 (+10.5)	1,567 (+4.6)	69.37	7.57	23.06
1959	6,923	4,710 (-0.2)	569 (+10.5)	1,644 (+4.9)	68.03	8.22	23.75
1960	7,082	4,720 (+0.2)	629 (+10.5)	1,733 (+5.4)	66.65	8.88	24.47
1961	7,269	4,744 (+0.5)	695 (+10.5)	1,830 (+5.6)	65.26	9.56	25.18
1962	7,500	4,789 (+0.9)	771 (+10.9)	1,940 (+6.0)	63.85	10.28	25.87
1963	7,779	4,856 (+1.4)	855 (+10.9)	2,068 (+6.6)	62.42	10.99	26.59

Sources : Shin-wong Kim and Kwang-jo Seo, The Creation of the Historical Base of Modern Korean Economy, A History of Modern Korean Economy, Academy of Korean Studies, May 1987

However, the government in fact started considering the introduction of a vocational training system from the time when it was working on the first economic development plan in 1961. It recognized that economic development would result in industrial expansion, which in turn would lead to an increase in labor demand, and that human resources development, which tends to take a long time, should be pursued in parallel with industrial development. As the economic development plan was put into action, demand for skilled workers started growing, so the government set out to design a concrete vocational training system.

In Korea, unlike other developing countries, the enrollment rate for compulsory education rose to as high as 96% in the early 1960s, and most young people had no difficulties reading or writing. Such a high literacy rate was a factor that made it possible for Korea to implement its vocational training policy successfully. Thanks to the five-year literacy project conducted in1954 after the end of the Korean war, the illiteracy rate among Koreans, which reached 14.0% in 1954, had largely declined to 4.1% by 1958 (Bok-Nam Yoon, 1990).

2. Need for Vocational Training System

At that time, there was a perception that Korea should introduce a vocational training system to match its economic development plan, as soon as possible, just as every country pursuing economic development after the Second World War. This perception played a critical role in introducing a vocational training system in Korea. Similar views were often expressed by foreign advisors. Advisors to the UN Commission for the Unification and Rehabilitation of Korea (UNCURK), who were stationed in Korea after the end of the Korean War in 1953, noted the importance of HRD projects in relation to Korea's industrialization policy (Sang-sun Suh, 2002).

The direct causes for the Korean government to introduce a vocational training system can be summed up as follows:

First, demand for skilled workers was growing rapidly. According to a survey of skilled workers employed in the secondary and tertiary industries, the number of craftsmen was estimated to increase by 205,623 from 279,670 in 1961, to 485,293 in 1966. An average of 40,000 new craftsmen was needed each year to meet increased demand <Table 1-2>.

Second, there were many unskilled workers for whom vocational training could be provided. Due to young people's preference for academic schools, there was a strong tendency to avoid vocational schools with the ratio of academic to vocational school graduates reaching 70 to 30. The main reason was that the vocational education system failed to produce skilled workers required by industry because of its poor contents, lack of equipment and facilities, and incompetent teachers. In addition, there were many unskilled unemployed youths who did not go into higher education. Young people who did not enroll in a middle school, high school and college accounted for more than 20%, 30% and 80% of total elementary, middle and high school graduates, respectively.

Third, since employers, the end user of a workforce, were passive about training skilled workers, an institutional device was needed to encouraget heir participation. Before the

introduction of the vocational training system, employers could voluntarily train the workforce necessary through apprenticeship programs at production sites, pursuant to the Craftsman Training Ordinance under the Labor Standards Act. However, the apprenticeship system did not work effectively because of employers' lack of awareness and failure to meet the required conditions.

Table 1-2 | Estimated Demand for Skilled Workers during 1st Five-Year Economic Development Plan

(Unit: 1,000 persons, %)

	1961	1962	1963	1964	1965	1966
Engineer	8,616	10,994	12,814	15,032	17,055	19,411
Technician	11,128	55,509	66,129	78,266	87,739	97,059
Craftsman	279,670	282,933	339,131	402,334	444,974	485,293
Total	299,414	349,436	418,164	495,632	549,758	601,763

Source : Sang-sun Suh(2002), p28

A vocational training system was finally introduced in Korea with the enactment of the Vocational Training Act in 1967, after a long deliberation period between relevant government agencies.

[Figure 1-1] shows a simplified structure of the Korean vocational training system. The system revamped significantly in response to changing economic development strategies, but its basic structure and features remained the same until the introduction of the Employment Insurance System.

First, as mentioned above, the Korean vocational training system was thoroughly planned with the aim of supplying the skilled workforce needed for industrial development under the five-year national economic development plan. The government's supervisory role in supplying a skilled workforce was divided between different government agencies according to skill level. The Office of Science and Technology was responsible for managing the research and development workforce, the Ministry of Education for three-year formal skills training for educators, and the Office of Labor for short-term vocational training aimed at cultivating skilled general workers.

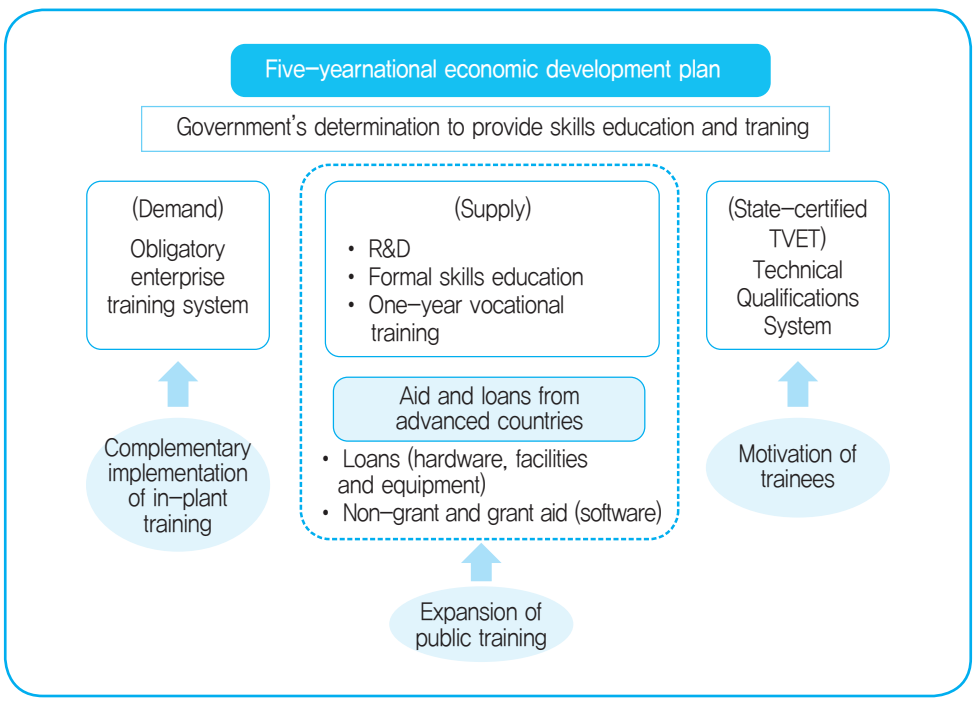
Second, some incentives were needed to motivate unskilled people to participate in education and vocational training. The skills test introduced under the Vocational Training Act in 1967, and the technical qualifications system introduced in 1973, were the incentives. Technical qualifications served as an incentive, as well as a training goal. It became possible for people to take the first step into developing their careers as skilled workers in an industrialized society, by acquiring the necessary qualification.

Third, government measures were also needed to encourage interest and investments in training programs among Korean enterprises, which would essentially be the end user of a qualified workforce. As a result, Korea introduced the training subsidy system under the Vocational Training Act in 1967, the Vocational Training Special Measures Act in 1974, and the obligatory in-plant training system under the Basic Vocational Training Act in 1976. The obligatory in-plant training system was a very strict measure under which an employer must provide initial training to a certain number of employees, or face penalty charges, or an equivalent amount of levy.

Finally, the Korean government put much effort into securing enough public vocational training facilities. It eased the burden of financing facilities and equipment (hardware), with loans from international organizations, and used aid, both grant- and non-grant-types, to build technical expertise (software) in vocational training.

The vocational training system in Korea has come long way in complementing formal vocational education at schools in the training of a skilled workforce. The obligatory in-plant training was also complemented by the public vocational training system, which has substantially expanded its network and improved its quality, owing to the skill testing system(Kye-Woo Lee, 1983). This module focuses on the vocational training system in supplying a skilled workforce.

Figure 1-1 | Structure of Korea's Vocational Training System



Source : Interview with Yong-yungPark, a HRD specialist of the Korea Chamber of Commerce and Industry

Chapter 2

Evolution of Vocational Training System

1. Vocational Training for Skilled Workforce (Pre-EI Period)
2. Vocational Training As Active Labor Market Policy (Post-EI Period)

Evolution of Vocational Training System

The development of the vocational training system in Korea can be divided into two periods, with the introduction of employment insurance (EI) in the mid 1990s as a significant turning point: the pre-EI period and the post-EI period.

In other countries, vocational training systems developed from apprenticeship systems in response to market needs. In Korea, however, the vocational training system was institutionalized as a means of carrying out economic development goals. Before the introduction of the employment insurance system, vocational training was implemented to train a skilled workforce, in order to pursue the industrialization strategy necessary for economic development. As the technical qualifications system, in addition to the vocational training system, was implemented to encourage participation in vocational training, it became possible for vocational trainees to be employed in technical work upon completion of training. With the economic situation deteriorating temporarily in the early 1980s, vocation training for the unemployed was provided first, but the program was not pursed in earnest. Following the financial crisis in 1997, two years after the introduction of the employment insurance system in 1995, the focus of vocational training was placed on the unemployed, and the vocational training system was transformed to function as an active labor market policy, which is the case in the West. Therefore, vocational training assumed greater significance as an active labor market policy, rather than for training a skilled workforce, after its integration into the vocational skills development project, under the employment insurance system in 1995.

1. Vocational Training for Skilled Workforce (Pre-EI Period)

1.1 Prior to Introduction of Vocational Training System (Early 1960s)

Due to the political and social upheaval at home and reduced the U.S. aid after 1960, Korea arrived at a critical moment in its economic management, with the deterioration of its foreign exchange system. Against this backdrop, the government set up the Economic Planning Board in 1961, and announced the first five-year economic development plan in 1962 to lay the foundation for economic independence. The strategic goals of the first economic development plan can be summarized as follows: to push ahead with government-led industrialization, to continue to create demand for industrial outputs by increasing exports, and to attract foreign capital to supplement insufficient investments at home.

Although vocational education and apprenticeship systems were already put in place to provide the workforce required to execute the first five-year economic development plan, their function of supplying skilled workers was still insufficient. In the case of technicians, existing technical high schools did not provide enough graduates to meet the demand. In 1962, technical high school graduates totaled 10,380. Assuming that the same number of graduates would be produced each year, there would be 51,900 technical high school graduates available during the first economic development plan period. However, at least two years of practical experience were needed to become technicians. This means that there could be just 31,140 new available technicians each year, falling short of the required 40,000. In addition, the curricula of technical high schools consisted mainly of theoretical subjects, with the ratio of theory to practice being 80 to 20. Graduates lacked practical skills, and were unable to work even as craftsmen (Sang-sun Suh, 2002). Moreover, the government did not devise any separate measure to secure more craftsmen, reasoning that there were many already available (Sung-joong Kim, 2005). Meanwhile, because employers took a passive attitude towards training a skilled workforce, a vocational training system that could bridge the gaps in the apprenticeship system was desperately needed.

In fact, as early as 1961, the government began to consider introducing a vocational training system to support its economic development plan. It recognized that economic development would bring a more industrialized society, which in turn would increase labor demand. It also recognized that human resource development, which tends to require a long period, should be pursued in parallel with industrial development. The fact that advanced countries had either introduced a new vocational training system or reinforced existing programs, to meet growing demand for various workforces after the Second World War, had some implications as well for the government.

It took almost five years for the Vocational Training Act to be established in 1967. This was caused by delays in decision-making by the government agency mainly in charge of coming up with the training system, objections to the introduction of the system raised by

the Ministry of Commerce and Industry and the Ministry of Education, and the long period of consultation between employers' organizations.

The following describes how the Office of Labor was put in charge of operating the vocational training system, after the Vocational Training Act was drafted in December 1964 (Taek-soo Jeong, 2008). The Economic Planning Board emphasized that the purpose of establishing a vocational training system was to supply the skilled workers necessary for economic development, and stressed mutual cooperation with educational institutions. The Ministry of Commerce and Industry opposed the idea of imposing vocational training obligations on employers. And the Ministry of Education believed that the new law was unnecessary, since it was possible to train technicians and craftsmen through informal courses provided under existing laws, such as the Education Act and the Industrial Education Promotion Act. However, it was determined that on-the-job training targeting job seekers and incumbent workers would form the main part of vocational training, with no overlap to the system being operated by the Ministry of Education. And the Office of Labor was designated as the main government agency responsible for the vocational training system.

In the early stage of industrialization in Korea, vocational training had to be designed in a way that did not overlap with existing school education. As shown in (Table 2-1), there was a clear distinction between vocational education and vocational training. Vocational education at school was defined as education that helps school-age students to form good character and develop expertise. On the other hand, vocational training was aimed at helping currently employed workers and job seekers to acquire skills immediately applicable to industry. Because of its emphasis on industrial applicability, vocational training was provided with a focus on practical education. Take as an example a machine operator course from this period. In the case of a three-year machine operator course run by a technical high school, only 34% was allocated to practice whereas the proportion of practice reached 80% in the case of an one-year course provided under the vocational training system (Related subjects and liberal arts made up 14% and 6%, respectively.).

Table 2-1 | Comparison of Vocational Education and Vocational Training at Early Stage of Industrialization

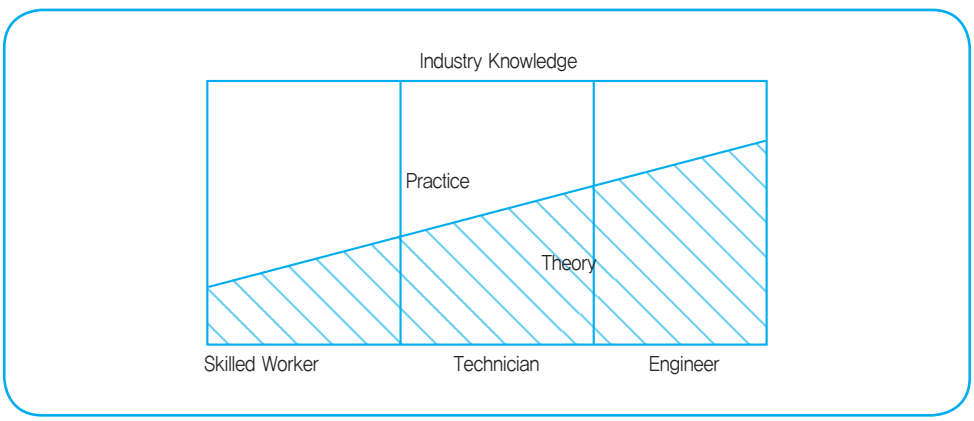
Classification	Vocational education	Vocational training
Purpose	1. To cultivate sound citizens and develop living abilities 2. To acquire basic, general and procedural knowledge	1. To train skilled workers according to demand in each occupational area 2. To develop adaptability to production circumstances
Target group	1. Students (unemployed)	1. Incumbent workers and job seekers 2. People wounded in action and people with disabilities

Classification	Vocational education	Vocational training
Characteristics	1. Non-business facilities 2. Not business-conscious 3. Theory-oriented 4. Short-term measure	1. Using business facilities 2. Directly related to business consciousness 3. Practice-oriented 4. Continuous guidance
Effects	1. Long-term investment 2. Heavy cost burden 3. Mismatch between supply and demand	1. Short-term investment combined with production 2. Reduced cost burden 3. Short-term adjustment between supply and demand (quantity·quality)

Source : Yearbook on Vocational Training in Korea. Jun. 1967. Office of Labor of Korea

According to the Vocational Training Act (draft) at that time, vocational training was defined as training that enabled "workers to acquire and improve necessary skills." The concept of a skilled workforce included craftsmen (skilled workers), technicians, and engineers. As shown in [Figure 2-1], the theory-to-practice ratio of initial training courses for engineers was 80 to 20. This suggested that engineers, whose jobs required much theoretical knowledge, could be fostered through school education. However, technicians and craftsmen, for whom the share of practical skills should be more than 50%,would be the target group for vocational training, since their skills were obtained through repeated exercises and practical training.

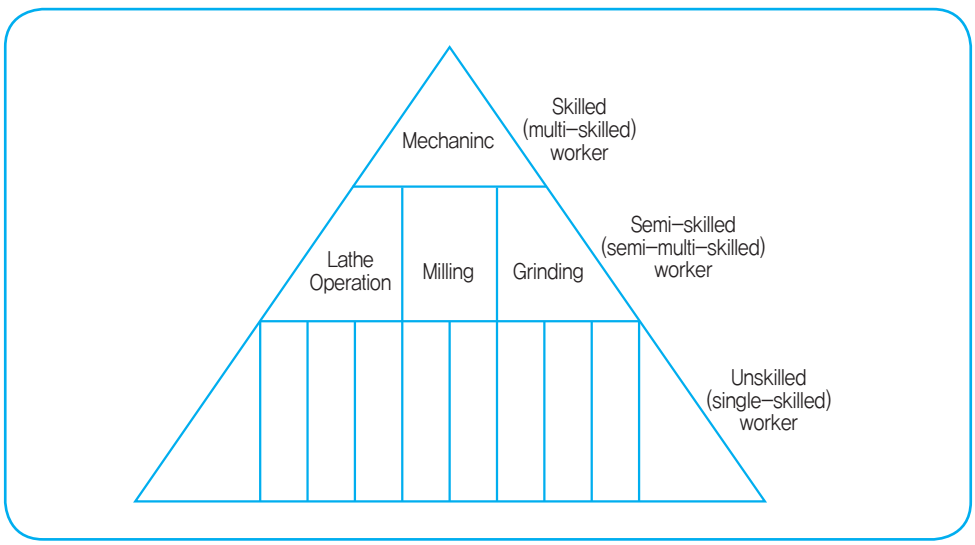
Figure 2-1 | Theory-to-Practice Ratio for Skilled Worker, Technician and Engineer at Early Stage of Industrialization



Source : Final Report on Technician Education. Jan. 1979. Technician Education Study Team. Ministry of Education of Korea

Meanwhile, skilled workers were divided into three types: skilled (multi-skilled), semi-skilled (semi-multi-skilled) and unskilled (single-skilled) workers, according to the scope and quality level of their work. And the scope and level of vocational training was determined differently for each type. For instance, "mechanic" was a term which referred to a craftsman classified as a skilled worker in the occupational area concerned, and was required to have major machine operation skills, such as lathe, milling and grinding operation skills, as illustrated below. A person who had only one of the three skills was categorized as a semi-skilled worker.

