

# **Case Study: Technical and Vocation Education and Training (TVET) System in Korea**

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# Contents

## 1. Introduction

- 1.1. Background
- 1.2. Overview of Korean TVET System

## 2. Pre-employment Training

- 2.1. Background
- 2.2. Secondary Level TVET
  - Visit to Busan National Mechanical Technical High School (BMT)
  - Visit to Busan Tourism High School
- 2.3. Tertiary Level TVET
  - Visit to Busan Korea Polytechnics
- 2.4. Lessons

## 3. In-service Training

- 3.1. In-house training
  - Visit to Hyundai Technical Education Institute (HTEI)
- 3.2. Consortium for HRD Ability Magnified Program (CHAMP) for SMEs
  - Visit to Human Resources Development Services of Korea (HRD Korea), Busan
  - Visit to Busan Regional Human Resources Development Center
  - Visit to POSCO
  - Work-Parallel System**
  - Visit to Bu-Yong CTS
- 3.3. Lessons

## 4 Employment Service

- 4.3. Introduction
- 4.4. Cases
  - Visit to Busan Employment Plus Center
  - Visit to Busanjin Women Employment Center
- 4.5. Lessons

## 5 Conclusion and Discussions

## **Introduction**

In August 2016, the World Bank signed an agreement with the Government of South Korea to finance a program to improve the quality and relevance of workforce training in Europe and Central Asia (ECA) countries, by identifying effective strategies to enhance the match between skills supply and demand. The program is structured in three components. Component 1 consists on piloting a set of instruments to map training institutions and assess the quality of their training services. Component 2 focuses on assessing the skills demand in key sectors. Component 3 seeks to deepen the partnership between the Korea Research Institute for Vocational Education and Training (KRIVET) and the World Bank to enhance knowledge on effective policy development to improve workforce training for ECA countries. To achieve the objective of Component 3 the Government of South Korea and the World Bank agreed to carry out a jointly facilitated study tour to South Korea for delegations of ECA countries.

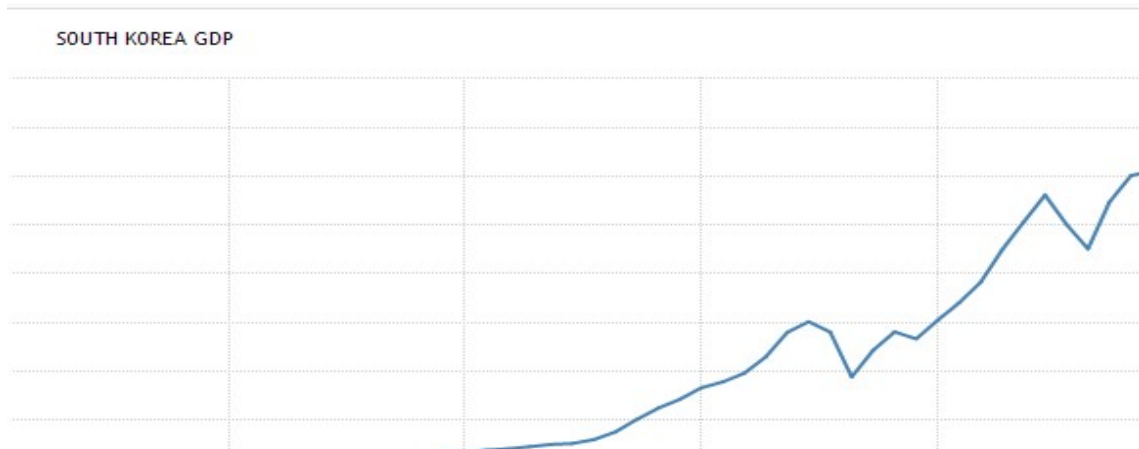
The purpose of this study is to introduce ECA region delegates to Korea's TVET policy that aims to reduce skills mismatch and enhance workers' competencies. The introduction unfolds via a tour of the best TVET providers. This first-hand review of Korea's policy could assist the delegates with successful TVET policy development and implementation in their respective countries.

This paper opens with an overview of the Korean TVET System, ranging from the areas of pre-employment training for youth, in-service training for employees, and an employment service program for the unemployed. Next, each of these training types is explored further in each section, and specific providers, serving as examples, accompany the government's policies for each training type. By doing so, the delegates may gain an understanding of how the government guides TVET providers and, accordingly, how providers execute best practices in their respective roles to provide trainees with demand-driven skills as well as employee training. A description of each provider's highlights is presented, and the section concludes with several lessons drawn from the cases. The paper addresses some issues that could serve as talking points during the study tour in Korea.

### **1.1. Background**

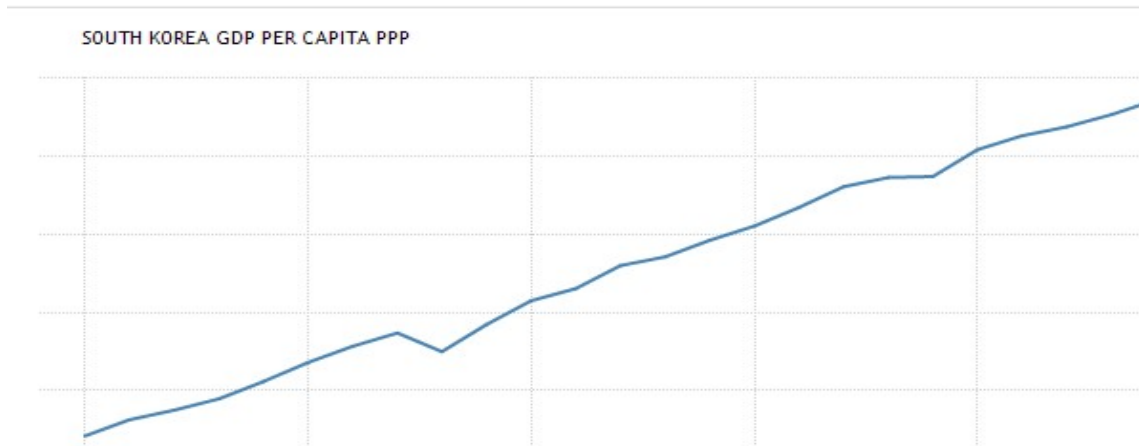
Korea has experienced rapid economic growth since the 1950s, and as of 2014, its GDP reached 1,410 trillion USD (Figure 1) and GDP per capita (PPP) also increased to 33,629 USD (Figure 2).

Figure 1 GDP Growth Since 1960



Source: retrieved from <http://www.tradingeconomics.com/south-korea/>

Figure 2 GDP per Capita PPP Since 1990



Source: retrieved from <http://www.tradingeconomics.com/south-korea/>

During the country's rapid economic growth, there is no doubt that education and training played a key role in this development by providing skilled-workers to the growing industries. This was possible, because in Korea, education, economic growth, and the labor market are closely related.

**Economic policy guides education and training policy** based on the assumption that education, although not sufficient, is a necessary factor contributing to the country's economic growth by providing adequately skilled workers to the labor market. Table 1 summarizes periodic key industry highlights and their corresponding educational policies (Jang, 2009).

Table 1 Relationship between Economic Policy and Education and Training Policy in Korea

Economic Policy	Educational Policy
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1950s	Aid economy	Provision of primary and middle schools
1960s	Export oriented, Labor-intensive, light industry	Expansion of primary and secondary level; expansion of secondary level TVET
1970s	Export oriented, heavy manufacturing industry	Expansion of TVET secondary and tertiary; emphasis on engineering department, control for the number of university students
1980s	Export oriented, heavy manufacturing industry; electronic and car industry	Expansion of higher education; emphasis on two to three-year college
Since 1990s	ICT, banking, Service, bio industry	Emphasis on ICT and bio tech education

Source: Jang, 2009, p. 87

During the 1960s, the main emphasis was export-oriented, labor-intensive light industry; therefore, unskilled workers were needed. Accordingly, primary education was emphasized (Jang, 2009, p.87). During the 1970s, because the country shifted from a lighter to heavier manufacturing industry, it required different types of labor force, such as skilled technicians and experts. Accordingly, the government expanded the secondary level education, particularly technical and vocational education to meet the demand for skilled workers in the heavier manufacturing industry (Kim, 2000, p. 320). For example, the growth rate of vocational schools was 24.5% during this time. The number of vocational high school students increased from 42.3% in 1975 to 45% in 1980 (Lee et al., 2012). For higher education, engineering schools were expanded to supply skilled workers in heavy industry (Kim, 2000, pp. 332-334). Since the 1980s, Korea's strategic industry has been shifted to a more skilled intensive industry, such as the electronic and car industries, and to meet this demand, higher education was greatly expanded to train skilled workers for this new type of industry (Jang, 2009, p.87). Korea's TVET system has been continually guided by the country's economic policies.

The primary TVET policy is the “**Work-Study Parallel System**”, an umbrella TVET policy that applies to both the provider and industry: under this system, technical vocational students study theory in school and receive practical on-the-job training simultaneously. Once hired, these students continue to receive both theory and practical training while working at companies under Consortium for HRD Ability Magnified Program (CHAMP) for SMEs. In addition, this system encourages companies, particularly SMEs, to provide training to their workers. Moreover, under CHAMP, workers of SMEs receive training in a common training center provided by either selected training institutes or large companies. Also, under the Work-Study Parallel System for new hires, new hires receive NCS-based training while on-the-job; in addition, any new hire at a company who has undergone a change in career or is at least 15 years of age or older can be selected as a 'learning worker' and engage in the aforementioned training program. Furthermore, under this Work-Study Parallel system, Korean TVET providers align their programs' developments with governmental strategies and depend heavily upon the government's financial support, regardless of their public or private statuses.

At the same time, the government has developed and instituted **National Competency Standard (NCS)-based training and qualifications** for utilization in TVET schools or companies. NCS serves as a channel for responding to the demands of industries and for reforming the curriculum

of secondary schooling, colleges and the educational delivery system. The NCS identifies and standardizes the competencies required for job performance at a certain level. A Competency Unit is a comprehensive concept of ability in the area of knowledge, skills and attitudes necessary to perform a job, and each unit also includes criteria for the assessment of that ability. This competence-based system, in particular, focuses on problem-solving, communicating, relationship management and teamwork. The NCS address 20 industry categories, including agriculture and forestry, textiles, chemicals, machinery, electronics, environment, financial services, healthcare, culture, tourism, food processing and human services. As of today, the NCS has been developed for more than 800 occupations, and for each occupation, about 10 competency units have been developed. HRD Korea is responsible for developing the NCS in collaboration with Sector Councils in their relative sectors. MOEL is responsible for operating the NCS and overseeing its application in the labor market. Nine government ministries are also responsible for operating the NCS in 20 industry categories in their respective areas. KRIVET, the government agency, is developing an NCS-based curriculum. This modularized curriculum will be used by training institutes, Mister high school, and vocational colleges. Accrediting agencies for qualifications will use the NCS to issue a qualification.

In addition to guiding TVET providers for youth in transition from school to the labor market and companies needing in-house training for their employees, the government also supports the unemployed via the provision of **employment services**. To provide improved services that meet an individual's needs and increase the efficiency of bureaucratic work, the government has moved towards a consolidated system of service that provides employment, welfare, and microfinance services in a single space.

