APPRENTICESHIP at VOCATIONAL HIGH SCHOOLS

IN THE REPUBLIC OF KOREA

Korea Research Institute for Vocational Education & Training
Center for School Apprenticeship

KRIVET Korea Research Institute for Vocational Education & Training

Contents

/ Terminology

- **Apprentice**

  An apprentice is a person hired by the training company owner to offer labor and receive training pursuant to Article 2 (1) 1 of the Labor Standards Act.

- **Apprenticeship agreement**

  An apprenticeship agreement is the agreement concluded between an apprentice and the training company owner. Based on this agreement, an apprentice offers labor to the company and receives training, while the training company owner pays wages and provides training by establishing necessary courses at the workplace.

- **Apprenticeship education center (or joint training center)**

  An apprenticeship education center (or joint training center) equipped with proper facilities and devices is installed at the representative institution of each project group (from stronghold type to single-school type and shared-training-center type) to provide on-the-job and off-the-job training for apprentices of each project group. The apprenticeship education center can be used as a venue for off-the-job training and "at-center on-the-job training", which fully reflects the demands of training companies. The Ministry of Education uses the term "apprenticeship education center", while the Ministry of Employment and Labor refers to it as a "joint training center".

- **External evaluation**

  An external evaluation is performed by an evaluation panel composed of external specialists and workplace teachers by a designated evaluation institution. Apprentices who have completed all courses of an apprenticeship program and passed the internal evaluation and document screening can submit an application to the Work-Learning

Dual System Management Department at a branch of Human Resources Development Service of Korea and take the written evaluation (true/false questions, multiple-choice questions, descriptive questions, short-answer questions, etc.) and the practical knowledge evaluation (workplace evaluation, interviews, portfolio evaluation, etc.) based on the compulsory competency units included in the training courses. Two rounds of evaluation are performed immediately before or after the completion of the apprenticeship program. The evaluation panel members are selected from specialists of industry-specific organizations, NCS, National Technical Qualification, etc.

- **HRD manager**

An HRD manager is an insured employee of the training company pursuant to Subparagraph 1 of Article 2 of the Employment Insurance Act who is designated by the training company owner to take charge of administrative support for the operation of training courses. Pursuant to Article 2 of the Monopoly Regulation and Fair Trade Act, any insured employee of the training company's subsidiary, etc., who has taken charge of the education and training of the training company and thus is recognized by Human Resources Development Service of Korea as qualified may be designated as an HRD manager of the training company as an exception.

- **HRD-Net**

HRD-Net is a vocational training portal site operated by Korea Employment Information Service to provide support for apprenticeship. Schools operating the apprenticeship program post all information related to training (from the selection of training companies to training details and applications for training costs) on this site to be monitored and managed.

- **Hub Agency for Apprenticeship**

The Hub Agency for Apprenticeship is an internal institution of Korea University of Technology & Education to provide support for apprenticeship program operators.

- **Human Resources Development Service of Korea**

Human Resources Development Service of Korea is a special corporation established under the Ministry of Employment and Labor to cultivate industrial workforces and promote the economy and public welfare.

- **Internal evaluation**

The achievement level evaluation regularly performed for participants of the appren-

ticeship program is the internal evaluation. The school and company separately evaluate the achievement of each apprentice to check whether the preset training goals have been reached and whether the apprentice is qualified to apply for an external evaluation.

① All competency units (compulsory and optional competency units, training tailored for individual companies, etc.) included in the training courses are evaluated. Although an internal evaluation of training tailored for individual companies is recommended, it is not compulsory.

② An evaluation of each competency unit is standard, but an evaluation of each course is possible to ensure greater efficiency.

③ An internal evaluation should be performed before or within one month from the completion of each competency unit or course.

④ The internal evaluation of all compulsory competency units must be completed before the submission of the application for an external evaluation (with the total training progress rate standing at 80% at minimum and the attendance rate at 80% at minimum).

- **Korean Skills Quality Authority**

Korean Skills Quality Authority is an institution affiliated with Korea University of Technology & Education that performs screening and evaluation commissioned by the Ministry of Employment and Labor.

- **Korea Research Institute for Vocational Education and Training (KRIVET)**

KRIVET is a government-funded research institution under the Prime Minister that was established to contribute to promoting vocational education and training and the vocational competencies of the public.

- **Korea University of Technology & Education**

Korea University of Technology & Education, affiliated with the Ministry of Employment and Labor, fosters specialists in engineering and human resources development.

- **Metropolitan and Provincial Offices of Education**

The metropolitan and provincial Offices of Education were established to take charge of all affairs in relation to education through each superintendent (the executive body of metropolitan- and provincial-level educational and academic affairs) and related public officials.

- **Ministry of Education**

  The Ministry of Education is the central administrative agency of the government in charge of Korea's human resources development policies, school education, lifelong education, and academic affairs.

- **Ministry of Employment and Labor**

  The Ministry of Employment and Labor is the central administrative agency of the government in charge of Korea's employment policies and all affairs in relation to labor.

- **On-the-job training learning tool**

  On-the-job training learning tools refer to all learning materials used for on-the-job training. A total of KRW 3 million per training company is allocated for the development of learning tools for two to three on-the-job courses. However, any additional learning tools needed must be developed and operated by training companies on their own.

- **P-TECH (Pathways in Technical Education-Oriented Convergent High- Technology)**

  P-TECH involves WBL for high-level skills. It refers to the intermediate and advanced training courses operated for apprenticeship program graduates in connection with polytechnic universities and junior colleges. On-the-job training is provided at their workplaces during the daytime, and off-the-job training is provided at nearby joint training centers on weekends and at night. The pilot operation began in March 2017, and over 1,400 students of 59 departments at 35 colleges are participating as of March 2020.

- **Training company**

  A training company is a company designated by the government to provide apprenticeship training.

- **Workplace teacher**

  A workplace teacher refers to a vocational skills development training teacher or a person equipped with expert knowledge in the relevant field pursuant to Article 27 of the Enforcement Decree of the Act on the Development of Vocational Skills of Workers designated by the training company owner to train apprentices to attain the skills, knowledge, and competencies required to perform their jobs.

I. CHAPTER

Overview

1. Korea's Secondary Vocational Education

Korea's Secondary Education[1)]

- Korea's elementary and secondary education consists of six years of elementary school, three years of middle school (first-half secondary education), and three years of high school (second-half secondary education).
- Students are required to choose from among different types of high schools when moving onto the higher level from middle school. Middle schools are rarely divided into different types. More than 99% of elementary school graduates move onto middle school, and more than 99% of middle school graduates move onto high school.
- Korea's high schools are categorized into various types based on different standards. They are first divided into national/public high schools and private high schools depending on the organization that established the school. They are then divided into general education high schools, vocational high schools, and arts/sports high schools based on the priority of education. They are also divided into general high schools, autonomous private high schools, autonomous public high schools, special-purpose high

1) The figures in the text are cited from "2019 Statistics of Preschool, Elementary, and Secondary Education" and "2019 Annual Report on Educational Statistics" of the Educational Statistics Service (https://kess.kedi.re.kr) provided by the Korean Educational Development Institute. The number of vocational high schools and their students has been calculated by combining the number of specialized high schools and Meister high schools and their students (searched on June 11, 2020).

schools (foreign language high schools, international high schools, science high schools, high schools for gifted students, Meister high schools, etc.), specialized high schools, and integrated high schools based on their traits. General high schools account for the largest share[2].

- General education and arts/sports high schools mostly provide curriculum to help their students enter higher education providers. The college entrance rate of general high school graduates is 77%. The college entrance rate of vocational high school graduates is also relatively high. In Korea, moving onto higher education providers is highly competitive.

- The number of high schools nationwide currently stands at 2,356, and 536 among them are vocational high schools (22.3%; Meister and specialized high schools). The number of enrolled high school students is 1,411,027, with those attending vocational high schools reaching 249,311 (17.6%). The number of vocational high schools and their students and the percentage of vocational high schools among all high schools have continued to decline gradually since 2000.

- Education from elementary school through high school will be completely free from 2021 onwards[3]. Only elementary school and middle school students were subject to free education in the past. Students of specialized high schools (from 2011 onwards) and Meister high schools (from their introduction in 2010 onwards) have also been exempt from admission fees and tuition fees.

2) The previous conservative administrations (2008-2016) diversified high school types, and this intensified the social trend to rank high schools. Meister high schools were introduced during this period. The current liberal administration (2017-present) is striving to reduce high school types. Autonomous private high schools, foreign language high schools, and international high schools will be converted to general high schools in 2025.

3) Ministry of Education (2019b). Encompassing All High School Students in a Phased Manner by 2021 Starting with 12th Graders in the Second Semester of 2019. Press release (August 19, 2019).
Admission fees, tuition fees, school operating support expenses, and textbook costs are provided to all students from 2021 onwards (excluding some private high schools where admission fees and tuition fees are determined by their principals).

Korea's Secondary Vocational Education

- Korea's vocational high schools can be divided into specialized high schools (489 schools; 230,098 students) and Meister high schools (officially named "industrial-demand-based high schools"; 47 schools; 17,754 students). They also include some integrated high schools that offer both general and vocational education (72 schools; 11,203 students)[4].

- Specialized high schools are aimed at fostering specialists in certain fields and supporting students to attain quality jobs through education designed to develop their aptitude and tap their potential. Specialized high schools select students in accordance with the screening methods of individual schools.

- Meister high schools are aimed at offering curriculum designed to directly cater to the needs of related industries and achieve the advancement of vocational education. Meister high schools also select students in accordance with the screening methods of individual schools.

- Each specialized and Meister high school is equipped with a range of majors. An engineering high school may offer majors in information and communications, design, architecture, and chemicals, while a commercial high school may offer majors in business administration, finance, trade, tax accounting, and software. Up to ten classes are operated for each major based on each school's policy.

- The curricula of specialized high schools can be divided into general courses and specialized courses. General courses include Korean, English, mathematics, social studies, history, science, music, art, and physical education. Specialized courses, which deal with job performance, include specialized, general, and hands-on training subjects. The subjects of specialized courses have been aligned with the National Competency Standards (NCS) since

4) The number of integrated high schools (offering curricula of both a general high school and vocational high school) and their students is cited from "School Status" on the portal site for specialized and Meister high schools (http://www.hifive.go.kr) (searched on June 11, 2020).

2018. In addition, the completion of creative activities (self-led learning, student societies, volunteer work, job experience, etc.) is required. Specialized high school students normally complete 80 units of general courses, 100 units of specialized courses, and 24 units of creative activities for three years (six semesters in total). One unit is equal to 17 classes offered throughout one semester, with each class taking 50 minutes. In the second semester of the third year, most specialized high school students participate in on-site training. Meister high schools are allowed to more freely align their courses for individual majors.

- The middle school records of specialized high school students vary greatly in accordance with each school's employment rate and level of prestige as well as the employment rate and future outlook of each major within each school. The average employment rate and college entrance rate of specialized high school students are 54.6% and 42.5%, respectively (as of 2019).[5] The middle school records of Meister high school students are in the top 30%, and their average employment rate is about 90%[6].

Korea's Apprenticeship Program

- A variety of projects for specialized high school students have been launched and operated by government ministries in addition to the Ministry of Education, such as the Ministry of Employment and Labor; Ministry of

5) This is cited from "2019 Statistics of Preschool, Elementary, and Secondary Education" of the Educational Statistics Service (https://kess.kedi.re.kr) provided by the Korean Educational Development Institute (searched on June 11, 2020).
College entrance rate = Post-secondary students / High school graduates × 100; Employment rate = Employed / (High school graduates − Post-secondary students − Recruits for compulsory military service) × 100

6) Kwon Su-jin (October 8, 2019), Employment Rate of Meister High Schools Nationwide − Daeguil Meister High School and Chungbuk Semiconductor High School Recording 100%, Veritas Alpha, https://www.veritas-a.com/news/articleView.html?idxno=171243, Kim Su-jin (October 17, 2016), How to Enter Meister High Schools Boasting 100% Employment Rate, EDUDONGA, http://m.edu.donga.com/news/view.php?at_no=20161017190837715131; Oh Seon-yeong (July 11, 2016), As High-Caliber Students Are Flocking to Meister High Schools, Students of Lower Ranks in Need of Vocational Education Are Becoming a Fifth Wheel, The Chosun Ilbo, http://news.chosun.com/site/data/html_dir/2016/07/10/2016071000851.html (searched on June 15, 2020).

Agriculture, Food and Rural Affairs; Ministry of Culture, Sports and Tourism; Ministry of Land, Infrastructure and Transport; Ministry of Science and ICT; Ministry of SMEs and Startups; Ministry of National Defense; Korea Forest Service; and the Korean Intellectual Property Office. These projects are aimed at cultivating key technical experts equipped with the knowledge and skills required in different industries related to the abovementioned ministries[7]. Some of these projects include education of agricultural high schools in connection with industry; support for the operation of educational programs for content-specialized high schools; the cultivation of spatial information-specialized high schools; support for the cultivation of the technical workforce for industry, academia, and the military; and the cultivation of the workforce through SME-specialized high schools.

- The Apprenticeship Program Project targeting specialized high schools has been jointly conducted by the Ministry of Education and the Ministry of Employment and Labor since 2014. Those schools designated to implement this project operate the courses for the apprenticeship program. The apprenticeship program operated through specialized high schools is an extension of the work-based learning (WBL) system[8] targeting junior college and college students and workers.

- Specialized high schools designated for the apprenticeship program apply WBL to some of their majors. One major can operate an apprenticeship

7) This is cited from An Jae-yeong et al. (2018a), Outcome Management and Development Ideas for Ministry-Connected Vocational High Schools, pp.15-16. The Ministry of SMEs and Startups and Korean Intellectual Property Office target all industries.

8) Training, which is designed to deliver the knowledge and techniques required to perform tasks to employees at their workplace or using the production facilities and equipment of their employer and appointing in-house specialists as trainers (hereinafter referred to as "on-the-job training"), and training offered at a facility or training institution outside of the workplace or premises of the company to supplement on-the-job training (hereinafter referred to as "off-the-job training") are offered in combination by the employer, and the completion of this system may be acknowledged as a qualification or academic background. This system is divided into two stages: the student stage (targeting those attending high school, junior college, and college) and the professional stage (targeting those hired by the company). (Ministry of Employment and Labor and Human Resources Development Service of Korea, 2020, pp.14, 16).

class and a non-apprenticeship class at the same time. The apprenticeship class students are guided to complete a curriculum different from that of the non-apprenticeship class students. The apprenticeship class students sign an apprenticeship agreement with companies contracted by the school and receive off-the-job training at school or an apprenticeship education center through specialized courses and on-the-job training on the premises of training companies as apprentices.