Figure 2-2 | Skill Levels and Types of Craftsmen at Early Stage of Industrialization



Source : Sang-sunSuh, Footmark of Korea Vocational Training System, Korea Chamber of Commerce and Industry, 2002.

1.2 Introduction and Settlement Period of Vocational Training System (1967-1970s)

1.2.1 Economic and Labor Market Situation

With the implementation of the second five-year economic development plan (1967-1971) in the late 1960s, Korea's export-led economic development began to take off, relying mainly on light industries. Korea also achieved economic growth driven by the heavy and chemical industries during the third (1972-1976) and fourth (1977-1981) five-year economic development plan periods. The demand for skilled workers grew sharply and steadily over those 15 years.

Box 2-1 | Construction of Large-Scale Heavy and Chemical Industrial Complexes and Supply of Skilled Workers in 1970s

After proclaiming that its industrialization policy would be focused on heavy and chemical industries in 1973, the government began to build large-scale industrial bases or coastal industrial complexes, under the rationale that heavy and chemical industries have strong mutual dependence and high production and technological correlations among raw materials, intermediate goods and finished products, and therefore require sophisticated equipment. As a result, the government concluded that an industrial complex should be constructed, in order to put them together in one place. Some major examples were the mechanical industrial complex in Changwon, the steel industrial complexes in Pohang and Gwangyang, the petrochemical complexes in Ulsan and Yeocheon, the non-ferrous metal complex in Onsan, the shipbuilding industrial complex in Geoje and the electronics industrial complex in Gumi. Almost all funding support for heavy and chemical industries came from the government. The government expanded vocational high schools and the vocational training system, and improved the technical qualifications system to cope with the large increase in demand for technicians and skilled workers expected in developing the heavy and chemical industries. Although the technological development achieved by Korea during that period relied in large part on technologies brought from abroad, it was essential to train a workforce in order to use the technologies for actual production. The total number of students admitted to science and technology universities was increased from 26,000 in 1973 to 58,000 in 1980, and the figure for technical high schools and technical education colleges was raised twofold and more than fivefold, respectively. During the same period, the government established 22 technical training centers, and produced 12,000 skilled workers as a result.

Source : Kwang-Ha Kim (2000). Kwang-Mo Kim (1988).

The unemployment rate was 8.4% in 1963 when the first economically active population survey was conducted, but fell to the 4% range by the 1970s, bringing the era of unlimited labor supply to an end. However, shortages of skilled workers nonetheless began to appear in some industries. And as the goals of the first five-year economic development plan (1962-1966), launched in 1962, were accomplished successfully, the employment structure began to change. Training and supplying the skilled workers required in the manufacturing sector emerged as an urgent social and economic issue, to effectively carry out the second five-year economic development plan (1967-1971).

The total number of skilled workers required during the second five-year plan period was estimated at 493,000, of which 165,000 were additionally needed skilled workers. If the estimated number of vocational high school graduates was subtracted from the additionally needed workforce, 96,000 skilled workers had to be supplied through

vocational training. Meanwhile, the number of employed people, which had increased by 300,000, or 3.5% on average each year before 1970, rose by an average of 460,000 or 4.1% each year until the mid-1970s, when the unemployment rate declined, and the employment structure improved.

Table 2-2 | Labor Market Situation (1963-1972)

(Unit: 1,000 persons)

Year	Population 15 years old and over					Labor force participation rate (%)	Employment rate (%)	Unemployment rate (%)
	Total	Economically active population			Economically non-active population			
		Sub-total	Employed	Unemployed				
1963	14,551	8,230	7,563	667	6,321	56.6	91.9	8.1
1964	14,967	8,341	7,698	643	6,627	55.7	92.3	7.7
1965	15,367	8,754	8,112	642	6,613	57.0	92.7	7.3
1966	15,753	8,957	8,325	632	6,796	56.9	92.9	7.1
1967	16,121	9,180	8,624	556	6,941	56.9	93.9	6.1
1968	16,456	9,541	9,061	480	6,915	58.0	95.0	5.0
1969	16,852	9,747	9,285	462	7,105	57.8	95.3	4.7
1970	17,468	10,062	9,617	445	7,407	57.6	95.6	4.4
1971	18,118	10,407	9,946	461	7,711	57.4	95.6	4.4
1972	18,819	10,865	10,379	486	7,954	57.7	95.5	4.5

Source : Korea National Statistical Office, Economically Active Population Survey, Yearly.

Table 2-3 | Employment Trend by Industry (1972-1979)

(Unit: 1,000 persons, %)

Year	All industries	Agriculture, forestry& fisheries (Primary)	Mining& manufacturing (Secondary)	SOC&other services (Tertiary)	Annual increase rate			
					All industries	Primary	Secondary	Tertiary
1972	10,382	5,238 (50.5)	1,468 (14.1)	3,674 (35.4)	4.4	9.2	3.9	1.7
1973	10,942	5,445 (49.8)	1,779 (16.2)	3,719 (34.0)	5.4	4.0	21.2	1.2
1974	11,421	5,481 (48.0)	2,027 (17.7)	3,914 (34.3)	4.4	0.7	13.9	5.2
1975	11,692	5,339 (45.7)	2,235 (19.1)	4,118 (35.2)	2.4	2.6	10.3	5.2
1976	12,412	5,514 (44.4)	2,708 (21.8)	4,191 (33.8)	6.2	3.3	21.2	1.8
1977	12,812	5,342 (41.7)	2,866 (22.4)	4,604 (35.9)	3.2	3.1	5.8	9.9

Year	All industries	Agriculture, forestry& fisheries (Primary)	Mining& manufacturing (Secondary)	SOC&other services (Tertiary)	Annual increase rate			
					All industries	Primary	Secondary	Tertiary
1978	13,412	5,154 (38.4)	3,092 (23.1)	5,167 (38.5)	4.7	3.5	7.9	12.2
1979	13,602	4,866 (35.8)	3,209 (23.6)	5,527 (40.6)	1.4	5.6	3.8	7.0

Note : ( ) is component ratio.

Source : Korea National Statistical Office, Annual Report of Economically Active Population, Yearly

Table 2-4 | Estimated Demand for Craftsmen during 2nd Five-Year Economic Development Plan

(Unit: 1,000 persons)

	1967	1968	1969	1970	1971	Total
Total demand	363.1	397.0	430.4	462.5	493.5	493.5
Additional demand	34.6	33.9	33.4	32.1	31.0	165.0
Vocational high school graduates	11.6	12.4	14.9	14.9	14.9	68.7
Vocational trainees demanded	23.0	21.5	18.5	17.2	16.1	96.3

Source : Office of Labor of Korea (1967). Industry and Labor.

As the continuing economic boom and the growth of the heavy and chemical industries pushed up the demand for skilled labor in the mid-1970s, Korea's labor market structure fundamentally changed. According to Professor Moo-giBae, this period is considered a major turning point in Korea's labor market, as the unlimited supply of labor from rural to urban areas ended in 1975.

1.2.2 Vocational Training Subsidy System

After the Vocational Training Act was enacted and went into effect in January 1967, the number of vocational training recipients rose threefold from 10,738 in 1967 to 30,588 in 1970. <Table 2-5> shows the trend in the number of people receiving vocational training between 1967 and 1970, the early years of the vocational training system. The number of training recipients during that period was close to the number of additionally needed skilled workers, as estimated in 1967. During this period, in-plant vocational training and public vocational training contributed an almost equal proportion of skilled workers to meet demand. Public vocational training relied on increased government budgets for its expansion, whereas in-plant vocational training depended heavily on the training subsidies provided by the government (Kye-woo Lee. 2005).

Table 2-5 | Number of Vocational Trainees by Type, 1967-1970

(Unit: Persons)

Type	Total	1967	1968	1969	1970
Total	86,688	10,738	20,180	25,212	30,558
In-plant training	33,922	3,890	8,022	8,527	13,483
- Craftsmen	27,111	3,140	5,918	6,503	11,550
- Technicians	6,811	750	2,104	2,024	1,933
Public vocational training	30,313	1,502	7,093	9,878	11,840
- Military facilities	3,721	1,278	853	777	813
- Government agencies	5,553	224	510	2,514	2,305
- Corporations	6,906	-	784	1,459	4,663
- Promotion training centers	13,597	-	4,946	4,961	3,690
- Rural vocational training centers	50	-	-	-	50
- Craftsmen (Central Vocational Training Center)	486	-	-	167	319
Special training	7,483	2,346	1,965	2,766	406
Instructors	811	246	160	195	210
Managers	461	-	15	246	110
Supervisors	6,211	2,100	1,700	2,325	86
Correspondence training	14,970	3,000	3,100	4,041	4,829

Source : Office of Labor of Korea, Intelligible Labor White Paper, 1971, p. 24.

In 1971, the government announced the third five-year economic development plan (1972-1976). In order to support the initiative effectively, the government set up the third five-year human resources development plan.[1] The main features of the plan were to adjust the size of the skilled workforce expected to be produced through vocational training according to labor supply and demand plans, and to place more emphasis on qualitative improvement. More specifically, for public vocational training, the government focused on training the workforce by the heavy and chemical industries, national key industries and export industries, while at

1 During the initial stage of economic development, a vocational training plan for skilled workers was considered a subordinate part of a human resources development plan for the science and technology sector, and technicians and craftsmen were trained in accordance with such an HRD plan. Accordingly, the 1st Five-Year Technology Promotion Plan (1962Ð1966) and the 2nd Science and Technology Promotion Plan (1967~1971) included a vocational training plan for technicians and craftsmen. However, the 3rd Five-Year Human Resources Development Plan (1972Ð1976) ensured that a training plan for skilled workers was established separately, but was nonetheless linked to the Five-Year Economic Development Plan and Five-Year Science and Technology Promotion Plan.

the same time trying to strengthen skills training at rural and military training facilities. The plan predicted a rapid growth in demand for technicians after 1970, and proposed expanding vocational high schools and vocational training facilities, and using the surplus of engineers to fill the expected shortage of technicians. Compared with previous plans, it emphasized the role of vocational training by clarifying sources from which technicians could be supplied. The plan also anticipated that craftsmen would be in short supply by 1976, and suggested expanding vocational high schools, various technical schools, and vocational training, all of which served as important sources for a skilled workforce.

Table 2-6 | Supply and Demand for Craftsmen under 3rd Five-Year HRD Plan

(Unit: 1,000 persons)

Classification	Total	1972	1973	1974	1975	1976
Demand	3,184.2	504.6	567.5	631.8	701.9	778.2
Supply	3,193.6	502.5	564.8	635.5	706.9	783.9
Already employed	2,779.9	440.9	494.7	550.4	613.0	680.9
(Graduates from existing vocational and technical schools)	(159.6)	(29.2)	(32.6)	(32.6)	(32.6)	(32.6)
(Graduates from newly established vocational and technical schools)	(54.3)	(-)	(2.2)	(12.5)	(17.6)	(22.0)
(Vocational training recipients)	(199.8)	(32.4)	(35.3)	(40.0)	(43.7)	(48.4)
Excesses or shortfalls	9.6	Δ2.1	Δ2.7	3.7	5.0	5.7

Note : ( ) is additional supply.

Source : Office of Science and Technology of Korea, The 3rd Five-Year HRD Plan (1972-1976), 1971, p.25.

After the enactment of the Vocational Training Act, the number of enterprises providing in-plant vocational training and the number of training recipients rose, thanks to government subsidies. Subsidies, especially those to large companies, increased for the most part during this period. However, the budget for such subsidies reached its limit by the end of the second five-year plan period. The number of enterprises providing in-plant training grew from 16 in 1967, 43 in 1968, 56 in 1969, 70 in 1970 and 81 in 1971. The number of training recipients jumped from 3,000 in 1967 to 14,300 in 1971, thanks in large part to government subsidies. As subsidy payments, financed from the general account, were suspended, the number of both training facilities and training recipients decreased significantly.

1.2.3 Introduction of Legislation to Implement Obligatory In-Plant Vocational Training System

The government established a new workforce plan and switched to a government-led regulation-driven vocational training policy, based on the supposition that the shortage of skilled workers expected, due to the growth of the heavy and chemical industries, could not be met by enterprises' voluntary training alone. It invested intensively in technical high schools starting in 1973, and obligated private enterprises to train and supply skilled workers from 1974 (Ju-ho Lee, 1992; Sung-jun Park, 1992). In 1974, the government finally confirmed its decision to make in-plant vocational training mandatory, and enacted the Vocational Training Special Measures Act. It decided to apply this Act only to enterprises employing 500 workers or more in six industries-mining, manufacturing, electricity, gas&water supply, construction, transportation, storage&communications, and services-on a pilot basis until the end of December 1976. With the establishment of the Vocational Training Special Measures Act in 1974, every large company was mandatorily required to provide vocational training to its new recruits during the third five-year economic development plan period. This obligatory in-plant vocational training system was suitable for realizing the government's commitment to achieve export-led growth by fostering the heavy and chemical industries.[2]

Two years later, in 1976, the Basic Vocational Training Act was established, combining both the Vocational Training Act and the Vocational Training Special Measures Act. This new Act greatly strengthened the obligatory in-plant training system. The scope of enterprises obligated to provide in-plant training was extended to those with 300 workers or more, and the number of workers who would be provided with in-plant training was determined and announced by the government annually for each industry, after considering demand for skilled workers, but not exceeding 10% of total workers in the enterprise concerned. The aim of the Basic Vocational Training Act was to strengthen employers' roles in training workers, so that they could supply necessary skilled workers on their own. At the core of the Act was the obligatory in-plant vocational training system. In 1979 alone, more than 90,000 skilled workers were trained and supplied through in-plant vocational training <Table 2-7>. This implied that in-plant vocational training played a more dominant role in training skilled workers than public training during the third and fourth five-year economic development plan periods.

The biggest advantage of in-plant vocational training was that enterprises could train their necessary workforce to meet their own demand, and that it would cost less than off-

2 However, the implementation of the obligatory in-plant training system revealed some problems. It turned out to cause too much burden to enterprises as the number of mandatory training recipients was determined in an one-size-fits-all manner regardless of industry and enterprise size. The system also disregarded the possibility of enterprises difficult to provide training due to their unique circumstances despite the mandatory legal provision. Private enterprises strongly resisted the system, which they thought was too inflexible, uniform and unrealistic.

the-job training, since it was possible to use existing production facilities and equipment for training. Also, companies could use production materials and their scraps as training materials, and field personnel, such as assistant foremen and foremen, could work as training instructors in the production processes. Korea's in-plant vocational training was based on the concept of apprenticeship training, which was partly based on Germany's dual education system. However, most in-plant vocational training conducted in Korea took the form of off-the-job training, and not apprenticeship training taking place during production processes (from an interview with Yong-yungPark, an HRD specialist).

Table 2-7 | Numbers of Vocational Trainees by Type during 3rd and 4th Five-Year Plans (1970s)

(Unit: Persons)

Year / Institution	Third Five-Year Economic Development Plan					
	Sub-total	1972	1973	1974	1975	1976
Total	309,593	27,525	39,851	41,310	75,254	125,653
○ Public training	78,151	9,918	16,234	16,356	17,480	18,164
1) Public cooperations	11,200	678	1,174	2,106	2,999	
2) Government agencies	39,499	3,893	5,164	8,757	10,240	11,445
(K.N.O.P.)	(3,267)		(1,515)	(833)	(355)	(564)
Local governments	27,452	5,347	9,896	5,492	4,241	2,476
○ In-plant training	177,350	10,799	14,124	12,940	42,667	96,820
○ Authorized training institutes	54,092	6,808	9,493	12,015	15,107	10,669
Year / Institution	**Fourth Five-Year Economic Development Plan**					
	Sub-total	**1977**	**1978**	**1979**	**1980**	**1981**
Total	495,616	83,027	100,425	129,297	104,502	78,365
○ Public training	119,994	14,878	19,201	28,488	31,153	26,274
1) Public corporations	56,294	5,539	10,041	12,672	15,029	13,013
2) Government agencies	37,064	7,468	4,769	8,594	8,933	7,290
(K.N.O.P.)	(2,815)	(543)	(802)	(518)	(603)	(349)
Local governments	26,646	1,871	4,391	7,222	7,191	5,971
○ In-plant training	337,388	58,739	73,038	90,992	66,213	48,406
○ Authorized training institutes	38,234	9,410	8,186	9,817	7,136	3,685

Note: 1) The training institutes operated by the public cooperation were integrated into the Human Resources Development Service of Korea on March 18, 1982.

2) The number of workers trained by government agencies includes those trained through the Korean National Outplacement Program (KNOP) offered by the Eight US Army in Korea.

3) A total of 8,220 Korean nationals were trained through KNOP in 1970-1972.

Source: Yearbook on Vocational Training in Korea, Yearly

Under the Basic Vocational Training Act, enterprises could pay training levies instead of complying with the obligation to provide in-plant vocational training. In other words, employers were allowed to make a choice between providing in-plant training and paying vocational training levies. Of all enterprises obligated to provide vocational training in 1978, about 70% introduced in-plant vocational training programs, and the rest chose to pay vocational training levies. However, given the slowdown in economic growth caused by the second oil shock in 1979, the obligation to provide in-plant vocational training was imposed only on large companies. As a result, public vocational training was maintained at the same level as before, but in-plant vocational training dwindled sharply.[3] Moreover, the proportion of enterprises choosing to pay training levies instead of providing in-plant vocational training increased rapidly. This was because the amount of levies that should have been paid was relatively small compared with the costs of providing in-plant training (Kye-woo Lee, 2005 pp.181-182).[4]

At any rate, there is no doubt that the implementation of the vocational training system during this period changed the perception of people who had favored an education in the humanities, raised public awareness about the importance of practical skills, and created a wider consensus on vocational training, thereby contributing greatly to the training of skilled workers. Thanks to the government's active intervention, the number of qualified skilled workers increased considerably. And as vocational training institutes, especially in-plant vocational training centers and authorized vocational training institutes, grew in numbers, the foundation for a vocational training market was beginning to be established. At that time, the positive aspects of the government's leadership and active role in administering vocational training were emphasized, while its negative aspects were understated (Soo-kon Kim, 1992). Korea was also a rare example, since as a developing country with a per capita income of less than $1,000, it succeeded in implementing a vocational training system.

3 The specific reasons were as follows: First, the government set the training levy so low that enterprises came to prefer paying such levies, rather than providing in-plant training; second, tax exemption, reduction and deduction on training levies were applied too inflexibly, which undermined enterprises' willingness to provide in-plant vocational training; and third, the obligatory in-plant vocational training system lacked an effective quality inspection mechanism. However, in spite of these problems, the vocational training levy system was effective in creating funds for public vocational training, offered mainly by independent training providers. In the 1980s, with money accumulated in the vocational training promotion fund, the government set up a public training management body, a college for training instructors, and a joint training institute (Jae-yong Shim 1997, Chul-inLee, 1998, Joo-yeonJeong 2002).