## 1.2. Overview of Korean TVET System

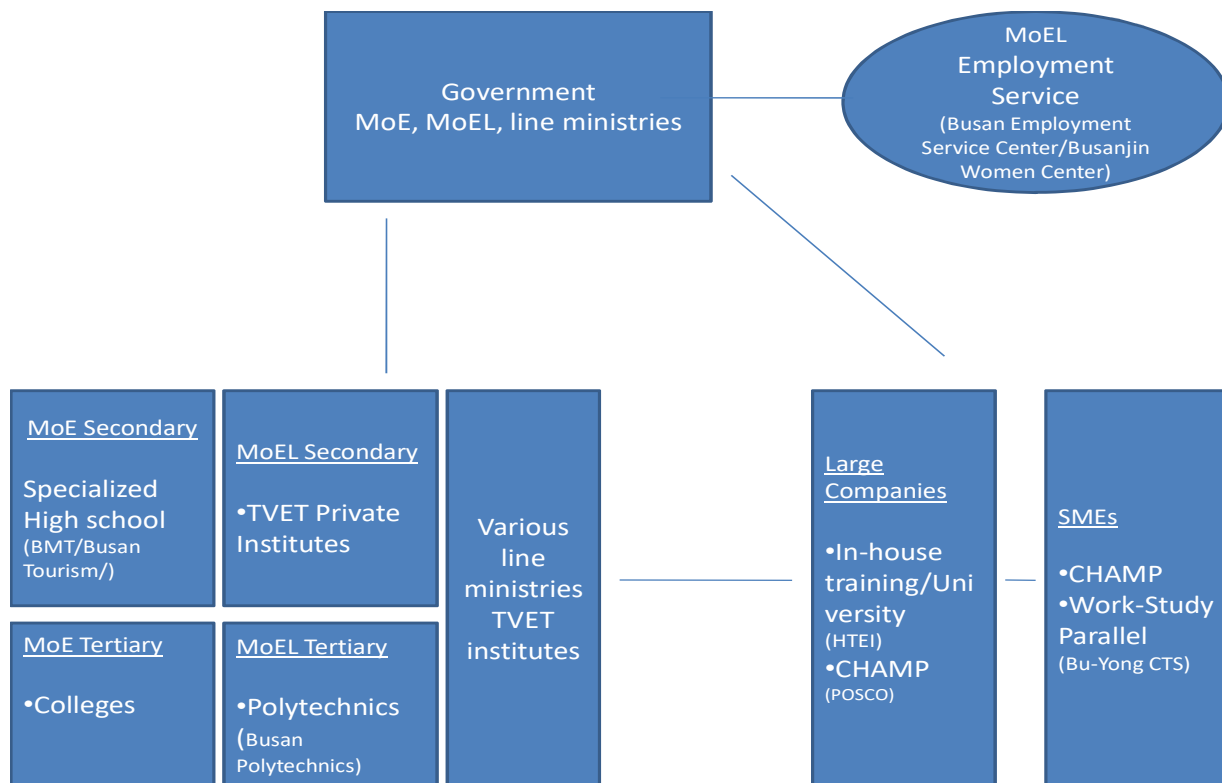
Training is provided via schools or accredited training institutes overseen and managed by the MOE, MOEL, and other appropriate line ministries as shown on the left side of Figure 3. Under the educational system, training is provided to youth via Specialized, Meister, and Apprenticeship High Schools at the secondary level and two- to three-year colleges at the tertiary level. The participants will visit Meister and Apprenticeship High Schools (BMT and Busan Tourism High School). Funded by the MOEL, various private TVET providers provide non-degree courses at the secondary and tertiary levels. Korea Polytechnics provide tertiary level TVET. The participants will also visit Busan Korea Polytechnics.

Training reflected on the right side of Figure 3 is provided via On-the-Job training at various companies. Korea has engaged in a work-study parallel system, adapted from Sweden's apprenticeship model. This system aims to help youth ease labor market entry and, simultaneously, companies reduce retraining expenses for new hires. First, a job seeker is hired by a company to become a 'learning worker'. Next, the learning worker gains practical knowledge 'on-the-job' and theoretical knowledge via training institutes. All training is NCS-based and qualifications are acquired at the conclusion. In the study tour participants will visit Bu-Yong CTS, one of the participating companies that has provided new hires with NCS-based training for the past three years. In-service training is also provided via CHAMP which is specifically designed to support SMEs in retention of competent workers, as well as increasing workers' practical and theoretical knowledge while on-the-job. Large companies provide

training to their workers via an internal training program or university (e.g. Hyundai Heavy Industries Engineering University); but SMEs do not have the same capacity to promote their workers' competencies. In response to the latter, the government has intervened via the CHAMP Project under the Work-Study Parallel System. In these efforts, a joint training center is selected if it has more than 30 participating companies; if approved, the center receives financial support, including operational costs, facilities and training materials from the government. Joint training is divided into two types: large companies to realize win-win cooperation between small- and medium-sized enterprises and training institutes to support SMEs in strategic sectors. POSCO, which will be visited during the study tour, falls under the former.

MOEL also offers training, unemployment benefits and job listings to the unemployed. During the study tour participants will visit one of the welfare centers located in Busan and the Busanjin Women Welfare center designed specifically to support female job seekers.

Figure 3 Overview of Korean TVET System



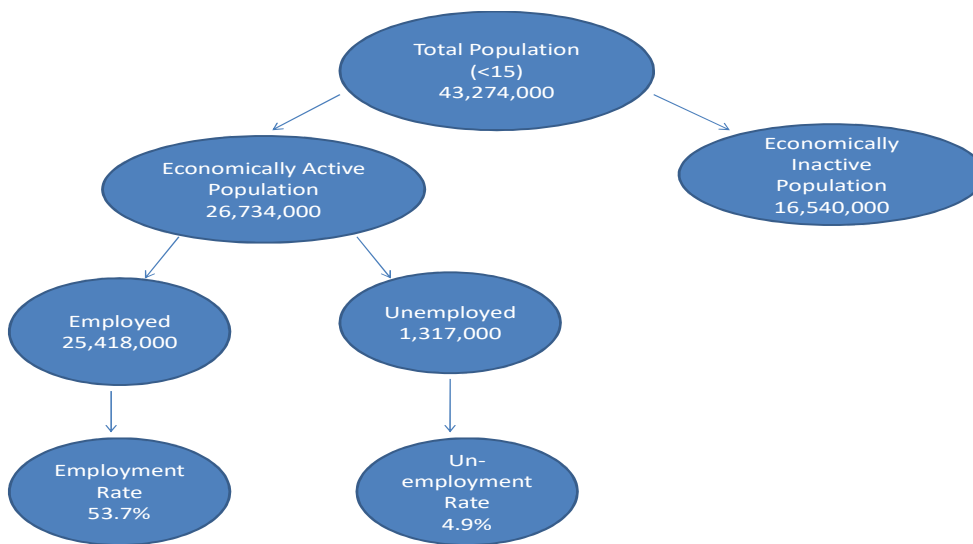
## 2. Pre-employment Training

### 2.1. Background

As of February 2016, Korea's employment rate is 53.7% and unemployment rate is 4.9% (Statistics Korea). The total population aged 15 and over is divided into two groups: economically active and economically inactive. The economically inactive population refers to

those who are not in the labor force during a short reference period, including those who are either in educational institutions, retired, engaged in family duties, or other. The labor force participation rate is the proportion of the population ages 15 and over that is economically active. The economically active population is then divided into the employed and unemployed. The employed are those aged 15 and over who report that they have worked for at least one hour in the previous week. Employment rates are calculated as a percentage of the employed in comparison to the total population aged 15 and over (economically active and economically inactive). On the other hand, unemployment rates are calculated as a percentage of unemployed workers in comparison to the economically active population only (number of people employed and unemployed).

Figure 4 Employment and Unemployment Rate as of February 2016



Source: Statistics Korea retrieved from <http://kostat.go.kr/portal/eng/index.action>

Youth employment (Table 2) and unemployment rates (Table 3) show that Korean youth's unemployment rate is lower than that of other developed countries, and youth aged 15-29 years (8.0%) show the lowest unemployment rate among the same group of countries. On the other hand, the employment rate of both groups (15-24 and 15-29) is lower than that of other countries. Even if we extend the age to 29, the youth employment rate (40.3%) is still lower than that of other countries, except for France (30.8%) and Japan (39.2%).

Table 2 Youth Unemployment Rates, 2010

	Korea (15-24)	Korea (15-29)	USA	U.K.	Germany	France	Japan
Total workforce		3.8	7.9	7.9	7.2	9.3	5.3
Youth	9.8	8.0	19.1	19.1	9.7	22.5	9.2
Unemployment Rate							
Youth/Total	2.6	2.1	2.4	2.4	1.3	2.4	1.7

Source: Nam & Kim, 2013, p. 14



Table 3 Youth Employment Rates, 2010

	Korea (15-24)	Korea (15-29)	USA	U.K.	Germany	France	Japan
Total workforce		63.3	66.7	70.3	71.2	64.0	70.1
Youth Employment Rate	23.0	40.3	45.0	50.9	46.8	30.8	39.2
Youth/Total	36.3	63.7	67.5	72.4	65.7	48.1	55.9

Source: Nam & Kim, 2013, p. 15

However, there is a continuation of a high portion of the economically inactive population in this age group, which is more than 50% of the youth population. Table 4 illustrates the labor force participation rates in addition to employment and unemployment rates for young people aged 15-29 years.

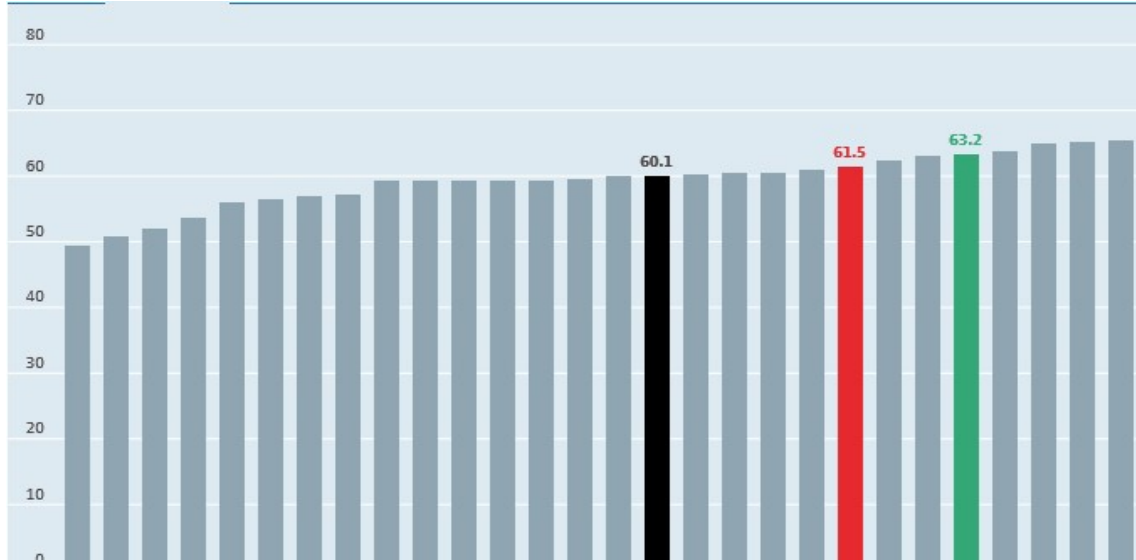
Table 4 Youth (15-29) Workforce Trend between 1980 and 2012 (unit 1,000)