- As of February 2019, approximately 7,700 students (equivalent to about 4.0%) from 158 schools (equivalent to about 30%), excluding overlapping schools, of 67 project groups are participating. Major job fields include machinery (65 schools), electrical/electronics engineering (59 schools), business administration/accounting/general administration (14 schools), information and communications (10 schools), and food service (8 schools)[9].

- Schools designated to operate the apprenticeship program are funded by the government for their facility, equipment, and operating expenses. The project period is five years, and the re-designation assessment is conducted in the fifth year to determine the extension of the project period by another five years. If any school drops out of the project, decides not to take part in the re-designation process, or fails to be re-designated, educational expenses are provided to the students participating in the project until they graduate from high school, and facility and equipment expenses invested are collected afterwards considering depreciation.

- Monitoring and performance assessment are conducted on a yearly basis for the Apprenticeship Program Project to better fit the conditions of specialized high schools and cater to the needs of industry.

9) Majors offered at specialized high schools are categorized into 17 groups: business administration and finance; healthcare and welfare; design and cultural content; beauty, tourism and leisure; food service; construction; machinery; materials; chemicals; textile and clothing; electrical and electronics engineering; information and communications; food processing; printing, publishing, and handicraft; environment and safety; agriculture, forestry, and fisheries; and ship operation.

2. Background of the Introduction of the Apprenticeship Program

Background and Purpose

- Work-based learning centered on on-the-job training, which takes place both at school and on the front lines of industry, is prevalent in Germany and Switzerland thanks to the favorable working conditions of technical professionals and active participation of companies in vocational education. This is evaluated to have laid a solid foundation for early employment, low youth unemployment rate, and high manufacturing competitiveness of these two nations.

- As a measure to reinforce vocational education centered on on-the-job training, the Ministry of Education and the Ministry of Employment and Labor have adopted the work-based learning system of Germany and Switzerland and developed it into the Apprenticeship Program Project since 2014 to help specialized high school students of Korea learn theory and receive on-site training at school and at companies.

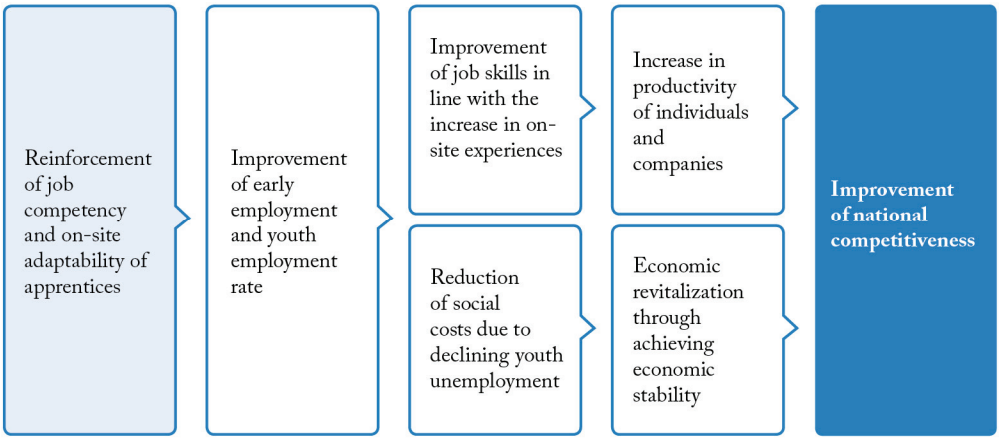
- An apprenticeship program is a vocational education and training model designed for specialized high school students to receive NCS-based education and training both at school (theory and basic training) and at companies (intensive training).

- The role and importance of the apprenticeship program continue to grow as

they are dedicated to cultivating specialists equipped with the qualities sought by companies through appropriate curricula in line with the rapid advancement of information and communications technology and the increase in jobs for highly skilled technicians.

- The expected outcomes from the introduction of the apprenticeship program are as follows.

[Figure 1-1] Expected Outcomes of the Apprenticeship Program Project



Source: Ministry of Education and Ministry of Employment and Labor (2016). Measures to Expand and Develop the Apprenticeship Program in 2016.

3. Latest Developments Concerning the Apprenticeship Program

Formation of Project Groups

- Planning of the pilot introduction and operation of the apprenticeship program
  - Designation of nine Stage 1 project groups consisting of specialized schools and companies (November 2014)
- Planning of the designation of Stage 2 project groups for the apprenticeship program
  - Designation of 57 schools for 16 Stage 2 project groups (October 2015)
- Planning of the designation of Stage 3 project groups for the apprenticeship program
  - Designation of 94 schools for 26 Stage 3-1 project groups (November 2016)
  - Designation of 26 schools for eight Stage 3-2 project groups (January 2017)
- Nine schools of nine groups previously operated by the Uni-Tech Project[10)]

10) Uni-Tech was initiated in 2015 under the aim of fostering professionals equipped with theoretical knowledge and practical skills through an integrated curriculum connecting high schools, junior colleges, and companies and executed both at school and on the front lines of industry. However, it is being terminated consecutively based on participation year from 2018 onwards and being replaced P-TECH, a WBL system aimed at fostering highly skilled professionals by providing funds to apprenticeship program graduates if they enter a junior college or polytechnic university designated as a P-TECH school after being employed. Currently, 59 departments of 35 colleges are participating in the project (as of March 2020). Source: Lee Yeon-hee (December 22, 2017). "As Junior Colleges Withdraw the Decision to Adopt NCS Comprehensively, Related Financial Support Will Be Expanded", University News Network, http://news.unn.net/news/article-

were converted to the Apprenticeship Program Project.

- Four schools among the existing schools operating the apprenticeship program were designated and added with majors evaluated to be promising fields of the Fourth Industrial Revolution.
  - IoT, SW development, smart factory, cutting-edge automobiles, and 3D printing

Extension of Project Period and Designation Cancellation through Re-Designation Assessment

- Re-designation assessment conducted on Stage 1 project groups with their project period nearing expiration (November 2018)
- Re-designation assessment conducted on Stage 2 project groups (November 2019)
- Designation canceled for those schools wishing to drop out of the project (November 2019)
- Re-designation assessment to be conducted on Stage 3-1 project groups (November 2020)

Enactment and Implementation of the Act on Support for Work in Parallel with Vocational Training in the Industrial Field (hereinafter referred to as the "Work Support Act")

- The Work Support Act was enacted on August 27, 2019.
- The Work Support Act will be implemented on August 28, 2020. Some of its provisions that will impact apprentices are as follows.
  - The Apprenticeship Qualification shall be recognized as a national qualification.
  - The training company owner shall convert the status of any apprentice who

View.html?idxno=183189; Ministry of Employment and Labor (April 23, 2020). "Introduction of the Latest Developments of P-TECH for Apprentices", official WBL blog, https://blog.naver.com/run-learn/221924783917 (searched on June 15, 2020).

passes an external evaluation and acquires the Apprenticeship Qualification to a full-time worker. A fine shall be imposed for any violation of this provision.

[Table 1-1] Schools Participating in the Apprenticeship Program Project (as of February 2019)

Category	Stage 1 groups (2014)	Stage 2 groups (2015)	Stage 3 groups (2016)		Uni-Tech (2017)	No new group (2018)	Note
			3-1	3-2			
Number of designated project groups	9	16	26	8	9	-	Overlapping schools are included.
Number of designated schools	9	57	94	26	9	-	
Current number of schools	8	49 (43)	85 (79)	23 (17)	9	-	Figures in parentheses represent numbers with overlapping schools excluded.
Number of training companies	-	168	826		2,108	2,870	-
Number of students	-	503	2,609		6,905	9,133	-
Major fields	Machinery and materials	Machinery, automobile maintenance, chemicals, and electrical/electronics engineering	Machinery, SW, beauty, tax accounting, construction, food service, etc.		Machinery, SW, etc.	-	-
Note	Re-designated in 2018	Re-designated in 2019	Designation canceled in 2019		-	-	-

i) No new project group has been designated since 2018.
ii) The current number of schools includes those that decided to drop out of the re-designation assessment and project.
iii) The number of training companies and number of apprentices are calculated from the year following the designation year onwards as preparations are made in the designation year and apprenticeship classes begin to be operated in full scale in the following year.
iv) As of February 2020, approximately 7,300 students and 67 project groups with 151 schools and about 2,000 training companies are participating.

Source: Based on internal data of the Center for School Apprenticeship of Korea Research Institute for Vocational Education & Training and of the Apprenticeship Division of the Human Resources Development Service of Korea

4. Operating Status of the Apprenticeship Program[11)]

- As of February 2020, approximately 7,700 students and 67 project groups with 158 schools and about 2,700 training companies are participating.
- The Apprenticeship Programs Project is only open to participation in the form of a project group. Project groups are divided into diverse types, from stronghold type (77%) to single-school type (7%), shared-training-center type (9%), and industry-led type (6%).
- Students in the apprenticeship class are introduced to the program and given the opportunity to experience different companies in the first year, concluding an apprenticeship agreement (for recruitment) with one of the companies in the second semester. From the second year to the third year (for 1.5 years or for 2 years)[12)], participating students receive WBL training as apprentices. The number of schools that opt for the two-year course (76%) is higher than that for the 1.5-year course (24%).
- Schools operating the apprenticeship program can choose among Model 1, Model 2, and Model 3 for on-the-job training and off-the-job training[13)].

11) The figures shown in this section are mainly cited from An Jae-yeong et al. (2019a). Apprenticeship Program Monitoring Report (Nationwide I), p.3, pp.117-122. This report includes data on the status of 2018 (collected up until February 2019). The 2018 statistics do not reflect schools that have dropped out of the re-designation assessment or the project. The operating system is explained in detail in Part II.

12) A one-year course will be established in 2021, reflecting the needs of the participating teaching staff of the apprenticeship program.

Most schools opt for Model 2 (50%) and Model 3 (40%).

- The application rate of all first-year students at specialized high schools participating in the Apprenticeship Program Project stood at 104.7% in 2017 and 101.4% in 2018. The application rate for the apprenticeship class reached 124.5% in 2017 and 120.4% in 2018.

- If any participating student wishes to drop out of the apprenticeship class, his/her participation may be canceled through each school's internal procedures, and the student may be transferred to the non-apprenticeship class. The dropout rate in 2018 stood at 7.3%[14].

- The status of participating students is as a WBL student at school and an apprentice at the training company. Apprentices take part in training based on the apprenticeship agreement and are subject to labor relations laws including those concerning minimum wage and the four major social insurance schemes.

- The average number of full-time employees at the companies participating in the Apprenticeship Program Project stands at about 50, and not many companies have more than 100 such employees.

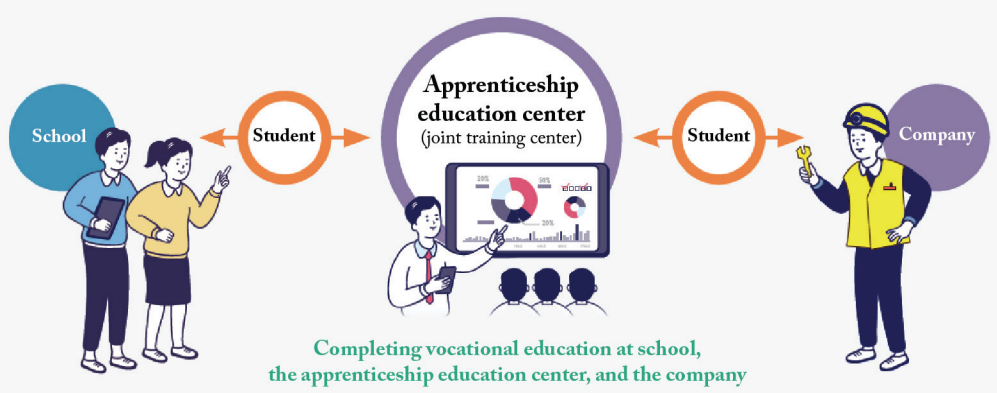
- The participating students can attain the Apprenticeship Qualification by passing the internal and external evaluations while receiving training[15]. At

13) Model 1 (based on hours per day) provides education at school in the morning and at a company or an apprenticeship education center (joint training center) in the afternoon.
Model 2 (based on days per week) provides education at school for one to two weekdays and at a company or an apprenticeship education center for three to four weekdays each week.
Model 3 (based on weeks or months per semester) provides education at school for one week to two months and at a company or an apprenticeship education center for one week to two months each semester.

14) This is cited from An Jae-yeong et al. (2019d). Support for the Apprenticeship Program in 2019: 3. Outcome Management and Development Ideas for the Apprenticeship Program, p.26.

15) The Apprenticeship Qualification shall be recognized as a national qualification from August 28, 2020, onwards. As the Apprenticeship Qualification has not been recognized as a national qualification until recently, the application rate for the Apprenticeship Qualification has remained low. Korea's national qualification system currently consists of the National Technical Qualification System and National Professional Qualification System (dealing with qualifications pursuant to individual laws). The Apprenticeship Qualification will be newly added to the system. The National Technical Qualification System is divided into

present, the application rate remains low, and the external evaluation passing rate in 2018 was roughly 66%[16].



Completing vocational education at school,
the apprenticeship education center, and the company

the testing type and the course evaluation type. The qualification attainment rate is far higher for the testing type, which has a longer history and requires applicants to simply pass an examination. The course evaluation type of the National Technical Qualification System and the Apprenticeship Qualification similarly requires applicants to complete the education and training courses and pass the internal and external evaluations. The former requires the completion of off-the-job training only, while the latter requires the completion of both off-the-job training and on-the-job training.

16) This is cited from Ministry of Employment and Labor and Human Resources Development Service of Korea (2019). National Technical Qualification Statistical Yearbook, p.344.

II. CHAPTER

Operating System

1. Operating System and Types of the Apprenticeship Program
2. Roles and Systems of Relevant Institutions
3. Administrative and Financial Support for Participants
4. Conditions for Training Companies

1. Operating System and Types of the Apprenticeship Program

Apprenticeship Program Operating System[17)]

- The apprenticeship program operated through specialized high schools is an extension of the WBL system targeting junior college and college students and workers.
- The apprenticeship program is implemented at specialized high schools selected for the Apprenticeship Program Project. These high schools conclude an agreement with Human Resources Development Service of Korea and are given authorities and responsibilities concerning the operation of the program.
- Participating students take theory and basic training courses at school and receive on-site training at training companies. They can attain the Apprenticeship Qualification upon graduation depending on their evaluation results.
- Participation in the Apprenticeship Program Project is in the form of a project group. Specialized high schools (with others or by themselves), shared training centers, or companies take the lead in forming project groups. Project groups are divided into diverse types, from stronghold type to single-school

17) Based on Ministry of Employment and Labor and Human Resources Development Service of Korea (2020). Operation Manual for Korean Apprenticeship, pp.142-144, 252, 339-342.

type, shared training centers type, and industry-led type. A single school may join multiple groups.

