
Trends and Challenges of Vocational Education and Training in Korea

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Introduction

Korea has achieved a rapid economic development from 1960's to 1980's, which is widely known as 'the miracle of Han river'. It is a surprising fact that a country, ruined by the war in the early 1950's, grew into world's thirteenth country in terms of GDP in 2006 (Kim et al., 2007). Since 1960's, the structures of industries and jobs have greatly changed from primary industries to tertiary ones through rapid industrialization. In this change, the importance of good human resources has brought relief for Korea to overcome the issue of lacking natural resources and enabled it to invest intensively in Vocational Education and Training (VET) (Huh, 2007). Korea has been able to promote the development of light industry in 1960's, heavy industry in 1970–80's, and up-to-date technology industries since 1990's. Also, VET has provided an equal education for all the people by providing with a way to acquire technology and achieve success (Lee, 2004).

However, in spite of this success, VET needs to be adjusted as the knowledge-based society has come, the global economy has faced crises, and population structure has changed since the early 2000's. Recently, the demographic profile of Korea has been aging due to the decreasing birth rate and the extended life expectancy. In the meanwhile, the retirement of the baby boom generation is resulting in the outflow of the essential technicians who have sustained the industries until now. In addition, the structures of industries and the patterns of employment have been changed and they have integrated with types of business and occupations which have been generated or become extinct (Jyung et al., 2006). As of March 2011, the

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youth unemployment rate was as high as 9.5%; as a result the chance of competent new workforce entering the labor market decreases, and mismatch between jobs and workforce is deepened (Na, 2010). Nevertheless, the population of foreign laborers working in Korea continues to increase up to 2.67% of the entire populations in 2011.

In this changed situation, Korea's VET has been greatly challenged, and to improve this, it has planned and implemented multilateral policies. For example, since 2010 at the secondary vocational education level, a reorganization of vocational high schools has been pursued through 'Strategies for Advancing Vocational Education in High School'; at higher vocational education level, plans to renew junior college vocational education have been implemented through 'Formula Funding for Strengthening the Capacity of Junior College Training Excellent Talents' since 2008. Also, in the field of vocational training, a card system for employee's skill development and a vocational skill development account system have been introduced to support consumer-oriented vocational training.

As mentioned above, even though Korean VET experienced many developments, it is still progressing. Fortunately, not only the Korean government but diverse stakeholders of VET have shown interest and support. Therefore, this paper aims to review the current situation and changes in VET, and to explore challenges and implications for further innovations. This paper focuses on the achievement and recent conditions of the VET which have contributed to Korea's economic and social development for the last 50 years. This paper examines VET with respect to: present conditions; shifts; achievements; issues; and prospects.

VET System

VET refers to vocational education and vocational training. Vocational education refers to acquiring and enhancing knowledge, skills, and attitude necessary for the performance of one's jobs within regular school education, which is mainly the responsibility of the Ministry of Education, Science, and Technology (MEST) and 16 metropolitan and provincial offices of education. Vocational education consists of pre-vocational education, secondary vocational education, and higher vocational education by school level. Pre-vocational education is mainly carried out in elementary, middle and general high schools. Secondary vocational education refers to a three-year course mainly in Meister high schools customized for industrial demand, and in the specialized vocational high schools. Lastly, higher vocational education refers to education in junior colleges, technical universities,

industrial universities, vocational education-related universities and in-company colleges (Kim et al., 2009; Kim et al., 2010; Na, 2009).

Vocational training refers to training provided for job seekers, laborers, and the unemployed apart from regular school education to cultivate or enhance job-related abilities in a short time, for which the Ministry of Employment and Labor (MOEL) is mainly responsible. Vocational training institutes include vocational-skill training and development facilities, corporations, organizations, lifelong-education facilities by 'Lifelong Education Act', tutoring institutes by 'Act on the establishment and operation of institutes and private lessons', training facilities made by each individual employer or business groups of employers for their laborers and other training facilities, established by individual laws (HRD-Net, 2008; Jeong, 2008; Kim et al., 2009; Oh and Kim, 2005).

Trends and Challenges of Vocational Education

Pre-vocational Education

Pre-vocational education, also called general vocational education, refers to education that is carried out through practical art subjects in elementary school, technology and home economics, and career and occupation subjects in middle and high school to foster values and various abilities necessary for students to lead life, promote career and understand their characteristics.

In elementary school, practical art subjects are taught to only 5th and 6th graders. Although, in the past, the subjects had been taught from 3rd to 6th graders, it became limited to 5th and 6th graders since 1997. The class hours also decreased to two hours a week (MEST, 2009). Moreover, in 2011, the practical arts curriculum has been organized and operated in 'science/practical arts' subject group, so actual class hours have been further decreased, and the curriculum only includes core contents (Jeon, 2009).

In middle school (7th to 9th graders), pre-vocational education is carried out through technology and home economics subjects as core curriculum, and with the recent revision of the curriculum in 2009, it is changed to the electives, 'science and technology/home economics'. Meanwhile, career and occupation subject can be included as an elective. In high school, technology and home economics subjects are organized as an elective, and students can independently choose a subject (MEST, 2009). Agricultural life science, engineering technology, home economics science, foundation and management, etc. are allowed for an intensive selective sub-

ject of technology and home economics; however, most schools do not offer in their preparation of college entrance exam-centered curriculum, which is pointed out as a serious problem at the level of pre-vocational education.

Meanwhile, about one fourth of academic high schools offer 'career and occupation' subject; but, they do not have a teacher who specializes in career education. Some teachers who lack class hours share the classes, so teaching contents do not have consistency and this is not considered important (Lee, 2008). So, the government has set up the qualification of career counseling teacher in 2011 and assigns teachers who take exclusively charge of career education according to school setting (MEST, 2011).