	Population (15 or over)	Economically Inactive Population	Employed	Unemployed	Labor Force Particip ation Rate	Unempl oyment Rate	Empl oyment Rate
1980	9,949,000	4,933,000	4,547,000	469,000	50.4	9.4	45.7
1985	11,242,000	6,151,000	4,702,000	389,000	45.3	7.6	41.8
1990	11,531,000	6,219,000	5,022,000	290,000	46.1	5.5	43.6
1995	11,734,000	6,028,000	5,443,000	263,000	48.6	4.6	46.4
2000	11,243,000	5,962,000	4,879,000	402,000	47.0	7.6	43.4
2005	9,920,000	5,104,000	4,450,000	366,000	48.5	7.6	44.9
2010	9,705,000	5,484,000	3,914,000	308,000	43.5	7.3	40.3
2012	9,517,000	5,398,000	3,843,000	277,000	43.3	6.7	40.4

Source: Nam & Kim, 2013, p. 4

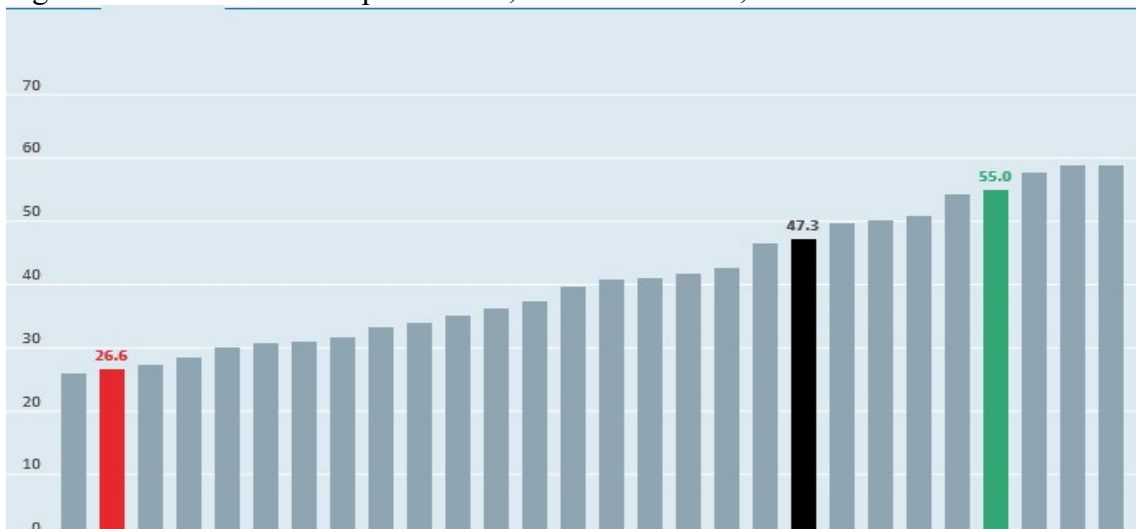
Korea's labor force participation rate for the total age group in 2013 was 61.5% -slightly higher than the OECD average of 60.1% (Figure 5)-, but the labor force participation rate of 15-24-year-olds in the same year was 26.6% - about half the OECD average of 47.3% (Figure 6). One of the primary reasons for such low labor force participation among Korean youth is that most young people desire to obtain white-collar positions at large companies or within the government. However, the number of available white-collar jobs is limited, so competition is high. In order to obtain a desirable position, young people now hold off on immediately entering the labor market and opt for continuing to increase their educational credentials and other skills (certificates, language skills, etc). On the other hand, companies (99% of companies in Korea are SMEs) have faced difficulties finding low- and mid-level workers, particularly blue-collar workers. The mismatch in skills and expectations among both youth and companies has been an outstanding issue in Korea's pre-employment training area.

Figure 5 Labor Force Participation Rates, Total, 2013



Source: OECD data retrieved from <https://data.oecd.org/emp/labour-force-participation-rate.htm#indicator-chart>

Figure 6 Labor Force Participation Rate, 15-24 Year-Olds, 2013



Source: OECD data retrieved from <https://data.oecd.org/emp/labour-forceparticipation-rate.htm#indicator-chart>

**2.2. Secondary Level TVET Provider**

Various line ministries provide secondary level TVET, but the primary player is the MOE with the technical vocational educational system. Korea’s technical vocational schools, referred to as “Specialized High Schools”, include both Meister High Schools and Apprenticeship High Schools. In the study tour, Busan Meister Technical High School serves as one of the best examples of a Meister High School, and Busan Tourism High School serves as one of the best examples of an Apprenticeship High School.

Korea is characterized by low-enrollment rates in technical vocational schools as the country's current labor market structure is favorable towards University graduates, especially those from prestigious universities: in 2012 76.3% students enrolled in general schools and 23.7% enrolled in vocational schools. Oftentimes, TVET students are stigmatized as low-ability students from low-income families and talented students do not apply to technical vocational high schools. Given these enrollment trends, the number of students per teacher is higher for general (15.8) than vocational schools (12) (2012). (KEDI, 2013, p. 8).

As of 2013, about 40% of vocational high school graduates advanced to higher education. Table 5 provides more detailed information on the advancement to higher education among graduates from each track. Table 6 shows the number of graduates of each school type who advanced to higher education, entered the labor market, or enlisted in the military.

Table 5 Advancement into Higher Education by Track, 2013

	General High School	Vocational
Graduates	453,046	105,612
% of students who pursue higher education	78.7	37.6
2-3 year College	111,942	27,625
Univ. of Education	2,338	
University	240,022	11,415
Other	1,886	517
International	537	109

Source: Education Statistic at <http://kess.kedi.re.kr/index>

Table 6 Graduates by Employment, 2013

	General High School	Vocational High School
Graduates	453,046	105,612
Advancement into Higher Education	356,725 (78.7%)	39,668 (37.6%)
Employed	8,958 (1.9%)	47,519 (45%)
Unemployed	64,632 (14.3%)	14,334 (13.6%)
Enlisted	614 (0.1%)	444 (0.4%)
Unknown	22,117 (4.9%)	3,647 (3.4%)

Source: Education Statistic at <http://kess.kedi.re.kr/index>

To increase interest in TVET schools and encourage the schools to move towards demand-driven providers, the government strategically morphed vocational high schools into “specialized high

schools”, schools that nurture workers with highly specialized skills in specific sectors of industry. Since 2009, among specialized high schools, highly qualified schools have been selected as Meister High Schools that receive full government support (e.g. operating costs, training costs, facilities, equipment, etc.) to produce Young Meisters. The government also launched an ambitious “Work-Study Parallel System” under which MOE selected several highly qualified specialized high schools to become Apprenticeship High Schools, similar to the German and Swedish apprenticeship models. Each type of school is described below:

**Specialized high schools** provide students with (1) Core professional skills; (2) On-the-Job customized training; (3) Creativity development; and (4) Additional professional skills training. Various pathways are open to specialized high school graduates. If a graduate has been employed more than three years, he or she will be granted a pathway to earn a degree, not only from an in-house university, but from any external college as well. Graduates are granted higher education opportunities linked to work experiences via courses from associated training providers, in-house universities, and Cyber University. Specialized schools provide scholarships.

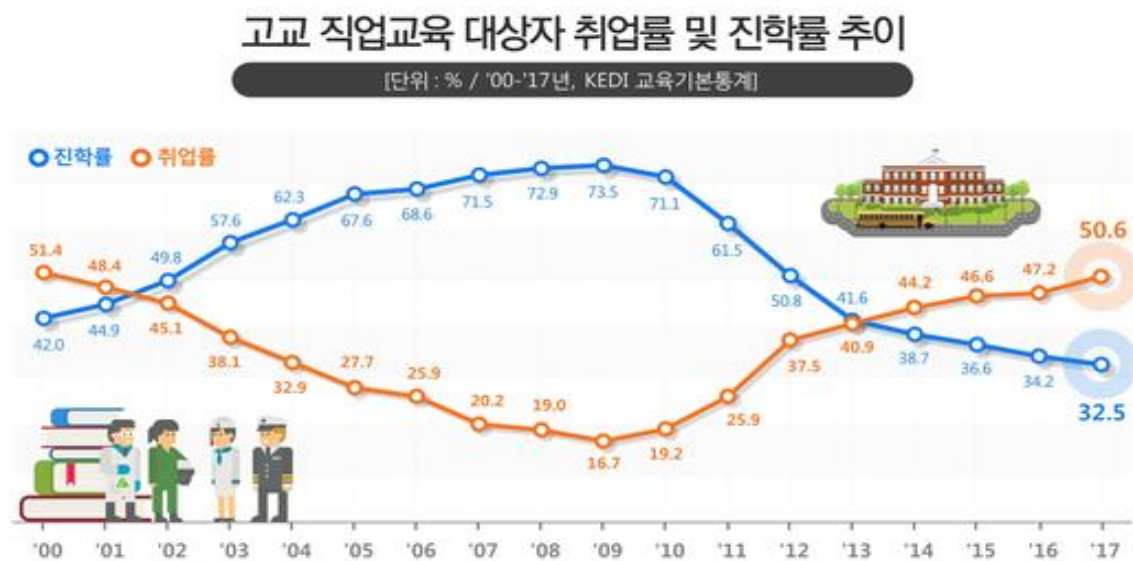
**Meister high schools** refer to special-purposed high school that specifically cultivates ‘young Meisters’. Meister high schools offer industry-developed courses and customized classes where students may gain educational requirements needed in specific sectors of industry (e.g. Ulsan Meister High School: Hanhwa chemical course, Samsung Electro-Mechanics course, Gumi Electronic Technical High School: LG Electronics course, LG Innotek course, Samsung Electronics course, Samsung Display course). Meister high school enrollees are exempt from tuition fees and provided free room and board. The graduates who have been hired can postpone military service for up to four years. The schools offer overseas work experience opportunities through government-led globalization projects. As of 2017, there are 46 Meister schools nationwide, each specializing in 25 different sectors. Meister schools hire practicing industry professionals as teachers so that students can learn the latest information and technology. In 2012 McKinsey introduced the Korean Meister School Policy as one of 4 successful cases of vocational education; the policy has also been recognized by The Economist and The Asahi Shimbun. The Ministry of Education and the Meister School Center at KRIVET systematically monitors the designation, preparation, and operation of Meister schools (Source: KRIVET).