- Students in the apprenticeship class are introduced to the program and given the opportunity to experience different companies in the first year, concluding an apprenticeship agreement (recruitment) with one of the companies in the second semester. From the second year to the third year (1.5-2 years), they receive training as apprentices. A one-year course can be set up from 2021 onwards, reflecting the needs of the teaching staff of the apprenticeship program.
- Specialized-course teachers at school and workplace teachers at training companies within each project group join hands to develop and operate individual educational and training courses.
- Participating students receive off-the-job training in classrooms and other school facilities, shared training centers, or an apprenticeship education center installed within each industry-related organization. They also receive on-the-job training at training companies under contract with the school.
- Specialized-course teachers take charge of off-the-job training and workplace teachers provide on-the-job training. Specialized-course teachers visit the training companies during the on-the-job training period of apprentices to perform monitoring.
- Each school can choose from Model 1, Model 2, and Model 3 for the off-the-job and on-the-job training and combine multiple systems if deemed necessary[18].
- As for on-the-job training, up to six hours per day[19] and 100 hours per

18) Model 1 provides education at school in the morning and at a company or an apprenticeship education center in the afternoon.
Model 2 provides education at school for one to two weekdays a week and at a company or an apprenticeship education center for three-four weekdays.
Model 3 provides education at school for one week to two months a semester and at a company or an apprenticeship education center for one week to two months.

month are permitted. As for off-the-job training, up to nine hours per day are permitted.

- The status of participating students is as a WBL student at school and an apprentice at the training company. Apprentices take part in training based on the apprenticeship agreement and are subject to labor relations laws including those concerning minimum wage and the four major social insurance schemes (National Pension, National Health Insurance, Employment Insurance, and Industrial Accident Compensation Insurance).

- If any participating apprentice wishes to drop out of the apprenticeship class, his/her participation may be canceled through each school's internal procedures, and the apprentice may be transferred to the non-apprenticeship class. One of the participating schools operates a system through which an apprentice can consult a career counseling teacher, professional school counselor, workplace teacher, and apprenticeship class teacher upon requesting career-change counseling to his/her homeroom teacher and submit an application to cancel his/her participation in WBL along with his/her parents. Then, the final decision is made by parents, workplace teachers, and teachers through the Maladjustment Support Committee.

- Participating students can attain the Apprenticeship Qualification by passing internal and external evaluations while receiving training. With the implementation of the Work Support Act (Act No. 16559) on August 28, 2020, the Apprenticeship Qualification is to be recognized as a national qualification.

- The minimum required hours of on-the-job training and off-the-job training for the Apprenticeship Qualification are 400 hours for Level 2 and 600 hours for Level 3[20]. On-the-job training hours must be no less than 25% but

19) On-the-job training can be performed for five to six hours at maximum per day from 2020 onwards (six hours per day for second-year students and five hours per day for third-year students based on the apprenticeship agreement). As the required number of school days is not met due to the postponement of the start of the new semester resulting from the spread of COVID-19, up to seven hours per day are recognized for both second-year and third-year students.

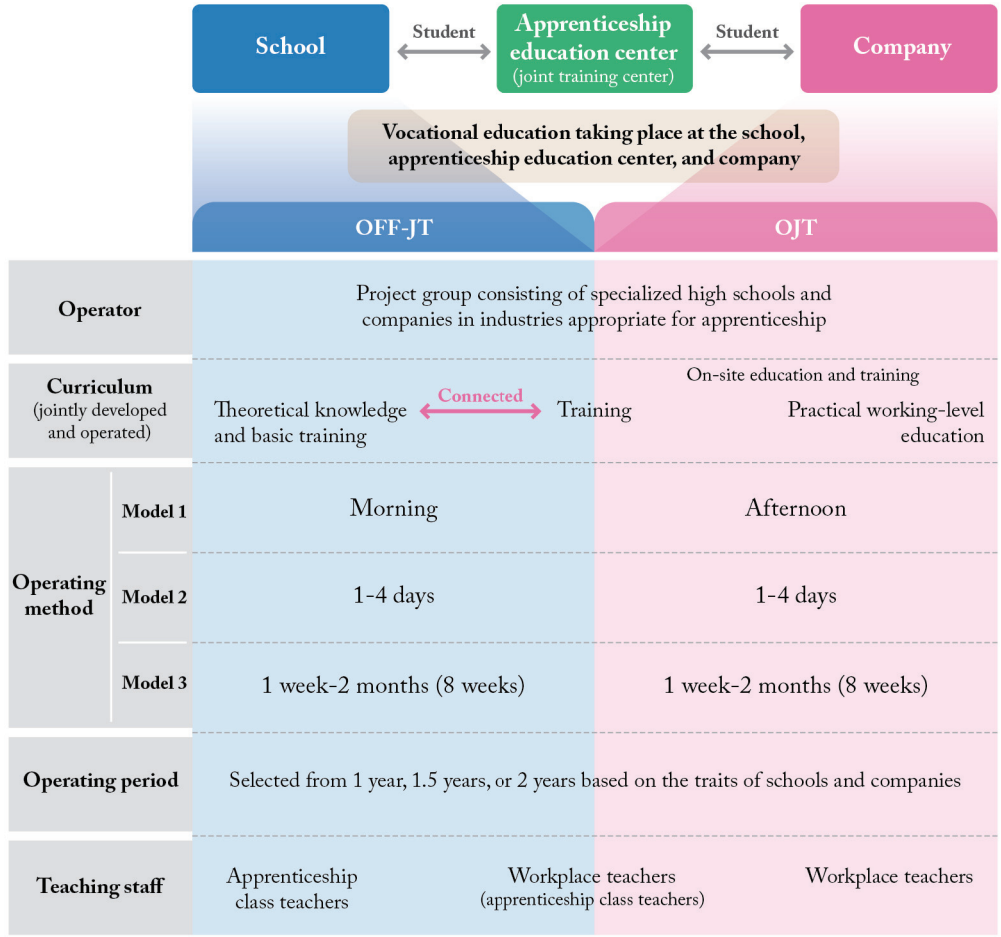
no more than 75% of all training hours.

- An internal evaluation is performed every time the participating student completes an NCS competency unit while engaging in on-the-job and off-the-job training. An external evaluation can be applied for after completing at least 80% of all the courses. An external evaluation consists of an essay test, task performance, and interview. Those who fail may re-apply for the evaluation within one year.

- Pursuant to the Work Support Act, the training company owner shall convert an apprentice who passes the external evaluation to a full-time worker. High school graduate apprentices can build a career path for continually advancing their skills by moving onto a company that offers junior-college-level apprenticeship training or entering a junior college or polytechnic university.

20) The Apprentcieship Qualification is rated from KQF Level 2 to Level 6. The Korean Qualifications Framework (KQF) was announced in February 2019, and relevant legal grounds are being prepared. KQF consists of Level 1 through Level 8 (Jeong Hyang-jin et al., 2019, p.15).

[Figure 2-1] Apprenticeship Program Operating Model



Source: Developed from Ministry of Education and Ministry of Employment and Labor (2016). Measures to Expand and Develop the Apprenticeship Program.

Types of Apprenticeship Program Project Groups[21)]

- Type 1: Stronghold type
  - Details: One specialized high school may take charge of a project group as a stronghold on behalf of multiple specialized high schools. The apprenticeship education center is installed at this stronghold school. All project group members are entitled to jointly use this center.
  - Eligibility: 1 stronghold school, 2 participating schools, 100 students, and 30 training companies at minimum
  - Application method and operation: A stronghold school applies for the project as a representative jointly with other participating schools. The stronghold school adjusts the schedule and operation of educational and training courses at the apprenticeship education center, while each school operates its own courses and seeks training company candidates.

- Type 2: Single-school type
  - Details: A single specialized high school can operate as a project group. The apprenticeship education center is installed within the school building with necessary equipment to carry out training courses.
  - Eligibility: 100 students and 30 training companies at minimum
  - Application method and operation: Each individual school applies for the project and exclusively develops education and training courses and operates the related facilities.

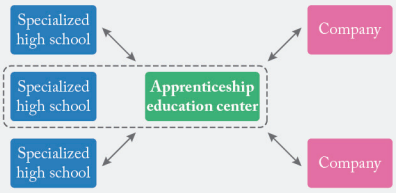
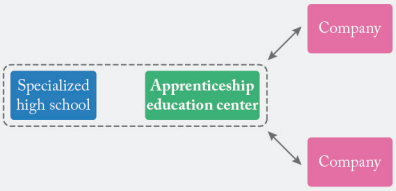
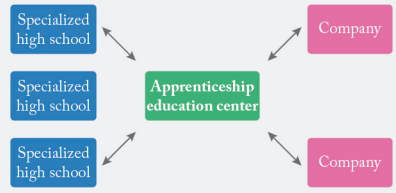
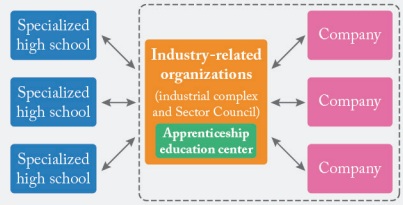
- Type 3: Shared-training-center type
  - Details: A shared training center operated by the metropolitan or provincial Office of Education can take charge of a project group on behalf of multiple specialized high schools. It can be equipped with an apprenticeship education center to be jointly used by schools and companies in the project group.
  - Eligibility: 3 schools, 100 students, and 30 training companies at minimum
  - Application method and operation: A shared training center can apply for the project as a representative jointly with participating schools. The metropolitan or provincial Office of Education (shared training center) takes charge of the super-

21) Based on An Jae-yeong et al. (2018b). 2018 Apprenticeship Program Operation Manual, pp.36-37.

vision and adjustment of the courses of the apprenticeship education center, while each school is responsible for the operation of its own courses. The apprenticeship education center can be installed at a facility other than the existing shared training center, and it is recommended to convert any school-affiliated shared training center to one affiliated with the metropolitan or provincial Office of Education.

- Type 4: Industry-led type
  - Details: An industry-related organization can take charge of a project group on behalf of multiple specialized high schools. The apprenticeship education center can be installed at such an organization to be jointly used by nearby schools and companies.
  - Eligibility: 100 students and 30 training companies at minimum
  - Application method and operation: Application for project participation is led by an industrial complex or industry-related organization (such as a Sector Council). Each industry develops education and training courses and operates related facilities.

[Figure 2-2] WBL Project Group Types

Type	Model	Trait
1 Stronghold type		· Apprenticeship education center installed at the stronghold school · Center jointly used by the schools and companies of each project group
2 Single-school type		· Apprenticeship education center installed at the specialized high school participating exclusively · Center used for WBL education by the school and companies
3 Shared -training -center type		· Apprenticeship education center installed at the shared training center of the metropolitan or provincial Office of Education · Center jointly used by schools and companies of each project group
4 Industry-led type		· Apprenticeship education center installed at each industry-related organization · Center jointly used by schools and companies of each project group

Source: Based on Ministry of Employment and Labor and Human Resources Development Service of Korea (2020). Operation Manual Korean Apprenticeship, p.340.

2. Roles and Systems of Relevant Institutions[22)]

Schools Operating the Apprenticeship Program, Shared Training Centers, and Industry-Related Organizations

- Stronghold schools, schools participating in single-school type project groups, shared training centers, industry-related organizations, and other participating schools carry out the following roles.
- They publicize the apprenticeship program, seek training company candidates, apply for necessary certification, provide off-the-job training for apprentices through the apprenticeship education centers, establish internal evaluation plans for apprentices, post internal evaluation results on HRD-Net, provide support for the development of education and training courses and learning materials of training companies, assist and monitor on-the-job training at training companies, and help workplace teachers provide education at the apprenticeship education centers.
- They receive applications from apprentices and provide support for training companies to perform apprentice evaluations.
- Industry-related organizations provide support for apprenticeship class teachers to receive on-site training on the front lines of industry and for

22) Based on Ministry of Employment and Labor and Human Resources Development Service of Korea (2020). Operation Manual for Korean Apprenticeship, pp.21-22 and An Jae-yeong et al. (2018b). 2018 Apprenticeship Program Operation Manual, p.11.

workplace teachers to receive capacity development education.

Training Companies

- Workplace teachers and HRD managers participate in the Apprenticeship Program Project.
- Workplace teachers educate apprentices, while HRD managers handle administrative affairs.
- Training companies provide on-the-job training for apprentices and perform internal evaluations.
- Workplace teachers take part in the development of training courses and learning materials.
- Workplace teachers and HRD managers are required to receive necessary training to be able to train apprentices and receive financial support from the government.

Supporting Institutions

- Supporting institutions include related ministries such as the Ministry of Education and Ministry of Employment and Labor, the metropolitan or provincial Office of Education, Korea Research Institute for Vocational Education & Training, Human Resources Development Service of Korea, and Korea University of Technology & Education. The major roles of individual supporting institutions are as shown in Table 2-1.

[Table 2-1] Major Roles of Apprenticeship Program Supporting Institutions

Supporting institution		Major roles
Relevant ministries and local governments	Ministry of Education and Ministry of Employment and Labor	- (Jointly) Forming project groups, assessing outcomes, performing re-designation assessment, etc.
		- (Ministry of Education) Designating pilot research schools, providing financial support for schools (special grants), providing administrative support including consulting, etc.
		- (Ministry of Employment and Labor) Connecting schools and companies, providing financial support for schools and companies (Employment Insurance funds), and managing and supervising participating companies
	Metropolitan or provincial Office of Education	- Seeking and connecting companies with schools, stationing outstanding teachers, providing training for apprenticeship class teachers and workplace teachers, designating research schools, providing financial support, etc.
	Local employment and labor office	- Performing labor management for wages and working hours related to apprenticeship agreements - Protecting apprentices through guidance on industrial accident prevention, etc. - Providing guidance on and inspection of training courses - Providing support for apprentice recruitment
Human Resources Development Service of Korea		- Providing support for and recognizing the development of training courses - Developing training course recognition standards - Establishing standards and systems for apprentices' competence assessment - Conducting monitoring of and consulting for training operation - Conducting Apprenticeship Program Project assessment and improving related systems - Performing the factual survey on the development of the apprenticeship system and publicizing the outcomes
Center for School Apprenticeship of Korea Research Institute for Vocational Education & Training		- Monitoring the project including the factual survey on participants - Providing support for the operation of education and training and conducting outcome assessment and re-designation assessment - Organizing related educational courses and studying operating methods - Publicizing the apprenticeship program
Korean Skills Quality Authority of Korea University of Technology & Education		- Conducting apprenticeship program outcome assessment - Providing support for the operation of the apprenticeship program
Hub Agency for Apprenticeship of Korea University of Technology & Education		- Providing consulting for project groups - Providing support for apprenticeship program outcome assessment - Monitoring off-the-job and on-the-job training of apprentices - Providing support for connecting graduates to P-TECH

Source: Based on Ministry of Employment and Labor and Human Resources Development Service of Korea (2020). Operation Manual for Korean Apprenticeship, pp. 21-22.