4 In reality, the standard training levy was far lower than the actual costs of providing training. The standard training levy per person was revised upwards gradually from ₩11,579 in 1977, ₩12,736 in 1978, ₩21,982 in 1979. ₩32,627 in 1980, ₩45,256 in 1981, ₩62,500 in 1982, and to ₩76,750 in 1983. And actual training costs rose from ₩31,345 in 1977, ₩35,687 in 1978, ₩63,918 in 1979. ₩89,730 in 1980, ₩136,544 in 1981, ₩129,232 in 1982 and to ₩142,750 in 1983. The standard training levy amounted to just 33%~53% of actual training costs (Source : Ministry of Labor of Korea. Yearbook on Vocational Training in Korea).

1.2.4 Setting-up of Central Vocational Training Institute to Train Vocational Training Instructors

One of the most pressing issues when designing the vocational training system was securing enough vocational training instructors.

When the vocational training system was first introduced, appointing vocational training instructors with relevant qualifications was one of the requirements that had to be met to obtain training approval. At the time, any person eligible to become a training instructor could obtain a training instructor license after learning training skills through pertinent courses.[5] The Office of Labor launched license courses for vocational training instructors in 1967. The training courses run by enterprises were mostly on-the-job, rather than off-the-job courses. The qualification requirements for training instructors were: Familiarity with, and experience in, practical work at production sites in the enterprise concerned. Thus, field supervisors, such as foremen and senior foremen, at production sites could be used as training instructors for such training.

It was determined that public training facilities providing off-the-job training courses should have training instructors, equipped with professional abilities, including theoretical knowledge and practical skills. The Office of Labor therefore decided to train such instructors through specialized long-term courses. As a result, the Central Vocational Training Institute was set up using international aid funds. The Institute had produced 180 training instructors each year in six trades, including casting and wooden pattern, since 1972. It selected trainees from among high school graduates, and provided them with theoretical and practical training in their major disciplines for two years. Each course generally consisted of 50-60% practice, 25%-35% theory, and 5%-15% teaching profession subjects. Compared with college and university education courses at that time, which were skewed towards theory, the education courses offered by the Central Vocational Training Institute were focused on practical applications. Vocational training instructors trained through the Central Vocational Training Institute were deployed to many newly-established vocational training institutes in the mid- and late-1970s, thereby contributing to a steady supply of training instructors (Young-hoon Oh et al, 2008).

To sum up, the Office of Labor put all of its efforts into its three major projects during this period: Skills testing, the entrenchment of in-plant vocational training, and the establishment of the Central Vocational Training Institute as part of public vocational training.

5 Before 1981, vocational training instructors were considered different from teachers in general educational institutions, and thus distinguished from teachers under the Education Act.

1.2.5 Expansion of Public Training Facilities with Assistance from International Organizations and Advanced Countries

In the 1960s, the Korean government strived to secure enough public training facilities as it pursued industrialization. However, it faced limitations in implementing the vocational training project because it lacked the financial resources and technical expertise needed to set up training facilities. To get around this problem, the government set up the Central Vocational Training Institute, the Korea-Germany Busan Vocational Training Institute, the Daejeon Vocational Training Institute, and the Korea-Belgium Changwon Vocational Training Institute, in cooperation with international bodies and advanced industrialized countries, such as Germany, Japan and Belgium. It also set up the Jungsu Vocational Training Center, which was initiated by a major US figure visiting to Korea (Sang-sun Suh, 2002). Based on the assumptionth at cultivating training instructors and developing training materials as well as drafting the Vocational Training Act was a matter of paramount urgency, the Korean government asked for financial assistance from the UNDP/ILO, and received $2.50 million in aid. The government policy for cultivating training instructors has been explained above.

Specific details concerning the establishment of each training institute are described below in <Table 2-8>.

Table 2-8 | Establishment of Public Vocational Training Facilities with Assistance from Advanced Countries

	Background of Establishment	Specific Assistance
Korea-Germany Busan Public Vocational Training Institute	- Korea and Germany agreed to set up the Institute as part of the technical cooperation project conducted according to the joint statement issued by their Presidents in March 1967	- The operating expenses of the building and land, and equipment maintenance costs were covered by domestic funds, while overseas funds were spent to hire experts (14%), install equipment (80%) and provide scholarships (6%). - Support was provided for Korean instructors to receive training in Germany on a yearly rotating basis, and curriculum standards for vocational training were developed to improve the level of vocational training. - The biggest significance of the Institute was that unlike other training institutes, it introduced and used the standards and methods of Germany's apprenticeship training, and provided training for technicians for the first time.

	Background of Establishment	Specific Assistance
Central Vocational Training Institute	- The establishment of the Institute for training instructors was agreed upon in 1968. Regular training started on March 9, 1970.	- The facility and operating expenses of the land, building, etc., were borne by the Korean government while equipment costs, the costs of hiring experts and overseas training costs were borne by the UNDP and ILO. - Its functions included training vocational training instructors; training craftsmen; providing technical guidance about in-plant vocational training; providing training for supervisors, correspondence training and entrusted training; conducting surveys and research to develop a vocational training system; and carrying out international technical cooperation projects.
Jungsu Vocational Training Center	- The Center was established in 1973 with financial assistance from the Chungwaedae (Office of the President) as Mr. Fathman, a US congressman, failed to make his promised visit to Korea.	- The US side provided training materials, (materials relating to electronics and communications, welding and sheet metal working, machinery, and vehicles) which came from surplus military supplies held by the U.S. armed forces. - The objective of the Center was to guide disadvantaged youths into the right path through vocational training.
Korea-Belgium Changwon Vocational Training Institute	- The Institute was set up with assistance from the Belgian government in 1976.	- The Institute operated as a non-profit organization under the supervision of the Office of Labor. The Belgian government provided $2 million in aid ($1.5 million for equipment and $0.5 million for hiring advisors, etc.) and sent three advisors to Korea. The project period was from 1976 to 1979 (Training services started in Mar. 1977). Four Koreans, including the Institute's president, were sent overseas for training.
Daejeon Vocational Training Institute	- The Institute was set up with assistance from Japan. It was part of the Korea-Japan technical cooperation project started under the assistance agreement made in 1976.	- Japan provided about ₩4 billion worth of equipment and supplies with the aim of supporting the establishment of the Institute, and provided about ¥54 million worth of additional support after that. - The HRD Service of Korea and the Employment Promotion Agency of Japan signed an agreement in Sept. 1988 to exchange visits by vocational training staff and share information and materials, laying the foundation for promoting mutual cooperation.

Meanwhile, rural vocational training centers were set up in cities and provinces with assistance from international organizations. Their aim was to train rural skilled workers required in the process of developing rural areas, under the second economic development plan in the late 1960s. Local governments bore the costs of constructing such centers, while UNICEF provided equipment and technical support, the UNDP paid training expenses, and ILO paid for expert dispatch. Training was provided in such trades as agricultural machine repair and electrical contracting.

As it became increasingly difficult to set up training institutes with grant-type overseas aid, the government began to rely on loans from the ADB and IBRD to establish training institutes. At that time, the Korean economy put every resource into economic development projects; financially, it had no spare capacity to establish dozens of training facilities within a short period of time. To address this problem, projects using foreign loans were discussed. The first such loan was obtained from the ADB, used to set up five training institutes in Chuncheon, Incheon, Daegu, Gwangju and Seongnam. The loan amounted to $3.7 million in total, and would be repaid at an annual interest rate of 5% over 15 years from 1977 to 1992, after a five-year grace period. The ADB loan project gave the government a foothold to bring public training into full swing. At first, it was planned to set up 11 training institutes at the seats of provincial governments, so that they could serve as the center of a populous local area. But ultimately, the government decided to establish five institutes itself. When preparing the project, the government forecast its investment effect on vocational training. According to the government report submitted to the ADB at the time, unskilled workers in Korea accounted for 93.23% of workers' total contribution to production outputs. Allowing for the increased productivity and reduced defect rates the project would bring among these unskilled workers, the added value created as a result would increase gradually from 0% in the year of establishment to as much as 95% a decade later (Sang-sun Suh, 2002).

As the ADB loan project proceeded as planned, the government picked the IBRD, which offered better loan terms, as the next target from which it would finance its objectives. Two IBRD loan projects began in 1975 and 1977, and were completed in 1980 and 1984, respectively. Through these two loan projects, a total of 15 training facilities were established in Cheongju, Jeonju, Jinju, Sucheon, Gumi, Pohang, Ulsan, Wonju, Busan, Hongseong, Gimcheon, Iri, Mokpo, Yeongju and Chungju. The IBRD loans amounted to $37.80 million in total.

A notable feature of the IBRD loans was that the costs of hiring foreign advisors and of providing overseas training to instructors and employees were not paid out of the loans. Instead, they were covered using the grant funds allocated to international cooperation projects for third-world countries. This not only allowed Korean instructors and employees to receive enough overseas training, but also enabled the government to invest the loans fully in facilities. In particular, as the IBRD loan projects were carried out as part of the Korea-Germany technical cooperation project (grant-type), training institutes could be established, based on careful preparation and technical support by German advisors. Such

experiences made a great contribution to the development of the vocational training system in Korea. For instance, unlike the ADB loan task force, the IBRD loan task force made thorough preparations, such as making a curriculum management plan for the theoretical and practical subjects of each training course, and calculating the size of each practical training room. And when they chose equipment, they took into account its utilization rate of at least 80-85%. They also determined the quantity of equipment on the premise that the use of equipment would be rotated among groups of trainees during practical training. The details of the German advisors' activities are described below in [Box 2-2].

Box 2-2 | IBRD Loans and German Advisors' Plan for Calculation of Training Facility Space and Use of Training Equipment

First, they kept unused space to a minimum when calculating training facility space. They established a curriculum management plan for theoretical and practical subjects of each training course, prepared a list of necessary equipment and built miniature models of major pieces of equipment to calculate facility space accurately. The layout was planned in a way to facilitate rotation-based practical training and minimize wasted space.

Second, when determining the types and quantity of equipment, they used equipment utilization rates as a standard. They selected equipment with a utilization rate of at least 80-85%, and considered equipment with a low utilization rate, expensive equipment and special equipment not suitable for training facilities, thereby avoiding budget waste. And in order to raise the degree to which equipment is used, they established an equipment usage plan not at the course level, but at the institute level.

Third, the quantity of equipment for practical training was determined, reflecting the ratio of theoretical to practical subjects (30:70). It was ensured that if one trade course had 90 trainees and was grouped into three classes, one class was assigned to theoretical training and the other two to practical training. If a mechanics course was comprised of 75% lathe operation and 25% milling machine operation given the scope of work of mechanics, 60 pieces of training equipment-45 lathes and 15 milling and other machines-were enough for 60 trainees to receive practical training at the same time. In that case, the equipment utilization rate could be maintained at 85% or above if four groups of 15 trainees used the equipment on a rotating basis.

Source : Sang-sun Suh, Footmark of Korea Vocational Training System, Korea Chamber of Commerce and Industry, 2002

1.3 Growth Period of Vocational Training System (1980s)

1.3.1 Economic and Labor Market Situation

Amid difficult external conditions, such as the continuing global economic recession and spreading trade protectionism, coupled with domestic political and social unrest, the Korean economy suffered from triple distress in the early 1980s : a slowdown in growth due to sluggish exports, a deteriorating balance of payments caused by growing oil imports, and serious inflation. Growth rates were negative and the unemployment rate reached 5.2%. This labor market period can be described as a period of moderate growth and moderate unemployment. In the 1980s, overall economic growth remained high with an annualized growth rate of 7%, but the shift in the industrial structure, from labor-intensive industries towards capital-intensive ones, influenced the employment structure. Over the decade from 1976 to 1986, the number of people employed in the primary industry fell 88.1%, while that for the secondary and tertiary industries rose by 48% and 86.8%, respectively.

The five-year economic development plan launched in 1982 was renamed the five-year economic and social development plan, reflecting the government's intention to put emphasis on social as well as economic development and to switch from its quantity-oriented development strategy to a quality-oriented growth one. As the economic and industrial structures changed after 1980, new demands for vocational training emerged, and rising income levels led to shrinkage of the primary target group for training, i.e. youths excluded from higher education. In other words, as the industrial structure changed from labor-intensive to technology-intensive industries, and from mass production to diversified small-quantity production, high-level multi-skilled workers were needed. In addition to cultivating new skilled workers, improving the quality and skill levels of existing ones became necessary. Rising incomes and growing social awareness about the importance of education resulted in higher college enrollment rates, and a rapid decline in demand for secondary vocational education and short-term vocational training, and this, in turn, reduced the target group that could be nurtured into skilled workers through training.

1.3.2 Establishment of Vocational Training Support System

Despite difficult social and economic circumstances during this period, Korea pursued the growth of vocational training by establishing the vocational training management organization, expanding vocational training facilities and building related infrastructure. It also brought relatively disadvantaged people into the fold by providing training opportunities for women and the disabled.

First, in response to the decline in in-plant vocational training caused by the economic slump in the private sector, the Korean government strengthened the public vocational training system in the name of stable growth, by setting up the Korea Vocational Training Management Agency. The Korea Vocational Training Management Agency, established in 1982, was created by combining together 24 public training institutes and vocational training

research centers under the Ministry of Labor, the Changwon Polytechnic College under the Ministry of Science and Technology, and the Korea Technology Qualification Agency responsible for qualification testing. Consequently, the functions of training, testing, and certifying skilled workers, which had been scattered across many government agencies and organizations, were unified, and could now be pursued more efficiently.

Second, with the aim of developing the skills of young women and making the female workforce more sophisticated, the government undertook the work of setting up a vocational training institute for women in 1986. This first training institute for women in Korea came into existence in April 1973. Until then, most skills education had been provided for men, and only a few female education and training courses run by public institutions and social organizations, such as YMCA, had been available to women.

Third, the Ilsan Vocational Training Institute for the Disabled, the first training institute for the disabled in Korea, was set up in December 1987 with a view to giving physically disabled people opportunities to develop their skills, turning them into skilled workers through training and improving their quality of life [Box 2-3].

Box 2-3 | Training Areas Covered by Anseong Vocational Training Institute for Women and Ilsan Vocational Training Institute for the Disabled

Anseong Vocational Training Institute for Women: At the time of its establishment, the Institute offered a two-year first-grade craftsman training to 450 women in the following six trades: precision measurement, electronics apparatus, office automation, jewelry making, machine drawing, and fashion design. Each course consisted of 30% theory and 70% practice. It focused on providing learning opportunities at industrial sites and strengthening field adaptation abilities, and allotted some hours to education about female virtues, such as an etiquette class and a tea ceremony class.

Ilsan Vocational Training Institute for the Disabled : The Institute provided training to 210 disabled people in the following seven trades, with 30 trainees for each trade: precision machinery, electronics, dress making, printing, wood craft, jewelry making and office automation. The vocational trades were selected from among those requiring little physical movement in consideration of their industrial prospects.

Source : Taek-soo Jeong (2008), The Evolution of the Vocational Skills Development System in Korea, Korea Research Institute for Vocational Education&Training

1.3.3 Changes to Obligatory In-Plant Vocational Training System

In the early 1980s, the number of enterprises providing in-plant training, which played a leading role in training craftsmen, and the number of in-plant training recipients began to dwindle, while income growth led to serious labor shortages in the so-called 3D industries. In response, the government revised the Basic Vocational Training Act in 1987 to change the standard for imposing training obligations on employers. The standard was changed from "the number of ordinarily employed workers in the previous year" to "total payroll in the previous year." In addition, the scope of activities on which enterprises could spend their mandatory training budgets was extended from providing training to establishing and installing facilities, equipment and related infrastructure. According to the amended Act, each eligible enterprise was mandatorily required to spend for vocational training purposes the amount calculated by multiplying the total annual wages to be paid to its workers by the rate determined and announced by the Minister of Labor each year by industry and enterprise size, within the limits of 20/1000 of the total payroll. The ways of fulfilling the training obligation included: providing in-plant vocational training; supporting other training providers designated by the Minister of Labor; helping workers employed by the enterprise concerned to receive education and training; and installing and purchasing the facilities and equipment necessary for vocational training. Enterprises were required to spend their mandatory vocational training budgets for the purposes mentioned above.If they failed to comply, these companies had to pay training levies.

Meanwhile, in the 1980s, the paradigm of state-led labor supply, which was adopted to prop up high economic growth in the 1970s, faded, while continuous vocational training for incumbent workers, which could support stable growth, gained popularity. Thus, employers' obligation to provide vocational training was extended to upgrade training for incumbent workers. The standards of the obligatory training system, which had accepted only initial training as obligatory in-plant training, were changed to recognize up to 80% of upgrade training for incumbent workers. Meanwhile, around 1980, the government conducted a short-term (3-6 months) outplacement (vocational) training program to deal with the mass layoffs in the wake of the second oil shock. In 1986, it also started reemployment training for the unemployed, under which trainees' living costs were partially supported during training periods.

As explained above, the in-plant vocational training system was reformed in response to changing economic and social circumstances. In-plant vocational training had some advantages, such as allowing enterprises to train their necessary workers on their own, who can easily adapt to the workplace, as well as using existing facilities and equipment for training. However, many problems were still pointed out by critics. One of the problems was that obligatory in-plant vocational training system or the training levy system ironically discouraged enterprises' participation in training, due to its excessive regulation. The government had set standards for all matters concerning vocational training (training curriculum, period, facilities and equipment, instructors and materials), and if an enterprise

failed to meet any of these standards, it did not recognize the training costs. Many enterprises therefore avoided in-plant vocational training, and chose to pay training levies instead. By 1986, two-thirds of enterprises obligated to provide in-plant training chose to pay training levies, instead of providing in-plant vocational training (Kye-woo Lee, 2005). It was also pointed out that vocational training levies became the main source of funding for public vocational training programs operated by government agencies (Jae-yong Shim,1997). However, this was a measure that had to be taken by the government to supply the skilled workers needed to achieve economic development.

Korea's obligatory in-plant vocational training system had unique characteristics compared with those in other developing countries. Many developing countries, including Brazil and Colombia, implemented an obligatory vocational training levy system, and allowed enterprises to deduct their training costs from training levies if they carried out in-plant vocational training. However, in Korea, enterprises were required to comply with the obligation to provide in-plant training, and allowed to pay training levies if they failed to do so. Many developing countries, especially, those in Latin America, which implemented a training levy system, in principle, set up independent public vocational training agencies (e.g. SENAI and SENAC in Brazil and SENA in Colombia) using collected training levies, and established and operated many training institutes under those agencies. As a consequence, public training formed the majority of training programs, and in-plant vocational training was not properly promoted in these countries. Moreover, although public vocational training institutes were entrusted by enterprises to provide training in these countries, their financial independence prevented them from responding flexibly to enterprises' demands to provide training courses, instructors, location and equipment, thereby exposing their weaknesses, such as low training practicality and efficiency. However, Korea's obligatory in-plant vocational training system, in principle, imposed the in-plant training obligation, and allowed payment of training levies to remove the weaknesses of a training levy system, and make in-plant vocational training play a dominant role. In its early days, the system served this purpose to a certain degree, but as time went by, it did not operate as originally intended. The system changed, and worked like a vocational training levy system that could be seen in other developing countries (from an interview with Kye-woo Lee, an expert).