**Apprenticeship Schools** correspond to the school model adapted from the German and Swedish apprenticeship models. This school type was developed under the Work-Study Parallel System. Apprenticeship Schools provide both in-school theoretical and in-house practical training. Participating specialized high schools and companies together provide NCS-based training to students for two years. Each grade’s training, qualifications, and school curriculum are established through negotiations among schools, companies, the MOE, and the HRD (MOEL). In turn, students become ‘learning workers’ at the beginning of the second grade and work at companies based upon contracts that follow labor laws. The process is as follows: companies linked with schools are selected by the HRD. Trainers are trained with support from the HRD, and training programs are developed with support from Polytechnics and KRIVET. After the programs are approved, they are administered at companies (OTJ) and schools (Off-TJ). Upon completion of the programs, students are evaluated by companies and then again by a third party. The students who successfully complete training acquire NCS-based qualifications and are hireable as regular workers at the training company or eligible to receive further employment

services for hire by other companies. Benefits are such that companies can retain competent young workers who acquire company-specific skills during 2-year apprenticeships and are immediately prepared to work on production lines. Upon high school graduation, the learning workers may also apply for Work-Study Parallel programs that are provided by companies for new hires. With financial support from the government, schools and companies can train competent workers without financial burden.

These efforts (specialized, Meister, Apprenticeship), there has been noted success in the employment rate of TVET graduates, but not so much in terms of college enrollment. As Figure 7 indicates, the employment rate has exceeded the college enrollment rate since 2013. According to the MOE, the employment rate of TVET schools reached 50.6% as of April 2017, which is a 3.4% increase from 47.2%, recorded in the previous year. Given that the college enrollment rate among vocational schools was as high as 73.5% in 2009, there has been a large reduction in higher education advancement.

Figure 7 Employment rate and enrollment rate of TVET high school graduates



Note. Redline : employment rate/ Blue line : college enrollment rate  
Source : MOE

Among TVET schools, Meister high schools show the highest rate of employment at 93.0%, followed by specialized high schools at 50.8%, and vocational courses in general high schools at 22.4%. The employment rate of Meister high and specialization school workers increased by 2.7% and 3.8% from the previous year, having been recorded at 90.3% and 47.0% respectively. Presently, Meister high schools reflect the highest employment rate since the first graduates in February 2013. On the other hand, general high schools providing vocational courses decreased their employment rate by 1.2% from a standing of 24.3% a year earlier (Source: Kwon, Newsis newspaper, November 20, 2017).

**Pre-employment training visits:**

### **Visit to Busan National Mechanical Technical High School (BMT)**

The school aims at providing Young Meisters to industries by focusing on industry-driven occupational competences; combining academic knowledge with technical skills; providing students with an excellent learning environment; and ensuring teacher competency. BMT was founded in 1967 by the government to supply skilled workers to Korea's newly established industry, and since then, the school has produced 28,415 graduates (as of 2015) in the field of mechanical engineering.

The school became Meister High School in 2009, and accordingly, it reorganized the program. The school now offers four majors: Precision Machining, Mold Design, Shipbuilding and Machining, and Robot Tech; each major includes three classes, except for Robot Tech which has six classes, and each class has about 20 students.

BMT is overseen by three government agencies: the Ministry of Education, the local education office of Busan, and the Small and Medium Business Administration (SMBA). SMBA is the main agency that provides annual funding to BMT, and it also funds two other Meister High Schools as part of its support to develop skilled workforce for SMEs.

The government (SMBA and the local office) provides about 60% of BMT's total revenue, followed by parents' support. The school spends the most on students' welfare, including dormitory and administration. Around 16% of the total budget is spent on teachers' salaries and more than 20% is allocated to curriculum development.

BMT has one principal, two vice principals, seven center heads and 25 team leaders. The roles and responsibilities of the seven Centers are clearly divided. For example, the **Meister Center** includes five departments, and the responsibilities of the Department of Meister include cooperating with other Meister High Schools in the areas of program development, student employment and managing school industry cooperation. The responsibilities of the Department of Employment include supporting student employment; supporting in-company practical training; managing company information; and developing strategies for improving the employment rate via the "School-Industry Cooperation Advisory Committee". The **Technical Education Center** is composed of four specialty subject programs, focusing on increasing students' competency in their designated field, assisting them in obtaining certifications, securing equipment and materials, and updating/developing text books. The **Creative Design Center** is responsible for managing the Department of Creative Skills, After Class School, and Mathematic Education. The Department of Creative Skills' tasks include improving students' problem-solving skills and developing College with Advance Points. The After-Class School department's tasks include supporting "Student Clubs" and assisting students in obtaining certificates. The **School Administration Support Center** includes five departments, and the Department of School-Industry Cooperation is one of them. The main responsibilities of this department include developing agreements with companies and government agencies, supporting student employment, and managing the "School-

Industry Cooperation Advisory Committee”.

*Achievements:*

BMT has showed very high graduate employment rates in the last decade: from between 45% and 55% in 2009 to more than 80% after the school reformed its organization and programs to apply for Meister High School status. Since 2013, when the first generation of Young Meisters graduated, the graduate employment rate has been above 90%. According to BMT’s Educational Planning Report, about 40% of the students are hired by public enterprises and large companies, and about 50 % are hired by SMEs. Less than 10% of graduates joined the Korea International Cooperation on Agency (KOICA) as volunteers, working at training institutes founded by KOICA in developing countries. By major, Precision Machine shows a very high employment rate, while Shipbuilding and Machine shows the lowest employment rate. Considering its larger number of students, compared to the other three majors, Robot Tech also shows a high employment rate, particularly in public enterprises and larger companies most pursued by BMT graduates.

BMT has achieved various skill awards since its establishment. As of 2014, 1,069 BMT students had received awards at the local Skill Competition, 303 were awarded at the National Skills Competition and 36 were awarded at the International Competition.

### **Visit to Busan Tourism High School**

Busan Tourism High School was selected as an “Apprenticeship School” and is now part of the Work-Study Parallel System that is managed by both the MOE and MOEL. This school has increased enrollment, attracted qualified students, and facilitated their transition into the labor market.

The curricula are divided in two departments: The Department of Tourism and Convention (convention management, hotel, food and beverage, and travel and tourism), and the Department of Korean Food (hotel, food and beverage, and baking and Korean Food). Each department is composed of four core subjects and students can select an area of study that parallels their respective career pursuits. As an apprenticeship school, it provides theory and basic practical training but, simultaneously, in-depth practical training is provided at the school’s partner companies. As the school’s curriculum and the partner companies’ training programs are NCS-based, the students acquire NCS-based qualifications in their respective areas upon course completion in addition to a high school diploma. Upon graduation, the students will have earned career pathways into the hospitality industry, a fast-growing sector with high demand in Korea and abroad.

The school provides special programs that focus on job and field experiences. To build their own mastery within a specific field, students work side-by-side with individual masters. The school also engages heavily with SMEs through contracts to develop customized classes.

*Achievements:*

Korea holds Skill Competitions in various industries to encourage skilled workers to upgrade their competencies. Students from the Busan Tourism High School students have received awards from these competitions, including the 2017 Philippine Culinary Cup and the 2017 Local Skill Competition in Busan.

Through a curriculum of specialized and sector-led courses, the school has helped its students gain work abroad experience while in school, increasing their future chances of being hired by global companies. In many cases, students are hired before graduation (typically 2nd term of senior year) via the school's various internship programs.

The employment rate of graduates has increased steadily: 52% in 2013, 60% in 2014, 65% in 2015, 68% in 2016, and 74% in 2017. This increase is due, in part, to the school's efforts to transform themselves into a demand-driven provider. The school has been selected by the Ministry of Food, Agriculture, Forestry and Fisheries to nurture cooks who are specialized in Korean Food. To achieve this, it has received equipment for practical training and financial resources for menu and curriculum development.

### **2.3. Tertiary Level TVET**

Line ministries provide tertiary level TVET, but the primary players are the MOE and MOEL. The MOE manages two- to three-year colleges, and the MOEL manages Korea Polytechnics. Colleges managed by the MOE are mostly private colleges and issue a MOE-approved certificate. College programs focus on both theory and practice, and the curricula are developed together with companies based on a "Customized Education System". On the other hand, Polytechnics provide both two-year and short-term programs. Polytechnics are MOEL-financed public schools that emphasize NCS-based practical training. Polytechnics accept both young people advancing to the tertiary level and the unemployed, regardless of age.

#### **Two to three-year colleges (MOE):**

Two-year colleges were founded based on the country's economic needs during 1970s. Before then Korea did not have two-year TVET colleges because the government had placed emphasis on expanding TVET high schools and 4-year universities. However, as companies began requiring mid-level skilled workers to fill the gap between low- and high-skilled workers, the government encouraged the private sector to establish two-year colleges to produce mid-level technicians by easing regulations to open such institutions.

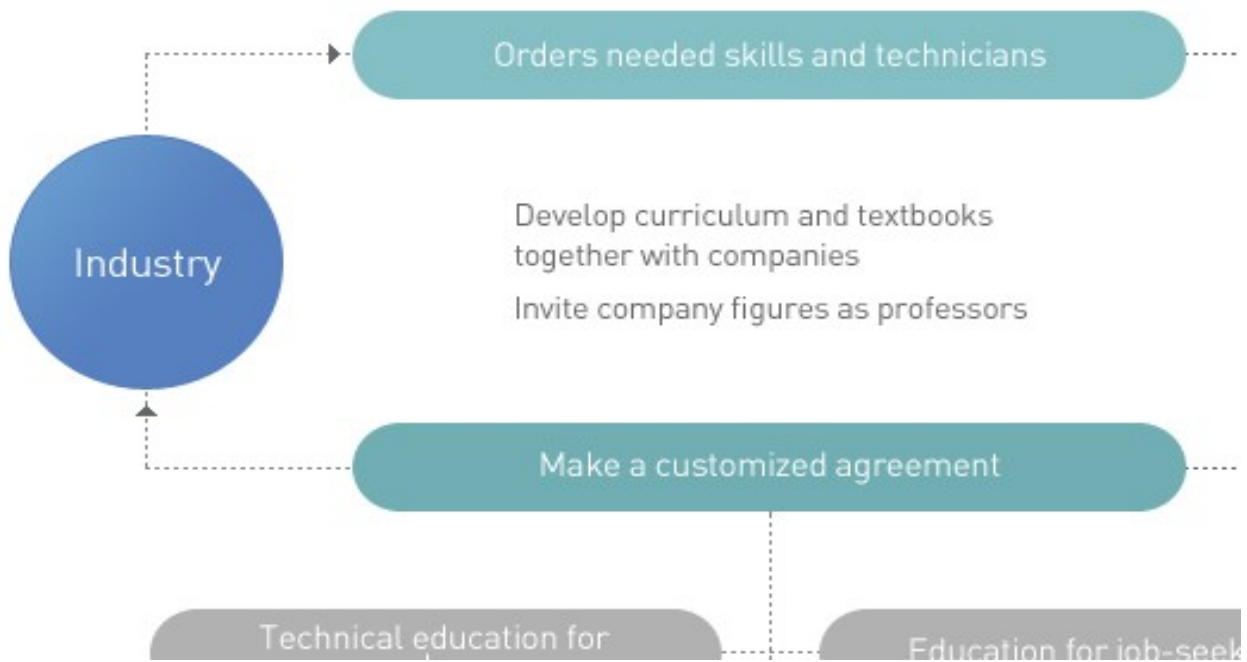
Since the mid-1980s, two-year colleges have faced a decreasing enrollment due to the changes in the economic structure that demanded more high-skilled workers, the change in the government's higher education policy that allowed 4-year universities to accept more students, and the establishment of in-house universities at large companies that provide specific skills. As



a result, the training market became more competitive, and two-year colleges lost market space against four-year universities and in-house universities. During this time, colleges found maintaining adequate numbers of competent students challenging.