3. Administrative and Financial Support for Participants[23)]

Students

- The school provides support for students for signing the apprenticeship agreement with companies.
- Students receive wages calculated based on the minimum hourly wage requirement[24)] and their on-the-job training hours.
- Students are subscribed to the four social insurance schemes (National Pension, National Health Insurance, Employment Insurance, and Industrial Accident Compensation Insurance).
- The working hours of students are no more than six hours per day, and their employment after graduation is stipulated in the agreement. (Recruitment terms and conditions vary by company[25)].)

23) Based on Ministry of Employment and Labor and Human Resources Development Service of Korea (2020). Operation Manual for Korean Apprenticeship, pp.175-176 and An Jae-yeong et al. (2018b). 2018 Apprenticeship Program Operation Manual, p.46.

24) KRW 8,590 per hour and KRW 1,795,310 per month (209 hours) as of 2020

25) When the Work Support Act takes effect on August 28, 2020, training company owners shall be required to hire apprentices who pass internal and external evaluations as full-time workers and shall be imposed with a fine for any related violation. As many company owners feel burdened by this requirement, this is projected to have an impact on the operation of the apprenticeship program in the future.

Schools Operating the Apprenticeship Program, Shared Training Centers, and Industry-Related Organizations

- Each project group is provided with operating expenses, facility expenses, and equipment expenses by the Ministry of Education, Ministry of Employment and Labor, and metropolitan or provincial Office of Education.
- The amount of support for each school included in a project group is determined through the deliberation of the Screening Committee of the National Human Resources Development Consortium.
- Details of support for the project group are determined through on-site inspections on the appropriateness of the budgets applied for by the project group. Operating expenses, facility expenses, and equipment expenses are adjusted based on the budgeting standards of Human Resources Development Service of Korea.

Training Companies

- Apprentice training allowances, training course development expenses, learning tool development expenses, and allowances for workplace teachers and HRD managers are provided to training companies.

Amount of Financial Support[26)]

- Budgets for the apprenticeship program are provided by the Ministry of Employment and Labor, Ministry of Education, local Offices of Education, and local governments. As of 2018, the total amount of financial support reached KRW 74,206,218,000.

26) Based on An Jae-yeong et al. (2019a). Apprenticeship Program Monitoring Report (Nationwide I), pp.31-32. Substantially larger budget amounts were invested in establishing facilities and equipment from 2014 to 2017, when new project groups were added.

- Financial support mainly consists of Employment Insurance funds of the Ministry of Employment and Labor (KRW 37.3 billion) and special grants of the Ministry of Education (KRW 23.5 billion).
- About KRW 7.53 million was provided for each apprentice.

[Table 2-2] Administrative and Financial Support for the Apprenticeship Program

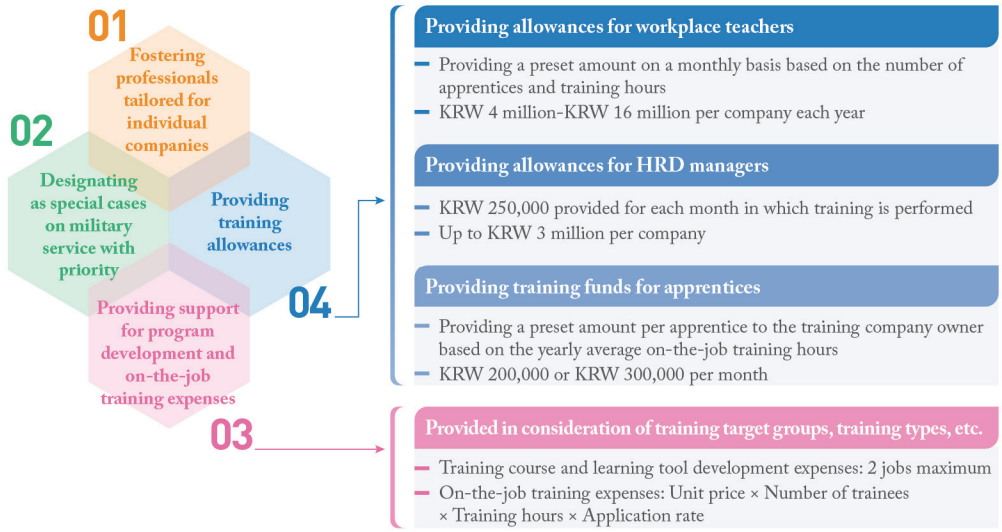
<table>
<tr><th colspan="2">Category</th><th>Details</th><th>Note</th></tr>
<tr><td rowspan="3">Support for project groups (off-the-job training)</td><td>Operating expenses</td><td>Differentially provided within KRW 1 billion
▫ 50 students (at least 1 dedicated manager): KRW 200 million
▫ 51-100 students (at least 2 dedicated managers): KRW 250 million
▫ 101-200 students (at least 3-4 dedicated managers): KRW 300 million
▫ 201-300 students (at least 5-6 dedicated managers): KRW 430 million
▫ 301-400 students (at least 7 dedicated managers): KRW 510 million
▫ 401-500 students (at least 8 dedicated managers): KRW 590 million
▫ 501 students or more (at least 8 dedicated managers): KRW 1 billion</td><td>Differentially provided based on the number of students</td></tr>
<tr><td>Facility and equipment expenses</td><td>KRW 100 million-KRW 1 billion</td><td>Differentially provided based on the number of apprentices and companies' years in business</td></tr>
<tr><td>Off-the-job training expenses</td><td>None</td><td>-</td></tr>
<tr><td rowspan="4">Support for companies (on-the-job training)</td><td rowspan="2">Training course and learning tool development expenses</td><td>Provided for training courses of up to 2 jobs</td><td>-</td></tr>
<tr><td>Preset amount of support for development expenses in 2020: KRW 2.1 million
(Course development expenses: KRW 1.5 million;
Learning tool development expenses: KRW 600,000)</td><td>-</td></tr>
<tr><td>On-the-job training expenses</td><td>[Preset unit price x Number of trainees x Training hours x Support rate]
- Preset unit price per trainee: KRW 4,000 (regardless of job)
- Support rate: Final support rate calculated based on training targets (enrolled student or worker), training type (industry type[1]) or company type[2]), job type (preferential or standard), and the company's size (SME or large corporation)</td><td>Up to 900 hours per year (on-the-job and off-the-job training)</td></tr>
<tr><td>Training support funds for apprentices</td><td>A preset amount per apprentice paid in lump sum based on the required hours of on-the-job training per year
<table><tr><th>Required hours of on-the-job training per year</th><th>Training support funds</th><th>Conditions</th></tr><tr><td>Less than 200 hours</td><td>Not provided</td><td></td></tr><tr><td>200 hours to less than 300 hours</td><td>KRW 200,000 per month</td><td rowspan="2">Preset amount provided for each month when any on-the-job or off-the-job training has been performed</td></tr><tr><td>300 hours at minimum</td><td>KRW 300,000 per month</td></tr></table></td><td>Support provided during the training period</td></tr>
</table>

Category		Details	Note
Support for companies (on-the-job training)	Workplace teachers	□ A preset amount of monthly allowance per apprentice (for the maximum number of apprentices permitted) is provided for each month during which training is conducted. □ Allowances may be provided for the apprenticeship program even for the month without any scheduled training if related activities such as preparations for internal evaluations take place. □ KRW 333,000 for one person per month-KRW 1,333,000 for 13 persons ※ KRW 100,000 is provided if a workplace teacher equipped with Korea University of Technology & Education's certification for the completion of the workplace teacher cultivation program (intensive course) performs apprentice training and support activities (in addition to allowances for workplace teachers). □ KRW 4 million-KRW 16 million per year	Support provided during the training period
	HRD managers	□ KRW 250,000 is provided regardless of the number of apprentices only for the month during which training is conducted. □ Allowances may be provided for the apprenticeship program even for the month without any scheduled training if related activities such as preparations for internal evaluations take place.	
Students	Four schemes of social insurance	Subscription to the four social insurance schemes	
	Wage	Wage pursuant to the apprenticeship agreement (in compliance with the minimum hourly wage requirement)	
	Working conditions	Up to six working hours per day One hour extendable with prior consent of the student and his/her parents	

1) Industry-type course (former NCS-based qualification course): training course developed by fully reflecting NCS competency units

2) Company-type course (former module-type course): training course developed by reflecting NCS competency units for 50% or more of its training hours based on the standards set by Human Resources Development Service of Korea

Source: Based on Ministry of Employment and Labor and Human Resources Development Service of Korea (2020). Operation Manual for Korean Apprenticeship, pp. 308, 316, 323, 328, 343-344.



4. Conditions for Training Companies[27)]

Conditions to Be Designated as a Training Company

- The company must be subscribed to Employment Insurance pursuant to Article 8 of the Employment Insurance Act and Article 5 of the Act on the Collection of Insurance Premiums, Etc., for Employment Insurance and Industrial Accident Compensation Insurance.
- As of the date of application for the project, the number of full-time employees must be 20 or more. However, a company with at least ten full-time employees may be selected if recommended by a Local Human Resources Development Committee (participated in by local government officials), a special district of training companies related to local industries, an institution related to any relevant ministry, etc.
- As for the sectors of business administration/ accounting/ general administration, culture and arts/design, food processing, printing/ timber/furniture/ handicraft, food service, beauty/ lodging/ travel/ entertainment, healthcare/ medical services, and textile/clothing (based on the classification of NCS), companies with at least five full-time employees are conditionally allowed to participate through stringent on-site inspections and recom-

27) Based on Ministry of Employment and Labor and Human Resources Development Service of Korea (2020). Operation Manual for Korean Apprenticeship, pp.38-39 and An Jae-yeong et al. (2018b). 2018 Apprenticeship Program Operation Manual, pp.30-31.

mendation procedures.

- The company must be sufficiently equipped with human/physical resources and management capacity to conduct apprenticeship for the aforementioned sectors.
- The company must have workplace teachers related to the jobs subject to apprenticeship.
- The company must be in compliance with other requirements of Human Resources Development Service of Korea.

Sectors and Jobs

- In principle, no restrictions are applied regarding sectors and jobs. However, priority is given to companies in the sectors for which NCSs have been established.
- Jobs must require training to develop the skills needed to work competently (advancement of at least one NCS job competency level).

  ※ The minimum requirement for attaining the qualification is the completion of an NCS-based training program that is at least one year in duration.

- Companies striving to cultivate a workforce equipped with advanced knowledge and skills and high job competency are subject to consideration as a candidate.

Considerations

- The company must have a clearly defined need for the government's financial support regarding the cultivation of its workforce (e.g., targets of training, number of trainees, related training courses, etc.).
- The company must have technological prowess and be willing to train stu-

dents for fields that require at least six months of training to attain expertise, instead of fields of simple labor.

- The company owner must have a strong will to foster workforce and cultivate students into key professionals of the company.
- The company's size, financial status, and on-the-job training experience must be sufficient to conduct training for apprentices for an extended period of time.
- The company must have high growth potential and be able to present working conditions and benefits that can appeal to jobseekers after completing training.
- The company must be adequately equipped with on-the-job training facilities and equipment, secure workplace teachers to take charge of on-the-job training, and provide conditions for off-the-job training to be viewed as feasible for apprenticeship.
- Apprentices who have completed an apprenticeship program shall be treated equally, at minimum, as non-apprentice graduates (junior colleges, colleges, etc.).

Ineligible Cases

- A company wishing to provide training for less than 12 months or more than 24 months (except for those companies connected with colleges)
- A company wishing to keep the rate of on-the-job training hours at less than 25% or more than 75%
- A company wishing to keep the rate of apprentices to regular employees at more than 25%
- A company included in the list of companies that have delayed payment of

wages disclosed pursuant to Article 43-2 of the Labor Standards Act

- A company included in the list of companies that have experienced frequent industrial accidents disclosed pursuant to Article 9-2 of the Occupational Safety and Health Act
- A company restricted from participating in apprenticeship as it is under administrative disposition, such as the cancellation of training course recognition, pursuant to the Act on the Development of Vocational Skills of Workers
- A place of business indicted for delayed payment of wages twice or more in the last three years
- A place of business where one or more deaths have occurred due to industrial accidents within one year prior to the date of application for the project
- A place of business that has evoked criticism due to workplace sexual harassment, etc.
- A place of business indicted for any violations of Article 69 (Work Hours) of the Labor Standards Act* at least once in the last year

  * Provisions specifying the limitation of work hours for underage workers (banned from exceeding seven hours a day and 35 hours a week)

- A place of business that fails to confirm the venue of training to Human Resources Development Service of Korea regardless of reasons

III. CHAPTER

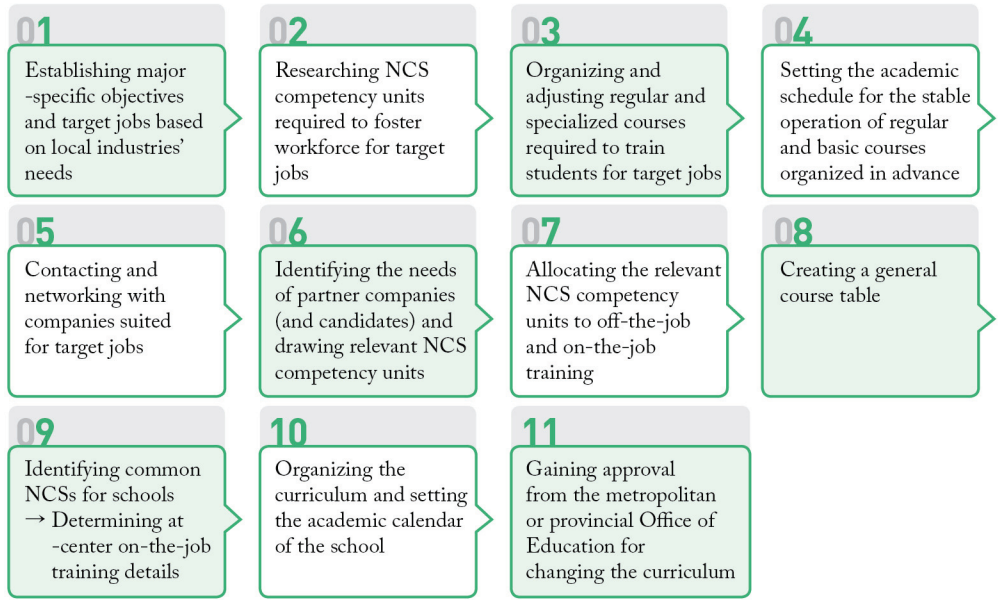
Courses and Support

1. Development of Courses for the Apprenticeship Program
2. Teaching and Learning Procedures and Models for Apprenticeship
3. Capacity Development Training for Related Staff of Schools Operating the Apprenticeship Program and Training Companies

1. Development of Courses for the Apprenticeship Program[28)]

Courses for the apprenticeship program are developed based on NCSs and in consideration of the Apprenticeship Qualification in a manner that connects classroom education and workplace education.