Like this, it would be very important to secure the affiliation, hierarchy and continuity of educational contents in pre-vocational education, which should be carried out variously by school levels. Nevertheless, the connectivity of educational contents among school levels is lacking overall (Kang, 2010). It is necessary to prepare a plan to improve this.

Secondary Vocational Education

Administration and Policy

Administrative organizations that are in charge of vocational high schools may be broadly divided into central administrative organizations and local ones. MEST, that handles all policies and related departments in each industry, falls into the central administration. The departments in charge of the education offices in cities and provinces, that handle vocational high school policies, and the industry-related departments in charge at cities, provinces, and districts, fall into the local administration (Jyung, 2005). Importantly, because the budget for vocational high schools has been transferred to local administrative organizations since 2005, establishing the size of projects at the unit of cities and provinces, and maintaining and developing them, have become important issues.

Meanwhile, MEST recently announced 'Strategies for Advancing Vocational Education in High School (2010)' and arranged the direction of secondary vocational education policies to approach the 'reorganization to vocational education institutions specialized in each field' and the 'creation of conditions of first employment-next education' (National Employment Strategy Meeting, 2010). Through this, it proposed a plan to reorganize all vocational high schools to Meister high schools and industrial-educational, cooperation-type specialized vocational high schools by 2015 and to promote the conversion of other vocational high schools to general high schools.

Recently MEST has increased the employment of specialized high school graduates and announced 'the educational system development plan for work-school balance (2011)' to establish systemic foundations for work-school balance (Presidential Council on National Competitiveness, 2011). Through this plan, enhancing vocational education centered on fieldwork experience, improving conditions for work-school balance, and increasing educational participation in the industries will be taken into action, and the support for creating conditions for 'first work-next school' of the specialized high school graduates will be strengthened.

Since the mid-2000's, the government has established and promoted a variety of policies to reorganize vocational high schools into specialized vocational high schools and Meister high schools in order to increase the employment rate of vocational high schools, and to resolve the discord between the demand and supply of the workforce. Regarding the expansion of specialized high schools, the government suggested that 500 vocational high schools should specialize in each industry through 'Innovation Strategies of Vocational Education System (2005)' and 'Strategic Plan for Cultivating Vocational High Schools for Realization of Hope (2007)' by 2020. Also, regarding Meister High Schools, the government devised a plan to select vocational high schools to designate them as Meister High Schools based on 'Cultivate the Korean Meister High School (2008)'. In August 2011, 21 Meister High Schools are operated and seven Meister High Schools will be opened in 2012. Under 'Strategies for Advancing Vocational Education in High School (2010)', the government announced that it plans to increase the number of Meister High Schools to 50 by 2015.

Vocational High Schools

Vocational high schools are typical schools that represent vocational education at the level of high school, providing opportunities for continuing education through the training of the changing industrial workforce or through basic vocational education at high school level. Especially, vocational high schools had greatly contributed to the cultivation of the workforce needed for the economic and industrial development in the 1970's to 1980's; however, they have been criticized for not being able to cultivate the workforce under recent changes of economic environment and the acceleration of the development of knowledge and technology (Na et al., 2007).

The number of vocational high schools has steadily increased by 2000 because of the economic boom in the 1980's and general-specialty 5:5 policy in the 1990's; however, entering upon the 2000's, it continuously decreased. As of 2010, there are 692 vocational high schools, which are 30.7% of the total high schools (Center for Education Statistics, 2011). Vocational high schools consist of 21 Meister high schools (3.0%), 40 special-purpose high schools (5.8%), 168 specialized vocational

high schools (24.3%), 275 general vocational high schools (39.7%), and 187 comprehensive high schools (27.1%) (National Employment Strategy Meeting, 2010).

The Meister high schools were found in 2010 to transit students from academic life to employment upon graduation. One of the major reasons for the establishment of these institutions is that the majority of vocational high school graduates continue their academic life rather than entering employments and that there are shortage of skilled workers in industries.

Since 1998, the specialized vocational high school came about to be the new type of vocational high school that is comparatively small in size and offers new nontraditional, narrowly specialized programs. In addition, the specialized vocational high school is a successful model for secondary vocational education in Korea.

The general vocational high schools can be classified by the contents of each individual school's conventional focus – agriculture, business, trade, and fishery, etc.

As a result, the types of school overlap each other's purpose/function, creating an issue regarding the inefficiency of secondary vocation education. As of June 2010, the Korean government announced a new policy to cultivate two types of vocational high schools: 50 of those vocational high schools which will be Meister High Schools and 350 of them which will be Specialized VHSs by 2015 (National Employment Strategy Meeting, 2010). The remaining vocational high schools will become general/academic high schools, or be closed due to lack of students. This reorganization of the vocational high school system aims at preparing conditions for 'first employment-next education' through reorganization to a work-based curriculum.

School Curriculum and National Curriculum

The vocational high school curriculum is organized and operated autonomously at the school level according to the national-level curriculum guide. This national-level curriculum guide has been changed periodically with the changes within industrial society, and by 2010, the school curriculum followed the 7th National Curriculum that was developed in 1997. Since the introduction of the 7th National Curriculum, the system to revise has been modified and operated as a nonscheduled system of the curriculum which allows revisions to the curriculum anytime and resolves the inefficiency of the scheduled revision method (Jang et al., 2010). Because of this revising system, the 7th National Curriculum was revised in 2009 along with its title; it is called the 2009 Revised National Curriculum which is effective this school year.