To survive in the training market, colleges have become more demand-driven by developing a “Customized Education System”, which means that the school receives requests from select companies to supply a certain number of skilled workers and then develops courses and curricula jointly to meet their requests. Students are expected to be hired by these companies upon graduation since they have acquired company-specific skills in addition to transferable, basic technical skills (Figure 8). The MoE has expanded the customized education system: between 1999 and 2008, it allocated \$153,641,000 to two and four-year colleges that have instituted the customized education system.

Figure 8 The Customized Education System



Source <http://www.yjc.ac.kr/CmsHome/MainDefault.jsp>

### Korea Polytechnics (MOEL):

#### Visit to Busan Korea Polytechnics

Korea Polytechnics is a collective of eight universities with 34 campuses, and Busan Korea Polytechnic is one of them. Like other Polytechnics, the Busan campus aims to produce qualified engineers for strategic and new growth industries. The school offers a two-year certificate program as well as various short-term programs to both the

unemployed and SME employees. It also offers support to vulnerable groups, such as women; baby boomers with low job skills; unskilled, low-income persons, etc.

*Highlights:*

Like other Polytechnics, the Busan campus has the lowest level of tuition and fees in Korea (about 1,000 USD per semester as of 2017) as compared to other two-year colleges (about 3,000 USD per semester). About 70% of students receive the government scholarship. Considering the lack of housing at both two- and four-year colleges (the majority of tertiary level schools under MOE are private schools), Busan is at full capacity in regards to student housing. In terms of financial support, government funds (about 7 million USD), were used to purchase advanced training equipment. In addition, using in-house funding, the school is able to send students abroad for short-term training.

The school offers a two-year ‘Advanced Degree Course’, as well as various short-term courses (3 mos./6mos./1yr.) leading to a NCS-based qualification.

As for the Advanced Degree Course’s curriculum, seven major subjects are offered for study. The school produces mid-level technicians by emphasizing practical training in response to specific companies’ demands in the areas of key engine industry and future growth industries, such as Artificial Intelligence (AI), Robot, IT, etc. Course delivery is in the form of a project that requires an application of classroom knowledge to practice. Like other Polytechnics, small class sizes enable professors and instructors to more readily maintain consistent communication with their students about future jobs. Moreover, each professor or instructor is responsible for communicating with ten companies that have been paired with the college in order to increase the likelihood of their respective students’ future employment

As for short-term programming, the Busan campus serves as a common training center for SMEs in the region under CHAMP. It provides training to SME employees as well as company support. Busan Korea Polytechnics falls under the second type of CHAMP in which the goal is to increase worker competency in strategic industries within the region.

In addition, the school has the “industry-academy collaboration division” that manages the “On-the-Job FL” program that provides various services, such as industry-university cooperation; customized courses and in-house companies; and government support projects. The working area in this division also includes the Industry-academia R & D cluster which is linked with local companies and government. The division provides training to both current workers at SMEs and the unemployed. In collaboration, the Research Institute of Industrial Science and Technology was established to support SMEs via provision of facility equipment, management and technical guidance.

*Achievements:*

The Busan campus has maintained the highest employment rate among its graduates for the last five consecutive years: 86.3% (2011), 83.4% (2012), 85.2% (2013), 85.4% (2014), 85.0% (2015), and 85.2% (2016) (Source: MOE, University Information Disclosure).

## 2.4. Lessons

In Korea, the primary challenge in pre-employment training has been how to match not only the skills but also the expectations of youth with industry needs. During the initial time of Korea's economic development, TVET schools were composed of students from low-income families but high performing (students) all the same. However, as Korea's strategic industry went high-end in the late 1980's, (i.e. electronics, ICT, bio, etc.), demands for advanced skills have increased. As a result, students' expectations from education and jobs have increased.

Another challenge is that TVET schools had been indifferent towards student employment. Schools trained students under obsolete curricula, provided low practical training and only issued diplomas for completion. This behavior hurled TVET schools into a vicious cycle in which graduates were not equipped with adequate industry skills, and TVET schools were only associated with under-performing students which led to decreased enrollment. Simultaneously, companies (mostly SMEs) faced a shortage of low- and mid-level workers with adequate skills; therefore, foreigners typically filled these positions.

In response to this, the government has made an effort to rebrand TVET schools into schools that nurture specialized skilled workers. Rebranding TVET schools as "Specialized", "Meister" and "Apprenticeship" schools, projected a more positive image helping change the past perceptions of students and parents. For instance, in the case of BMT, the school is now attractive to competent students who can easily obtain skills throughout the school year. In addition, when the school shows a high employment rate, it receives more financial support from the government, which enables the school to retain expensive equipment and practical training facilities. Such competent results or outcomes serve to increase the school's brand power. With high social recognition as a leading or top performing school, more companies show interest in hiring BMT graduates.

Beyond re-branding efforts, the government instructed the schools to transform into demand-driven providers for a specific sector or industry, usually the local government's strategic sectors. For example, BMT is specifically designed to advance skilled workers into the heavy industry market in the Kyungnam Province; Busan Tourism High school provides skilled workers to the hospitality industry in Busan. Overall, by providing specialized skills to students to meet specific needs in the region, the providers increase their competitiveness in the training market.

A third change in pre-employment training is that the government has expanded TVET schools' customized programs, which are considered the closest form of school-industry cooperation. Schools establish customized programs jointly with and at the request of specific companies.

Although these programs are expected to lead to future employment with the requesting companies, they teach both company-specific and transferable skills. These programs benefit both sides: schools can strategically develop demand-driven programs and help students find employment upon graduation, and companies can reduce the cost of retraining new hires.

A factor that has impacted the increase in the employment rate among TVET graduates is the government's Work-Study Parallel System. Under this system, TVET students are highly encouraged to initially find a job and then continue studying via various pathways. Their degrees, certificates, and even work experiences all contribute to the advancement of their education. Given these open pathways, TVET graduates who obtain jobs can continue their studies while working. Furthermore, they can return and achieve a higher level of education between jobs. Another advantage of these various pathways is that young people can upgrade their skills continually throughout their careers. Entering the job market as low- or mid-level technicians, they can eventually move more easily up corporate ladder.

Government incentives have influenced providers to change their business models. MOE provides financial incentives to the schools that perform best in their ranking system (under which the employment rate is the most important criteria). The MOE also provides various opportunities for the schools to apply for government-funded projects, which are more likely to be implemented in schools with well-designed programs that align with the government's priorities. Companies that provide practical training to TVET schools also receive financial incentives. On the student side, young male students (18 years and older) are incentivized to enroll in TVET schools by allowing them to postpone military service if they do so.

### **3. In-service training**

The provision of in-service training has been encouraged by the Korean government. Three types of in-service training are introduced in this paper: in-house training, training provided to employees of SMEs under CHAMP, and training provided to new hires under the Work-Study Parallel System. The Hyundai Technical Education Institute (HTEI) is one of the best examples of in-house training, but it also utilizes its training facilities and programs to support outside trainees, such as employees of SMEs under CHAMP, technical vocational students, and anyone who wishes to upgrade their skills in order to work in heavy industry. POSCO is presented as an excellent example of training for SMEs employees (in government strategic sectors) under CHAMP. In-service training is also provided, in particular, to new hires. Under the Work-Study Parallel System, selected companies provide NCS-based training to their new hires (the majority is young workers from technical vocational schools), and Bu-Yong has been selected as one of the best examples of this practice in Korea.

#### **3.1. In-house Training**

Large and some mid-size companies maintain excellent training facilities and programs developed in-house for their employees. This type of training is provided in the form of firm-specific training aimed at enhancing the productivity of their employees.

### **Visit to Hyundai Technical Education Institute (HTEI)**

Hyundai Heavy Industries (HHI) has a global business network in each of its five business divisions: Shipbuilding, Special & Naval Ships, Offshore & Engineering, Industrial Plant & Engineering, and Engine & Machinery. HHI was founded in 1972 and wrote the first chapter of its shipbuilding history by completing construction of the world's largest shipyard. A decade later the Hyundai Shipyard became the leader in the world shipbuilding market. Hyundai Shipyard's drive has mirrored the growth of modern Korean heavy industry, and its success has allowed the expansion into other heavy industry areas, ultimately leading to the formation of Hyundai Heavy Industries, an integrated heavy industry company. They employ about 16,000 people in production, R&D, and management & administration. Their well-trained and experience-rich employees are ready to support their clients and partners with advanced technology (Source: KRIVET).

#### *Highlights:*

HTEI provides various training programs to both internal and external workers:

- HTEI offers training programs to anyone who wishes to become a skilled worker in heavy industry. Trainees receive both theoretical and practical training in welding, machinery, electric power, CAD, and other areas relevant to Hyundai's heavy industry. The company pays short-term training costs abroad. Trainees obtain qualifications upon course completion and receive HTEI's assistance with job placement at successful SMEs in related fields.
- The institute provides training to employees of Hyundai, as well as employees of Hyundai's cooperative companies (SMEs that provide components to Hyundai). Hyundai understands that its competitiveness relies heavily on its own employees' competencies but also on the competencies of employees at their cooperative companies. Via this training, employees obtain qualifications, particularly in the areas of welding, equipment and safety. Training is also provided to the executive directors of the cooperative companies.
- Another type of employee training, offered to new hires, covers the company's production lines and employees' responsibilities. This training is offered to both clerical and technical staff and linked with in-house courses that are administered by Hyundai Heavy Industries Engineering University (established in 2013). The University offers a two-year associates degree program, which may be linked to continued study at a four-year university. The curriculum is highly advanced, all instructors are employees of Hyundai Heavy Industries and hold at least a master's degree.
- HTEI also offers industrial training to students of specialized high schools and colleges as well as their teachers and trainers. In 2004, HTEI was selected as the

government-approved provider for teacher’s in-service training.

- The Institute participates in CHAMP to realize aco-growth with SMEs via the sharing of training infrastructure and skills based upon an agreement delineated by the government. The government provides equipment and pays for training costs requested by HTEI. In addition to training incumbents of SMEs, HTEI recruits and trains new workers to be ready and provided at the request of SMEs. In this way, SMEs may not only retain adequate and productive workers but also avoid a shortage of skilled workers overall. As for workers, training provides them the opportunity to gain exposure to best learning practices/equipment.
- To motivate blue-collar employees to improve competency, HTEI provides in-house qualifications via a system of well-defined evaluation. Workers may continue to obtain their qualifications from Level 3 to Meister (highest). They can receive achievement rewards.
- To encourage all employees (cooperative companies included) to consistently improve their skills, an in-house Skills Competition is held annually. Various rewards are also given, such as a short-term international training.

*Achievements:*

Since 1978, many trainees at HTEI have participated in the International Skills Competitions. In 2013, 88 participants (out of 91 HTEI participants), won awards. HTEI has received various awards, including best practices for in-house training and best provider for skills development.

Overall, HTEI maintains excellent training equipment and facilities. These training facilities are located in three areas: Ulsan, Gunsan and Yungyen; the delegates will visit the Ulsan facility.