1.4 Transition Period of Vocational Training System (Early 1990s)

1.4.1 Economic and Labor Market Situation

Between 1987 and 1997, the labor market achieved almost full employment, with the unemployment rate averaging 2.4% annually. This period can be summed up as one of moderate growth and low unemployment. Korea recorded double-digit economic growth, thanks to the boom with three lows-low exchange rates, low oil prices and low interest rates. However, in the late 1980s, the small-item mass production method came to its limit, due to changes in the international economic environment and rapidly changing industrial relations. Labor supply during that period was characterized by the high educational attainment of

the population and increasing female participation in economic activities. Thanks to these characteristics, the labor force participation rate, which started to grow slowly in the mid 1980s, rose to 60% in 1990 and then to 62.5% in 1997, just before the Asian financial crisis. On the other hand, the demand-side characteristics of the labor market at that time resulted in the industrial structure changing at a very rapid pace, as Korea moved towards a service economy. In addition, automation, technological sophistication and mechanization decreased the demand for simple-skilled labor, and increased the demand for high-skilled workers in the manufacturing industry.

1.4.2 Reorganization of Polytechnic Colleges and Establishment of Joint Vocational Training Institute

With the enactment and promulgation of the Polytechnic College Act in 1977, Changwon Polytechnic College, the first polytechnic college in Korea, was established (See 3, 3.2, 3.2.2, 3.2.2.1). At that time, master craftsmen were required to have high-level practical skills, knowledge and skills in his/her professional area, in addition to knowledge about business management. They not only provided guidance to skilled workers in the workplace, but graduates also began performing managerial roles. At the time of its establishment, each polytechnic college consisted of nine departments-machine tools, sheet metal working and welding, metal work, automobile maintenance, electricity, electronics, heat equipment, and hazardous material management-and had 290 students. It provided practice-oriented skills education with the ratio of theory to practice of 34 to 66. The number of hours allocated to practical training for two years was 2,828 hours, far above the level in two-year junior colleges. In response to the high educational attainment of the population and growing social demands in the 1990s, polytechnic colleges began to grant their graduates an industrial bachelor's degree equivalent to a junior college degree.[6] Since they were reorganized into Korea Polytechnic Colleges in the mid 2000s, one-year craftsman courses as well as two-year courses have been offered to reflect industries' labor demand in a more flexible manner.

Meanwhile, in 1990, the government established a basic plan for vocational training development, and constructed the Joint Vocational Training Institute with money from the Vocational Training Promotion Fund. Since the private sector was the main contributor to the Fund, the government transferred control of the Joint Vocational Training Institute to the Korea Chamber of Commerce and Industry (KCCI), an employers' association, in 1993. This was expected to give rise to private sector-led vocational training with private business organizations taking up a central role, as they are in advanced countries such as Germany. Although participation and interest from employers' associations did not increase as much as expected, the KCCI ran eight vocational training institutes in Busan, Gunsan, Gwangju, Incheon, Gyeonggi, Okcheon, Hongcheon and Gongju, and produced favorable results. In

6 Polytechnic colleges established a separate educational foundation in 1998, and have since operated as independent two-year colleges.

particular, their job placement services were suited to the aptitudes of individual trainees, leading to high employment, and local enterprises had a relatively high level of satisfaction with these institutions.

1.4.3 Establishment of Korea University of Technology and Education

As explained above, Korea was able to cope with the rising demand for training instructors caused by the rapid growth of vocational training institutions, by offering regular training courses for vocational training instructors at the Central Vocational Training Institute, beginning in 1972. However, in the early 1980s after public vocational training facilities were established, demand for training instructors fell rapidly, and the level of qualifications required for them were raised, which necessitated changes to instructor training.

In response, the government pursued the establishment of a four-year university for vocational training instructors. At the time, general engineering colleges focused on theoretical education, and were therefore seen by many as inappropriate for fostering training instructors, who should have job performance skills needed at industrial sites. As a result, the Korea University of Technology and Education (KUT) was established in November 1991, following about four years of planning. At the time of its establishment, the university consisted of engineering departments, such as industrial machinery, production machinery, control machinery, power machinery, electricity, electronics, information and telecommunications, and prototyping, and had 240 students (Taek-soo Jeong, 2002).

Since then, KUT has run two types of courses for training instructors: regular courses and teaching profession courses. The former is available to those qualified to enter a college under the Education Act, and is aimed at producing training instructors equipped with theoretical knowledge and practical skills through four-year training. The latter is a course that can be attended by those who are qualified and knowledgeable in a given professional area, with the instructor license earned after four weeks of intensive education.

2. Vocational Training As Active Labor Market Policy (Post-EI Period)

2.1 Employment Insurance and Vocational Training

2.1.1 Economic and Labor Market Situation

Korea's planned economy initiative ended with the sixth five-year economic and social development plan (1987-1991). In response to new demands on workforce training, the government established the five-year plan for the new economy (1993-1997).

The new demands arose from the transformation of the Korean labor market. Labor shortages were beginning to get worse as workers sought higher wages, and progress was being made towards a service economy, thanks to increases in female labor force

participation. Over the decade between1988 and1997, the unemployment rate stabilized at 2%, close to full employment. However, democratization movements triggered a massive eruption of labor movements, and higher income and education levels resulting from economic development also fueled the nation's desire for democracy (Kil-sang Yoo, 2009).

There were strong public aspirations for political democracy at home, and with the spread of globalization, free-market principles were gaining momentum. Given this environment, the government established a large framework for guaranteeing private enterprises' freedom in their activities, and accepted the assertion that government intervention in the market should be kept at the minimum level necessary for ensuring consumer safety and active corporate competition. Even when the government had to intervene in the market for the sake of public interests, it was emphasized that it should turn to indirect regulation, such as giving enterprises incentives to act in favor of public interests, rather than directly controlling their activities (from an interview with Kye-woo Lee, an expert).

2.1.2 Integration of Vocational Training System into Vocational Skills Development Project after Enactment of the Employment Insurance Act

Korea's state-led planned economy initiative ended with the sixth five-year economic and social development plan (1987-1991).In response to new demands on workforce training, the government established the five-year plan for the new economy (1993-1997). It was a comprehensive reform plan for the efficient training and management of an industrial workforce, which was based on the philosophy that a country's national power depends on its economic power, and that a country's international competitiveness is eventually determined by the comparative advantage of its human resources. The government gave concrete shape to this philosophy by establishing the Industrial Manpower Supply and Skills Development Restructuring Plan in 1994. The main feature of reforms to the vocational skills development system was to divide roles between government (public sector) and private sector. The role of private enterprises was to voluntarily train necessary skilled workers, while the government was to encourage and induce enterprises to do so (from an interview with Kye-woo Lee, an expert).

Then a critical event occurred, which enabled the vocational training system to meet changing social needs. That event was the introduction of the employment insurance system. In 1995, the vocational skills development project was reorganized to become part of the employment insurance system, and the obligatory vocational training system was abolished. In addition, the focus of vocational skills development shifted from training for a new skilled workforce to upgrading training programs for incumbent workers in order to support workers' lifelong skills development. The obligatory vocational training system that had applied only to a few industries, including manufacturing, and businesses of a certain size or larger was abolished, and support for vocational skills development was extended to all businesses and workers. Ways of providing support changed as well. In

the past, enterprises were uniformly obligated to provide in-plant vocational training, and selectively required to pay training levies. But after the change, all enterprises were obligated to pay training levies as part of employment insurance premiums, and when an enterprise provides training, its training costs were reimbursed or supported to provide an incentive for voluntary compliance. In other words, the government provided an incentive for voluntary worker training by reimbursing training costs if an enterprise carried out the vocational training system.

The new system was similar to the training levy systems adopted in many other developing countries, in that the obligation to pay vocational training levies was imposed on all enterprises. However, it provided a refund of the training levies already paid if an enterprise provided training, thereby encouraging the voluntary provision of training. In that respect, the system set itself apart from other training levy systems. In other developing countries, such as Chile, some legislative cases can be found in which ex-post financial incentives (tax deduction, reduction and exemption) were given to enterprises providing training. However, Korea's new system was unique and distinguished from those in other developing countries, such as Chile and Brazil that removed the obligation to pay training levies. This was because in Korea, all enterprises were obligated to pay training levies from the outset. The systems in Chile and Korea were similar in that if an enterprise carried out training, the costs were reimbursed. However, Korea's system obligated all enterprises to pay training levies in the first place, and in that respect, can be seen as more effective in encouraging voluntary training (from an interview with Kye-woo Lee, an expert).

This incentive has certainly been of great help in promoting enterprises' voluntary participation in the vocational skills development project. A comparison between the percentages of enterprises training their workers in 1994 before the introduction of the incentive and in 2002 reveals that only 22.5% of enterprises obligated to provide vocational training (enterprises employing 150 workers or more) actually trained their workers in 1994, whereas the percentage of enterprises providing training increased to 63% by2002 (including incumbent training). In terms of the absolute number of workers receiving training from their firms, the new system under the Employment Insurance Act has had a more positive effect on worker training than the previous training levy system. The vocational training system has finally established itself as part of active labor market policies, and become connected to the unemployment benefit and employment security projects within the framework of the employment insurance system.

With the establishment of the Workers Vocational Training Promotion Act (renamed Workers Skills Development Act in 2004) in late 1997, the new vocational skills development system took off in a full-fledged manner. The Basic Vocational Training Act had limitations in providing various opportunities for vocational skills development and systematic support because of its overly-strict training requirements and procedures, though it greatly contributed to the training of a skilled workforce. Moreover, the existing obligatory vocational training system being enforced temporarily and the vocational skills

development project covered by the employment insurance were being implemented simultaneously. This dual implementation still caused inefficiency. So in 1997, the Workers Vocational Training Promotion Act was established to replace the Basic Vocational Training Act. With the introduction of the Workers Vocational Training Promotion Act, various regulations were repealed, making the shift towards voluntary training, demand-oriented training and upgrade training for incumbent workers more visible. And, the government has since limited its role to that of an assistant only supporting the implementation. As shown in <Table 2-9>, the increase in the number of training recipients was led by in-plant training with the number of in-plant training recipients more than doubling from 120,000 in 1992 to 260,000 in 1998.

Table 2-9 | Numbers of Trainees by Type in 1990s (1992-1998)

			1992	1993	1994	1995	1996	1997	1998
Total			180,018	188,408	217,337	223,894	221,817	253,558	491,529
Craftsmen	Total		178,864	184,034	213,095	217,738	214,259	245,044	481,595
	Public Training	Sub-total	26,131	26,206	31,761	30,586	36,644	49,257	182,853
		HRD Service of Korea	18,116	18,407	22,704	21,220	25,615	36,970	169,153
		Korea Chamber of Commerce &Industry	-	-	1,869	2,069	3,253	5,450	8,076
		Korea Employment Promotion Agency for the Disabled	-	193	241	224	198	195	233
		Government agencies	5,082	4,991	4,815	4,825	4,570	4,355	3,011
		Local governments	2,933	2,615	2,104	2,248	3,008	2,287	2,380
		K·N·O·P	-	-	-	-	-	-	-
	In-plant training		122,457	122,151	152,030	160,413	151,303	173,686	258,037
	Authorized training institutes		30,276	35,677	29,304	26,739	26,312	22,101	40,705
Multi-skilled engineers			-	-	961	3,004	4,733	5,843	7,177
Master craftsmen			594	352	286	417	480	579	474
Training instructors			560	4,022	2,992	2,735	2,345	2,092	2,283

Source : Ministry of Labor of Korea. Yearbook on Vocational Training in Korea, Yearly

However, from the viewpoint of enterprises, integrating the vocational skills development project into the employment insurance system did not solve the problems inherent in the obligatory vocational training system. The basic purpose of the vocational skills development project under the Employment Insurance Act was to promote private sector-led vocational training by allowing private enterprises to carry out voluntary vocational training according to their needs, and the government was to provide support in response to their demands. Nevertheless, it has been argued that the project, like previous obligatory vocational training systems, entails many regulations when it is implemented, and is therefore hard to promote private-led voluntary training.[7]

The government has taken a clear position on this kind of criticism. It has said that training markets cannot be dominated by the principle of perfect competition or voluntary market alone, and that everyone, if possible, will want to be a free rider without paying training costs because training is a public good. That is to say, anyone employing a trained worker can benefit from the training. For that reason, the Korean government adopted the principle that all enterprises were required to pay training levies, and that only those providing training would be reimbursed for their training costs. By doing so, it gave enterprises an incentive to voluntarily provide training. In particular, the system was designed in such a way to ensure that if SMEs, less capable in terms of both finances and size, provide training, their training costs would be reimbursed at a more favorable rate.

2.2 Vocational Training as Social Safety Net

2.2.1 Economic and Labor Market Situation

Korea failed to adapt promptly to the changing global environment, represented by globalization with the launch of the World Trade Organization (WTO) in late 1993, as well as labor market changes. In 1997, Korea was taken off from the IBRD's list of eligible loan recipients with its per capita income rising above $10,000, and strengthened its status as a semi-industrialized country. The country attracted a lot of attention as one of the Asian dragons, and was even studied as a development model for other developing countries (With high economic growth, Korea became the world's 11th largest trading country, and an OECD member.). However, a string of economic disasters-Hanbo Steel's bankruptcy on January 23, 1997, the successive collapses of large companies, the insolvency deferral agreement, court mediation, court receivership, continuously falling stock prices and rising exchange rates, and the depletion of foreign exchange reserves held by the Bank of Korea-eventually led the country to ask for bailout funds from the IMF on November 21, 1997 (Yun-ho Lee, 2000).

7 Moreover, voluntary training provided by enterprises does not need to go through the approval or notification procedures under the employment insurance system, and such procedures could be regarded as costs by enterprises, and thus is highly likely to be a social loss. Basically, the vocational skills development project is not aimed at providing insurance against possible risks. So the argument has emerged that there is no reason to collect training levies from individual enterprises and operate the project with them (Chul-inLee, 1998).

Companies refrained from hiring new workers, and began their restructuring process in earnest to improve business conditions. The number of employed people, which reached 20,071,000 in the fourth quarter of 1997, plunged 3.7% year-on-year to 19,526,000 in February 1998.

Table 2-10 | Numbers of Employed and Unemployed People by Industry During Asian Financial Crisis (1997-1998)

(Unit: 1,000 persons, %)

		1997			1998			% change
		Number		%	Number		%	
Employed	Total	21,048		100.0	19,926		100.0	-5.3
	Agriculture, forestry &fisheries	2,324		11.0	2,424		12.2	4.3
	Mining	4,501		21.4	3,904		19.6	-13.3
	Manufacturing	4,474		21.3	3,884		19.5	-13.2
	Service	14,223		67.6	13,598		68.2	-4.4
	Construction	2,004		9.5	1,557		7.9	-21.3
	Wholesale &retail trade	5,798		27.5	5,565		27.9	-4.0
	Other services	6,421		30.5	6,457		32.4	0.6
Unemployed	Total	319	(1.5)	100.0	1,193	(5.6)	100.0	273.9
	Agriculture, forestry &fisheries	4	(0.2)	1.3	17	(0.7)	1.4	315.2
	Mining	81	(1.8)	25.4	279	(6.7)	23.4	244.4
	Manufacturing	80	(1.8)	25.1	278	(6.7)	23.3	247.0
	Service	235	(1.6)	73.7	897	(6.2)	75.2	281.7
	Construction	50	(2.4)	15.7	299	(15.9)	25.1	498.4
	Wholesale &retail trade	110	(1.9)	34.5	346	(5.9)	29.0	214.4
	Other services	75	(1.2)	23.5	252	(3.8)	21.1	236.0

Note : ( ) is unemployment rate.

Source : Korea National Statistical Office (1998), Annual Report of Economically Active Population.

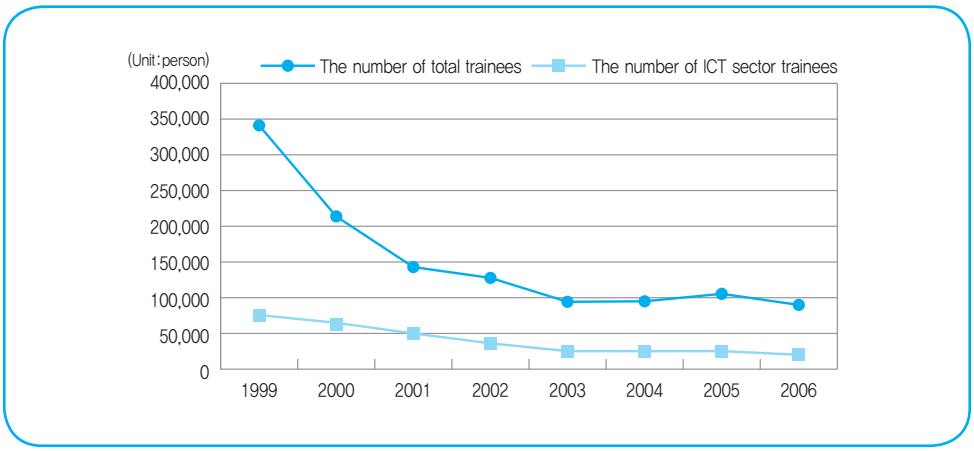
Korea was confronted with the financial crisis in 1998, and experienced mass unemployment with about one million people losing their jobs. The number of jobless people, which started rising soon after the bailout request, increased steeply from 561,000 in the fourth quarter of 1997 to 1,235,000 in 1998, and the unemployment rate stood as high as 5.9%. The number of people unemployed due to corporate restructuring shot up from 320,000 in 1997 to 1,079,000 in 1998, accounting for 87.4% of total jobless people.

2.2.2 Expansion of Vocational Training for Unemployed People during the Asian Financial Crisis

In response, the Korean government established comprehensive measures against unemployment in March 1998. Among them, vocational training measures were recognized at home and abroad as having contributed greatly to stabilizing employment. Large-scale training programs were provided to jobless people in the short-term to help them return to the labor market. There was an especially large increase in IT training, which not only helped to overcome the economic crisis, but also paved the way for Korea to become a strong IT country. At first vocational training was provided for 65,000 jobless people (1997), but the number was increased to 330,000 (1999), of whom 76,000 participated in IT training ([Figure 2-3], as of 1999).

The reason for such intensive investment in IT training was youth unemployment. Data on the number of participants in training for the unemployed by educational attainment show that the number of people with a junior college degree or higher accounted for 62% in 1999, and 66.9% in 2000. On the demand side, the rapid growth of the IT industry gave rise to the need for trained workers for the sector. The industry grew markedly by 20.7% in 1998, when the overall economy recorded a negative growth of 6.7%. The government tried to resolve the unemployment problem by reinforcing IT training, with the understanding that the IT industry would grow faster than other industries, and thus could readily absorb the Korean workforce.