After the revision of the 7th National Curriculum, the number of credits (units) required to graduate from vocational high school decreased from 216 to 204 over the course of three years as the number of school days per week decreased from six days (Monday to Saturday) to five days (Monday to Friday). The curriculum majorly

consists of academic subjects, vocational subjects and creative experience activities. The minimum units to complete in each category are 72 units for the academic subjects, 80 units for vocational subjects and 24 units for the creative experience activities (MEST, 2009). Meister high schools and specialized vocational high schools are allowed to exercise much more discretion in designing and implementing curriculum so that they realize an education that is in line with the foundation goals and characteristics of the schools. And as for education that is applied to industrial demand, the proportion of organization for specialized courses is higher than ordinary courses (Jang et al., 2008; Na et al., 2007).

Nevertheless, it is constantly pointed out that many curricula in vocational high schools do not correspond with the demands from industrial sites (Park et al., 2010). Hence, recent curricula of vocational high schools have changed to strengthen the employment functions, reinforcing the operation of vocational education customized to the site (Jang et al., 2010). For example, newly established Meister high schools offer work-based curricula based on the National Competency Standards (NCS) (Kim, 2011; National Employment Strategy Meeting, 2010). The NCS is a guide developed by the government to show the knowledge, skills and attitudes required for workers to perform well in their jobs.

In addition, since 2008, the MEST has encouraged the related central ministries to support changing the existing vocational high schools into the specialized vocational high schools that produce the workforce needed in their fields (Na et al., 2010). In the future, it is expected that efforts to construct a system that can reflect demand from industrial sites to the development and operation of curricula will be made continuously.

Vocational Teachers

The number of teachers in vocational high school continued to decrease from 40,977 in 2000 but 35,688 in 2010 with the decrease of the number of schools and students each year. In 2011, the number of teachers decreased; unlike previous year's ratio, the ratio of academic teachers to vocational teachers in 2011 is 17,138 to 15,096, showing more academic teachers than vocational teachers (Center for Education Statistics, 2011).

These vocational teachers hold at least one of the 23 different teacher licenses. In addition, because there was a myriad number of a specific teacher licenses, the government decided to integrate into 23 teacher licenses in January of 2000. They had two given routes: the regular teacher education program and the special teacher training course attached to a college major. While the regular teacher education program is available for every graduate, the special teacher training course, accredited by the MEST, would issue teacher license to only 10% of the graduates. Interest-

ingly, however, majority of the vocational teachers come from the special teacher training course. On the other hand, majority of the academic teachers come from the regular teacher education program.

Vocational high school teachers teach, on average, 18 h of class; however, with the given circumstances, vocational teachers need to cover several subjects to fulfill their teaching load, supervise the occupational experience or internship, and provide vocational guidance for the students, while academic teachers have one or two subjects. In addition, vocational teachers need to update their skills and knowledge according to the emerging technology and development, resulting in more stress and burnout for the teachers. Vocational high schools are increasingly hiring adjunct teachers to strengthen field suitability. The adjunct teachers who teach part-time are selected among industry expert, with certain qualification, working for companies which signed industry-academic cooperation. Unfortunately, with the lack of financial support and the clumped geographical distribution, local vocational high schools cannot afford to have adjunct teachers.

Vocational Students and Careers

The number of vocational high school students decreased from the zenith of 810,651 in 1990 to 466,129 in 2010, which is 23.8% of the total high school students (Center for Education Statistics, 2011). The main reasons for this decrease of students include the increase of difference in wage by level of education, the advancement of production structure, the regularized impact of low birth rate, the steady expansion of college quota and students' avoidance of vocational high schools (National Employment Strategy Meeting, 2010).

Most vocational high school students have low academic records when they enter the school, their self-esteem and all abilities are relatively lacking (Jyung et al., 2006). So the drop-out rate of vocational high school students has been higher than that of general high school students since 2000. As of 2010, the drop-out rate of vocational high school students is 3.7%, which is more than three times that of general high school (1.2%) (Center for Education Statistics, 2011). However, in recently established Meister high schools, the records of new students are greatly improving, which is because they provide the students with various benefits such as tuition exemption, scholarship and the operation of various programs by talent and aptitude (Kim, 2011).

Meanwhile, for the career after graduation of vocational high school students, the college entrance rate caught up employment rate for the last decade: as of 2010, entrance rate (71.1%) is far higher than employment rate (19.2%) (Center for Education Statistics, 2011). It seems to be caused by the increase of students' and parents' demand for entrance into colleges because of the liberalization of college founda-

tion, the enhancement of income level and the decrease of the number of children (National Employment Strategy Meeting, 2010). Especially, the gradual decrease in employment rate of graduates in their majoring fields urgently calls for measures on the issue.

Higher vocational Education

Administration and Policy

Higher vocational education usually refers to vocational education carried out in junior colleges, industrial universities, technical universities, and general universities, etc. The administrative authority of higher vocational education mostly belongs to MEST. Particularly the university support team of MEST is the one in charge of establishing and improving general policies and reforming the systems of higher vocational education. In addition, some other universities that aim to develop human resource in specific areas are under control of the related ministries.

Each higher vocational education institution can be categorized as a national, public, or private university according to the type of operating agents. As of 2010, 88.6% of the entire higher education institutions and 93.8% of the entire junior colleges were run by private institutions. Because the private institutions have higher dependence on private financial resources, such as students' tuitions, there are concerns about lack of investment on educational quality improvement.

Meanwhile, the policies about higher vocational education are focusing on enhancing capabilities of supporting students' employment through vitalizing industrial-educational cooperation. Projects such as 'Junior college development project through industrial-educational cooperation', and 'Junior college education competency enhancement project', have been initiated. 'Junior college development project through industrial-educational cooperation' has been geared since 2005 for the purpose of developing human resources which are creative, well-adjusted to work, and customized to the demands of the industry through industrial-educational cooperation in the junior college level. It has been considered successful in terms of enhancing industrial-educational cooperation (MEST, 2009). The 'Junior colleges' education competency enhancement project' has been under way since 2008 for enhancing education competency of junior colleges. It provides financial support for junior colleges with good performance and potential to improve their educational quality and students' employability after graduation (Junior college education competency enhancement project support portal, 2010).