Development Procedures



Source: An Jae-yeong et al. (2018b). 2018 Apprenticeship Program Operation Manual, p. 55. Ministry of Education and Korea Research Institute for Vocational Education & Training.

28) Based on An Jae-yeong et al. (2018b). 2018 Apprenticeship Program Operation Manual, pp.55-59.

Preparations for the Development of Training Courses

- Establishing educational objectives and exploring NCS competency units
  - Establishing major-specific objectives and target jobs based on local industries' needs
  - Researching NCS competency units required to foster workforce for target jobs
  - Organizing and adjusting regular and specialized courses (basic, common, and practical subjects) required for target jobs (included in off-the-job training in advance)
    - ※ Prior preparations to secure learning hours of commonly required regular and basic courses (off-the-job training) to cater to individual needs of training companies
    - ※ This is an approach that focuses on the need to perform off-the-job training (theoretical knowledge and basic matters) prior to on-the-job training (practical working-level matters) to be performed by companies [e.g., to organize basic courses commonly required by the machinery major (target job: machine operator)].
    - ※ This is aimed at preventing school courses from being changed frequently by the influence of certain companies although courses should be organized in a manner that can cater to companies' needs.
    - ※ It is recommended to reflect compulsory competency units in the third year of high school (before November) in consideration of the external evaluation schedule for the Apprenticeship Qualification.
  - Organizing the academic calendar in advance for the stable operation of regular and specialized courses (basic, common, and practical working-level subjects), including creative hands-on experience activities and allocation of teachers
  - Improving evaluation credibility through ensuring consistency between school courses and on-the-job training courses

- Selecting NCS competency units and determining course details
  - Identifying companies suited for the respective school's workforce cultivation goals
  - Understanding the needs of partner companies (as well as those scheduled to provide training) to deduce respective NCS competency units
    - ※ To check if companies plan to demand more than what is required in job descriptions
  - Identifying whether the deduced NCS competency units match the Apprenticeship Qualification
  - Dividing roles between the school (off-the-job training) and companies (on-the-job training) for education regarding the deduced NCS comptency units
  - Creating the general NCS table for training courses (refer to Table 3-1)

[Table 3-1] General NCS Table for Training Courses

To be filled out by the school								To be filled out by the company
School	Subcategory	Competency unit name	Elements/Definition[1]		Apprenticeship Qualification[2]			Demand survey[4]
					Compulsory NCS	Optional NCS	None	○○○○ [3]
A Engineering High School	02. Milling	01. Establishing plans	Elements	1. Determining the task 2. Establishing plans 3. Reviewing plans	○			○
			Definition	"Establishing plans" involves the competency to establish plans to efficiently perform the respective task within the authorities of the team head (workplace) and allocate staff members and equipment to middle managers.				
B Engineering High School						○		△

1) Elements/Definition: Refer to the NCS website (http://www.ncs.go.kr)
2) Apprenticeship Qualification: Please make sure to check only one of the columns.
3) Enter the name of the company here.
4) ○: Education on the respective NCS competency unit needed/On-the-job training possible (equipped with workplace teachers, separate space for education, and necessary equipment)
△: Education on the respective NCS competency unit needed/On-the-job training not possible (lacking workplace teachers, separate space for education, and necessary equipment)
X: On-the-job training not needed

Source: An Jae-yeong et al. (2016), Apprenticeship Program Project Group Formation and Consulting – Q&A Book, p. 337. Korea Research Institute for Vocational Education & Training.

- (Shared-training-center type and stronghold type) Deducing common NCSs for schools → Determining at-center on-the-job training details
- (Industry-led type) Deducing compulsory NCS competency units after analyzing the needs of training companies → Screening jobs for at-center on-the-job training

Tips for the Operation of the Industry-Led Type Project Group

☐ **Roles of Representative Institution of the Industry-Led Type Project Group**

1. Analyzing major jobs of training companies
2. Identifying NCS competency units matching major jobs
3. Allocating competency units to companies (on-the-job training) and schools (off-the-job training)
4. Performing at-center on-the-job training (joint training center)

→ *To minimize inconsistencies among industry, educational institutions, and educational courses

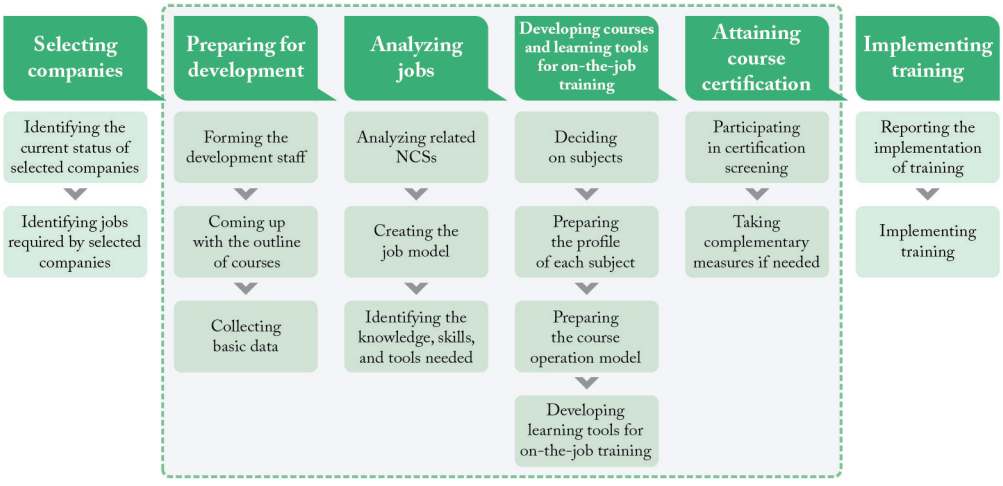
• Development of Training Courses

[Figure 3-1] Review of and Preparations for Educational Courses

Source: Lee Soo-Jeong et al. (2016). Establishment of Apprenticeship Program Operation Infrastructure. Korea Research Institute for Vocational Education & Training.

- In principle, apprenticeship program courses should be jointly developed by schools and training companies.
- It is required to comply with the apprenticeship program certification criteria.
- Courses should be developed tailored for the needs of companies in line with the Apprenticeship Qualification.
- Each company is required to come up with one representative job based on the opinions of the front lines of the industry (up to three jobs if deemed necessary).
- The representative job should be developed from the company's key jobs and may be a combination of multiple jobs.
- It should proceed in the order of development sector selection, job analysis, course and learning tool development, and certification.

[Figure 3-2] Training Course Development Process



Source: Korea Polytechnics (2015). 2014 Apprenticeship Program Course Development Plan.

- NCS-based courses based on the traits of the front lines of industry should be designed.
  - Developing courses, holding a kick-off meeting (compulsory), and analyzing given responsibilities for each company's representative job (two courses can be developed for two jobs if deemed necessary)
- The details of courses should reflect the traits of each company as well as common skills required by the overall industry and the job and special skills required by each company.
  - Developing courses based on the Apprenticeship Qualification standards
  - NCSs related to the job to be utilized in principle
- Profile of each modular course
  - The details of each course are determined by the training company, while its framework is developed by the supervising institution.
  - If the course is developed in collaboration with colleges, the period of off-the-job training and on-the-job training, etc., should be determined based on the opinions of the institution that grants the degree.
- The training objectives should be clearly set and utilized as the standards for the evaluation of the student.
  - (Job) Defining the job [job and responsibilities]
  - (Required competencies) Determining the NCS level based on the knowledge, skills, and details of competencies
  - Setting the training objectives to foster a workforce that can be readily put to work on site upon the completion of the course

2. Teaching and Learning Procedures and Models for Apprenticeship[29)]

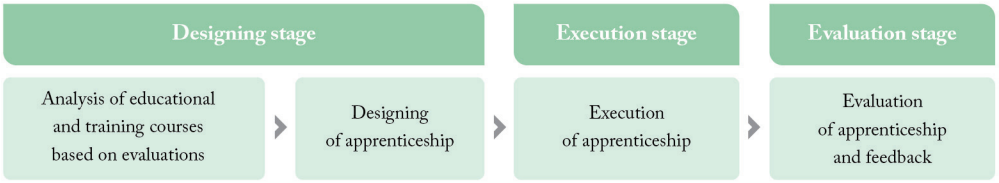
Apprenticeship is realized through on-the-job training, which is provided to apprentices by those on site equipped with professional skills and knowledge utilizing the production facilities and equipment of training companies to pass on the expertise, skills, and qualities required to perform jobs, and off-the-job training conducted at vocational skill development facilities and training institutions outside of the training companies. Lee Soo-jeong et al. (2019) proposed the following teaching and learning procedures and model.

Teaching and Learning Procedures

- Teaching and learning procedures consist of the designing, execution, and evaluation stages. In the designing stage, the educational and training courses are analyzed to design the teaching and learning procedures from the perspective of evaluation for Apprenticeship Qualification attainment. In the execution stage, on-the-job training and off-the-job training are performed. In the evaluation stage, reasonable internal and external evaluation methods are crafted and applied concerning Apprenticeship Qualification attainment with feedback gained.

29) Based on Lee Soo-jeong et al. (2019). 2019 Support Measures for the Apprenticeship Program_2. Reinforcement of the Competence of the Apprenticeship Program (I) and Network Establishment.

[Figure 3-3] Teaching and Learning Procedures

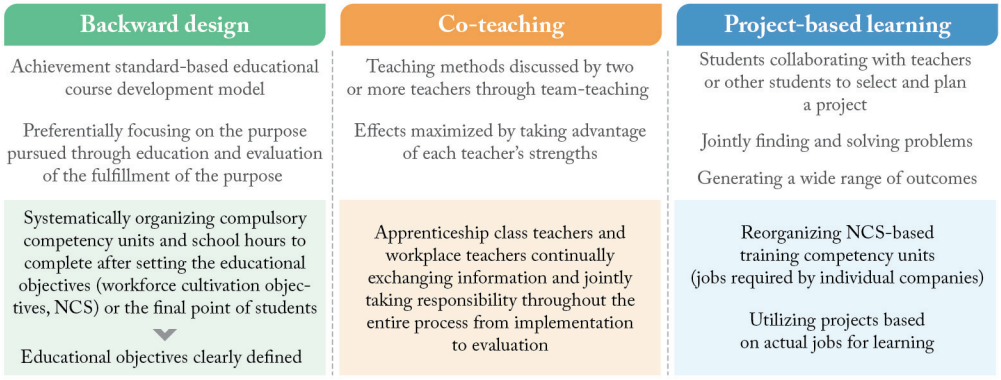


Source: Lee Soo-jeong et al. (2019). 2019 Support Measures for the Apprenticeship Program_2. Reinforcement of the Competence of the Apprenticeship Program (I) and Network Establishment, p. 27.

Teaching and Learning Models

- The backward design is applied to systematically organize teaching and learning activities and improve students' achievement levels through close cooperation between apprenticeship class teachers and workplace teachers. The following figure illustrates the teaching and learning model of project-based co-teaching by apprenticeship class teachers and workplace teachers.

[Figure 3-4] Teaching and Learning Model



Source: Lee Soo-jeong et al. (2019). 2019 Support Measures for the Apprenticeship Program_2. Reinforcement of the Competence of the Apprenticeship Program (I) and Network Establishment, p. 61.

- First, the backward design is an educational course development model based on achievement standards, which preferentially focuses on "evaluation" to check the purpose pursued through education and whether the purpose has been fulfilled (Wiggins & McTihhe, 2005[30]).
- Students must be able to attain target qualities and competencies and reach the target point through the teaching of apprenticeship class teachers and workplace teachers. As such, the backward-design-applied teaching and learning model, which sets evaluation standards and plans each course in advance, is deemed more effective to fulfill the purpose of apprenticeship than general teaching and learning methods through which course objectives are set, learning experiences are screened and organized, and evaluations are conducted.
- Second, co-teaching, a type of team-teaching, is a teaching method through which two or more teachers form a team and make decisions together. It maximizes the effects of individual courses by taking advantage of each teacher's strengths (Cook & Friend, 1995; Roth & Tobin, 2001).
- Apprenticeship can be divided into the leader-supporter type and team-teaching type based on the method of cooperation between apprenticeship class teachers and workplace teachers. Apprenticeship class teachers take charge of theoretical knowledge and basic practical education through the school curriculum and off-the-job training, and workplace teachers provide practical education for on-site tasks through on-the-job training. Apprenticeship class teachers and workplace teachers can directly and indirectly complement one another in designing teaching methods and proceeding with their courses.

- **Leader-supporter type: One teacher takes the lead, and the other teachers present opinions and provide help when necessary.**
- **Team-teaching type: Two teachers teach students in turns.**

30) Cited from Wiggins, G. & McTighe, J. (2005). Understanding by design (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

- Third, project-based learning enables students to find and solve problems and generate a wide range of outcomes while selecting a project and establishing plans in cooperation with teachers or other students.
- Projects of smaller units are planned by reorganizing the details of each course (NCS competency units) and reflecting the jobs required by individual companies, and these projects are compiled to complete a larger final project.

3. Capacity Development Training for Related Staff of Schools Operating the Apprenticeship Program and Training Companies[31)]

Overseas training opportunities were given from 2015 to 2018 for staff members of the apprenticeship program and training companies to visit related institutions (schools, companies, training centers at companies, and chambers of commerce) in Germany and Switzerland, gain a better understanding of the WBL system, and improve their expertise.

Objectives

- A total of 21 overseas training sessions were conducted for apprenticeship program staff members from 2015 to 2018.
- Overseas training was aimed at providing apprenticeship program staff members with opportunities to learn about the WBL operating systems of advanced countries, further motivating them to participate in the project, and improving their competence to seek measures appropriate for Korea's situation.

Outcomes

- Overseas training for apprenticeship-related staff members began in 2015

31) Based on Lee Soo-Jeong et al. (2018). Visiting the Birthplace of WBL and Finding the Future Path for the Apprenticeship Program.

and was conducted in 21 sessions until 2018, with participation by 751 staff members (361 from schools, 376 from companies, five from the industry-led type apprenticeship association, and nine from others).