Figure 2-3 | Numbers of Unemployed People Participating in Training and IT Training by Year



Source : Ministry of Labor of Korea, Yearbook on Vocational Training in Korea, Yearly

It is highly commendable that faced with the economic crisis of 1997, Korea provided vocational training programs for the unemployed promptly and on a large scale. The government also sought to improve the vocational skills of the entire nation. In the process of addressing the problem of unemployment among highly-educated youths, the government focused on IT training, and thus was able to improve overall re-employment results. And in an effort to meet the demand for highly-skilled workers in the IT industry, the private sector also provided professional IT education. All of these efforts helped Korea, both in quality and quantity, to grow into an IT power.[8] This is a good example of turning a crisis into an opportunity. In recent years, lifelong vocational skills development has served as a means to increase workers' adaptability and facilitate restructuring amid intensifying competition due to globalization. In this sense, the fact that Korea overcame the economic crisis earlier by providing vocational training has important implications for vocational training policies in other countries.

2.2.3 SMEs Training Consortium

Although the vocational training system under Employment Insurance did serve as an effective incentive for providing training program, it was not favorable to SMEs (Ra et al, 2006; Lee, 2005). Both large enterprise and SMEs paid training levies, yet a

8 The employment rate in the IT sector was fairly high in the early days of training for the unemployed, but the oversupply of training programs caused an imbalance between labor supply and demand. So, the government reduced the scale of IT training by approving fewer training courses after the unemployment rate declined (Hong-kyunKim, 2002).

disproportionate share of the rebate went to large enterprises. This inequitable situation in the use of training levy-rebate incentives between large enterprises and SMEs implied that when administering financial incentives, additional actions should have been taken by the government to address the constraints facing SMEs. In this regard, the SMEs training consortium is well-known as a best practice in addressing three types of issues (financial, informational, and organizational constraint on training provision) facing SMEs.

The SMEs training consortium project was introduced in 2001 to train and supply a talented workforce (initial training) for SMEs suffering from shortages of production workers, and to promote the skills development of incumbent workers (upgrade training). Both at home and abroad, the project is seen as having contributed significantly to the promotion of training among SMEs, by sharing training facilities and know-how between large companies and SMEs.

Only six consortiums operated in 2001, but the number increased to 70 by June 2007. The number of SMEs participating in such consortiums rose from 1,029 to 59,833 over the same period. There were three factors behind its success. First, night training and part-time training were provided to avoid any disruption to work. Second, the outstanding capacity of project operators, such as large companies, was used to make up for SMEs' lack of expertise and training programs. Third, the system of reimbursing SMEs' training expenses at a more favorable rate was utilized to solve their lack of training funds. According to the results of an evaluation, large companies and their suppliers developed joint training models, and provided flexible training courses, such as part-time training and night training. The project helped to meet training demands and improved the work attitudes and achievement levels of participating workers (evaluation by employers). And the level of satisfaction among employers and workers participating in training consortiums was as high as 91.2% (Korea Research Institute for Vocational Education and Training, 2004). The proportion of SMEs reimbursed for their training expenses among those participating in training consortiums jumped from 4% to 49%, improving the regressive nature of the financial incentive that had been more advantageous for large enterprises than for SMEs.

The project was also presented as a successful case in the Employment Outlook 2004, and at the OECD International Conference on Lifelong Learning held in March 2005.

2011 Modularization of Korea's Development Experience
Vocational Training System for a Skilled Workforce

Chapter 3

Implementation of Vocational Training System

1. Legislation
2. Implementation Mechanism
3. Training Financing

Implementation of Vocational Training System

1. Legislation

Legislation provides the framework for policy implementation. Korea's vocational training policy has evolved and developed, along with its relevant legislation. In the past, training-related legislation provided the foundation for implementing vocational training policies aimed at training skilled workers, mainly for the manufacturing industry. Since the introduction of the Employment Insurance Act, it has been leading the development of the vocational training system as an active labor market policy.

1.1 Enactment of the Vocational Training Act

The Vocational Training Act was enacted in 1967, when the first five-year economic development plan period (1962-1967) was drawing to an end, in order to train skilled production workers in response to the shortage of skilled workers arising during that period. This was evident in the stated purpose of the Act, "to improve workers' status and contribute to the development of the national economy by conducting vocational training and skills tests for workers, and thus fostering skilled workers necessary for the manufacturing and other industries." [Article 1 (Purpose) of the Vocational Training Act]

The Office of Labor started to carry out vocational training activities according to this Act. On one hand, it set up public training facilities to train vocational training instructors and skilled workers. On the other hand, it provided subsidies to encourage employers to voluntarily conduct training and foster skilled workers. However, as subsidies were suspended due to the budget constraints of the general account, employer-provided training for skilled workers rapidly dwindled, which prompted the introduction of the obligatory in-plant vocational training system.

1.2 Enactment and Revisionof the Basic Vocational Training Act

In the 1970s, manpower scouting (poaching) became a social problem as a result of the serious shortage of skilled workers, caused by the construction boom in the Middle East. In response, the Vocational Training Special Measures Act was enacted on December 26th, 1974, which introduced the obligatory in-plant vocational training system. Later, the Vocational Training Special Measures Act was combined with the Vocational Training Act to create the Basic Vocational Training Act, which introduced the vocational training levy system. With the enactment of the Basic Vocational Training Act on December 31th, 1976, the entire system relating to the in-plant vocational training obligation finally settled into place.

The obligatory in-plant vocational training system obligated businesses in six industries, including manufacturing, which employed large numbers of skilled workers, to train at least a certain proportion of their workers. If they failed to comply, the system made them pay the corresponding amount in levies. In other words, employers engaged in businesses of a certain size or larger, or in certain industries, were required to carry out in-plant training, and if they failed to do so, they had to pay a certain amount of levy as a penalty. The Vocational Training Promotion Fund Act was established in the same year (1976) to ensure that the funds from such vocational training levies were spent on various projects to promote vocational training (e.g. entrusted training expenses, training allowances, accident compensation, subsidies for public training facilities and in-plant vocational training, survey and research projects, education and publicity activities, etc.).

In response to changing social and economic circumstances, the Human Resources Development Service of Korea (then the Korea Vocational Training Management Agency) was established, which led to revisions inl egislation. In March 1982, the HRD Service of Korea was set up to improve the efficiency of public vocational training, and the Basic Vocational Training Act was amended to back up its establishment. The main feature of the amendment was that public vocational training corporations under the Basic Vocational Training Act would be merged with, or integrated into, the Korea Vocational Training Management Agency, under the Korea Vocational Training Management Agency Act. Existing provisions on skills testing were absorbed into the National Technical Qualifications Act, in order to establish an efficient workforce management system.

With the revision of the Basic Vocational Training Act in 1987, the standard for imposing the in-plant vocational training obligation was changed from the number of workers to total payroll. This system of imposing the training obligation on the basis of total payroll became the basis for calculating insurance premium rates for the skills development project, under the employment insurance system.

1.3 Enactment of the Employment Insurance Act and the Workers Vocational Training Promotion Act

The 1990s witnessed changes in the situation surrounding the obligatory in-plant vocational training system. First, the structure of industrial workforce demand changed as a result of technological innovation and changes in the industrial structure. Demand for skilled production workers decreased, while demand for upgrade training focusing on incumbent workers sharply increased. Second, although enterprises were willing to fulfill the obligation to provide vocational training to new employees, it became difficult to comply with that obligation because the increase in overall educational attainment led to a lack of target people for vocational training. Third, calls to relax the excessive administrative regulations imposed under the Basic Vocational Training Act made it difficult to maintain the obligatory vocational training system in its existing form. Besides, with the introduction of the Employment Insurance System in 1995, vocational training was integrated into one of the three projects financed by the employment insurance fund. Thus, the obligatory vocational training system was abolished and absorbed into a comprehensive support system, the vocational skills development project, under the employment insurance system, in order to strengthen the vocational skills of all workers.

Against this backdrop, the Workers Vocational Training Promotion Act was established to replace the Basic Vocational Training Act. The purpose of the Workers Vocational Training Promotion Act was to "promote the employment of workers, raise their status, improve the productivity of enterprises, and thus contribute to social and economic development by ensuring that workers can develop and display vocational skills to the fullest through training, etc., aimed at developing the vocational skills of workers."

The Workers Vocational Training Promotion Act (renamed Workers Vocational Skills Development Act in 2004), which was proposed in 1996 and went into effect in 1999, was enacted to replace the Basic Vocational Training Act. As a result, the obligatory vocational training system was abolished, and for-profit corporations, associations of enterprises, and individuals were also allowed to provide training if their training facilities or courses were recognized or designated by the authorities. In the past, only those meeting the requirements, such as non-profit corporations, had been allowed to conduct training. Moreover, in order to promote upgrade training for incumbent workers, training courses excluded from the training standards were stipulated. Such courses were recognized by law, and were therefore eligible for support for training expenses. These provisions were all intended to create the foundation for promoting private vocational training. The main features were to repeal the Vocational Training Promotion Fund Act stipulating sources of funding, and to unify vocational training funds into the Vocational Skills Development Project Fund. [9]

1.4 Enactment of the Workers Vocational Skills Development Act

The Workers Vocational Training Promotion Act, along with the Employment Insurance Act, contributed to the training of the unemployed during the economic crisis of 1997.[10]

However, the Regulatory Reform Committee noted that the Workers Vocational Training Promotion Act allowed too many matters to be prescribed by its subordinate statutes, and thus called for an amendment that would move some provisions to higher law.

An amendment to the Workers Vocational Training Promotion Act was required for the following reasons: investment, which had fallen sharply in the wake of the economic crisis would not recover quickly, and the level of participation in training stayed low among SMEs; the traditional practice of employer-led training persisted, despite its claims that companies would support the switch to worker-led training and to a lifelong vocational skills development system; although it was made easier for private training institutions to enter the training market, their competitiveness was still weak; training for various vulnerable groups was strengthened, but had yet to produce satisfactory results; and there was a lack of institutional devices to cope with the rapid increase in E-learning.

Therefore, the Workers Vocational Training Promotion Act was wholly amended, and renamed the Workers Vocational Skills Development Act on December 31st, 2004. The purpose of the Act was to "stabilize the employment of workers, raise their social and economic status, improve the productivity of enterprises, and thus contribute to social and economic development by promoting and supporting workers' skills development throughout their lives." The purpose, though similar to that of the Workers Vocational Training Promotion Act, puts emphasis on lifelong vocational skills development by adding the phrase, "throughout their lives."

The changes in Korea's vocational skills development policy and system at each stage of economic development, discussed in this report, imply that in Korea, legislation concerning vocational skills development has been enacted or revised to respond to changing circumstances at home and abroad.

9 When the Workers Vocational Training Promotion Act was established, it included just one provision, stating that all matters concerning the vocational skills development project shall be governed by the provisions of the previous Workers Vocational Skills Development Act (i.e. Workers Vocational Training Promotion Act), and be inserted into the Employment Insurance Act, as in Japan. However, authorities in charge of employment insurance did not agree to this idea. As a result, whenever any change is made to the vocational skills development project, both the Employment Insurance Act and the previous Workers Vocational Skills Development Act, it needs to be revised accordingly, causing some procedural complications. The main reasons were as follows: the Employment Insurance Act and the Workers Vocational Training Promotion Act were enacted at different times; the Employment Insurance Act inevitably had to have separate provisions on the vocational skills development project, since the obligatory vocational training system and the vocational skills development project were both implemented from 1995, when the employment insurance system was introduced until the Workers Vocational Training Promotion Act entered into force in 1999; and it was not easy to revise these provisions in the Employment Insurance Act, in line with the provisions of the Workers Vocational Training Promotion Act that was enacted later.

10 In 1998 when there was mass unemployment due to the economic crisis, the Workers Vocational Training Promotion Act did not exist, but the vocational skills development project was being implemented under the Employment Insurance Act.

Table 3-1 summarizes the evolution of the vocational training system in Korea. In the 1970s when high economic growth took off, the obligatory in-plant vocational training system was introduced to meet temporary but huge demand for new skilled workers, and public training facilities began to be established with the injection of foreign capital. In the early 1980s, training demand plummeted due to the shrinking economic growth caused by the oil shock, but a quality-oriented strategy was adopted to broaden the range of skilled workers and raise their skill levels, and Korea began to be aware of the need for enterprises to provide upgrade training to incumbent workers. In the 1990s, the obligatory training system was abolished and integrated into the employment insurance system, making it possible to provide a stable source of funding for the training of incumbent workers. During the economic crisis of 1997, active efforts were made to help jobless people reenter the labor market by conducting vocational training for the unemployed on a large scale. With Korea moving into a globalized economy in the 2000s, more importance was attached to the outcomes and efficiency of the vocational training system, and vocational training has been emerging as the most effective way to guarantee lifetime employability for all people, including the vulnerable, as well as the employed.

Table 3-1 | Changes in Vocational Training System at Each Stage of Economic Development

	Pre-EI period			Post-EI period	
	1960s	1970s	1980s	1990s	2000s
Economic development stage	1st and 2nd five-year economic development plans	3rd and 4th five-year economic development plans (Industrialization driven by heavy and chemical industries, takeoff of high growth)	5th and 6th five-year economic development plans (Autonomy and openness, economic stability)	Moderate growth low unemployment, economic crisis of 1997	Entry to globalized economy, fall in economic growth
Economic indicator (Per capita income)	$80	$254→$1,676	$1,645→$5,418	$6,417→ $9,438	$10,841→ $20,000
Enactment and revision of legislation	Vocational Training Act (1967)	Vocational Training Special Measures Act (1974), Basic Vocational Training Act (1976) and Vocational Training Promotion Fund Act (1976)	4th amendment to Basic Vocational Training Act (1987)	Employment Insurance Act (1995) and Workers Vocational Training Promotion Act (1999)	Workers Vocational Skills Development Act (2004)

	Pre-EI period			Post-EI period	
	1960s	1970s	1980s	1990s	2000s
Changes in workforce demand and response strategy	Rising demand for simple-skilled workers due to Korea's shift from agricultural to light-industry focused economy →Supply of skilled workers mainly	Increasing demand for skilled workers and serious shortages of skilled workers resulting from Korea's shift to heavy and chemical industry-focused economy →Unlimited supply of unskilled workers caused by mass migration from rural to urban areas, establishment of vocational	Falling demand for in-plant vocational training; reinforcement of public vocational training : establishment of Korea Vocational Training Management Agency (1982)	Falling demand for new skilled workers and growing need to raise incumbent workers' skill levels, incentive for voluntary vocational training by employers;	Flexible labor market, building of lifelong vocational training system, strengthening of training for vulnerable groups
	through school education, establishment of vocational training system, introduction of vocational training subsidy system	high schools, expansion of public vocational training, implementation of obligatory training system, introduction of training levy system	introduction of high-level vocational training courses (master craftsman courses)	training as social safety net for unemployed people	

2. Implementation Mechanism

2.1 Administrative Authorities for Vocational Training

As a vocational training bill was expected to pass through the National Assembly in the early 1960s, the Office of Labor set up a division that would be in charge of vocational training, as part of its preparations to conduct vocational training activities. Around that time, there was a professional agency for vocational training, whose aim was to operate vocational training projects efficiently, and enhance the expertise of related staff.

In 1966, the Vocational Training Bureau was set up under the Planning and Management Office of the Ministry of Labor. In the same year, vocational training was separated from skills testing, and the two separate divisions were put under the control of the Job Security Bureau. Then it was reorganized into the Vocational Training Bureau, under which there were the Training Planning Division, the Public Training Division, the In-plant Training Division and the Skills Testing Division. There were many organizational changes before

the establishment of the Skills Development Bureau, which consisted of the Training Policy Division, the Skills Development Division, the Training Guidance Division and the Qualifications Promotion Division. The Skills Development Policy Bureau today is composed of the Skills Development Policy Division, the Skills Development Assessment Division and the Human Resource Development Division. The Skills Development Assessment Division is responsible for the technical qualifications system. The central organization has been mainly responsible for making and designing policies, while over 40 local labor authorities (Job Security Divisions) have been in charge of paying training costs and managing training institutions. Since the beginning of the 21st century, these roles have been taken up by Job Centers (Employment Security Centers).

Unfortunately, until recently, there were almost no close linkage between vocational training and employment security. Labor administrative services meant comprehensive workforce management services, which involved performing a wide range of functions, such as workforce creation (vocational training), workforce distribution (job security), workforce utilization (labor-management cooperation) and workforce protection (labor standards) in the labor market. However, in Korea, vocational training policies were implemented separately from job security or employment policies from the beginning, and such a separation seems to have worsened the imbalance between labor supply and demand. This lack of connection between vocational training and employment security can be seen as the biggest administrative shortcoming in the area of vocational training.

2.2 Vocational Training Institutions

Prior to the integration of the vocational training system into the vocational skills development project under the Employment Insurance Act, vocational training institutions were broadly divided into public and private vocational training institutions. Public vocational training institutions went through continuous reforms, such as introducing polytechnic colleges and establishing the Joint Vocational Training Institute. Public institutions also transferred its control to the Korea Chamber of Commerce and Industry, in response to the changing workforce demands of industry. In-plant vocational training institutions, categorized as private vocational training institutions, made the largest quantitative contribution to the training of craftsmen during industrialization. Authorized vocational training institutions, the precursor to present private training institutions, trained workers in occupational areas where public and in-plant vocational training could not be provided.

2.2.1 Public Vocational Training

If a public training facility has reached a certain stage of maturity, it is more desirable to make it an independent entity, rather than leaving it to be run directly by the government. Put under the control of the private sector, it should be able to provide localized and specialized training in order to meet the needs of the local economy. In the same context,

public vocational training institutions in Korea were run directly by the government in their early days, but later the responsibility for operating them was moved to public organizations or private corporations.

First, the most representative public vocational training institution was the Korea Vocational Training Management Agency, set up at the initial stage of industrialization. The Korea Vocational Training Management Agency (presently called the Human Resources Development Service of Korea) was established in 1982. As public vocational training facilities set up with foreign aid operated as separate entities, the capacity of the Korean government (then the Office of Labor) to manage them was ultimately limited. Public vocational training activities increased significantly, with 15 public newly-established vocational training facilities, thanks to the ADB and IBRD loan projects. However, there were difficulties in managing these public vocational training institutions because they were all operating as separate entities, and resources were being wasted due to overlapping services. It was necessary to establish an agency to be responsible for their management, and German advisors, confronted with the situation, and also stressed the need for such an entity. Eventually, the purpose of establishing the Korea Vocational Training Management Agency was to operate the vocational training system efficiently. Vocational training activities needed to be properly adjusted and managed in response to frequently changing industrial and workforce demands, especially in terms of training courses, curriculum composition, operation methods, and qualification criteria for instructors. However, it was difficult for government agencies to respond flexibly, because of their unique institutional nature. So, the Korea Vocational Training Management Agency (present HRD Service of Korea) was established in 1982 to take charge of skills testing and manage public vocational training facilities, for which the Ministry of Science and Technology and the Ministry of Labor had been responsible, respectively. As a result, the duplication of functions between government agencies was removed, and the efficiency of the administrative process was improved (Sang-sun Suh, 2002).[11] Before 2005, the Agency performed its duties in six business areas (training workers and testing their vocational skills, providing employment services, such as job placement and recruitment support, stabilizing industrial relations, creating a safe and pleasant work environment, etc.), with a focus on vocational training and qualification testing, training skilled workers at its 21 vocational schools. However, after the consolidation of public training infrastructure in 2005, the work of providing vocational training was transferred to Korea Polytechnics (previously polytechnic colleges). At present, the HRD Service of Korea is devoted to work relating to HRD infrastructure (supporting public and private training, supporting in-plant skills development, supporting distance training, developing training materials and courses, etc.).