For the future there are plans to reform the former industrial-educational cooperation support project and launch an 'industrial-educational cooperation lead-

ing college development project' not only for junior colleges but also for four-year universities to create and spread various industrial-educational cooperation promotional models. Through this, starting 2012, it plans to focus on developing 50 universities, chosen as 'industrial-educational cooperation leading universities,' to lead the development of human resources that can meet the demands of the industries (MEST, 2011). In addition, 'Master plan for fostering world-class junior colleges (2011)' has been announced to concentrate on developing junior colleges with students' employability potential and sound financial conditions. According to the plan, 21 junior colleges will be selected by 2013 and will be intensively promoted as leading junior colleges equipped with global vocational education standards.

Higher Vocational Education Institution

As of 2010, there are 145 junior colleges, 179 universities, 11 industrial universities and one technical university. Compared to the year of 2000, there are 18 more universities, whereas junior colleges and industrial universities are decreasing in number.

Junior colleges, as the major institutions for higher vocational education, are run with the purpose of developing professional workers. In 1996, any educational foundation that meets specific criteria could become eligible for establishing colleges. Starting in 1997, the student quota of regional universities was given autonomy if they meet certain conditions. These policy changes have resulted in quantitative expansion.

Recently, however, the number of junior colleges steadily decreased from 158 in 2000 to 145 in 2010. This may be due to the decrease of new junior college students, restructuring caused by merger policy among junior colleges and conversions to four-year colleges accommodating students' demands (Kim, 2010). Particularly, many junior colleges in the provinces are facing serious problems with decreasing students and are in danger of closing. As a temporary solution, they often attract international students from China and elsewhere.

Meanwhile, to promote the status of junior colleges and eliminate the juxtaposition to other universities, the title of the head of junior colleges changed from 'dean' to 'president'. Also, in Korea, the name, 'Daehakgyo' had been used only for four-year colleges while 'Daehak' for junior colleges, but a recent law allows junior colleges to use the title, 'Daehakyo'. This has systematically made the status of junior colleges not quite different from universities, ergo, there are discussions for establishing their identity as higher vocational education institutions that can be differentiated from universities.

Universities can be considered as higher vocational education institutions in that they are recently emphasizing on the job training and industrial-educational coop-

eration. Also, the roles of universities as higher vocational education institutions are expanding as the demand for high-quality human resources is increasing in the knowledge-based society, and the curricula in the universities are covering the content areas which have been taught in junior colleges before.

Industrial universities were designed to provide working youth, workers and other people who have completed, or failed to complete, school education with the opportunities for re-education and lifelong education. They were introduced in 1981 with the name of open universities, and renamed as industrial universities in 1996. Currently, they are not operating with the original purpose of its foundation but are very similar to general universities. Many industrial universities have changed or integrated into general universities. As a result, while there were 19 in 2003 these has decreased to 11 in 2010. The number of industrial universities is likely to continue to decrease (Na and Kim, 2007). A technical university is an educational institution for employed workers in industries which provide formal university education. It emphasizes lifelong education, and there is one technical university under MEST. However, the technical university is also not operating with the original intention as a university for employed workers because university education is becoming more common and it is losing competitiveness compared to general universities.

Higher Vocational Education Curriculum

Students can take a maximum of 24 credits per semester and should take a minimum of 80 credits for two-year course of study and a minimum of 120 credits for three-year course of study. Advanced specialty courses for bachelor's degree at junior college are available. Students with working experience of one year or longer after graduating junior colleges are qualified to apply for the courses. To obtain a degree, students with two-year course should attend the course for four semesters or longer while students graduated from three-year course should take the course for two or more semesters. Completing at least 140 credits is required including transferred credits from junior colleges.

The courses of study at junior colleges consist of the liberal arts curriculum and vocational curriculum. The courses are comprised of essential subjects for learning fieldwork, and much more practicums are offered than theory courses. Moreover, junior colleges are revitalizing continuing education for employees in the workplace by carrying out college education commissioned by the employers and broadening their horizons as lifelong education institutions by offering bachelor's degree programs in the field of vocational education.

The courses of study at junior colleges have been criticized for not having been advanced systematically to meet the demands from business and industrial sectors

(Lee and Kim, 2010). In order to solve this problem, 'Junior college specialization project' has been launched, and three sub-projects, 'Domain specialization project', 'Customized education project', and 'Joint major project', have been implemented. Lately, 'Project for supporting customized educational programs to industrial demands' has been introduced.

They are trying to reform and manage the curriculum designed for industrial fields in order to produce students who are competitive and adaptive to industrial and technical changes. For this purpose, specifically, the alliance among the Sector Human Resources Development Council (Sector Council), the Local Sector Councils and industrial sectors have been formed, and the NCS has been adopted.

Recently, universities are developing human resource for the emerging industries such as convergence industries and bio industries through the specialization projects.

And as for the green industry, that Korean government is paying careful attention to, specialized graduate programs were chosen to offer educational programs for nurturing specialized human resource. On the other hand, industrial universities or technical universities have a problem in that they have not differentiated themselves from other general universities in accordance with their original goal of expanding lifelong education and offering specialized vocational education.

Higher Vocational Education Professors

In terms of the status of faculty at junior colleges in 2010, the faculty consists of full professors (58.9%), adjunct professors (37.9%), and part-time lecturers (3.2%), which implies low full-time faculty ratio. And the number of students per professor at junior colleges in 2010 is 39.4 students, which is very high compared to 28.9 students at universities. This is caused by lack of financial resource at junior colleges, and will lead to decreased quality of education.