**3.2. Consortium for HRD Ability Magnified Program (CHAMP) for SMEs**

Korean companies are mostly SMEs. The number of SMEs with less than 300 employees increased from 22,000 in 1975 to 64,000 by 1990 due to an increase in subcontract relationships between large companies and SMEs as large companies changed their emphasis from labor-intensive light industry to capital/technology intensive industry (Lee, 2008, p. 44). Currently, there are a total of 3,418,993 companies, 99% of which are SMEs (Table 7). SMEs retain 13,421,594 employees, which are 87.5% of the total workforce (13,421,594) (Table 8). Table 9 shows the changes in workforce by firm size and age.

Table 7 Number of Total Firms in Korea by Size between 2008 and 2013

	2008	2009	2010	2011	2012	2013
SMEs	3,044,169	3,066,484	3,122,332	3,231,634	3,351,404	3,415,863
Large	2,789	2,916	3,125	3,053	2,916	3,130

Note. SMEs have max 300 employees and occupy 99.9% of a total number of firms in Korea  
Source: Statistics Korea

Table 8 Number of Employee by Firm Size between 2008 and 2013

	2008	2009	2010	2011	2012	2013
SME	11,467,713 (87.7%)	11,751,022 (87.7%)	12,262,535 (86.8%)	12,626,746 (86.9%)	13,059,372 (87.7%)	13,421,594 (87.5%)
Large	1,602,711	1,647,475	1,872,699	1,907,484	1,831,790	1,923,266

Source: Statistics Korea

Table 9 Changes in Workforce by Firm Size Across Age Groups

	2009/ 2010	2010/ 2011	2011/ 2012	2012/ 2013	2013/ 2014
Total Firms	323,000	415,000	437,000	386,000	533,000
>25	16,000	12,000	93,000	23,000	101,000
25-29	-59,000	-47,000	-128,000	-73,000	-25,000
30-39	-4,000	-47,000	-31,000	-21,000	-21,000
40-49	29,000	57,000	11,000	22,000	38,000
50-54	149,000	122,000	103,000	89,000	50,000
<55	191,000	318,000	389,000	346,000	389,000
<b>SME</b>	354,000	378,000	381,000	272,000	416,000
>25	27,000	3,000	90,000	20,000	96,000
25-29	-51,000	-64,000	-104,000	-58,000	-55,000
30-39	31,000	-41,000	-83,000	-97,000	-19,000
40-49	10,000	36,000	14,000	13,000	11,000
50-54	141,000	132,000	96,000	69,000	17,000
<55	196,000	321,000	368,000	325,000	366,000
<b>Large (more than 300 employees)</b>	-31,000	37,000	55,000	114,000	117,000
>25	-11,000	8,000	3,000	3,000	5,000
25-29	-8,000	16,000	-25,000	-15,000	30,000
30-39	-35,000	-6,000	52,000	76,000	-2,000
40-49	20,000	22,000	-3,000	9,000	27,000
50-54	8,000	-9,000	7,000	20,000	33,000
<55	-5,000	6,000	21,000	21,000	23,000

Source: Statistics Korea in Kim, 2015, p. 46

Given the large portion of those in the labor force in SMEs in comparison to large companies, the government tasks itself with assisting SMEs in advancing their workers' skills, as increasing the competency of these workers can result in decreasing the skills gap between large and small companies and increasing Korea's competitiveness at large. Since 2000, the government has supported SMEs workers in skills upgrades at common training centers via the project of Consortium for HRD Ability Magnified Program (CHAMP) under the Work-Study Parallel system. The project's aim is to provide SMEs with systematic education and training, as well as assistance to improve their overall personnel management.

There are four primary players in this project: MOEL, HRD, Joint Training Centers, and SMEs. MOEL oversees and manages the project; the HRD approves the joint training center's nomination and provides financial support; and the Joint Training centers provide training to workers of participating SMEs and technical assistance to companies. Companies, trainees, and training providers all receive financial support from the government. As for providers, the government covers operating expenses, including personnel expenses, up to 40,000 per year; training facilities and equipment expenses up to 1.5 million per year; and development expenses for training programs up to 10,000 per year.

From the perspective of a worker, the process of training via CHAMP is as follows: A trainee is first recruited by a company and then receives training from a joint training center connected with that company. After the training is completed, the trainee acquires a certification if the qualifications are achieved. Throughout training, the trainee is exempt from training fees and receives a training allowance up to 200 USD.

There are two types of training providers under CHAMP. First, large firm training providers that aim to improve win-win cooperation between with SMEs by sharing training infrastructure and skills based on an agreement delineated by the government (e.g. POSCO and Hyundai Technical Education Institute). Second, training institutes for skills development in the government's strategic sectors. Qualified training institutes that have a cluster of SMEs can apply for the latter and receive financial support from the government to provide training and support to SMEs in the government's strategic industrial areas in the region.

#### **Visit to Human Resources Development Services of Korea (HRD Korea, Busan Office)**

Founded by the MOEL in 1982, the primary responsibilities of the HRD Korea include assisting workers with competency development; restructuring the national qualifications system; developing and expanding NCS; assisting foreign workers; enhancing skills nationwide via hosting skills competitions; and expanding global cooperation in skills.

As of 2017, the number of staff totaled 1,313 and consisted of Headquarters at Ulsan, 6 provincial headquarters and 18 branch offices in the region. The Busan HRD Korea is one of six provincial headquarters. In addition, Global Institutes for Technical Transfer (GIFTS) is located in Jungbu, provincial headquarters is in Inchoen, and the NCS Center is located inside the Headquarters at Ulsan.

#### *Highlights:*

##### **Competency Development:**

Directed by the MOEL, the HRD Korea has supported employees, particularly SME workers, with competency development throughout their respective career spans since 2012. Since 2014, emphasis on the previous area has amplified with the institution of



the government's new TVET policy, the Work-Study Parallel System. The purpose of this area of work (Competency Development) is to increase the country's productivity via promotion of employees' skills development and support to companies in their efforts to retain qualified human resources. The primary work areas include Competency Development for Employees and SMEs; Support for the Work-Study Parallel System; and Support for Regional Councils and Industry Sector Councils.

More specifically, if a company is selected for CHAMP or the Work-Study Parallel program, the HRD Korea provides funding to this company to assist with purchases, i.e. training equipment, and expanding training facilities. It also provides the company with in-house (HRD Korea) and outside instructors.

In addition, the HRD Korea provides the "*Tomorrow's School*" Program to students who are not enrolled in an institution (school). These learners should submit an application to the HRD Korea, and if selected, they are required to attend a one-month preparation course; afterward, they are required to complete at least 700 hours of NCS-based training in the Tomorrow's School Program. After program completion, those learners receive one-year of employment service. The role of the HRD Korea includes not only the selection of learners but also the provision of funds to both learners and providers (free tuition/fees; 300 USD allowance per month if their attendance rate is above 80% per month; and free room and board). In addition to direct financial support, the learners at Tomorrow's Schools receive psychological counseling.

#### Competency Assessment and NCS Development:

The HRD Korea is also responsible for restructuring the national qualifications system to meet industry requirements and expanding NCS and NCS-based qualifications. In Korea, National qualifications include National Technical Qualifications (NTO) and National Qualifications of Non-Technical Categories (NQNTC). Provider specific qualifications are the registered private qualifications and the nationally recognized private qualifications. Among aforementioned qualifications, the HRD Korea accredits NTO for administering test and conferring qualifications. It also accredits 37 qualifications of NQNTC as it is commissioned from 17 related departments. Given such a complicated qualifications system, the government (HRD Korea) is restructuring the qualifications system by instituting the National Qualification Framework (NQF) and directing the qualifications system towards NCS-based qualifications. In order to move toward NCS based qualifications, in collaboration with industries, it has also developed and disseminated NCS. For example, to expand NCS based-training and qualifications, the HRD Korea provides consultations to SMEs to develop NCS based-training program and qualifications for their workers under the Work-Study Parallel System (e.g. Bu-Yong CTS)

## **Visit to Busan Regional Human Resources Development Center**

In 2013, the Busan Regional Human Resources Development Center was established by various entities to include the (1) public sector (including Busan City government); (2) private sector (including Chamber of Commerce & Industry and SMEs); (3) labor union; (4) employment experts; and (5) training providers. Its overall purpose is to catalyze regional economic growth by meeting the needs, specifically HRD issues, of SMEs.

The Center's responsibilities include (1) developing the regional HRD program; (2) supporting the Work-Study Parallel system; and (3) supporting the government's HR programs (NCS; HRD in national strategic industry); Tomorrow's Learning Card; CHAMP). The Center's primary role in developing the regional HRD program is described below. Additional responsible areas are executed via program funding if applicants (unemployed, employees and SME employers and providers) are qualified.

The goal of developing the regional HRD program is to decrease difficulties in securing workers by training people based on the assessment of demands and HR supply. Furthermore, the program serves to promote training for vulnerable groups. Another goal is to increase SMEs' participation in in-service training. Finally, in order to improve training outcomes, the Center pushes for a shared HR management system where the assessment of demands and HR supply is shared by all relevant bodies.

The Center conducts the assessment, and based on its outcomes, the Center establishes the HRD plans and selects common training providers that can deliver programs in the needed areas. The three stages are described below:

*The first stage* is an assessment of demands for workforce and training via an analysis (1) of demands for the type of workforce; (2) of demands for the type of training (training for newly hired workers and employees); (3) of current providers.

- **Assessment of Workforce Demands:**

The purpose of the assessment is to establish the HRD plans and to select training providers that can deliver programs in the needed areas. The Center assesses HR demands on both a regular and occasional schedule. The regular assessment is conducted via a face-to-face interview utilizing a Computer Assisted Personal Interview (CAPI) tool with companies that retain at least five employees across all industries. The occasional assessment is conducted via round table. The Center assesses HR demands on both a regular and occasional schedule.

- **Assessment of Training Demands:**

The purpose of this work is to learn what types and volume of training will be required in Busan. It encompasses two stages: the analysis of current providers and HRD programs.

As for the first stage, the output involves an analysis (1) on training providers (current HR supply from specialized high schools, colleges, universities, etc.); (2) on HR flow in the labor market (sector and occupation); and (3) on the current HR supply.

As for the second stage, the output involves (1) the assessment of training programs funded by various government agencies, i.e. MOEL, line ministries, local government, concerning the size of funds; (2) the assessment of training supply in comparison to training outcomes (sector and occupation); (3) the analysis of training costs/outcomes.

- Assessment of Current Supply of the Workforce and Training in Busan:

The purpose of the work is to utilize the results of the aforementioned assessment to develop the “Busan regional HRD plan” for the upcoming year. The output involves (1) workforce demands (labor market assessment); (2) training demands; (3) workforce and training supply; and (4) the analysis on the workforce and training demands as opposed to the current training supply.

*The second stage* is the establishment of the HRD plan for the upcoming year, which includes (1) the analysis on the comparison between HR supply and demand; (2) establishing HRD plans in priority areas and training size; and (3) the selection of common training centers.

*The third stage* is the provision of training via the Center’s designated common training centers that provide training to newly hired workers and employees of partnered SMEs. The Center also monitors training outcomes and provides employment services.