11 In the early 1990s, the Korea Vocational Training Management Agency was renamed the Human Resources Development Service of Korea, with the intention of extending it scope of business to employment creation, retention and management for the industrial workforce, in addition to vocational training and skills testing. However, its role was not expanded to cover the overall employment policy, as planned.

The second-most representative public vocational training institutions were polytechnic colleges spun off from the Korea Vocational Training Management Agency. When Changwon Polytechnic College was established in the 1960s, it intended to produce master craftsmen who have reached the highest qualification in their trade, just like a Meister in Germany. These individuals would work as middle managers performing important duties, such as managing production, guiding and supervising subordinate craftsmen, and providing on-the-job training. However, in the 1990s, the master craftsman training courses faced many problems: they became irrelevant to the needs of industry; although they required high training costs, master craftsmen often lacked practical experience; and the number of trainees sharply fell with only a few people applying for the courses. As more master craftsmen needed to be trained, public training facilities were divided into vocational schools running one-year craftsman training courses and polytechnic colleges providing two-year training for multi-skilled engineers. In 2005, public vocational training facilities were merged into Korea Polytechnics, which now offers two-year multi-skilled engineer courses (37 areas, 72 departments) and one-year craftsman courses (34 departments, 51 trades) at its 40 campuses nationwide. Its major departments can be classified into three groups. In the case of machinery-related departments, trainees can obtain a relevant qualification after completing training in the fields of gas, boiler, welding and industrial design, heat management and machine assembly, fire-fighting and others. In the case of automation-related departments, trainees can obtain a relevant qualification after completing training in mechatronics, digital control, production automation, computer-applied machine, and others. In the case of architecture-related departments, trainees can obtain a relevant qualification after completing training in general building works, architectural carpentry, interior architecture, and others.

Third, another major public vocational training institution was the Joint Vocational Training Institute. The Joint Vocational Training Institute was financed by vocational training levies, and operated by the Ministry of Labor in its early days. But later, its control was transferred to the Korea Chamber of Commerce and Industry (KCCI), an employers' association. As the private organization was put in charge, emphasis was placed on planning the curriculum in a way that would foster a workforce adaptable to industrial demands, improving training methods to develop trainees' application skills, making better use of training facilities, giving trainees the flexibility to change their trade, and saving training costs. Specific examples included the use of simulation for training, the adoption of forward-looking teaching methods that could improve trainees' workplace adaptability, and the invitation of outside lecturers. Later, the Joint Vocational Training Institute became part of the Korea Chamber of Commerce and Industry, and transformed itself into a training institution that can reflect private-sector training demands more actively. It is now called the Human Resources Development Office of KCCI, and offers training courses relating to electricity, electronics and architecture at its 8 training institutes nationwide. Recently, it has been attempting to develop training courses in the field of green technology.

2.2.2 Private Vocational Training

First, the most representative private vocational training was the one provided by in-plant vocational training institutions. Prior to the introduction of the obligatory in-plant vocational training system, in-plant vocational training took the form of voluntary training that was conducted by employers after they got approval from the head of the Office of Labor. At that time, the head of the Office of Labor selected and supported training areas in which skilled workers should be fostered to balance labor supply and demand. The 22 occupational areas selected in 1967 included machinery, casting, electrical work, welding, forging, machine operation, carpentry, metal press, internal combustion engine assembly, plumbing, machine assembly, design, automobile maintenance, sheet metal, engineering drawing, painting, electronic equipment repair, organic synthesis and synthetic resin, radio and TV, electronic equipment assembly and telecommunications equipment assembly. Sixteen enterprises, including the Korea Electronic Power Corporation, obtained approval for their training programs, and enjoyed benefits, such as the provision of vocational training materials, training instructors and technical support, the granting of qualifications to take skills tests, and subsidy payments. After the enactment of the Basic Vocational Training Act, employers obligated to provide vocational training carried out in-plant vocational training, using their own training facilities or by entrusting vocational training to public or private institutions. As of 1987, in-plant craftsman training was being provided in a total of 405 occupational areas for varied periods ranging from three months to 36 months. However, six-month or shorter-term training occupied 61% of the total, suggesting that most in-plant vocational training was short-term training-six months or less-for single-skilled workers (Young-sun Ra, 1987).

Second, another private training institution was authorized vocational training institutes under the Basic Vocational Training Act. According to the Vocational Training Act enacted in 1967, authorized vocational training was defined as training provided by a public organization after permission is obtained from the head of the Office of Labor. However, the Basic Vocational Training Act established in 1976 allowed organizations, other than public organizations and private enterprises, to become a training provider. Consequently, non-profit organizations, social welfare organizations, and so on emerged as training providers. Authorized vocational training accounted for 7.7%-25.6% of total training, making a quantitative contribution to the training of skilled workers during industrialization. Authorized vocational training was provided mostly in trades, such as transport equipment and construction equipment, which enabled trainees to be employed soon after training, or in trades, such as information processing, electronics and communications, which were not covered by public and in-plant training, but were popular among trainees and did not require much facility investment. In its early days, authorized training had a positive effect on social welfare by giving training opportunities to socially vulnerable groups, such as disadvantaged youths, juvenile delinquents, the poor and those in welfare facilities.

2.3 R&D, Evaluation and Feedback

Research and development bodies have supported the constant development of the vocational training system by developing and evaluating policies and giving feedback. These entities, therefore, have been indispensable in the vocational training implementation mechanism.

Following the Vocational Training Research Institute in the early 1980s and the Korea Industry and Technology Workforce Research Center established in 1992 under Korea University of Technology and Education, the Korea Research Institute for Vocational Education and Training (KRIVET) is now in charge of research and development by conducting research on vocational skills development policies, and giving feedback based on its evaluations. The HRD Service of Korea is also engaged in developing training materials and standards, and developing and disseminating e-learning contents. At the early stage, these organizations often had provided the economic rationale, such as a cost-effectiveness analysis for training policy decision-making. Also, they suggested that the training levy percentage be lowered for relieving employers' burden during periods of economic downtown, while meeting industrial manpower demand. These R&D activities have made a great contribution to the operation of vocational training institutions, and the development of vocational training policies in Korea.

Strategies for improving the quality of training have never been overlooked, to ensure that training brings better labor market outcomes. In particular, the Training Institution and Course Evaluation Project has been conducted annually to control the quality of training programs that have increased in quantity since the economic crisis of 1998. The evaluation project has worked by selecting outstanding training institutions and courses, and eliminating a certain proportion of poorly-performing institutions every year, thereby enhancing the competitiveness of private training institutions.

Moreover, efforts have been made to conduct an econometric analysis of the effects that vocational training has on economic results, such as employment and income growth. KRIVET and other relevant institutions, such as the Korea Labor Institute and the Korea Employment Information Service, have built and analyzed databases, providing basic data for policy improvement by conducting various surveys, including the manpower and training demand survey, labor panel survey, establishment panel survey, youth panel survey, Korean education and employment panel survey, and human capital corporate panel survey.

3. Training Financing

3.1 State Funding (General Account)

The strategy for securing funding for vocational skills development has changed to match each stage of economic growth.

In the early stage of vocational training policy development, the government selected 16 large companies and provided them with subsidies, financed by the general account

budget to start in-plant training. This was to make enterprises aware of the need for in-plant training, thereby establishing the in-plant training system itself. However, with the subsidy system fully reliant on the general account, there were inevitable limitations in scaling up and sustaining financial viability. Since the collection of vocational training levies began, training funding has come from two separated sources: the general account and the fund created through training levies. State funds from the general account are spent generally on the training and management of craftsmen, instructor training, and training for the unemployed, including unemployed youths, at public vocational training institutions.

3.2 Private Funding (Fund)

After the enactment of the Basic Vocational Training Act, the Vocational Training Promotion Fund served as the main private funding source. And since the introduction of the Employment Insurance Act, private funds have been allocated from the Vocational Skills Development Project Fund. The obligatory in-plant vocational training system was established to secure funding for vocational training, and thus to supply skilled workers at early stages of industrialization. However, there was a side effect to this plan: Private enterprises increasingly depended on state funds to train workers. The controversy over private funding is described below.

The government obligated enterprises of a certain size to provide in-plant training. At the early stage of industrialization, when skilled workers were needed (especially in the manufacturing industry), investment by large companies to train employees was emphasized through the obligatory in-plant vocational training system. This government regulation continued to exist after the integration of the vocational training system into the employment insurance system. However, imposing in-plant vocational training, without allowing companies to use the external training market in the early years of the obligatory training system, inevitably put too heavy a burden on those not prepared for such a system. Enterprises unable to comply with the in-plant vocational training obligation were allowed the option of paying training levies, and doing so was considered by many to be more advantageous than setting up and operating in-plant training facilities. As a result, many enterprises opted to pay training levies, instead of establishing and operating in-plant training facilities. This created the perception among enterprises that they could fulfill the training obligation just by paying training levies. Although government-led public training was provided as well, the policy of putting too heavy a burden on enterprises not prepared to bear the costs of producing skilled workers was still a problem. This is an example of the government intervening in the market temporarily, but also a little too excessively.

As the economy made progress, enterprises required highly-skilled workers, product life cycles became shorter, and technology changed rapidly. Faced with these changes, the government began to recognize the need to give workers opportunities to develop vocational skills voluntarily throughout their careers. Therefore, the government reformed the obligation to pay vocational training levies, to fit into the framework of the

employment insurance system. Vocational training levies that had been imposed mainly on large companies were renamed employment insurance premiums, and have since been imposed on all enterprises. And incentives for enterprises to provide training were further strengthened. If an enterprise conducted training, the training expenses were reimbursed out of the employment insurance fund. In addition, the government implemented a preferential policy for SMEs that started to spend training costs, even though no change had been made to the policy of imposing the full costs of training on enterprises. An SME which conducted training under the employment insurance system could get a refund on training costs that were higher than its insurance premiums. This was a policy that took into account the nature of training as a public good, and imposed equality between enterprises of different sizes. However, some people have raised a question over whether the incentive is sufficient to ensure equal treatment to SMEs. In response, the government has carried out special support programs, targeting SMEs.

Table 3-2 | Changes in Vocational Training Funding Strategy in Korea

Funding measure	Advantages	Disadvantages
Vocational Training Subsidy System (1967)	Additional burden on employers was eased as a result of government subsidies for instructor costs, training facilities, etc.	Deadweight loss in government subsidies, budget constraints.
Vocational Training Obligation and Non-Compliance Penalty System (1974)	Enterprises were encouraged to train necessary workers voluntarily, and consensus on joint responses to manpower scouting was created among enterprises.	Failure to fully reflect workforce demands of individual enterprises due to the training obligation imposed in an one-size-fits-all manner.
In-Plant Vocational Training Obligation and Levy System (1976) - Based on number of workers	Enterprises were guaranteed supplies of necessary workers, both in quantity and quality, through external training institutions.	Oversupply of skilled workers in certain areas as a result of enterprises training unnecessary workers just to comply with the training obligation.
(1987)-Based on total payroll	Market failure at the national level was prevented, and funds for public training for workers were secured.	Enterprises considered training levies an additional tax that could weaken their competitiveness.
Vocational Skills Development Project under Employment Insurance System (Training Cost Reimbursement System)	All enterprises were obligated to pay training levies as part of the employment insurance system, and reimbursed for training costs in the case of training provision. (Promotion of active labor market measures)	Weak justification as a solution to market failure, heavy administrative burden, possibility of abuse of power, deadweight loss in support for large companies, and too little support for training by SMEs

Source : Kye-woo Lee (2005).

Free market economists hold the position that the supply and demand of vocational training should be determined autonomously in the training market (Kyeong-joon Yoo, 2008). And yet, if the supply of training is not sufficient to meet the demand(or vice versa) a market failure occurs, and it is necessary for the government to intervene in the market until that failure is corrected. In the case of Korea, market failure required government intervention in the initial stage of industrialization. However, as the market becomes more mature, it is more likely government intervention causes government failure (non-market failure), such as deadweight loss (Kyeong-joon Yoo, 2008).[12] Whether a market failure exists or not in the Korean vocational training market can be found through empirical analysis. However, no clear empirical analysis has been available thus far. There is also an argument that the private sector needs to be encouraged to determine the costs of training autonomously, except for certain government-led training, for which a market has barely been created. This is because the vocational training market has expanded gradually, and is expected to continue to do so. However, in Korea, vocational training has been considered public goods, and government policies have had asignificant role in supplementing an undersupply of private-sector training.

3.3 Foreign Capital

It is also worth noting that the Korean government actively attracted loans from advanced countries and international organizations as part of its strategy for financing vocational training.

In the early years of economic development, the state lacked funds for training, especially public training. As a result, the government made efforts to attract financial assistance from advanced industrialized countries and international organizations.[13] During

12 Kyeong-joonYoo (2008) conducted an analysis of workers voluntarily leaving their jobs after completion of training, to see if vocational training is in short supply in the Korean labor market. According to the results of this analysis, no significant difference was found in separation rates between workers who had received vocational training, and those who had not. This result dismisses the hypothesis that training is in short supply across the whole labor market in Korea. However, the result needs to be verified by further studies because data classified by industry and enterprise size may show different results. Another question is whether job separation is the only or best indicator to prove an undersupply of vocational training. Changes in working conditions, such as wage increases and promotion, which take place after training may be a better indicator. If there is an improvement in working conditions, such as a wage increase and promotion, after training, the worker has little reason to leave his/her job.

13 International organizations and advanced countries provided assistance in introducing and establishing the public vocational training system in Korea. As Korea's economic development plan was focused on industrialization driven by the heavy and chemical industries, vocational training had to be provided in occupational areas which could supply the skilled workers needed for the growth of those sectors. At that time, the Korean government actively used foreign loans to set up public vocational training facilities. It not only increased training facilities with the help of loans from the ADB and the IBRD as well as advanced countries, such as Germany, Japan, Belgium and the US, but also conducted overseas training programs to produce excellent vocational training instructors, and expert dispatch programs to learn advanced techniques and know-how in the field of vocational training. Public vocational training facilities in Korea, which were comparable to those in advanced countries and provided intensive practical training, produced good results at home and abroad, and became a model for other developing countries as well (YoHuh, 2002).

its loan negotiations with international organizations, the government strongly expressed its determination to implement these projects, and persuaded them to extend loans, by providing reasonable estimates of expected project results. In order to facilitate such borrowing, the government carried out loan projects using the matching fund method, in which the costs of facilities, such as land and buildings, and operating costs were covered by Korea, while funds from international organizations or advanced countries were spent on buying equipment and dispatching experts. There was also a case in which Korea took the lead in coordinating the roles of different international organizations (e.g. ILO, UNDP, and World Bank). It relied on the World Bank and the IBRD for financial assistance, while obtaining technical expertise from UN organizations, such as the ILO and the UNDP, and individual advanced countries, such as Germany and Belgium. In the 1970s-1980s, Korea established and operated a total of 25 vocational training institutes with loans from international organizations and advanced countries, and thus could supply the skilled workers essentially needed for economic development. Five of them were set up through cooperation projects with advanced countries, and remaining 20 with the help of loans from the World Bank (15 institutes) and the ADB (5 institutes).

3.4 Tax Benefits[14]

From the outset of the vocational training system, the following tax benefits were provided to promote investment in vocational training.

First, technology development reserves were tax-deductible, in accordance with the Restriction of Special Taxation Act. Such reserves included entrusted training costs, the costs of conducting in-plant vocational skills development training and related projects, fees for applying for national technical qualification tests under the National Technical Qualifications Act, the costs of developing human resources and providing technical guidance for SMEs, the HRD costs spent to improve productivity, and the costs of operating a corporate technical university (including graduate schools).

Second, training facilities were granted tax reduction or exemption, under the Local Tax Act. Vocational training facilities (including accommodation) were exempt from acquisition and registration tax on the land and buildings acquired, to be used directly by them.

Third, under the Customs Act, customs duties were reduced or exempted on goods, which were prescribed by the Prime Ministerial Decree, among those imported to be used in schools and training institutes for academic research, education, experiments and practices.

14 Yearbook on Vocational Skills Development Training in Korea, Jun. 2000. Ministry of Labor of Korea

2011 Modularization of Korea's Development Experience
Vocational Training System for a Skilled Workforce

Chapter 4

Evaluation of Korea's Vocational Training System

1. Connection between National Economic Development Plan and Vocational Training System
2. Division of the role of the Government and the Private Sector
3. Adjustment of Training Supply to Meet Industrial Demand
4. Vocational Training Funding Strategy
5. Parallel Development of Vocational Training and National Technical Qualifications System
6. Complementarities between Vocational Education and Vocational Training
7. Limitations of Vocational Training System

Evaluation of Korea's Vocational Training System

1. Connection between National Economic Development Plan and Vocational Training System

Many scholars have agreed that human capital was the key driver behind economic growth in Korea's rapid industrialization. According to On the Mechanics of Economic Development, a paper published by Lucas in 1988, real economic growth rates between 1960 and 1980 were widely different among the countries of the world, with 1.4% in India, 3.4% in Egypt, 7.0% in Korea, 7.1% in Japan, 2.3% in the U.S. and an average of 3.6% across advanced countries. The paper pointed out the different speeds of human capital accumulation among countries as the main variable that could explain the differences in growth rates. Underdeveloped countries were able to produce simple industrial goods efficiently, by eradicating illiteracy and providing standardized education and training. In these countries, continued growth was possible through their governments' low-wage policy and strong leadership, as in the case in Korea (Chul-in Lee, 1998). They could create a virtuous circle in which government-led education and training helped to accumulate human capital, which in turn drove economic growth, and thus had a positive impact in addressing poverty. The International Labor Conference Report of 2008 mentioned Korea, along with Hong Kong, Ireland and Singapore, as a successful catching-up country, and cited its government-led education and vocational training policy as one of the reasons. The report also noted that as part of its five-yearly economic development projects, Korea had flexibly adjusted its HRD policy to respond to skills shortages in an industrialized society.