The professors at junior colleges have a variety of tasks besides teaching and research activities. Especially as the situation of under enrollment of new students continues to aggravate, the burden of recruiting new students and school promotion activities have been increased, and the teaching-related activities have been decreased (Shin et al., 2007). In addition, the abilities to teach practical skills are not sufficient due to the lack of experience in industrial fields (Kim, 2010). Most of the professors have expertise in the academia with a minimum of master's degrees but have relatively less practical understanding and expertise in industrial fields.

As the professor position openings for the industrial field experts are limited at junior colleges, the professors' practical expertise is often insufficient, and, therefore, the curriculum reflecting the demands from the field is not offered and operated. This all results in the lack of teaching practical skills (Jang, 2006).

Recently, to identify industrial demands and apply them on the curriculums, there are projects to support onsite training for university faculty and short-term (less than four weeks) training sessions to learn the technology trends and changes in industry.

This issue also applies to four-year universities. Professors are equipped with knowledge and research skills in their major areas, but often lack instructional skills. To solve this problem, universities set up resource centers for learning and teaching for teaching skills development (Na, 2004).

Higher Vocational Education Students and Careers

The number of students at junior colleges in Korea was 913,273 in 2000, representing 29.2% of the entire higher education institutions but has gradually decreased to 23.7% (767,087 students) in 2010. Junior college students are less than one quarter of the entire students in higher education, so it shows the ongoing decrease of junior college students accompanied by the decrease of junior colleges in number (Center for Education Statistics, 2011). It is anticipated that junior college students will continue to decrease due to the ongoing decrease in school-age population itself and increasing students entering four-year universities. On the other hand, the number of university students continued to increase from 1,665,298 in 2000 to 2,028,398 in 2010.

Junior colleges have the students with a lot of different kinds of educational backgrounds, and feature the coexistence of heterogeneous groups of learners because there are many differences between the academic backgrounds or educational admission, along with various admission methods, such as the general admission, special admission, college graduate quota and admission commissioned by employers etc. (Kim, 2010; Mun et al., 2005). Thus, junior colleges should teach the diverse groups of learners such as the learners who wish to transfer, adults for the purpose of pre-vocational education, students for commissioned study, students for readmission after university graduation, and workers and unemployed people in addition to the typical students who enter the colleges right after high school graduation (Jang, 2006). Moreover, in many cases relatively outstanding students go to university, while the students with poor academic skills enter the junior colleges due to the decrease of new students at junior colleges and the increase of special admission. Therefore, the basic learning skills of students at junior colleges are relatively not as good (Lee and Jung, 2003).

The employment rate of the junior college graduates is 86.5% in 2009, and it had increased from 79.7% in 2003. The increase in the employment can be explained as the results of the improved employment structure in the industry, the policies support for junior colleges, improved social awareness, reinforcement of industrial-

educational cooperation, and enhanced quality of individual college, etc. (Korean Council for College Education, 2011).

In the meantime, four-year universities are getting an increase in the number of students thanks to the Korean society preferring higher levels of education. However, the employment rate of 2010 is as low as 51.9% (MEST, 2011), and it could be considered as a consequence of the job mismatch phenomenon, where people wish to get a job only in the big companies and avoid jobs in the small companies, the skill mismatch between graduates' competencies and corporate needs, and the lack of job opportunities caused by difficult social and economic situations. In response to these issues, the government is implementing several policies for boosting employment, such as 'the internship to employment program for young people'.

Trends and Challenges of Vocational Training

Administration and Policy

The administration and policies related to vocational training are mainly conducted by the Ministry of Employment and Labor, Regional Ministry of Labor, and affiliated organizations. The name of the Ministry of Labor (MOL) changed to the Ministry of Employment and Labor (MOEL) on 5 July 2010, which shows that the integral functions of employment policies have been highlighted as the significant employment issues for the nation. The roles and responsibilities of the MOEL about vocational training are specified based on the 'Workers Vocational Skills Development Act' (Korea Law Service Center, 2011).

Through the local employment and labor offices, the MOEL takes the overall responsibility of the vocational training administration, the simple administrative tasks, such as the approval and guidance of vocational skill development training facilities and programs. The Human Resources Development Service of Korea is in charge of the public vocational training and qualifications while the training for the vocational training teachers is conducted by the Korea University of Technology and Education (Jeong, 2008; Kim et al., 2009). The functions of administrative organizations for vocational training are expanding with the increasing emphasis on employment and skills development. The 'Master Plan for Workforce Skill Development' of the MOEL suggests directions for vocational training policies at the national level. With the recent trend of emphasizing employment policy, the Master Plan is presented in the 'Basic Plan on Employment Policy' as part of efforts for workforce skill development.

Currently, Korea's vocational training policies are being promoted for the purpose of 'increasing competitiveness through the human resource development, the employment security and building support systems for the lifelong development of ability of workers' (HRD-Net, 2008; MOEL, 2011). The existing vocational training has been focusing on the government-led technology and skill manpower training and policies of improving the vocational training of incumbents, but recently emphasizing lifelong learning and maintaining employment dimension are reflected.

The vocational training financial resources can be distinguished with the public and private funds. The public funds are the budget of the MOEL, related government departments, and the regional Ministry of Employment and the Labor, while the private funds are related to the vocational skill development (Baek and Kim, 2003; Lee, 2004). The vocational training financial resources have been continuously increasing depending on the significance of the employment and vocational skill development policies.

Meanwhile, the vocational training is closely connected with the national technical qualification which is managed by the MOEL, and the possibility of correlations among vocational education, vocational training, and qualification increased with the addition of provisions about 'NCS' and 'qualifications framework' in the 'Framework Act On Qualifications'. It is presented in a variety of ways, such as recognition of proficiency through the national technical qualification, recognition of qualification as credit through the academic credit bank system (Kim et al., 2009). Thus, the role of the vocational training associated with the qualifications systems will be expanded, and the results of vocational training through the connection with the vocational education will be improved.