## Visit to POSCO

POSCO is a multinational steel-making company headquartered in Pohang. It had an output of 41.6 million tons of crude steel in 2016, making it the world's fifth-largest steelmaker. In 2010, it was the world's largest steel manufacturing company by market value. Also, in 2017, it was named as the 208th world's largest corporations by the Fortune global 500. POSCO currently operates two integrated steel mills in South Korea, in Pohang and Gwangyang. In addition, POSCO operates a joint venture with U.S. Steel, USS-POSCO, which is located in Pittsburg, California, United States (Source: KRIVET).

POSCO provides training to SME workers under CHAMP that encompasses (1) SEMs and (2) strategy sectors. POSCO falls under the former as it provides training to SME workers in order to accomplish win-win cooperation between SMEs and large companies.

### *Highlights:*

POSCO seeks to provide training and consultations to SMEs based on the needs of an individual company.

POSCO provides training in four specific areas (technology, safety, IT, personality) via 130 programs (90 face-to-face and 40 eLearning). It provides training to newly hired workers, middle-level managers, executive directors, and soon-to-be retirees (of SMEs). Services are at no cost, as POSCO receives partial government funding. In terms of training to newly hired workers, POSCO provides job-related courses (e.g. crane, industrial facility maintenance, mechatronics, etc.) and personality courses for a three-month duration. As of 2014, the number of trainees reached approximately 800. Furthermore, in order to help small-sized companies expand the size of company, POSCO provides leadership and management courses to high-level managers and executive directors. As for soon-to-be retirees, in collaboration with the MOEL, POSCO provides a “Green Life Design” program that assists the previous with labor market re-entry via a provision of both training and employment service for six months.

In terms of consultation, POSCO assists SMEs with improving their training capacity based on the assessment of a company’s specific needs.

Its assists partnership companies with the institution of systematic OJT, referred to as S-OJT: POSCO helps companies develop their own training modules based on job analysis as well as trains SMEs’ in-house trainers. Between 2010 and 2014, POSCO trained 76 instructors at 44 companies in OJT delivery. Second, POSCO assists experienced workers in becoming learning leaders (OJT instructors) by systematically organizing their work experiences and knowledge. Between 2010 and 2014, 23 companies were able to produce 133 learning leaders.

Another area of assistance is the HRD consulting program that provides suggestions to a company regarding human resource development via increasing the transparency of personnel management. POSCO consultants and trainers provide consultations based upon job analysis and the results of employee surveys and interviews.

In addition to training under CHAMP, POSCO has expanded the Work-Study Parallel System by providing Off-the-Job Training. In 2015, it provided Off-JT to 112 learning workers from 21 companies. POSCO convenes with partnership SMEs in an annual conference to promote the Work-Study Parallel System program among SMEs via the sharing of experiences (December 16, 2016 NewMaker).

*Achievements:*

Since 2005, POSCO has trained approximately 72,000 workers annually under CHAMP. As of 2014, the total number of trainees has increased to 350,000. POSCO has provided 30% of its training under CHAMP (SMEs-Large companies). POSCO received accolades from the MOEL for seven consecutive years for the best practice in CHAMP (2008-2014). Moreover, the program has been recognized internationally for the best practice of a win-win growth model between small and large companies at various conferences, including ASTD (2012), APEC (2013), and OECD (2014). Also, according to MediaPen Newspaper (June 23, 2017), POSCO's programming, based on an individual company's needs and employment service, have been satisfied by SMEs and youth.

### **3.3. Work-Study Parallel System**

Adapted from Sweden's apprenticeship system, the Korean government has established a system of a "Work-Study Parallel" to decrease industry skills mismatches and reduce unnecessary expenses for retraining new hires whose skills don't match the demands of new industry developments. Instead, companies can now hire 'learning workers' or trainees who receive work-study parallel training. For example, any new hire at a company who has undergone a change in career or is 15 years of age or older can be selected as a 'learning worker' and engage in the aforementioned training program. Trainees receive on-the-job training based on National Competence Standards (NCS) and theoretical training at joint training centers; trainees may also qualify for degrees in some cases.

Depending on the characteristics of participating companies, training is divided into two types: 'qualification-linked' and 'degree-linked'. The former type allows participants to obtain qualifications recognized by the state after participating in NCS-based on-the-job training, while the latter type allows participants to gain their respective degrees while working.

Companies are selected by the MOEL and receive financial support to train new hires. Some companies, like Bu-Yong CTS, provide both programs on site, as they have NCS-based company specific training programs, materials, and evaluation tools. Otherwise, learning workers receive

practical training on-the-job with supervision from an internal trainer and attend a sector-related NCS-based program at a common training center.

### **Visit to Bu-Yong CTS**

Bu-Yong CST is one of the world's leading manufacturers supplying high-pressure gas storage tanks and is recognized as a top technological company especially in the field of cryogenic storage tanks. Since its establishment in 1999, Bu Young CST Co., Ltd. has specialized in the manufacture of high-pressure gas storage tanks and vaporizers. It is expanding business scope into high-value products including tank-lorries and cryogenic storage tanks. Bu-Yong CST has been devoting its efforts into development of liquefied gas vaporizing equipment, cryogenic globe valve, differential pressure digital level meter, liquefied-gas vaporizer using cooling water by waste heating and an apparatus for preventing liquid from the leaking of the electric heating-hot water-type vaporizer. Bu-Yong CST will step further into prosperous future by diversifying cryogenic storage tank and high-pressure gas-related products following strict assurance system and value-added service (Source: KRIVET).

Bu-Yong CTS is a company that has engaged in "Work-Study Parallel" for the past three years, and it has been selected as one of best practices in this program. Unlike many SMEs who use common sector-driven NCS and send their 'learning workers' to outside training centers, Bu-Yong has developed a company-specific NCS and training materials in order to provide both practical and theoretical training on-the-job.

#### *Highlights:*

With guidance from the NCS, Bu-Yong CTS developed a one-year training program that consists of both OJT (On-the-Job Training) and theory.

Regarding the OJT program, learning workers, in addition to training with in-house instructors, attend seminars managed by outside instructors and graduated learning workers. After course completion, the learning workers are evaluated based on an internal evaluation system. As for the Off-JT program, the company developed an internal textbook for the courses and support learning workers in obtaining related national qualifications. The test for each course is administered during the class. For example, the qualification for a welding operator (Level 2) requires a learning worker to complete a one-year program which is composed of 700 hours of OJT and 300 hours of Off-JT.

As of 2017, there are four learning workers and three instructors at Bu-Yong CTS. Instructors train individual learning workers via a one-on-one mentoring modality. A daily record charting the progress of an individual learning worker is prepared and monitored by the instructors. Once a month, the instructors schedule meetings with respective learning workers to evaluate their course comprehension. Based on these

assessments, the instructors then provide additional training as needed to close the knowledge and skills gaps among their students. During the meeting, the learning workers are allowed the opportunity to provide feedback and share any concerns. Instructors are required to have at least four years of experience with Bu-Yong CTS; and the company encourages them to attend various training opportunities offered by universities or large companies. In addition, Bu-Yong CTS has expanded its facilities and equipment to meet needs as well as it consistently monitors the program.

*Achievements:*

The workers' operation accuracy increased, resulting in a decrease in the final production's defective fraction, and job satisfaction increased as well. According to Bu-Yong CTS's internal survey, job satisfaction among their regular workers increased from 53.5% (2015) to 70.0% (2016) and up to 75% (2017). On the other hand, job satisfaction among the learning workers increased from 56.5% (2017) to 79.5% (2016) and up to 83.5% (2017).

Furthermore, employee retention lengthened: Bu-Yong's data indicates that the turnover rate decreased from 92.6% (2013) to 30% (2017). The reason for the increase in retention is due to fewer interruptions during the work period: the newly hired are from specialized high schools that offer customized classes linked to Bu-Yong, which elevates their status from student to learning worker. In addition, these learning workers are able to remain with the company, as their compulsory military service is waived.

### **3.4. Lessons**

Under the Work-Study Parallel System, various government-led projects are now available to companies (SMEs in particular), training providers, and workers. The unique feature of Korea's in-service training is the government's strong presence. While large companies have higher training capacity and will rarely have an issue providing in-service training to their employees, small companies suffer from lack of training consistently. In Korea, where 99% of companies are SMEs with less than 300 employees (the majority sub-contractors for large companies), the government's intervention to train employees in SMEs is crucial. CHAMP supports SMEs by helping increase their competitiveness and provides an opportunity to employees of SMEs to improve their competencies. The Work-Study Parallel program for new hires also helps SMEs reduce costs of retraining their workers.

In addition to the benefits provided to SMEs and their employees, the programs benefit training providers. If a training institute is selected as a common center, it receives government financial support to upgrade its training facilities, it receives high-end equipment, and its training costs, including operating costs and program development are also covered by government funds. This provides an opportunity for colleges that only rely on student tuition and fees (as most common training centers are private colleges) to diversify their financial resources, which could also help their own students.

To increase interest from employers and employees, various incentives should be available. In the case of Korea, the majority are financial incentives, such as the financing of training costs, operating costs, allowances, etc. In addition, by engaging with a common training center, SMEs receive technical assistance and can use high-end equipment. In fact, without incentives, it would be hard to imagine the government's success in implementing the Work-Study Parallel system. This is especially true as employers, recognizing how beneficial the government's programs have been in promoting companies' competitiveness and reducing training costs, are now highly encouraged to provide in-service training to their employees as well as practical training to TVET students at their partnering schools. This marks a change from the times in which busy production lines and high turnover rates had discouraged both employees and employers from pursuing additional training. As the programs benefit all parties, including providers, large and small employers, and employees, all parties are actively engaged in in-service training.

Lastly, government-led programs require coordination efforts with well-defined roles and responsibilities among line ministries and between the central and local governments. In the case of Korea, the main player in in-service training is MOEL and its agency HRD, which approves and finances specific training initiatives based on the strategic sectors identified by the local government and respective workforce plans. For example, in CHAMP, the responsibilities and roles are well defined: MOEL develops the policies, HRD regional offices approve programs submitted by local governments and the central HRD office manages and finances programs. HRD also acts as consortium hub in the central and southern region to develop programs that meet local needs.

## **4. Employment Service**

### **4.1. Introduction**

Overseen by the Ministry of Employment and Labor (MOEL), the Welfare & Employment Center (WEC) is a new service model that offers employment, welfare, and micro finance services in a unified space. These centers are located in each Korean region and province, including the city of Busan. In other words, the work modality has transformed from the delivery of independent services from individual agencies to a consolidated service system with united efforts from those agencies. Service has thus become more user-friendly; people are now able to save time by visiting and receiving consultations in a single space instead of multiple places.

Furthermore, from an organization's perspective, work efficiency has increased as assisting agencies may now resolve their client's issues more quickly by sharing efforts and information. Via the integrated system, agency workers discuss regularly the best options and services available to meet the various needs of their clients. Another benefit from this model is that the costs of data collection and maintenance have decreased as information is shared across agencies.