In the early years of industrialization when Korea was at the growth stage, government-led vocational skills development drove economic growth. Efforts were made to train and supply necessary workers in a timely manner, in response to industrial sophistication, which progressed as the industrial focus moved from light industries, to heavy and chemical industries, and then to service and high-tech industries. As shown

in <Table 4-1>, about 2.5 million skilled workers were trained and supplied over the 30-year industrialization period.

Table 4-1 | Number of Vocational Trainees by Economic Development Plan Period and Type

(Unit: Persons, %)

Type	Total (67-96)	2nd plan (67-71)	3rd plan (72-76)	4th plan (77-81)	5th plan (82-86)	6th plan (87-91)	7th plan (92-96)
Total	2,501,588 (100.0)	98,863 (100.0)	312,736 (100.0)	495,739 (100.0)	273,151 (100.0)	313,275 (100.0)	1,006,822 (100.0)
Public training	623,736 (24.9)	36,317 (36.7)	81,294 (26.0)	120,117 (24.2)	121,044 (44.3)	113,802 (36.3)	151,160 (15.0)
In-plant training	1,502,479 (60.0)	47,225 (48.8)	177,350 (56.7)	337,388 (68.1)	114,773 (42.0)	116,389 (37.0)	708,354 (70.3)
Authorized training	375,373 (15.0)	14.321 (14.5)	54,092 (17.3)	38,234 (7.7)	37,334 (13.7)	83,034 (26.5)	148,309 (14.7)

Source : Ministry of Labor of Korea. Yearbook on Vocational Training in Korea. 1997.

The abundant and qualified workforce provided the basis for Korea's rapid growth and catch-up development, often called a man-made miracle. An analysis of trends in Korea reveals that labor productivity in the Korean manufacturing industry was a mere 12% of that in the US in 1976, but thereafter steadily improved, exceeding to 30% by the early 1990s.

When other developing countries are trying to derive lessons from Korea's vocational training experience for benchmarking, the following should be considered;

If a government takes the lead in formulating and implementing an economic development plan, its vocational training system should be focused on ensuring a smooth supply of skilled workers necessary to execute the plan. Also, the vocational training system should be modified and adjusted according to changes in the economic development plan. In Korea, this kind of connectivity worked consistently and efficiently from the 1960s to until the 1990s. Given that many developing countries establish and implement economic development plans, it is not only feasible but also desirable to establish and implement a vocational training system closely linked to such plans, in order to support their efficient execution.

2. Division of the role of the Government and the Private Sector

Institutionalizing vocational training by imposing legally-binding requirements, like the obligatory in-plant vocational training system, enabled the successful implementation of vocational training in Korea. Korea's vocational training policy could be successfully changed to support economic development, thanks to the division in the roles played by government and the private sector. For a start, the role of implementing vocational training was properly divided between government and private sector, reflecting the situation during each period of economic development.

Korea was clearly aware of the limitations of the market (private enterprises), and adopted a development strategy in which the government directly chose industries (heavy and chemical sectors) to be developed. It was also the government that came up with a workforce training plan. When establishing the first and second five-year economic development plans, the government estimated supply and demand for skilled workers, and developed the vocational skills development system based on those estimates. The introduction and revision of the Vocational Training Act was one of the major tasks pursued by the government, as part of its five-yearly economic and social development projects. Vocational training agencies, such as the Korea Vocational Training Management Agency (present HRD Service of Korea), were also set up under the leadership of the government. In the early years of industrialization, public training still accounted for a large share in Korea, but the government began to provide financial support or incentives to boost training in the private sector. It provided necessary training subsidies to the private sector, and after encountering funding constraints, started to impose training obligations on the private sector. The five-year science and technology promotion plan, or the five-year human resources development plan, was prepared and carried out simultaneously along with the five-year economic development plans (from an interview with Kye-woo Lee, an expert).

Meanwhile, as economic development accelerated in Korea, the private sector grew and began to lead the economy. So the government reduced its role in supplying training, while inducing and encouraging the private sector to increase its role in providing training. For instance, the role of public training was adjusted according to economic cycles. As training demand fell with the economic recession in the 1980s, private-sector training supply shrank within a short period of time. In response, the government strengthened public training. The government ensured the continuation of HRD activities, by expanding public training in the face of the economic recession on the basis that human resources development and labor productivity improvement should be pursued for the long-term. As a result, when the economy began to boom again in the late 1980s and 1990s, it was easy to meet the rising demand for skilled workers.

In order to respond flexibly to changing economic and labor market circumstances, a sweeping amendment was made to the Workers Vocational Skills Development Act in 2004. The amendment was an innovative measure that brought fundamental changes to the vocational skills development system in Korea. It prompted the shift in focus from initial training for basic skilled workers to upgrade training for incumbent workers, and from supply-oriented industrial workforce training to demand-oriented training voluntarily provided by enterprises. It aimed to establish the foundation for supporting workers' lifelong vocational skills development, by reducing unnecessary intervention and reinforcing voluntary private-sector programs.

Table 4-2 | Roles of Public and Private Sectors in Vocational Training

Stage of economic development	Public	Private
1960s	In-plant training was promoted with subsidies, and the vocational training system was established.	Enterprises started to train their new recruits on a small scale, and relied on government subsidies and training materials developed by the government.
1970s	The obligatory vocational training system was introduced, and the pubic training system was established.	Enterprises trained their new recruits on a large scale, and began to pay training levies.
1980s	Private enterprises were given the choice between fulfilling the training obligation and paying levies, to promote voluntary training, and reinforce public training.	Enterprises strengthened training for new recruits and incumbent workers, and preferred to pay levies while avoiding having to provide training.
1990s	Voluntary training by private enterprises was promoted through the training cost reimbursement system, and the government's role in implementing active labor market policies was emphasized.	Voluntary training spread, especially among large companies after the integration of the vocational training system into the employment insurance system, and the economic crisis.
2000s	Emphasis was placed on lifelong vocational skills development for all people, demand-oriented public training (introduction of the individual training account system, etc.), and HRD investment for SMEs and vulnerable groups.	Large companies' level of investment in voluntary training was close to that in advanced countries (spread of IT-based training, such as E-learning). There was a serious training gap between large companies and SMEs.

When other developing countries are trying to derive lessons from the Korean vocational training experience for benchmarking, the following should be considered;

It usually takes a long time to reap the rewards from investment, in the form of skills development. For this reason, it is extremely difficult for enterprises or individuals to recognize the need for skills development, and to invest voluntarily. In particular, at the initial stage of industrialization, management capability and financial resources are insufficient, which makes it more difficult to invest in skills development. That is why governments' policy intervention and regulation are needed.

Public goods like vocational training carry a great risk of market failure, and it is therefore desirable that the government takes the lead in supplying such goods in the earlier period. After they have reached a certain stage, the government can then let the private sector take control. Especially in case swhere countries have a per capita income of less than $5,000, government-led vocational training is effective as a driving force for industrialization. The term "government-led" also means that the policy must be institutionalized by law, as exemplified by the introduction of the obligatory vocational training system.

However, vocational training for particular target groups, such as the poor, the vulnerable, and priority investment areas under a national workforce policy, needs continuous attention and pre-emptive investment by the state. As demand for skills changes rapidly due to advances in information and communications technology, in addition to globalization, the role of the private sector in training should grow further. So governments should also focus on providing active incentives to promote in-plant training and private training markets.

As for vocational training, a division of roles between state and private sector is neither fixed, nor can it be said conclusively that a particular model will always bring success. Therefore, the appropriate distribution of roles between government and private sector for each state, stage of economic development, and industrial sector should be decided after careful consideration. It takes a long time for an industry-oriented system to take root in developing countries with a traditionally weak basis for private-public cooperation, but building a private-sector involvement mechanism is very important in the long term.

Box 4-1 | Necessity and Areas of Government Intervention in Vocational Training

1. Necessity of government intervention in vocational training: 3 aspects

A. Efficiency of resource allocation: market failure

- Government intervention is needed if a market failure occurs, in which training supply falls short of the level required by society due to the existence of externalities, asymmetric information, and imperfect capital market.

B. Equality of resource allocation

- Government intervention intended to support the economically disadvantaged, such as the long-term unemployed, welfare recipients, low-income people and the disabled, can be justified with no empirical evidence, and irrespective of the efficiency of resource allocation.

C. Response to HRD dilemmas in knowledge-based economy

- In a knowledge-based economy, skills demand grows rapidly, but great labor mobility causes enterprises to avoid investing in vocational training, and individuals are hard to make a proper investment in training because of information, time and budget constraints. Government intervention is needed to cope with such dilemmas.

2. Areas of government intervention in vocational training in 5 areas:

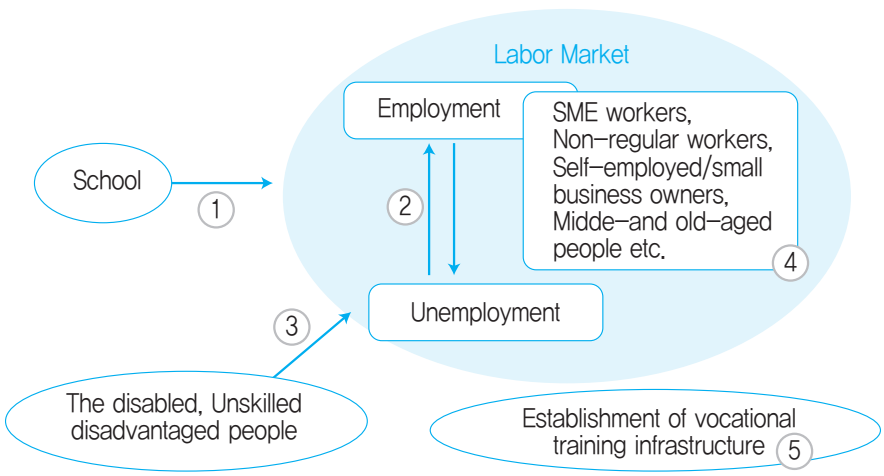
① Those who fail to make a transition from school to the labor market: unemployed youths who do not go on to higher education

② Those who drop out of the labor market: the unemployed, those subject to employment adjustment

③ Those who have difficulties in entering the labor market: the disabled, unskilled disadvantaged people, etc.

④ Those affected by market failures in the education and training market: SME workers, non-regular workers, self-employed and small business owners, middle- and old-aged people, foreign workers, prison inmates, and 3D and high-tech industries

⑤ Establishment of vocational training infrastructure: provision of education and training information, software development, training and re-education of training instructors, training facilities and equipment, etc.

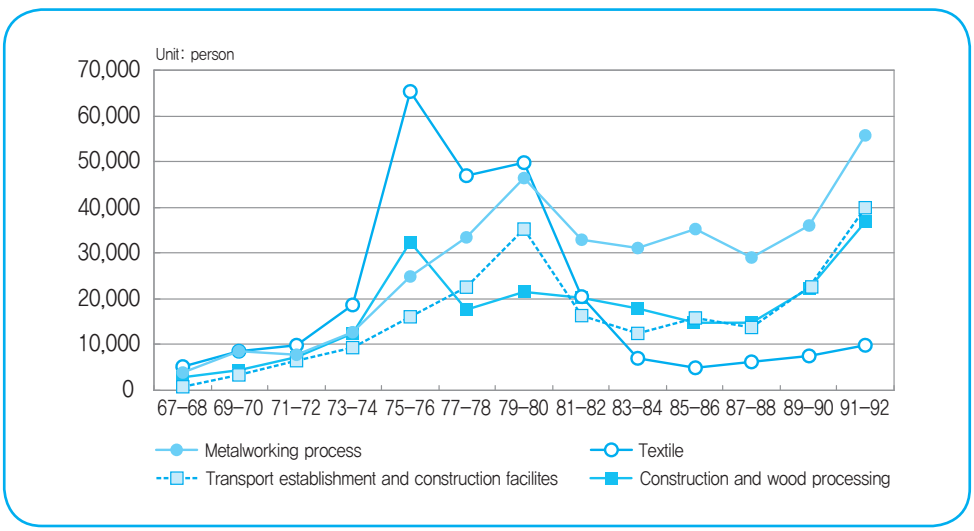


3. Adjustment of Training Supply to Meet Industrial Demand

The purpose of vocational training is to train workers in practical workplace-focused skills within a short period of time. As such, it is very important to select appropriate training fields at each stage of industrial development.

In the early stage of economic development in Korea, occupational areas in demand across all industries were preferentially selected as training fields, and in the case of occupational areas requiring vast or special training facilities, enterprises were encouraged to provide in-plant training, thereby maximizing training effects. Training fields were also adjusted flexibly according to changes in industrial demand. This is shown by changes in the number of trainees in each training field from 1967-68, when the vocational training system was introduced, to the early 1990s. [Figure 4-1] shows trends in the annual number of trainees in the five training fields, with the largest number of trainees among 13 training fields, such as metal processing, transport equipment and construction installation, textiles, construction and wood processing, and electronics.

Figure 4-1 | Number of Trainees in Five Major Training Fields by Year



Source : Ministry of Labor of Korea. Yearbook on Vocational Training in Korea. Yearly

As indicated by the boom in the textile industry at the early stage of industrialization in Korea, the number of trainees in this field sharply increased until the mid 1970s, then declined gradually, representing the smallest portion by the 1980s. The figure for construction and wood working reached its peak in the late 1970s, but dropped sharply thereafter. The number of trainees in the fields of metal processing, transport equipment, and

construction installation, which were small at the initial stage of industrialization, steadily increased by the end of the 1970s to support the heavy and chemical industry initiatives, but thereafter fell, though not as significantly. The electrical contracting and electronics field also saw a steady increase in the number of trainees as industrial sophistication pushed up the demand. In particular, in the early 1990s, the number of trainees sharply rose particularly in the fields of metal processing, transport equipment, and construction installation, with electrical contracting and electronics reflecting the increased demand for skilled workers in those sectors.

The number of occupational areas where training was provided increased from 396 (13 sectors) in 1982 to 456 in 1991, suggesting that training fields were subdivided or increased in number, in response to changes in industrial demand.

Meanwhile, as many skilled construction workers went to the Middle East during the construction boom beginning in the mid-1970s, the domestic labor market suffered from a lack of technical and skilled workers, which led to a rapid rise in the wages of skilled workers in Korea. This is considered a main supply failure, which arose as a result of the government failing to predict skilled workers' move to the overseas labor market when projecting the size of skilled workforce that would be supplied through vocational training (from an interview with Sang-sun Suh, an advisory member).

When other developing countries are trying to learn lessons from the Korean vocational training experience for benchmarking, the following should be considered;

The ultimate goal of fostering and supplying skilled workers through vocational training is industrialization. As illustrated in the case of Korea, when a country transfers its experience in vocational training to a developing country (recipient country), it is essential to examine the industrial demand of that recipient country in advance. Although training a skilled workforce is an indispensible prerequisite for industrial development, it should be noted that the recipient country may not create enough jobs to absorb the increased workforce. It is therefore necessary to recommend social and economic policies, including how to develop the capacity of the existing vocational training system. The recipient country should be given comprehensive recommendations, from an industrialization strategy and estimated demand for workers at each skill level to improvements of the labor market system and measures to complement job placement strategies and reduce structural unemployment.

Above all, it is important to know accurately the industrial demand from the initial stage of project planning. Most developing countries have not built a labor market information system, and thus lack reliable data on workforce demand. In such cases, it is necessary to get comprehensive information on workforce demand by using statistical data offered by international organizations and other international cooperation projects, policy documents of the recipient country, or through consultation with industry and relevant experts (Young-hyun Lee et al. 2009).

4. Vocational Training Funding Strategy

In Korea, the strategy for securing funding for vocational training has been properly changed to suit each stage of economic growth. In the early years of vocational training policy development, the government adopted a strategy of providing 16 selected large companies with subsidies from the general account to start in-plant training. This was done to make enterprises aware of the need for in-plant vocational training, and thus establish the in-plant training system.

However, the subsidy system inevitably had limitations in scaling up and sustaining its finances. Thus, the government obligated enterprises of a certain size or larger to provide in-plant training. At the early stage of industrialization, when skilled workers were needed especially in the manufacturing industry, training investment by large companies was emphasized through the obligatory in-plant vocational training system. After the reorganization of the vocational training system into the employment insurance system, this strategy of using private funds to finance training continued to be pursued, and private funds became a stable source of funding.

It is also worth noting that the Korean government actively attracted and used loans from advanced countries and international organizations, as part of its strategy for financing vocational training. In the early years of economic development, the state lacked funds that could be invested in training, especially public training, so it made its best efforts to attract financial assistance from advanced industrialized countries and international organizations.

When other developing countries are trying to derive lessons from the Korean vocational training experience for benchmarking, the following should be considered;

Matching a country's general account budget with private funds to finance vocational training is certainly a very useful funding strategy that can be adopted at the initial stage of industrialization, when state finances are insufficient. However, obligating enterprises to provide vocational training, without allowing them to use the training market, could put too heavy a burden on unprepared enterprises. When imposing the obligation to provide in-plant vocational training, Korea gave enterprises the choice of paying training levies. However, paying training levies could be perceived as more of a disadvantage, if anything, or as a sort of tax among enterprises, and such a negative atmosphere could undermine the promotion of training in the private sector.

Therefore, if a developing country is to apply the funding strategy of matching state funds with private ones, the government's strong will, its publicity activities and leadership, as well as a legal ground for enforcing that strategy, are needed for successful implementation.

5. Parallel Development of Vocational Training and National Technical Qualifications System[15]

National technical qualifications are signals in the labor market, reflecting the skills and capabilities required by industry. Korea introduced a qualifications system along with the vocational training system during industrialization. At first, the qualifications system was intended to increase the credibility of certificates awarded to those who completed training courses. This intention was revealed by the skills testing provision of the Vocational Training Act, enacted in 1967, which clearly stated that the level of a worker's skill should be tested, according to specific criteria to officially certify that skill. Skills tests administered under the Vocational Training Act were divided into written tests and practical tests. Written tests were implemented directly by the head of the Office of Labor, while the implementation of practical tests was entrusted to capable organizations.

The National Technical Qualifications Act was established in 1973 to merge various qualifications administered by different government agencies under different laws, and to give official credibility to skills tests. At the time of its enactment, the Office of Science and Technology was in charge of administering national technical qualifications, with a focus on qualification categories related to the heavy and chemical sectors. In 1981, qualification categories other than those related to the heavy and chemical industries were added, and the Ministry of Labor became the responsible government agency.

Korea's national technical qualifications system has developed alongside the evolution of its industrial structure and vocational training system. The system has generally evaluated workers' skills and training outcomes fairly, and thus contributed to improving workers' vocational skills and corporate productivity. In addition, the system has performed the function of giving feedback as to whether qualifications helped to provide skills education and vocational training that meet industrial demands, and thus contributed to establishing the framework for workforce training that can effectively support industrial development and securing the quality of training. Moreover, it has played a role in rationalizing corporate wage systems, by enabling enterprises to move away from traditional pay schemes based on seniority or education level, and by securing a level of wage and compensation commensurate with craft and skill level through the official recognition of qualifications (from an interview with Kye-woo Lee, an expert).