National Technical Qualification System

The National Technical Qualification (NTQ) is the evaluation and recognition of the necessary job performance at the industry or the degree of learning technology that depends on the uniform standards and procedures by the government (MOEL, 2010b). The MOEL takes the overall responsibility of the management, and operation of the NTQ should be conducted by other institutes such as the Human Resources Development Service of Korea. The Korean Qualification System is benchmarked to the German Qualification System. The NTQ system was institutionalized based on the proclamation of National Technical Qualifications Act in 1973. After that, the areas and types of NTQ have been continually expanded and improved. The government is making efforts to establish the 'Basic Plan for

Development of National Technical Qualification System' and to conduct a qualification system with industrial demand since 2007, and it is promoting for improvement through the evaluation each year. Nevertheless, the issues about usefulness of NTQ are still being raised, so the improvement for increasing the utilization is required. Recently, the MOEL is making efforts to reform the NTQ system through expanding the development of the national competency standards and for preparing introduction of the program-based qualifications. Accordingly, the connection among industry, vocational education training and qualifications system should be strengthened, and the role of the vocational training in the qualifications system is expected to be strengthened.

National Competency Standards (NCS)

NCS is the standardization of derived, required skills for the workers to accomplish the duties in their jobs (MOEL, 2010b).

It establishes more strengthened connections among work, education and training, and the qualification system, and formed work-based training. In May, 2010 the NCS was made by integrating National Occupational Standard (NOS), which had been developed by MOEL and Human Resources Development Service of Korea since 2002, with Korean Skill Standards (KSS), which had been developed by Ministry of Education and Human Resource Development and Korea Research Institute for Vocational Education & Training, in order to prevent using two mixed terminologies and wasting national budget on duplicated investigation.

Now, the two terminologies became one terminology: NCS. Furthermore, each government department has clearer roles. The NCS Development project will be generally monitored by Ministry of Employment and Labor. However, the work to develop NCS will be mainly implemented by Human Resources Development Service, and the research will be conducted by Korean Research Institute for Vocational Education and Training. The standards have been developed for 254 kinds of jobs since 2002; they are expected to be widely used for curriculum development of vocational education and training. Moreover, Korea has arranged the training system that grants qualification to people completing training courses and program to be developed based on NCS. Thus, it is expected that NCS will be more often used in vocational education and training.

Training Institutes and Facilities

The vocational training institute and facilities are the places for the job seeker, employees and unemployed person to cultivate or improve the job-related ability in a short time without general formal schooling. They are divided into public and private depending on their training principals. Korea's current public vocational training institutes and facilities in 2010 are composed of 34 campuses of Korea Polytechnics, eight Korea Chamber of Commerce & Industry Workforce Development Institutes, one Korea University of Technology and Education, and five vocational schools attached to local governments; a total of 48 units are being managed. When established in 1997 by the technical college law, Korea Polytechnic College had originally the name Technical College. In 1997, Technical College gained the right to grant Bachelor's degrees of industry (two-year degree courses). In 2006, 'Unified with Job' was replaced into 'Korea Polytechnic College' composed of 11 colleges and 34 Campuses.

The private vocational training institutes and facilities are composed of 68 Corporate Training institutes, 959 Ministry of Employment and Labor (MOEL)-designated vocational training institutes, 5,537 training institutes except designated institutes; a total of 6,564 units are being managed (Jeong, 2008; Kim et al., 2009; MOEL, 2010a).

The vocational training institutes and facilities have been increasing steadily since 1967, when government-led vocational training started to be conducted in earnest. The public sector is maintaining the certain scale, but the private sector is being expended sharply (Park, 2009).

The contents of vocational training have been changed according to the industrial fields which demand workforce by time-periods. Recently vocational training programs for New Growth Engine Industries and Green energy industries have been increased in accordance with transition of national strategic industries, while from 1970's to 1980's, a major part of vocational training programs was focused on developing the workforce in heavy chemical industry. It is also expected that the contents of vocational training will be consistently changed following future national strategic industries' trends.

The existing Korean vocational training was government-led, so either it impeded the efficiency of vocational training or the indigenous competitiveness of private training institutes has been hindered by it. To resolve these issues, recent trends have involved the privatization of the public vocational training institutes, and the relaxation of entry regulations of private vocational training institutes and facilities. In addition, the 'vocational training costs coupons (vouchers)' have been introduced for the trainees as consumers can complete the vocational training pro-

cess as they want. The existing state-centered aspects are therefore being converted to be more consumer-oriented (MOEL, 2010a). The public vocational training institutes and their efficiency will increase in the future, and the improvement of training information and method will be expected to activate good competition in the private vocational training market.

Training Programs

The vocational training program provides the trainees at vocational training institutes with the units of substantial vocational training. Recently, the vocational-training-related-policies business of government was conducted by the training subjects. The vocational training programs are largely classified as three types, namely training to unemployed, training to incumbent workers, and training to foster skill manpower (HRD-Net, 2008; Oh et al., 2005).

The employee training for improvement of incumbent workers' skill can be either directly or trustingly conducted by business proprietors. There are the 'business proprietors' support for technical education and training', 'support projects specifically for small and medium-sized enterprises', etc. Training for the unemployed is provided by the government to improve the employability or the basic skills of the unemployed. There is a type of training for the newly unemployed and another type for the already existing unemployed people. The training to foster manpower is conducted in the field of labor shortages through public training institutes or specified training institutes. There are trainings for craftsmen and technicians through Korea Polytechnic Colleges, priority job training through the Korea Chamber of Commerce & Industry Human Resource Development Center, and cultivation of training teachers through Korea University of Technology and Education (e-National index, 2011; Kim et al., 2009; MOEL, 2010a).