Since its transformation, WEC has increased the employment rate of its beneficiaries by 12% (from 653 to 731), the number of partnerships among agencies from 118 to 212, and the satisfactory rate among customers from 4.14 to 4.24 out of 5 points (when comparing the



numbers before and after opening the Center, as of 2016). In addition, the number of centers around the country has increased from 40 in 2015, to 70 in 2016, and to 100 in 2017. WEC provides services in three main areas, namely, employment, welfare and microfinance:

- **Employment** is provided via five divisions that serve different objectives and audiences. The first division, the Employment Center (or the entire employment service), help SMEs retain competent workers and works with the unemployed to provide them with unemployment benefits and job assistance that is customized to meet the specific needs the job seeker and the employer, ensuring that all needs are correctly defined and that the match is a good fit for both parties. The second division, the Local Job Center, gathers information on available jobs in industries growing locally and provides this information to job seekers via job fairs. The third division, the New Work Center, focuses on assisting women whose careers have been interrupted by child bearing and care circumstances. It offers vocational training and internship opportunities at available companies and assists these women with labor market re-entry. The fourth division, the Middle Age and Plus Employment Center, provides holistic services to the elderly who have retired or suffered job loss. Services include assistance with job placement, opening small businesses, retirement planning and a provision of social activities. The fifth division, the Military Veteran Support Center, provides job assistance services to those who have served in the military for more than five years.
- **Welfare** is provided by the Welfare Support Team, which connects low-income individuals with both public and private support programs.
- **Microfinance** is provided by the Microfinance Support Center. The Center assists those with financial struggles (e.g. self-employed or low-income individuals) by providing them with low-interest small loans. It also assists with bankruptcy recovery and prevents clients from accepting illegal private loans. As of 2017, there were 100 centers in Korea, and **Busan Employment Service Plus** is one of them.

#### **Visit to Busan Employment Service Plus Center**

Busan's center supports job seekers by providing unemployment benefits, job training and placement. This visit aims to illustrate Korea's move towards more accessible, efficient and impactful employment and welfare services through their concentration in a single space. The Busan Center provides various support services:

- **Employment Support Services:** “Job Support Service” provides job seekers with employment information, vocational training, and counseling. “Human Resources Support Services” provides employers with a means of recruiting adequate workers via WORK-NET. Since 2009, financed by the MOEL, a total service program, referred to as a “Package of Job Success”, assists low-income persons experiencing job insecurity. This Package consist of three steps: helping develop a client’s career pathway via job counseling; providing vocational training or support for start-up businesses and establishing job connections. To increase program participation, all

job- and training-related expenses are paid by the government.

- **Employment Insurance:** The center supports independent skills development for the unemployed and self-employed under the Employment Insurance Act.
- **Unemployment Benefits:** The Center administers employment insurance and provides unemployment benefits to the insured who have lost jobs and those actively seeking new ones. Unemployment benefits are classified as "job-seeking benefits", which consist of 12 months of compensation equivalent to 50% of previous salary, and "employment promotion allowances", which provides allowances for early employment, skills development, and active local job-hunting.
- **Employment Stabilization:** This program helps companies offer stable employment to workers alongside technological progress/changes by, for example, supporting a portion of labor or facility expenses for new hires.
- **Skills Development:** This team provides "Tomorrow's Learning Cards" to the unemployed, self-employed, and high school and college graduates who are seeking jobs. Applicants to this program are selected by the Skills Development team through a screening process that looks at the quality of employment or start-up plans, the need of training, and the urgency of employment. If a job seeker obtains a Card, he or she is entitled to receive training at one of MOEL's approved institutes. The Center assists Card holders in finding approved programs and covers training expenses via opening an account. Upon training completion, both the Center and training institutes help trainees find jobs. "Tomorrow's Learning Cards" can also be granted to workers who voluntarily participate in vocational competency development training.
- **Employer Support Training:** The Center supports a portion of training costs and competency development training incurred by employers.
- **National Human Resources Development Consortium:** The Center provides support for training facilities, equipment, and operating expenses to participating SMEs.

### **Visit to Busanjin Women Welfare Center**

Busanjin Women's Human Resource Development Center supports women's skills advancement and labor market re-entry. The Center's strategic goals are to equip female workers with skills required by local industries, expand female-specific training programs, and increase the Center's training market competitiveness via supply-driven customized training programs. The Center's primary focus includes vocational training, labor market re-entry as a salaried employee or entrepreneur, and welfare services. The Center has three operating teams overseen by different government agencies with slightly different objectives:

- **Career Development Team:** It provides training to the employed and unemployed through two types of training programs (managed by different entities): “Tomorrow’s Learning Card”, managed by MOEL, and “Fee-based Training”, managed by the Center. Under “Tomorrow’s Learning Card”, a worker who wishes to improve job competencies can apply and, upon acceptance, she may take government-approved courses and receive 2,000 USD per year in financial support (250 trainee participants). If the beneficiary is unemployed, she can use the Card to take courses at government-approved training institutes and receive 2,000 USD per year, in addition to 100 USD per month as a training grant (18 trainee participants). Employers may enroll new hires in this program to receive partial reimbursement of training expenses (either in-firm or from government-approved training institutions) from MOEL. Under the “Fee-Based Training”, the Center acts as a training institution, developing and delivering training based on its research of skills demand and supply. Upon course completion the Center connects trainees with available jobs. The fee-based programs were provided to 842 trainees in 2017.
- **Women's New Work Center:** The Center connects trainees with employers by developing and providing training programs, supporting job navigation, and maintaining job networks. It also has a "comprehensive employment support system" that is dedicated to women who have lost their jobs due to childbearing and care circumstances. The Center is overseen and financed by the Ministry of Gender Equality and Family (MGEF). In 2017, the completion rate of the training programs offered by the Center was 92.1% (129 out of 140 trainees completed), and the employment rate was 73.6%.
- **Women Entrepreneurship Support Center:** Managed by Busan Metropolitan City, the Center provides prospective female entrepreneurs with consultations, knowledge and information related to start-up businesses. During 2017, 122 out of 140 participants completed the training program.

### 4.3. Lessons

The experience of Korea with employment services yields four main lessons. First, the government should ensure services are delivered with the simplest methods to increase access. The Korean model indicates that service begins with a consultation to diagnose a client’s need, such as employment; welfare; microfinance, or all these combined. Next, customers are instructed to visit the issue-related offices within a Center. In these respective offices, customers receive the instructions on how to receive their services. During internal surveys, clients indicate that the instructions were clear. For example, in a case of sudden job loss, a customer may visit the Center and receive first-hand assistance from a consultant who provides them with

customized ‘types of services’. Next, the consultant gives information on the ‘types of jobs’ available in the local area and any available ‘training programs’ best suited to their client. These types of clear steps with clear instructions have increased use of the Center.

Second, employment services should not provide ready-made forms applicable to all people, because everyone’s needs, and problems are different. Oftentimes, customer’s issues fall beyond lack of a job; some clients face deeper concerns, e.g. poverty, physiological issues, lack of skills, injuries, etc. To resolve such issues, coordinated efforts are required as a single team may not be able to meet all of a person’s needs. As the Busan Center’s case illustrates, through this integrated system, agency workers regularly convene to discuss the best options and services available for a client.

Third, employment services should serve as an avenue to help resolve issues, but it should not make people solely reliant on government assistance. Services should increase clients’ self-reliance by allowing them to develop their own career paths. In addition, clients must acknowledge that the duration of assistance (e.g. employment benefits) is limited. Furthermore, various incentives should be provided to the unemployed to remain in an active job search. For example, as one Korean case indicates, rewards may be received by those securing jobs within a certain period.

Fourth, the biggest challenge to the integrated system is how to achieve harmony among all the participating government agencies. As the Busanjin Center illustrates, an employment services center can be composed of various line ministries and government agencies. They manage each department with different aims and purposes. In addition to various line ministries, the central and local governments must also work well together. Coordination can be easier by establishing a common database to organize client information and holding regular meetings among all related agency members. Most importantly, a culture of harmony should be promoted and infused within the organization.

## **5. Conclusion and Discussion**

As TVET is a very large and complicated system, it would be very difficult to introduce the entire system with all of its related TVET policies. Instead, this paper introduced Korea’s primary TVET policies and highlighted some providers as examples to show the implementation of such policies at the provider level. This paper also shared some lessons drawn from the cases. Korea’s workforce development has been traditionally guided by the country’s economic policies: Establishing economic goals and then designing a TVET system that produces a workforce in support of the country’s strategic sectors.

Recently though, such efforts have become more complicated with the accelerated devolution of the central government’s power in the provinces and local industry levels. Under the umbrella of economic policies in each region, providers and industries are now linked. More specifically, with the selection of strategic sectors regionally, the government links TVET providers, local companies, and the local government; then, within this framework, the schools provide technical assistance and skilled workers to the SMEs and train their employees, while

the SMEs hire the schools' graduates. In addition, TVET providers could become a skills hub in the SMEs consortium if the government provides funding to the schools to retain high-tech facilities that are to be shared by the SMEs.

Another feature of the Korean TVET system is its successful reform efforts, especially the successful adaptation of the Swedish and German apprenticeship models in a Korean context. Under the umbrella policy of the Work-Study Parallel system, TVET students presently receive theoretical training in school and practical training on-the-job. Under this system, employees of SMEs may also undergo training at a common training center while on-the-job. New hires also receive training while serving as 'learning workers'. The training programs are also linked to various pathways to promote upward mobility. Moreover, given the open pathways under this system, TVET graduates enter the labor market immediately rather than advancing into higher education. The Work-Study Parallel system has changed the paradigm of the TVET system entirely from pre-employment training to in-service training, and Korea's TVET providers have never been this closely linked with industry before. Additionally, the government-led projects have filled the gap in training where there is a low or non-existent capacity or interest and promoted both employees and employers to participate in in-service training as it benefits them

However, there are some limitations to be addressed in regards to TVET reform efforts.

TVET's success lies in its incentives. In Korea's case, the biggest incentive is the financial support that has transformed TVET schools' business models as well as increased engagement with in-service training. In fact, various ministries provided tremendous amounts of funds, from the MOF, MOE, MOEL, etc. In addition to direct funds, various government-financed projects were available to both providers and companies.

However, the question remains whether the government obtains the expected outcomes in comparison to the high level of funds they have invested in the TVET system. In other words, has the government seen a return on its investment? For example, the government has been consistently criticized for its inability to resolve issues in youth employment considering the large amount of funds that the government has invested to increase youth employment as well as youth's labor force participation.

Another finance-related question: how can this new model of the TVET system be sustainably developed? All parties: providers, companies, and trainees are engaged with in-service training based upon financial support, but there may be an issue with continuation if funds are discontinued. In fact, many government-funded projects have a time limitation. The government believes that the role of funding for government-led projects is for the start-up stage only, and afterwards, providers should continue funding programs without government assistance. However, most programs will most likely discontinue if government funding ends. Furthermore, in order to maintain reform efforts, what other types of incentives (beside financial incentives) can be available?

Lastly, TVET reform has a limited role in the labor market. As Korea's case illustrates, even though the government directs the TVET schools to demand-driven providers and increases training opportunities for SMEs workers, if there is a large gap in wages and working conditions

between large companies and SMEs, people inevitably would avoid attending TVET schools and working at SMEs. Therefore, TVET reform is necessary but also needs to work harmoniously with labor market policies, such as wages, working conditions, etc.

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