15 For detailed information on the national technical qualifications system, see another module report, "The National Technical Qualifications System in Korea".

Table 4-3 | Overview of Qualifications (as of July, 2010)

		No. of qualifications	Relevant law	Relevant government agency	Type of qualification (e.g.)
National qualification	National qualification	128	66 different laws	22 ministries, offices, and committees	Lawyer (Attorney-At-Law Act), medical doctor (Medical Service Act), etc.
	National technical qualification	556	National Technical Qualifications Act (Ministry of Labor)	Ministry of Employment and Labor	Professional engineer, master craftsman, engineer, industrial engineer, craftsman, word processor, etc.
Private qualification	Officially recognized private qualification	87	Framework Act on Qualifications (Ministry of Education, Science and Technology)	11 ministries, offices, and committees	Internet information searcher, TEPS, etc.
	Registered private qualification	1,250	Framework Act on Qualifications (Ministry of Education, Science and Technology)	(440 private organizations)	Marriage counselor, certified investment analyst, etc.
	In-plant qualification	85	Employment Insurance Act (Ministry of Labor)	Ministry of Employment and Labor (44 enterprises)	TV master, customer counselor, etc.

Note : The upper portion of this table, "National qualification" is different from "National technical qualification," sincethe former only provides practitioner licenses.

Source : Private Qualification Information Service (Korea Research Institute for Vocational Education and Training, 2010), Q-net (HRD Service of Korea, 2010).

The role of the private sector has gradually increased in the qualifications system, as in the vocational training system. As of 2010, there were a total of 556 national technical qualifications, and the number of purely private qualifications was more than 1,300. The state and private sector have strengthened their cooperation in accurately testing skills and clearly establishing the capabilities required by industry.

When other developing countries are trying to derive lessons from the Korean vocational training experience for benchmarking, the following should be considered;

A national technical qualifications system is essentially needed for the efficient management of trained workers. The quality of training varies widely among training institutions, and to address this problem, a qualification certification system, the credibility of which is established at the national level, is necessary. A national qualifications system

helps to increase the efficiency of vocational training and supply the market and individual enterprises with workers they want, by assessing and certifying the skills of individual workers. To serve these purposes, national technical qualifications should be able to show the relative skill levels between various workers within the same skills category. This underscores the importance of ensuring equivalence between national technical qualifications and other forms of national qualifications, such as academic degrees or certificates.

Given this, countries should consider their political and economic conditions, such as industrial relations, labor market systems, and relationships between school education and vocational training, when designing their national technical qualification systems. And because each country faces different conditions, national technical qualifications systems may differ from country to country, in terms of the way national technical qualifications are linked to academic degrees, the number of qualification levels, the number of qualification categories, and more.

6. Complementarities between Vocational Education and Vocational Training

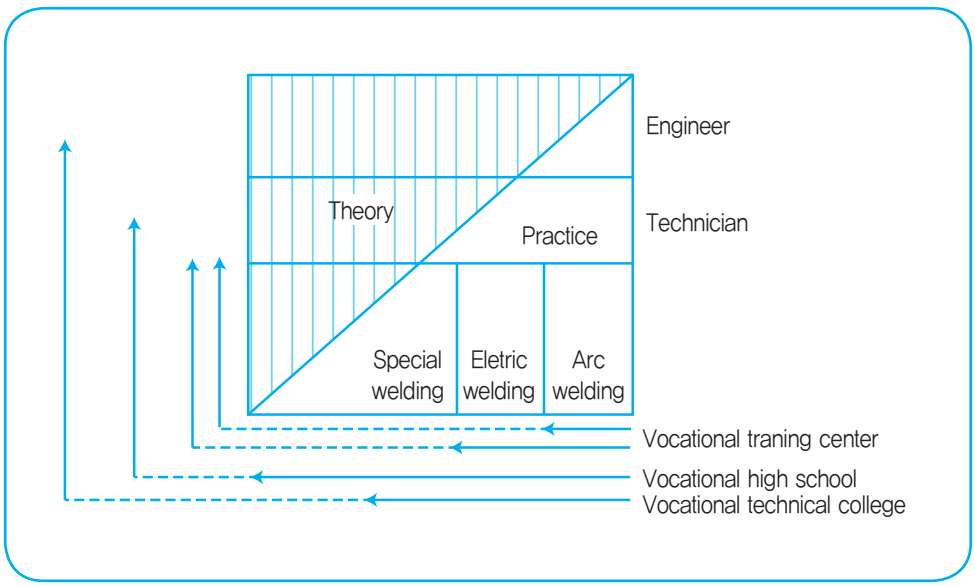
Skilled workers required for industrialization are generally trained in one of two ways: formal vocational education at academic institutions or vocational training. Formal vocational education produces skilled workers by providing long-term basic skills education in secondary education courses, and vocational training supplies skilled workers to industry by providing short-term professional skills training to prospective or incumbent workers. Many countries in the world introduced a vocational training system, despite the fact that they already had a vocational education system, because formal education alone is not enough to satisfy the various workforce demands of a modern industrialized society (Sang-sun Suh, 2002).

In the case of Korea, skilled workers have been trained and supplied through formal school education, such as vocational high schools, and informal education, such as technical schools and vocational training facilities. In order to train workers needed for industrialization, the formal school education system and vocational training system have been implemented and developed concurrently, thereby minimizing gaps in workforce supply.

Take as an example the second five-year science and technology promotion plan established in 1966. Based on estimated supply and demand for scientists, engineers, technicians, and craftsmen, the plan noted that it would be necessary to provide vocational training because technicians and craftsmen would be in serious short supply. To ensure a smooth supply of craftsmen, the curricular of vocational high schools were reorganized in a way that would train and supply the skilled workers required by industry, and the Central Vocational Training Institute was set up under the Office of Labor to foster training instructors, administer skills tests, produce training materials, and manage overall matters

concerning vocational training. In 1977, the Ministry of Culture and Education and the Office of Labor worked together on a plan to train a skilled workforce for rapid economic growth. In the plan, the number of skilled workers needed to cope with a sophisticated industrial structure was estimated by schooling stage and skill level. As shown in [Figure 4-2], education goals (levels) and theory-to-practice ratios were set differently by school type, to meet workforce demand.

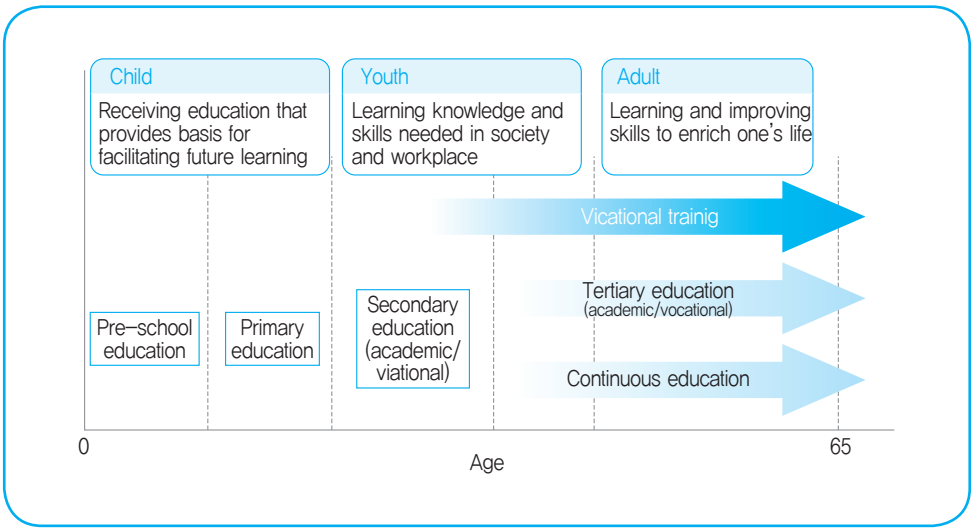
Figure 4-2 | Education Goals and Contents of Vocational High School, Vocational Technical College and Vocational Training Center



Source : Kye-woo Lee (1983). Human Resources Planning in the Republic of Korea-Improving Technical Education and Vocational Training. World Bank Staff Working Paper no. 554.

Apart from vocational education offered by formal education courses, the vocational training system, which provides workplace-focused training in various ways, has been operated under the responsibility of labor authorities in Korea, like in most of advanced industrialized countries. This must be considered by developing countries when establishing a workforce training policy.

Figure 4-3 | Roles of Formal Vocational Education and Vocational Training at Each Life Stage



When other developing countries are trying to derive lessons from the Korean vocational training experience for benchmarking, the following should be considered;

In Korea, vocational training and vocational education have developed side-by-side, complementing each other and sharing roles to train the national workforce. However, other developing countries need to take into consideration their unique economic situations when applying such a system. In the case of underdeveloped countries with a weak industrial base, the focus should be placed on primary education to build basic skills, such as literacy and numeracy, rather than on vocational training. After such a basis has been established, they should then design a vocational education and training system. This is because vocational training is more effective in supplying skilled workers in developing countries, where basic education has been developed to a certain extent, and where the manufacturing industry is growing.

7. Limitations of Vocational Training System

Korea's vocational training system is viewed as an overall success, but some problems are nonetheless apparent. To begin with, there was the vocational training levy system that imposed a financial burden on enterprises. There was also an oversupply of skilled workers in particular areas, a supply and demand mismatch caused by shortages of skilled workers in newly emerging areas, and poor outcomes for training unemployed workers following the economic crisis. Furthermore, a more innovative policy approach has been needed to cope with rapidly changing circumstances at home and abroad in recent years,

such as the arrival of the era of lifelong vocational skills development, and the growing awareness among enterprises about the importance of skills development. They are examined in more detail below.

First, the vocational training levy system, essentially a regulation imposed on enterprises, brought inevitable side effects. The government's leading and active role had positive aspects, such as greatly contributing to the development of the vocational training system, and the training of an industrial workforce. However, problems stemming from excessive regulation and enforcement of vocational training offered by private enterprises, and the direct provision of public vocational training by the government, cannot be overlooked. Although Korea responded to the explosively increased demand for skilled workers at the initial stage of industrialization, a market for private vocational training was never really created, and the vocational training levy system failed to sufficiently boost voluntary training investment among enterprises. The obligatory in-plant vocational training system was effective in securing sources of funding for public vocational training, but did not attain the goal of promoting voluntary training by enterprises, which resulted in enterprises relying too much on the government for workforce training. Moreover, as public training played the dominant role, the growth of a private training market was delayed. Even after the integration of the vocational training system into the employment insurance system, corporate investment in vocational training was not induced as much as expected.[16] In short, imposing a financial burden on enterprises, by obligating them to provide training without considering their capacity, led to inevitable resistance.

In the case of Korea, the obligatory vocational training system, though its timing and method was right, caused government failure because it was maintained longer than necessary. According to a recent study by Kyeong-joon Yoo (2008), there is no empirical analysis showing that market failure exists in the Korean training market. The study also presents empirical data supporting the assertion that there is no undersupply of training in the labor market, and therefore concludes that government intervention in the field of training should be reduced in the long term. However, the dependency of enterprises on the government for training has not been reduced thus far. SMEs are still suffering from shortages of skilled workers. Skilled or experienced workers are still frequently scouted by large companies, and there is a growing need to provide training to vulnerable groups, such as non-regular workers and the unemployed. Given the nature of training as a public good, more profound studies are needed on the issue of whether government intervention is reasonable and appropriate at this time.

16 It is pointed out that such a result was due partly to the inflexible training pricing system failing to reflect market prices. According to a recent study, enterprises spent 190% of the set training price to train incumbent workers. Given that training costs were reimbursed up to 100% of the training price, this means that they spent nearly double the reimbursed amount (Young-seop Choi et al. 2008).

Second, although from a macro point of view, vocational training is considered to have successfully reflected the workforce demands of industry, it is seen as not having responded well enough to the sophistication of the industrial structure. In its early days, the vocational training system failed to meet the demand for new skilled workers, putting a strain on the national economy. There were also cases where failures to ensure a smooth supply of workers caused problems, such as overheated competition to secure a workforce and higher wages. For instance, when the footwear industry grew substantially in the 1970s, an insufficient supply of workers to the industry led to a large increase in the wages for shoe factory workers. And when the development of new towns demanded massive numbers of skilled workers in the 1990s, a competition to secure workers erupted among developers, because they were not prepared to meet such a huge demand (Sang-sun Suh, 2002). It is also pointed out that industries develop at different paces and have different characteristics. As a result, the government-led and inflexibly-applied obligatory in-plant vocational training system[17] was inadequate to address the resulting market failure. Kil-sang Yoo (2007) describes the vocational training pursued so far by the Korean government as "training for activity," meaning that the government was often a step behind, rather than effectively implementing necessary policies in a timely manner in response to changing circumstances. He considers that remnants of the old paradigm still remain, such as focusing on initial training, training for production workers, hardware investment, supply-oriented regulation-driven training, and training by large companies. He proposes a switch to "training for impact," in which the government finds innovation-focused vocational training policies that can build SMEs' capabilities to achieve workplace innovation through learning organizations, for example. It is also pointed out that the qualifications system, which acts as a mechanism for signaling skill levels, does not properly reflect the demands of industry, the end user.

Third, vocational training for the unemployed should be judged by its effectiveness. Such training should be provided in sectors and occupational areas with good employment prospects, which was not always the case. During the economic crisis of 1998, when the number of jobless people exceeded one million, vocational training was provided to more than 300,000 jobless people for varied periods ranging from three months to one year. Vocational training for the unemployed had great significance in itself, since it prepared jobless people for re-employment by preserving their skills, which could easily be degraded during unemployment, and serving as a social safety net by providing training allowances and education programs, to promote both economic and psychological stability. As the economy recovered, vocational training for the unemployed settled down as a stable system, raising interest in its re-employment outcomes and program quality. However, the outcomes fell short of expectations, and subsequent policy responses were also not satisfactory.

17 In the early days of the system, the number of workers that must be trained by enterprises was determined in a one-size-fits-all manner regardless of industry or enterprise size. But later the system was improved to set and announce the number differently according to industry. However, such an improvement did not win support from enterprises amid economic downturn (Sang-sunSuh, 2002).

Finally, there is an issue of how effective establishing public training institutes with assistance from international organizations or advanced countries can be. There is no doubt that Korea set up many public vocational training facilities with help from international organizations and advanced countries, and was able to supply excellent workers necessary for economic development within a short period of time through such facilities. However, it is hard to judge how suitable Korea's growth model is for other developing countries. Since the 1990s, Korea has strengthened its role as a donor country to spread its growth model to other developing countries. However, they could not achieve as much as Korea had, due to cultural differences, language problems, inadequate training equipment, problems with the use of experts, etc. In order to get better outcomes from vocational training programs, individual countries should make a thorough analysis of their social and economic situation and overall industry, to establish a development strategy based on its results. They need to establish and execute a differentiated policy that suits their unique domestic situation.

2011 Modularization of Korea's Development Experience
Vocational Training System for a Skilled Workforce

Chapter 5

Implication

Implication

Korea introduced the vocational training system with the enactment of the Vocational Training Act in 1976, in order to supply the skilled workforce needed for industrialization. Since then, the system has been changed to respond adroitly to each stageof economic development, and thus helped to satisfy the workforce demands of the labor market and constantly improve the quality of the workforce.

The vocational training system that drove industrialization by training skilled workers, especially for the manufacturing sector in the 1970s and 1980s, was developed into a system operated based on labor market conditions, estimating supply and demand for skilled workers according to each stage of industrialization. Its funding strategy was also properly changed to suit each stage of economic growth. At the initial stage of growth, the government-led obligatory vocational training system was implemented, but later it was reorganized into the private sector-led employment insurance system. In 1995, the vocational training system transformed itself into an active labor market policy within the framework of the employment insurance system. In 2004, it was further expanded and developed to support lifelong skills development under the Workers Vocational Skills Development Act. The vocational training system, which has been changed in response to each stage of economic growth, has constantly backed up Korea's economic development by reducing poverty in the early years of economic development and fostering competitive workers suited to a knowledge-based economy.

Korea's economic growth is considered the most remarkable and successful case of economic and social development among developing countries since World War II. The root of it ssuccess lies in the excellent workforce trained through HRD programs, which is recognized as a success model for developing countries. Korea sees vocational training in developing countries as a core project in which it has a competitive advantage, and is making systematic efforts to pass on its development experience and strategies to other developing countries. Korea's overseas assistance model in the field of vocational training aims to support "other developing countries' capabilities for economic development and

growth." According to the choose-and-focus principle, recipient countries and areas of assistance are selected, and experience and knowledge are then transferred to them. Korea's experience in its economic development, creating a workforce through a strategic training system, which has shored up such development, have been acknowledged by the World Bank and the ILO as a genuine success model, and is expected to offer informative lessons for other developing countries that intend to use a skills development strategy to escape poverty and achieve sustainable growth. The detailed lessons are as follows:

First, it is necessary to implement a tough vocational training policy that is closely linked to any national economic development plan. Globalization gives countries opportunities to create more economic wealth, thanks to increased trade between countries, the spread of knowledge, and more. On the other hand, it is highly likely to intensify polarization by widening the knowledge gap, which puts developing countries in a more vulnerable position. A state-led tough vocational training policy designed to address such a problem can ease shortages of skilled workers in industries with high workforce demand, and promote social integration by developing the potential of vulnerable groups prone to social exclusion.

Second, the primary goal of vocational training should be to improve corporate productivity. To that end, institutional improvements that can reflect market demands and utilize new technological advances are urgently needed. It is necessary to differentiate vocational training policy according to enterprise size. For large companies, regulations should be relaxed to allow them to carry out vocational training voluntarily. For SMEs complaining of a lack of learning time and money, it is effective to build infrastructure, such as support for on-the-job training and corporate learning organizations.

Third, identifying the workforce demands of industry early, and reflecting them in policy, is essential for the successful implementation of any vocational training system. During the early stage of industrialization, Korea estimated the required number of skilled workers. Recently, it has conducted the workforce and training demand survey every year to resolve skills gaps between regions, and between skill levels. Early signs about the workforce, and the skills demands of industry, can be used as basic data to increase workers' employability.

Fourth, a vocational training system is a useful means to bring into the formal sector those not protected by a social safety net, and vulnerable groups that have special social needs. Korea strengthened IT training for unemployed youths who had difficulties entering the labor force during the economic crisis of 1998, thereby turning a crisis into an opportunity. It has since promoted employment by providing specialized training programs for self-employed small business owners, welfare recipients, career-break women, et al.

Fifth, countries have different experiences and best strategies vocational training, depending on what stage of economic development they are in. It is therefore necessary to consider ways to share experiences, and give help to one another. A framework for cooperation in vocational training between countries should be established, so that they can share information and knowledge with one another. And international organizations should play a stronger role in disseminating best practices in skills development, and spreading successful project models.

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