The existing vocational training program was entirely conducted in the form of a support for the training costs to the vocational training institutes. As a result, there have been problems such as a lack of results and the unimproved quality of the training process. Currently, however, the training programs that the consumers participate in complete the training process by selection such as the 'card system for employee's skill development' for incumbent workers, or the 'vocational skill development account system' for the unemployed people. These selection methods were introduced for availability of consumer-oriented training (MOEL, 2010a). It is positive in terms that it increases participation in training and enables customized training. In addition, training counselors were placed in Job Centers since 2009 to

lead customized training in the various supports (MOL, 2009), and the qualitative performance of vocational training is expected to be improved.

Training Teachers and Qualifications

Vocational skill development training teachers are certified trainers who teach necessary technology and functions of certain professions in the vocational skill development training institutes, corporations and associations. The cultivation of training teachers has regularly been conducted at the Korea University of Technology and Education since 1991, and about 4,000 training teachers are cultivated each year (e-National index, 2011). The existing cultivation of training teachers was accomplished through two-year professional courses, but the necessity of systemic cultivation of training teachers increased due to industrial advancement. It has very much developed since (Jeong, 2011; Oh et al., 2008).

Vocational teachers take charge of training courses of various industries, such as engineering, metallurgy, chemistry and ceramics. The qualification types of vocational training teachers are classified under 23 fields and 101 jobs and divided into three levels depending on career level, educational level and complement of training for promotion (Jung, 2011; Oh et al., 2008). Level three of vocational teacher qualification is provided to those who have finished the vocational teacher training course (a four-year degree course) in Korea University of Technology and Education. Then, it is possible to be promoted to level two or level one by either making training experiences or taking training programs.

On the other hand, there may be limitations; the level of social treatment to training teachers is lower than that of secondary vocational education teachers or junior college professors, and employment is unstable. Because the training process has been approved and the trained personnel are assigned through evaluations by training institutes every year, the employment training teachers can be decided depending on the results of the approved training. Treatment of training teachers or employment anxiety issues can have direct effects on the quality or the performance of training. Efforts for the improvement of the institutes and social awareness may be required in the future (Jeong, 2011; Kim et al., 2004; Oh et al., 2008).

Trainees and Job Placement

A trainee, who participates in vocational training, differs as much as a training course. The number of trainees emerging through the various vocational training

programs, such as training for the unemployed, employee training, training to foster skill manpower, and etc. –total 4,639,000 people during the year 2010. The minimum costs of living one day are offered to every trainee. Transportation costs and other living costs are additionally offered as well. The current trend is an increase in the scale of these trainees after state-led vocational training generally. Recent increase in trainees seems to be attributable to the increased number of employees participating in training. In specific, the number of the unemployed participating in training has decreased a bit since 2007 and the number of trainees for skilled manpower remains about the same while the number of employees participating in training is increasing. (MOL, 2009; MOEL, 2010a).

Regarding the effects of vocational training on trainees, it is reported that completing the course helped increase the employment rate of the unemployed and job performance of employees. Although there are different features in training programs, the employment rate for trainees remains high at 65 to 75%. But, despite the quantitative growth of vocational training, the rate of employees, who kept the same job continuously among all of the employees for trainees, is as low as 50%. The incumbent workers have been criticized for the ineffective ability to improve in the qualitative aspects or maintaining employment. Of course, Korea recently introduced the various training programs and made efforts to improve training through the ongoing training institute and evaluation of training programs. Therefore, it is noticeable that the efforts to improve the results of vocational training in terms of quality as well as quantitative will increase in training of personnel.

Conclusion and Implication

Conclusion

This paper aims to review the current situation and changes in VET to explore challenges and implications for future innovations. For this purpose, this paper respectively examined vocational education and training with regard to each of trend, performance, challenges and prospects. The main conclusions are the followings. VET system has been operated in two different systems – vocational education and vocational training. Vocational education system was based on a single ladder system which leads to primary, secondary and tertiary school; this education system benchmarked the American school system. The vocational training system depending on its purpose and subject has been operated by a variety of agents, institutes and facilities; this vocational training system benchmarked the German system. Mean-

while, in order to reflect the diverse needs of the industrial field and customers of education training, VET system sought to changes, such as the establishment of Meister school, by introducing the German vocational education model.

As the time changes, the central axis of vocational education is moving from the high school level towards the junior colleges. However, this is not because of the industrial requirements of a high level of workforce but the tendency of work force being highly educated due to the trend of discrimination based on the educational background and the preference of liberal arts education. In other words, companies require different academic levels according to job types but job seekers are mostly highly educated leading to job and skill mismatches. On the other hand, in recent years, the goal for training the workforce according to the level of schools is clarified, and the tailor-made training is operated to foster human resources who can be put directly into the field. In addition, there is the need to create a continuing education environment which allows the ongoing re-education which is required.

General vocational education had significance for all students on having the basic skills as a career man through the understanding of the world of work and their individual characteristics. It had also importance in terms of social dimension. However, despite its importance, the general professional education is recently classified as elective courses. Also, as all forms of education focus mainly on the preparation for college entrance exam, it actually is less operated than the actual necessity.

Secondary vocational education has taken a role of primary vocational education institutes in terms of fostering the workforce needed for the economic development in the past. Recently, however, the secondary education is recognized as the preliminary step for the entrance university and the demand for secondary vocational education is declining due to the wage differentials by educational background, and so on. In addition, the problem, that the secondary vocational education does not follow the industry's technology level and change, appeared. In recent years, in order to resolve these problems, the school has gained the autonomy to operate flexible school curricula. In addition, education which reflects the needs of industry is provided, and adjunct teachers are applied to ensure the understanding of the field. Nevertheless, the fundamental problem such as students' preference of entering a college and avoiding working in a small company still has not been resolved. Therefore, field-based education should be realized for secondary vocational education and career path after graduation should be suggested as well.