[Table 3-2] Overseas Training for Staff Members of the Apprenticeship Program and Training Companies (2015-2018)

Year	Target	Number of sessions	Participants		Fields	Visited institutions
			Number of schools	Number of participants		
2015	Stage 1 project group	2	9	72 (33/39)	Metal cutting, molding, and welding	Chambers of commerce, associations of artisans, research institutes, vocational high schools, and companies (training centers)
2016	Stage 2 project group	5	51	224 (107/116/1)	Metal cutting, electronics engineering, automobile, chemicals, welding, molding, etc.	
2017	Stage 3-1 project group	10	89	346 (177/169)	Automobile maintenance, manufacturing, hair design, electronic device production, food service, quality management, tax accounting, SW development, etc.	
2018	Stage 3-2 project group	4	24	100 (44/52/4)	Machinery, information/communications, business administration/accounting/general administration, food service, etc.	

- A total of 38 institutions were visited through overseas training from 2015 to 2018, and the details are as follows.

[Table 3-3] Visited Institutions during Overseas Training of Schools Operating the Apprenticeship Program (2015-2018)

No.	Country	Visited institution	Institution type	Year of visit				Number of visits
				2015	2016	2017	2018	
1	Germany	Komet Group GmbH (metal cutting)	Participating companies			3rd, 7th		2
2		Mapal Dr. Kress KG (metal processing)		1st, 2nd	1st			3
3		Thyssenkrupp Rasselstein GmbH (metal processing and electrical/electronics engineering)					1st	1
4		Opel Automobile GmbH (electronics/engineering)					2nd	1
5		Delta Hotels by Marriott Frankfurt (food service and hotel management)					3rd	1

No.	Country	Visited institution	Institution type	Year of visit				Number of visits
				2015	2016	2017	2018	
6		Emmentaler Schaukäserei AG (food service and food processing)					3rd	1
7		Schunk Group (tax accounting)					4th	1
8		Carl Bosch Schule Heidelberg	Expert interviews in 2017		1st, 5th	3rd, 7th, 9th		5
9		Mies-van-der-Rohe-Schule					1st	1
10		David-Roentgen-Schule Neuwied					1st	1
11		Max Weber Schule Giessen					4th	1
12		Hessisches Kultusministerium	Teachers' school				4th	1
13		IHK Bildungshaus Stuttgart	WBL training centers affiliated with the chamber of commerce		5th, 8th			2
14		IHK Exportakademie				7th, 8th		2
15		Holzbau Baden-Wuerttemberg	WBL training center affiliated with the wooden construction association	1st, 2nd				2
16		HWK Mannheim	WBL training center affiliated with Handwerkskammer of Mannheim		4th, 5th	1st		3
17		Handwerkskammer zu Köln-Bildungszentrum Butzweilerhof (machinery)	WBL training center of Handwerkskammer of Köln				1st	1
18		HWK Stuttgart	WBL training centers affiliated with Handwerkskammer	2nd	1st			2
19		ABB Training Center Heidelberg (quality management)	WBL training centers of participating companies		1st, 3rd	10th		3
20		BMW Muenchen (automobile/machinery and electrical/electronics engineering)		1st		1st		2
21		Samson AG (automation control and electrical/electronics engineering)			5th	8th		2
22		Trumpf GmbH (sheet metal/metal processing and electrical/electronics engineering)	WBL training centers of participating companies		5th	5th		2
23		EAZ (Electro Ausbildungszentrum e.K, electrical/electronics engineering)					2nd	1
24		IHK Frankfurt	Chamber of commerce		3rd	7th		2
25		IHK Rhein-Neckar					2nd	1
26		IHK Muenchen		1st, 2nd				2
27		IHK Koblenz					1st	1
28		IHK Offenbach am Main					3rd	1
29		IHK Stuttgart					4th	1
30		Handwerkskammer der Pfalz	Association of artisans				2nd	1

No.	Country	Visited institution	Institution type	Year of visit				Number of visits
				2015	2016	2017	2018	
31		BiBB (Bundesinstitut für Berufsbildung)	BiBB		1st, 3rd	1st	2nd	4
32	Switzerland	Swiss Banking Association (tax accounting)	Related association				4th	1
33		Schindler AG (elevators, escalators, machinery, and electrical/electronics engineering)	WBL training centers of participating companies		2nd	5th		2
34		CYP (banking and financial expert training)					4th	1
35		SERI (State Secretariat for Education, Research, and Innovation)	Department of Education of a canton government		2nd, 4th			2
36		Allgemeine Berufsschule Zürich ABZ	School				3rd	1
37		SFIVET (Swiss Federal Institute for Vocational Education and Training)	BiBB		2nd, 4th	6th	3rd	4
38		VET Training Center	WBL training centers of vocational schools		2nd, 4th			2

Source: Lee Soo-Jeong et al. (2018). Visiting the Birthplace of WBL and Finding the Future Path for the Apprenticeship Program, pp. 6-7.

Satisfaction Level for Overseas Training

- The level of satisfaction on the details of overseas training scored 4.23, while the usefulness of overseas training for apprenticeship operation scored 4.36. Chambers of commerce ranked first in terms of the satisfaction of participants on each visit at 4.52, followed by research institutes (4.49), associations of artisans (4.38), vocational schools (4.19), and companies (4.16).

IV. CHAPTER

Outcomes

1. Satisfaction of Companies and Apprentices
2. Training Maintenance Rates of Companies and Apprentices
3. Employment Rate of Graduates
4. Graduates' Participation in P-TECH

The outcomes[32] of the apprenticeship program are managed through the outcome assessment conducted annually by the Ministry of Education and Korea Research Institute for Vocational Education & Training and calculated based on quantitative indicators (employment rate, training maintenance rate of training companies and apprentices, graduates' participation in P-TECH, etc.) and qualitative indicators (satisfaction of apprentices, graduates, and training companies). The results of the apprenticeship program outcome assessment in 2019 are as follows.

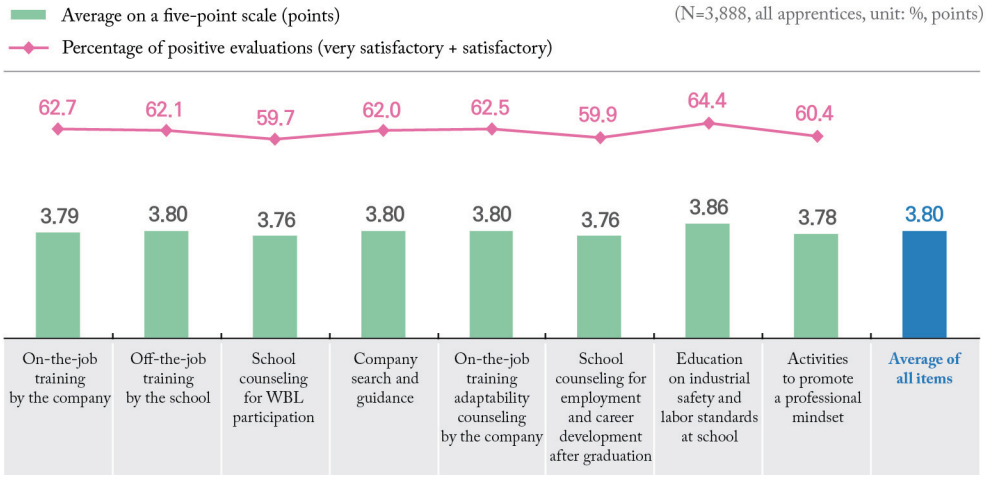
1. Satisfaction of Companies and Apprentices

Current Apprentices' Satisfaction

- Satisfaction with WBL-Related Activities
  - Satisfaction with "education on industrial safety and labor standards at school" scored the highest at 3.86, followed by "on-the-job training adaptability counseling by the company", "company search and guidance", and "off-the-job training by the school" at 3.80; "on-the-job training by the company" at 3.79; "activities to promote a professional mindset" at 3.78; and "school counseling for employment and career development after graduation" and "school counseling for WBL participation" at 3.76. The average of all eight items stood at 3.80.

32) Based on "An Jae-yeong et al. (2019e). 2019 Support Measures for the Apprenticeship Program_ 4. Apprenticeship Program Outcome Assessment"

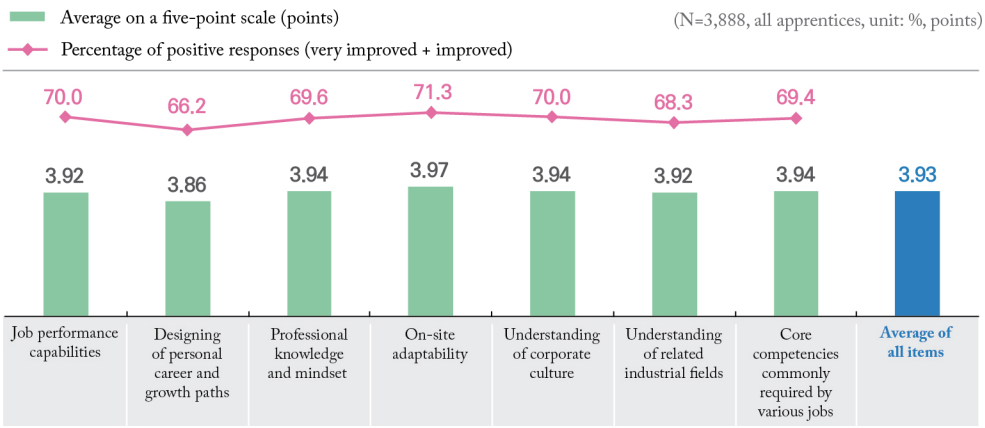
[Figure 4-1] [Current Apprentices] Satisfaction with WBL-Related Activities



Source: An Jae-yeong et al. (2019c). 2019 Report on Survey Results for Apprenticeship Program Outcome Analysis, p. 33.

- Improvement in related capabilities after participating in WBL
  - The improvement in "on-site adaptability" scored the highest at 3.97, followed by "understanding of corporate culture", "professional knowledge and mindset", and "core competencies commonly required by various jobs" at 3.94; "understanding of related industrial fields" and "job performance capabilities" at 3.92; and "designing of personal career and growth paths" at 3.86. The average of all seven items stood at 3.93.

[Figure 4-2] [Current Apprentices] Improvement in Related Capabilities after Participating in WBL



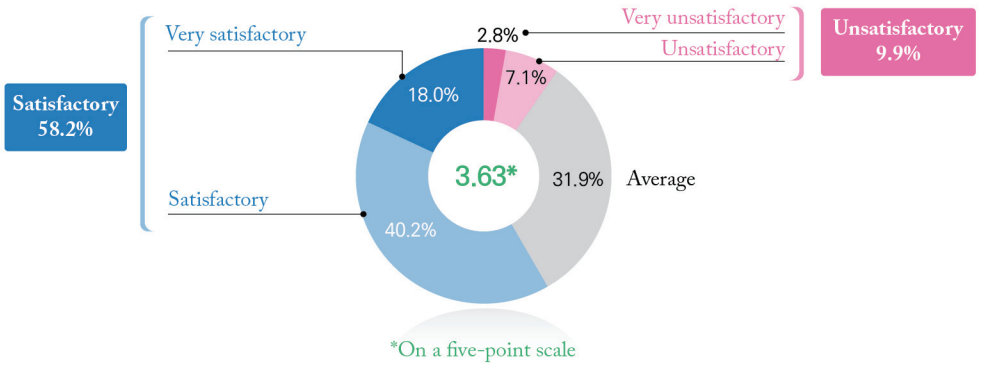
Source: An Jae-yeong et al. (2019c). 2019 Report on Survey Results for Apprenticeship Program Outcome Analysis, p. 37.

Graduates' Satisfaction

- Satisfaction with companies
  - Those who responded "very satisfactory" stood at 18.0% and "satisfactory" at 40.2%. Combined, 58.2% gave positive evaluations. Those who responded negatively reached 9.9% ("very unsatisfactory" 2.8% and "unsatisfactory" 7.1%). Of all respondents, 31.9% responded "average". The average on a five-point scale was 3.63.

[Figure 4-3] **[Graduates] Satisfaction with Companies-Overall Satisfaction**

(N=2,378, all respondents, unit: %, points)



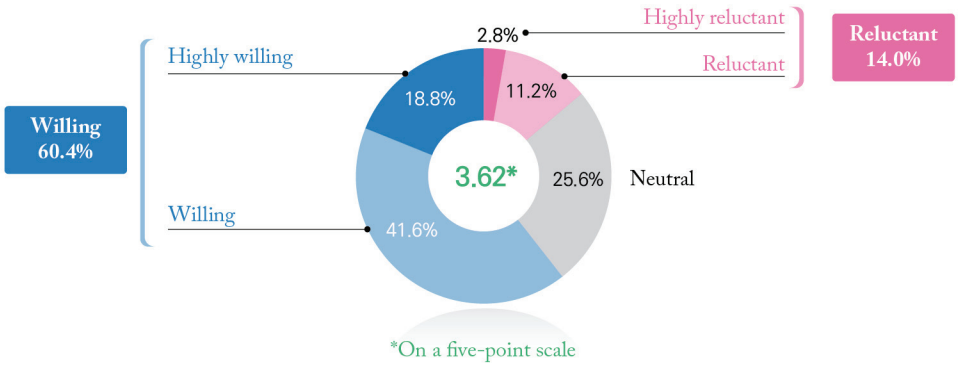
Source: An Jae-yeong et al. (2019c). 2019 Report on Survey Results for Apprenticeship Program Outcome Analysis, p. 93.

Company's Satisfaction

- Intention to continue participation in WBL
  - Those who responded "highly willing" to continue participation in WBL stood at 18.8%, while those who responded "willing" stood at 41.6%. Combined, those who responded positively reached 60.4%. Those who responded negatively reached 14.0% ("highly reluctant" at 2.8% and "reluctant" at 11.2%). Those who responded "neutral" recorded 25.6%. The average score on a five-point scale was 3.62.

[Figure 4-4] **[Company] Intention to Continue Participation in WBL**

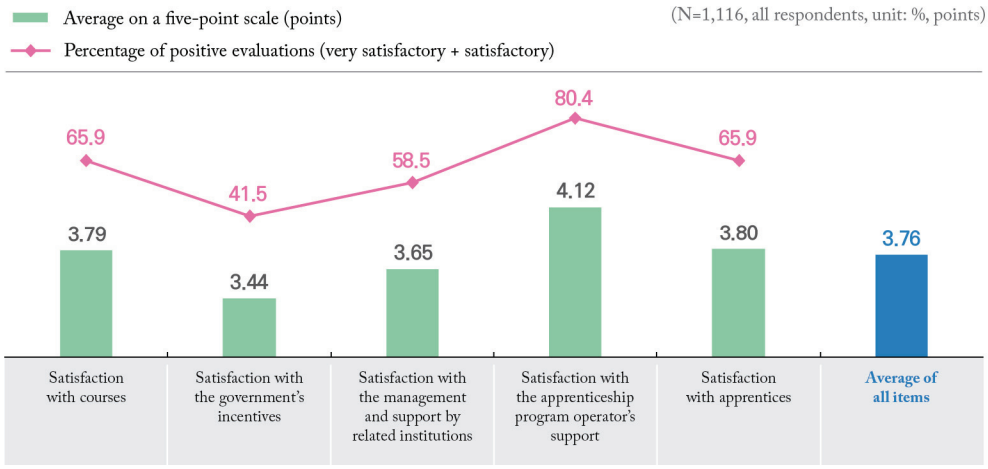
(N=1,116, all respondents, unit: %, points)



Source: An Jae-yeong et al. (2019c). 2019 Report on Survey Results for Apprenticeship School Outcome Analysis, p. 170.

- Satisfaction with the Apprenticeship Program
  - "Satisfaction with the apprenticeship program operator's support" scored the highest at 4.12, followed by "satisfaction with apprentices" (3.80), "satisfaction with courses" (3.79), and "satisfaction with the management and support by related institutions" (3.65). "Satisfaction with the government's incentives" scored the lowest at 3.44. The average of all items stood at 3.76.

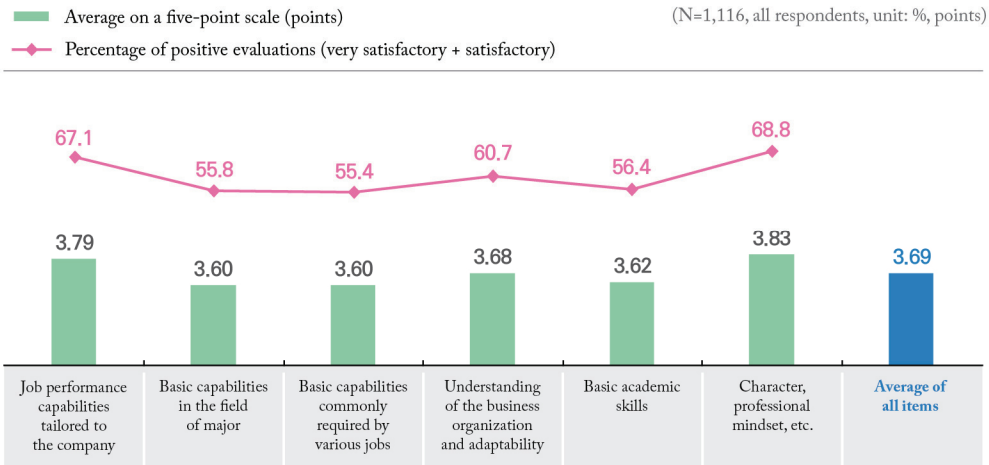
[Figure 4-5] **[Company] Satisfaction with the WBL System**



Source: An Jae-yeong et al. (2019c). 2019 Report on Survey Results for Apprenticeship Program Outcome Analysis, p. 166.

- Satisfaction with apprentices (graduates)
  - "Character, professional mindset, etc." scored the highest at 3.83, followed by "job performance capabilities tailored to the company" (3.79), "understanding of the business organization and adaptability" (3.68), and "basic academic skills" (3.62). "Basic capabilities in the field of major" and "basic capabilities commonly required by various jobs" scored the lowest at 3.60. The average score of all items stood at 3.69.

[Figure 4-6] **[Company] Satisfaction with Graduates**



Source: An Jae-yeong et al. (2019c). 2019 Report on Survey Results for Apprenticeship Program Outcome Analysis, p. 167.

2. Training Maintenance Rates of Companies and Apprentices

Training Maintenance Rate of Training Companies

- Companies participating in the Apprenticeship Program Project show a high training maintenance rate. The participation of new companies continues to increase, while existing companies are retained.

  - The initial number of training companies stood at 2,966, among which 96 dropped out. In total, 2,870 companies participated in on-site education. The average rate of training companies dropping out of on-site education recorded 3.2%.

  - The final number of training companies reached 2,870. Among them, 1,840 (64.1%) were existing companies that participated in on-site education for two consecutive years, and 982 were newly participating companies.

[Table 4-1] Status of Partner Companies (2019)

(N=184)

Category	Initial number of training companies (B1)[1]	Final number of training companies (B2)[2]	Number of companies dropping out (F)	Dropout rate (F/B1)	Number of existing training companies (final) (G)[3]	Number of new training companies (final) (H)[4]	Rate of training companies that participated for 2 consecutive years (G/B2)
Seoul	453	435	18	4.0%	264	153	60.7%
Busan	218	212	6	2.8%	132	79	62.3%
Daegu	267	259	8	3.0%	183	75	70.7%
Incheon	320	315	5	1.6%	145	170	46.0%
Gwangju	131	123	8	6.1%	94	29	76.4%
Daejeon	54	46	8	14.8%	34	12	73.9%
Ulsan	38	38	0	0.0%	30	8	78.9%
Sejong	54	50	4	7.4%	32	18	64.0%
Gyeonggi-do	474	467	7	1.5%	327	140	70.0%
Gangwon-do	87	76	11	12.6%	43	33	56.6%
Chungcheongbuk-do	94	93	1	1.1%	69	21	74.2%
Chungcheongnam-do	225	218	7	3.1%	108	107	49.5%
Jeollabuk-do	53	51	2	3.8%	30	21	58.8%
Jeollanam-do	146	140	6	4.1%	108	26	77.1%
Gyeongsangbuk-do	219	217	2	0.9%	142	65	65.4%
Gyeongsangnam-do	133	130	3	2.3%	99	25	76.2%
Total	**2,966**	**2,870**	**96**	**3.2%**	**1,840**	**982**	**64.1%**

1) Number of training companies at the time of the initiation of on-site education in 2018
2) Number of companies and substitute companies that operated on-site education without dropping out throughout the year (March 2018-February 2019)
3) Number of companies that have participated in on-site education since the previous year (March 2017-February 2018) and have provided it for more than two years (based on information collected from school status surveys)
4) Number of companies that newly participated or joined during the year (March 2018-February 2019) (based on information collected from school status surveys)

Source: An Jae-yeong et al. (2019b). 2019 Apprenticeship Program Monitoring Report (Nationwide Ⅱ), p. 15-17.

Training Maintenance Rate of Apprentices

- The training maintenance rate of apprentices hovers over 90%. Among the second-year and third-year high school students who participated in the apprenticeship class in 2018, only 7.3% transferred to the non-apprenticeship class for the year.
  - The dropout rate turned out to be high in Gangwon-do, Daejeon, Jeollabuk-do, and Gwangju.
  - Based on the analysis of raw data, although not specified in the table below, the dropout rate of third-year students is higher than that of second-year students.

[Table 4-2] Status of Apprentices (2019)

Category	Initial number of apprentices (A1)[1]	Final number of apprentices (A2)[2]	Number of apprentices dropping out (E)	Dropout rate (E/A1)
Seoul	1,692	1,538	154	9.1%
Busan	730	696	34	4.7%
Daegu	878	824	54	6.2%
Incheon	802	770	32	4.0%
Gwangju	370	332	38	10.3%
Daejeon	161	129	32	19.9%
Ulsan	164	158	6	3.7%
Sejong	141	128	13	9.2%
Gyeonggi-do	1,380	1,312	68	4.9%
Gangwon-do	287	221	66	23.0%
Chungcheongbuk-do	354	340	14	4.0%
Chungcheongnam-do	842	774	68	8.1%
Jeollabuk-do	241	226	15	6.2%
Jeollanam-do	539	479	60	11.1%
Gyeongsangbuk-do	773	735	38	4.9%
Gyeongsangnam-do	500	471	29	5.8%
Total	**9,854**	**9,133**	**721**	**7.3%**

1) Number of apprentices at the time when on-the-job training was first performed by training companies in 2018
2) Number of apprentices who completed on-the-job training by training companies without dropping out from March 2018 to February 2019

Source: An Jae-yeong et al. (2019b). 2019 Apprenticeship Program Monitoring Report (Nationwide II), p. 19.

3. Employment Rate of Graduates

Employment Rate of Apprentices

• The average three-year employment rate of apprentices stood at 71.4%.
- (2016) 73.8% (end of February 2017) → (2017) 70.2% (end of February 2018) → (2018) 70.2% (end of February 2019)

[Table 4-3] Employment Rate of Schools Operating the Apprenticeship Program by Region (2017-2019)

(Unit: persons, %)

Category	2017 (9 schools)			2018 (59 schools)			2019 (184 schools)		
	Employed students	All students	Employment rate	Employed students	All students	Employment rate	Employed students	All students	Employment rate
Seoul	-	-	-	190	229	83.0	613	825	74.3
Busan	-	-	-	-	-	-	269	384	70.1
Daegu	46	51	90.2	110	129	85.3	295	458	64.4
Incheon	37	55	67.3	118	149	79.2	289	418	69.1
Gwangju	61	114	53.5	56	101	55.4	114	170	67.1
Daejeon	-	-	-	41	77	53.2	28	73	38.4
Sejong	-	-	-	59	82	72.0	60	88	68.2
Ulsan	-	-	-	-	-	-	55	58	94.8
Gyeonggi-do	89	121	73.6	291	416	70.0	499	679	73.5
Gangwon-do	-	-	-	54	96	56.3	77	101	76.2
Chungcheongbuk-do	-	-	-	-	-	-	116	190	61.1
Chungcheongnam-do	-	-	-	111	197	56.3	267	420	63.6
Jeollabuk-do	-	-	-	-	-	-	78	135	57.8
Jeollanam-do	26	41	63.4	115	187	61.5	175	268	65.3
Gyeongsangbuk-do	47	52	90.4	80	127	63.0	354	426	83.1
Gyeongsangnam-do	55	55	100.0	124	132	93.9	181	250	72.4
Total	**361**	**489**	**73.8**	**1,349**	**1,922**	**70.2**	**3,470**	**4,943**	**70.2**

Source: An Jae-yeong et al. (2019b). 2019 Apprenticeship Program Monitoring Report (Nationwide II), p. 11.

- The employment rate of schools operating the apprenticeship program as of February 2019 is as follows.

  - The average employment rate of apprentices is 70.2% and that of non-apprentice students is 29.7%. The overall employment rate of schools operating the apprenticeship program is 39.8%.

  - The rate of apprentices employed in the fields of their majors reached 96.3% and the rate of apprentices employed by partner companies stood at 84.1%. The apprenticeship program is evaluated to be effective in improving the employment of apprentices, especially in the fields of their majors.

[Table 4-4] Status of Employment by Partner Companies and Non-Partner Companies (2019)

(Unit: persons, %)

Category	Status of employment by partner companies					
	Partner companies[1]			Non-partner companies[2]		
	Employed students (G)	All students (A)	Employment rate(G/A)	Employed students (H)	All students (A)	Employment rate(H/A)
Seoul	538	613	87.8	75	613	12.2
Busan	242	269	90.0	27	269	10.0
Daegu	223	295	75.6	72	295	24.4
Incheon	268	289	92..7	21	289	7.3
Gwangju	100	114	87.7	14	114	12.3
Daejeon	20	28	71.4	8	28	28.6
Ulsan	54	60	90.0	6	60	10.0
Sejong	48	55	87.3	7	55	12.7
Gyeonggi-do	437	499	87.6	62	499	12.4
Gangwon-do	77	77	100.0	0	77	0.0
Chungcheongbuk-do	89	116	76.7	27	116	23.3
Chungcheongnam-do	183	267	68.5	84	267	31.5
Jeollabuk-do	76	78	97.4	2	78	2.6
Jeollanam-do	128	175	73.1	47	175	26.9
Gyeongsangbuk-do	274	354	77.4	80	354	22.6
Gyeongsangnam-do	162	181	89.5	19	181	10.5
Total	**2,919**	**3,470**	**84.1**	**551**	**3,470**	**15.9**

1) Cases of apprentices employed by the companies where they received training

2) Cases of apprentices employed by companies other than those where they received training

Source: An Jae-yeong et al. (2019b). 2019 Apprenticeship Program Monitoring Report (Nationwide II), p. 11.

4. Graduates' Participation in P-TECH[33)]

- Participating students of the apprenticeship program continue to build their career through P-TECH after graduation.
  - Among the 4,943 graduates in 2019, 1,121 joined P-TECH, with the participation rate reaching 22.7%.
  - The P-TECH participation rate of graduates was the highest in Ulsan (61.4%), followed by Busan (43.2%), Gyeonggi-do (40.1%), Incheon (35.1%), and Gyeongsang nam-do (32.8%). Gangwon-do recorded the lowest at 1.0%. The participation rates in the Gyeongsang-do region remained relatively high.

33) P-TECH (Pathways in Technical Education-Oriented Convergent High-Technology) refers to WBL for developing high-level skills. It consists of intermediate and advanced training courses operated in association with polytechnic universities and junior colleges for apprenticeship program graduates. Trainees receive on-the-job training at their companies during the daytime and off-the-job training at nearby joint training centers on weekends and at night. Its pilot operation began in March 2017, and, as of March 2020, over 1,400 students of 59 departments at 35 colleges are participating. WBL (April 23, 2020), "Introduction of the Latest Developments of P-TECH for Apprentcies", official WBL blog, https://blog.naver.com/run-learn/221924783917 (searched on June 24, 2020).

[Table 4-5] P-TECH-Participating Graduates (2019)

Category	Number of P-TECH participants (A)	Number of graduates in 2019 (B)	P-TECH participation rate (A/B)
Seoul	131	825	15.9%
Busan	166	384	43.2%
Daegu	104	458	22.7%
Incheon	147	418	35.1%
Gwangju	16	170	9.4%
Daejeon	2	73	2.7%
Ulsan	54	88	61.4%
Sejong	2	58	3.4%
Gyeonggi-do	272	679	40.1%
Gangwon-do	1	101	1.0%
Chungcheongbuk-do	34	190	17.9%
Chungcheongnam-do	44	420	10.5%
Jeollabuk-do	23	135	17.0%
Jeollanam-do	12	268	4.5%
Gyeongsangbuk-do	31	426	7.3%
Gyeongsangnam-do	82	250	32.8%
Total	**1,121**	**4,943**	**22.7%**

Source: An Jae-yeong et al. (2019b). 2019 Apprenticeship Program Monitoring Report (Nationwide II), p. 25.

APPENDICES

1. List of Schools Operating the Apprenticeship Program
2. COVID-19 Response Measures
3. Interviews of Participants

1. List of Schools Operating the Apprenticeship Program

The number of schools participating in the Apprenticeship Program Project stands at 143 (excluding those that overlap) as of May 2020. The following is a list of the schools compiled by project group type and region.