The higher vocational educations have contributed to the economic and social development with regard to supplying and developing the technical manpower that the industry needed in the 1970's and 1980's. However, in spite of recent quantitative expansion, the aspect of quality of education is problematic in the sense that

teachers and curriculum are outdated in comparison to the field of industry. In addition, the customers of higher vocational education are expanding from the past students of secondary education to the recent industry workers. On the other hand, in response to these changes, universities and governments make an effort to improve the quality to meet the industrial needs as well as operate the various entrance admissions to satisfy the demand of educational customers. Accordingly, higher vocational education institutes are required to operate flexibility to reflect the diverse needs of industry and customers.

Vocational training, since the 1960's, has been expanded as state-led training is promoted. It has been developed by continuously and sensitively responding to the ongoing industrial and professional needs. Recently, expanding the functions of manpower training through vocational education, the vocational training expands the continuing education features, focusing more on retraining or educating technique and vocation of employees or job seekers, rather than developing capabilities of the art/skill workforce. In particular, in addition to the national technical qualification system, the efforts to improve the quality of vocational training is being expanded, and in response to the development of National Skill Standards, the field-centered vocational training is expanding in conjunction with the industrial and vocational training, and qualification system. As such, vocational training has contributed to supply or retrain the national need of art/skill workforce very actively responding to the changes in the industry and society. However, with industry changing faster and becoming more knowledge-based, there are growing demands for high-grade workforce rather simple skill manpower. Accordingly, vocational training is required to improve responsiveness to meet the demands of industrial society by offering qualitatively improved training programs rather than simple training for skill delivery.

Training administration and policy, in the past, simply focused on technical and vocational education for job seeker and employees but, more recently, they looked at the vocational training as the part of a national employment policy in a more macroscopic perspective. National Skill Standards are developed for the purpose of tailor-made education and training necessary for the field of industry and, based on it the efficiency is increasing in conjunction with the field of industry, vocational training and qualifications systems. Vocational training institutes and facilities, avoiding the government-led training in the past and fostering civilian-led training, is expanding consumer-oriented training through investing in the industries of national economic growth such as green energy industry. These administrative and policy changes of vocational training respond appropriately to the era and they are required to develop and operate a wide variety of tailor-made vocational training to meet new customer demand for vocational training.

As the industry advances and systematic training of VET teachers is demanded, the training teachers have been raised by the shift from the past two-year training to a four-year college training course since the 1990's. Nevertheless, training teacher's social status and employment stability is low. Graduates of vocational training are expanding each year and the employment rate of unemployed graduates and graduates of training is high. The scope is expanding by developing various training programs and supporting the expense of livelihoods or transportation. Nevertheless, as the rate of longevity of graduates of training after getting their job remains by 50% and the training process may need to improve its quality. In other words, for advanced vocational, it is necessary to improve the treatment of training teachers as well as to give the quantitative and qualitative support for graduates of training.

Implication

First, vocational education and training should be able to contribute to continuously raising the labor force to meet the changing demands for man power. To satisfy the changing demands of the labor force in the labor market, this study first predicts not only the fields of work necessary in the future, the changing trends of the skills needed, and the demand for labor, but also identifies core competencies required by the profession. To this end, it is necessary to have active partnerships, exchange of information and collaborative action between relevant stakeholders, for example, industry, education and training institutes, governments, and research institutes. In addition, it is indispensable to have maintenance and financial support for this entire process to manage the overall dimension of the system.

Second, the field of vocational education and training should be strengthened. For effective vocational education and training, it is essential to enhance the consideration of the field. Thus, to reflect the individual employability and competitiveness of companies and countries, vocational education and training should meet the needs of the world of work and integrate work and learning. In particular, by using NCS that reflect industry demand, it is very important to strengthen the organic linkage of 'vocation-education training in the field of industry'. To do this, VET should be switched from knowledge-based to vocational-based and it should induce the industry to participate more actively in vocational education and training. In addition, it requires a variety of policy initiatives to strengthen VET teachers' expertise in the field.

Third, the linkages between vocational education and training should be strengthened. Recently, following the continuous changes of labor market and employment structure, it stands out the need of linkages between vocational edu-

cation and training. Therefore, in order to improve the quality and the efficiency of vocational education and training, it is necessary to expand human/material resources in the institute of vocational education and training and establish the foundation to maximize the cross-linking among VET institutes. With regard to human resources, it is required to cooperate mutually in terms of exchanges of teachers between vocational training institutes and vocational education institutes. As regards material resources, it needs to prepare the measures to purchase and use facilities and equipment in a joint manner. In addition, through the mediation of NCS, it is necessary to build up the foundation to do continuing education of their job in conjunction with the linkage between the content of vocational education and vocational training.

Fourth, it will be needed to build up the system which promotes social recognition of the results of the vocational education and training. In the consideration of continuing education-oriented society, the institutional device should be provided and activated to the end that the vocational ability is applied more usefully in the field, and receives a proper recognition of its value. To do this, disregarding the current system that the VET systems and qualifications systems are separated and each system derives their tasks individually, it is necessary to arrange an alternative to build up the vocational ability recognition system through the mutual linkage. For a detailed plan, by introducing the course completing qualification system, it is necessary to have methods of recognizing the results of VET as a visible tool.

Fifth, the establishment of international vocational education and training cooperation for mutual development will be needed. In the situation of internationalization and globalization being a common phenomenon, employment and education and training surpassed a single country-wide level of discussion. In particular, it will be necessary to analyze the German system, that is, industry directly involved in vocational education and training systems, as well as Western systems such as Finland and Sweden, that is, higher vocational education is valued as a successful example, and to make an effort in terms of their appropriate and proper application.

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