[Table 1] Participating Schools by Type (as of May 2020)

Type	Stage	Region	Participating schools
Stronghold type	2	Seoul	Seongdong Technical High School (Seongdong Technical High School, Seoul Information Technology High School, Induk Science and Technology High School, and Hanyang Technical High School)
			Yongsan Technical High School (Yongsan Technical High School, Kwangwoon Electronics Technical High School, Seoul Electronics High School, and Semyeong Computer High School)
		Incheon	Bupyeong Technical High School (Bupyeong Technical High School, Dowha Mechanical Technical High School, and Cheonghak Technical High School)
		Daejeon	Daejeon Electronic Design High School (Daejeon Electronic Design High School, Daejeon Practical Science High School, and Kyeryong Digitech High School)
		Gyeonggi-do	Gyeonggi High School of Automotive Science (Gyeonggi High School of Automotive Science, Bucheon Technical High School, Gyeonggi Polytech High School, and Uijeongbu Technical High School)
			Bucheon Technical High School (Bucheon Technical High School, Gimpo Jeil Technical High School, and Gyeonggi Polytech High School)
			Pyeongchon Technical High School (Pyeongchon Technical High School, Gunja Digital Science High School, and Bucheon Technical High School)
		Gangwon-do	Wonju Technical High School (Wonju Technical High School and Gangneung Jungang High School)
		Chungcheong nam-do	Seosan Technical High School (Seosan Technical High School, Nonsan Technical High School, and Cheonan Technical High School)
		Jeollanam-do	Mokpo Technical High School (Mokpo Technical High School, Gurim Technical High School, and Jindo Vocational High School)
			Yeongam Electronic Science High School (Yeongam Electroic Science High School and Jangseong Hitech High School)

Type	Stage	Region	Participating schools
	3-1	Seoul	Dongil Girls' Commercial High School (Dongil Girls' Commercial High School, Seoul Convention High School, Seoil Culture Arts High School, and Seoul ShinJeong High School)
			Semyeong Computer High School (Semyeong Computer High School, Sangil Media High School, Seoul Digitech High School, and Hanyang Technical High School)
			Shinjin Science Technology High School (Shinjin Science Technology High School, Sungsu Technical High School, Induk Technical High School, and Hwigyeong Technical High School)
			Hwigyeong Technical High School (Hwigyeong Technical High School, Kwangwoon Electronics Technical High School, and Hanyang Technical High School)
		Busan	Gyeongnam Technical High School (Gyeongnam Technical High School, Kyeongsung Electronic High School, Dongui Technical High School, and Seobusan Technical High School)
			Daeyang Electronics & Communications High School (Daeyang Electronic Communication High School, Daegwang High School, Busan Digital High School, and Buil Electronic Design High School)
			Busan Technical High School (Busan Technical High School, Donga Technical High School, Dongmyeong Technical High School, and Haeundae Technical High School)
			Busan Electronic Technical High School (Busan Electronic Technical High School, Keumjeong Electronic Technical High School, and Daejin High School of Electronics & Communications)
		Daegu	Sangseo High School (Sangseo High School and Daegu Tourism High School)
			Yeongnam Technical High School (Yeongnam Technical High School, Kyeongsang Technical High School, Daegu Dalseo Technical High School, and Daegu Electronic Technical High School)
		Gwangju	Kumpa Technical High School
		Gyeonggi-do	Samil Technical High School (Samil Technical High School, Gyeonggi Aviation High School, Suwon Technical High School, and Hanbom High School)
			Yangyoung Digital High School (Yangyoung Digital High School, Gyeonggi High School of Automotive Science, Samil Commercial High School, and Sungil Information High School)
		Gangwon-do	Chuncheon Mechanical Technical High School (Chuncheon Mechanical Technical High School and Wonju Technical High School)
		Chungcheong buk-do	Cheongju Technical High School (Cheongju Technical High School, Jecheon Digital Electronic High School, Jeungpyeong Technical High School, and Cheongju Hitech High School)
			Chungbuk Technical High School (Chungbuk Technical High School, Jecheon Industrial High School, and Chungju Technical High School)
		Chungcheong nam-do	Ganggyeong Commercial High School (Ganggyeong Commercial High School, Gongju Information High School, Nonsan Girls' Commercial High School, Dangjin Information High School, and Cheonan Commercial High School)
			Yesan Electronic Technical High School (Yesan Electronic Technical High School, Nosan Technical High School, Buyeo Electronic High School, and Hongseong Technical High School)
		Jeollabuk-do	Jeonbuk Hitech High School (Jeonbuk Hitech High School and Jeonju Technical High School)
		Jeollanam-do	Yeonggwang Technical High School (Yeonggwang Technical High School, Naju Technical High School, Damyang Technical High School, and Jeonnam Technical Science High School)
		Gyeongsangb	Gyeongbuk Hitech High School (Gyeongbuk Hitech High School and Gyeongbuk

Type	Stage	Region	Participating schools
		uk-do	Science Technology High School)
		Gyeongsangnam-do	Gimhae Construction Technical High School (Gimhae Construction Technical High School, Masan Technical High School, and Changwon Technical High School)
	3-2	Seoul	Eunpyeong Meditech High School (Eunpyeong Meditech High School, Deogil Electronics Technical High School, and Yuhan Technical High School)
		Daegu	Gyungbuk Girls' Commercial High School (Gyungbuk Girls' Commercial High School, Gunam Health High School, and Daegu Girls' Commercial High School)
		Gyeongsangbuk-do	Gyungbuk Girls' Commercial High School (Myungin Information High School)
		Incheon	Incheon Hitech High School (Incheon Hitech High School, Bupyeong Technical High School, Incheon Information Industrial High School, and Incheon Jaeneung High School)
			Pyeongchon Management High School (Incheon Taxation High School)
		Gyeonggi-do	Pyeongchon Management High School (Pyeongchon Management High School, Gwangmyeong Management and Accounting High School, and Samil Commercial High School)
Single-school type	1	Daegu	Daegu Technical High School
		Incheon	Incheon Mechanical Technical High School
		Gwangju	Gwangju Technical High School
			Gwangju Electronic Technical High School
		Gyeonggi-do	Shihwa Technical High School
			Duwon Technical High School
		Gyeongsangbuk-do	Gyeongbuk Mechanic Metal High School
		Gyeongsangnam-do	Changwon Mechanical Technical High School
	3-1	Seoul	Seoul Technical High School
		Ulsan	Ulsan Technical High School
	3-2	Incheon	Inpyung Automobile High School
		Jeollanam-do	Suncheon Hyosan High School
	4	Seoul	Gyeonggi Mechanical Technical High School
		Daegu	Gyeongbuk Technical High School
			Daegu Dalseo Technical High School
		Gyeonggi-do	Duwon Technical High School
		Gyeongsangbuk-do	Mungyeong Technical High School
		Busan	Busan Tourism High School

Type	Stage	Region	Participating schools
		Gyeonggi-do	Buwon High School
		Incheon	Incheon Jaeneung High School
		Jeollabuk-do	Jeonju Technical High School
Shared-training-center type	2	Daegu	Daegu Seobu Technical High School (Daegu Seobu Technical High School, Gyeongbuk Technical High School, Kyeongsang Technical High School, Joil High School, and Daejung Technical High School)
		Chungcheongnam-do	Cheonan Technical High School (Cheonan Technical High School, Nonsan Technical High School, Asan Technical High School, Seosan Technical High School, and Janghang Technical High School)
		Gyeongsangbuk-do	Gyeongju Technical High School (Gyeongju Technical High School, Gumho Technical High School, and Pohang Heunghae Technical High School)
		Gyeongsangnam-do	Jinju Mechanical Technology High School (Jinju Mechanical Technology High School and Gyeongnam Automobile High School)
Industry-led type	3-1	Jeollanam-do	Korea Cosmetologists' Association (Jeonnam Beauty High School)
		Incheon	Korea Cosmetologists' Association (Incheon Beauty Arts High School and Incheon Practical Science High School)
		Daegu	Korea Cosmetologists' Association (Sangseo High School)
		Gyeongsangbuk-do	Korea Cosmetologists' Association (Gyeongbuk Domestic Science High School)
	3-2	Seoul	Korea Die & Mold Industry Cooperative (Yongsan Technical High School, Yunhan Technical High School, and Hwigyeong Technical High School)
		Gyeonggi-do	Korea Software Industry Association (Gwangmyeong Management and Accounting High School)
		Incheon	Korea Software Industry Association (Inpyung Automotive High School)

Source: Internal data of the Center for School Apprenticeship of Korea Research Institute for Vocational Education & Training (as of May 2020)

2. COVID-19 Response Measures

Legal Grounds for the Operation of the Apprenticeship Program

- As apprentices are students of specialized high schools, off-the-job training is operated pursuant to the Elementary and Secondary Education Act and the Enforcement Decree of the same Act of the Ministry of Education, while on-the-job training is operated pursuant to the Directives for COVID-19 -Related Vocational Training Measures, etc., of the Ministry of Employment and Labor to respond to COVID-19 (refer to Table 2).

[Table 2] Operation of the Apprenticeship Program amid the Spread of COVID-19

Category	Off-the-job training	On-the-job training
Operating measures	To reduce off-the-job training to one-tenth of 190 school days (due to force majeure, etc.)	· To adjust on-the-job training based on each training company's conditions and utilize the training period extension system if needed · To reduce learning hours if needed (at least 80% for individual competency units)
Legal grounds	Article 64 (Orders for Suspension of Classes and Temporary Closure of Schools) of the Elementary and Secondary Education Act, Article 45 (Number of School Days) of the Enforcement Decree of the same Act), and the Remote Learning Criteria of the Ministry of Education (March 27, 20207)	Plan for Additional WBL Measures Concerning COVID-19 (Proposal) of the Ministry of Employment and Labor (February 7, April 8, and June 15, 2020)

Operating Measures for the Apprenticeship Program (jointly by the Ministry of Education and Ministry of Employment and Labor)

- (Utilizing the focused/intensive course completion system, etc.) The focused/intensive course completion system* and Model 3** are utilized to prevent the spread of COVID-19 due to movements of students from the venues of on-the-job training and off-the-job training.

  * The focused/intensive course completion system is operated for either off-the-job training or on-the-job training.
  ** The operating sections for off-the-job training and on-the-job training are divided for the period of 1-9 weeks.

- (Utilizing remote learning for off-the-job training) Off-the-job training is offered online using interactive communications programs*.

  * Real-time video streaming tools: Google Meet, Google Hangouts, Zoom, etc.

  - Those having difficulties in taking online classes may submit assignments online instead. The Plan to Support Vocational High Schools in Preparation for the COVID-19 Pandemic is put into operation to minimize learning loss.

- (Enhancing the flexibility of on-the-job training) It is allowed to extend the maximum hours of on-the-job training from six to seven hours per day to prevent apprentices from frequently moving between the school and company (center).

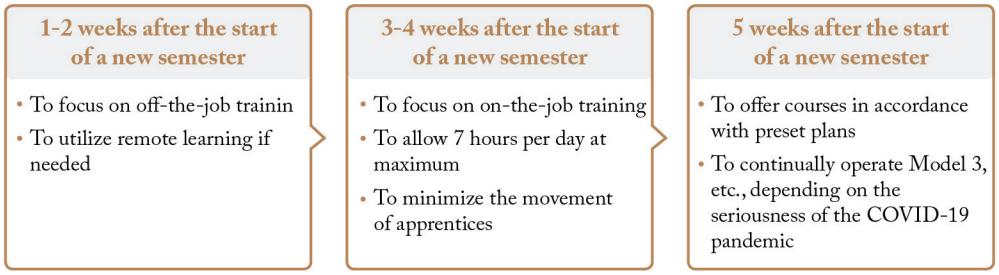
- (Reinforcing infection control during on-the-job training) Apprentices and workplace teachers are checked for fever and any possible manifestation of respiratory symptoms and guided to stringently conform to the code of conduct for COVID-19 prevention.

  - Guidance on social distancing, wearing protective masks, and hand hygiene is provided frequently during on-the-job training, and facilities and equipment are thoroughly sterilized before and after training.

  ※ Human Resources Development Service of Korea has sent COVID-19 text message alerts to apprentices, managing teachers of the apprenticeship program, and training companies (alerts will be sent until the COVID-19 situation subsides).

Measures for the Apprenticeship Program in Preparation for the Spread of COVID-19 (Proposal)

<Measures for the Apprenticeship Program in Preparation for the Spread of COVID-19 (Proposal)>



Source: Ministry of Education (2019a). Guidance on the Operation of the Apprenticeship Program in Preparation for the Spread of COVID-19 (March 25, 2020).

3. Interviews of Participants

Apprentices

No	School and name	Interview
1	Gu ○○ Senior, Electronics and Communications Major, Pyeongchon Technical High School	**"I will make greater leaps forward through the apprenticeship program!"** I was able to complete the roadmap for my future through the apprenticeship program. My short-term goal is to become a full-time employee of the company at which I am being trained as an apprentice. To this end, I plan to obtain certificates related to my job before graduation. My ultimate goal is to become a top-tier engineer equipped with foreign language skills in the field of electronic communications. If I did not join the apprenticeship program, I would not have been able to muster the courage to envision such a future. I have successfully started making preparations to advance into society based on my roadmap. I am now ready to take further steps.
2	Kwon ○○ Senior, Skincare Major, Gyeongbuk Domestic Science High School	**"I learned how to design my dreams through the apprenticeship program!"** Although practical training is provided at school, it is vital to gain hands-on experience to become a specialist in my field. This is why I wanted to join the apprenticeship program. I wanted to receive real-world training. I was impressed that all the staff members took trouble to look after me and entrusted me with work as if I was one of the full-time employees. I was grateful that they trusted me and allowed me to gain real-life experience on site. Through this program, I could design my dreams and set a future goal, which is to join ID Hair, my current training company, and grow into a trustworthy colleague and a hair designer sought by customers.

Training Company Staff Members

No	Company and name	Interview
1	Kwak ○○ CEO, Arneg Korea	**"Participation in the apprenticeship program is an investment in the future of the company!"** We have participated in the Apprenticeship Program Project as a training company since the initial year, and over ten apprentices have joined our company as staff members. It is a mutually beneficial system as apprentices come to work after being trained at school to some extent, equipped with an attitude to gain work experience and seek employment, and companies aim to foster them into the specialists they need. I strongly believe companies should think of this program as a long-term investment, rather than pursuing immediate productivity or profit improvement in a short-sighted manner. It takes time and dedication to grow a tree. The apprentices are the trees that will enrich our company in the end, and thus we should be patient and invest in training them. It will pay dividends in the future.
2	Park ○○ Workplace teacher, One Billion Website	**"I find the apprenticeship program very satisfying."** At first, the apprentices appeared to be somewhat overwhelmed working with seasoned professionals on site, but they adapted quickly. We are fully satisfied with the apprenticeship program. Of course, there is a gap between students who just graduated from high school and college graduates. However, I am sure apprenticeship program graduates will be an asset to our company if they continue to be trained this way. I would like to see regular meetings among apprenticeship class teachers, apprentices, and workplace teachers to have more constructive discussions and seek improvement together.

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APPRENTICESHIP at VOCATIONAL HIGH SCHOOLS IN THE REPUBLIC OF KOREA

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