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- Based on the Experiences of Korea -

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December, 2014

Working Paper 14-06

KDI 국제정책대학원
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* We are grateful to the KDI School of Public Policy and Management for providing financial support.

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Pre-employment VET Investment Strategy in Developing Countries
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Sung Joon Paik

This study was attempted to identify key factors that are worth to be considered when the government of a developing country designs and implements the pre-employment VET policies and systems. For this, 7 policy cases of Korea were selected and analyzed according to 4 key policy issues that developing countries face. Key factors identified are (1) different modes of delivery (school, vocational training institute, employer); (2) relative efficacy of vocational education to general education; (3) relative effectiveness of public provision to private provision; and (4) funding rationale (who should pay for VET). Analysis identified 10 common key factors: (1) changes in employment opportunities and skill demands, (2) society's perception on VET and preference of academic programs, (3) capacity and readiness of existing VET providers, (4) cognitive skills of students and trainees, (5) government's policies to induce private sector to the pre-employment VET and to form training market, (6) government's financial capacity and funding rationale, (7) private sector's capacity and willingness to finance and provide VET, (8) supporting mechanisms (qualification system, quality assurance, and information system), (9) political leadership (initiation and sustainability of policies), and (10) cooperation & coordination mechanisms among stakeholders (ministries of central government, local governments, industry, providers, etc.). For effective investment, this study suggests long-term, comprehensive and demand-driven approach.

- Key words: pre-employment VET, vocational education, vocational training, investment strategy, developing countries, funding, skills

I. Introduction

Pre-employment vocational education and training (VET) has been considered to be a key supplier of skilled workforce and played an important role for national economic development in developing countries. As the primary school enrolment expanded substantially due to the MDG and thus demand for secondary education increased rapidly, many developing countries attempt to provide more vocational education at the secondary education level to prepare young students for employment and supply skilled workers, to solve youth unemployment problem, and to reduce future demand for higher education.

While some recent studies show a positive labor market outcome for graduates from vocational education track, however, investment in pre-employment VET in developing countries in the past in general turned out to be inefficient compared to other modes of VET like employer-provided training or general education.[1] While VET was regarded as a key policy component for economic growth in the 1960s and 1970s, studies on the rate of return to VET together with structural adjustment and cost-sharing measures in the 1980s decreased donors' support and public investment in VET and the heavy focus on universal primary education has contributed to less support to VET in the 1990s and 2000s.[2] Although there is significant policy interest in the pre-employment VET among many developing countries, past experience is telling that developing countries need right advice for investment in pre-employment VET.

One way to get guidance is to conduct country case studies to analyze pre-employment VET systems and policies in terms of what has worked and what has not under what circumstances to augment the supply of skilled workers and their productivity. This study selected Korea. Korea has constantly adapted its VET systems to changes in skill demands. As the economy has grown quantitatively and to more advanced level qualitatively, Korea has changed its pre-employment VET policy focus from formal school-based VE to non-formal vocational training institute- and workplace-based VET and from secondary to tertiary education level.

This study is attempted to identify critical factors, which have crucial policy implications to enhancing the efficiency and quality of pre-employment VET systems and policies and thus need to be checked when developing countries plan, implement and evaluate pre-employment VET systems and policies.[3]

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[1] The World Bank (1991). Vocational and Technical Education and Training.

[2] DFID (2007. April). Technical and Vocational Skills Development. A DFID practice paper.

[3] Each country has its own unique economic, social, political and historical characteristics. What works in Korea does not necessarily have equivalent effects in other countries. In that sense, this paper tries to, based on the Korean experiences, identify key factors/conditions to be checked when the government develops VET policies, not policy itself.

II. Key Policy Issues of Pre-employment VET[4]

Developing countries have been facing 4 major policy issues when they design and implement the pre-employment VET policies:

(1) What is the most efficient and effective way of VET delivery – schools, vocational training institutes, or employers?
(2) How much vocational education should be offered at what level of schooling, compared to general education?
(3) Which is more appropriate, public provision or private provision? What should be the role of the government?
(4) Who should pay for VET by how much?

These provide analytical viewpoints for selecting and analyzing specific policy cases of Korea in Chapter III. In order to make right decision on each issue, it is helpful to review strengths and weaknesses of alternatives with consideration of country's specific economic, social, political, and historical circumstances.

1. Different Modes of Delivery: School-based vs. Vocational Training Institute-based vs. Workplace-based VET

School-based VET has advantages of more diverse chances of job selection by providing more core competencies, while it has been criticized by high cost, rigidity and lack of relevance of its curriculum to labor market demands, compared to other providers like vocational training institutes and enterprises. On the contrary, vocational training institutes can provide occupation-specific skills development opportunities in more efficient and flexible ways. Work-based VET is the most efficient and effective to keep up with rapidly changing demands for skills. While vocational training institutes and enterprises have potentials of getting higher efficiencies, VET provision by them might have problems of inequitable access to training services of the disadvantaged. Young people from poor family and less competent youth would have smaller chances to get training provided by vocational training institutes and enterprises.

Each mode has its own unique utility depending on country's economic and educational development. With respect to enhancing the overall performance of the pre-employment VET system, it is crucial to have coordinating mechanisms among

[4] UNEVOC(2006). Participation in Formal Technical and Vocational Education and Training Programme Worldwide. p.p.24-30; World Bank (2006). Fiscal Efficiency and Vocational Education in the EU8 Countries; KRIVET(2006). Vocational Education in Lifelong Learning Society; World Bank(1999). Vocational and Technical Education and Training; Arvil V. Adams(2007). The Role of Youth Skills Development in the Transition to Work: A Global Review. The World Bank. p.p..10-17.

schools, vocational training institutes, and private firms in terms of curriculum development and implementation and cost sharing.[5] In this context, school-industry linkage has been well emphasized as a way of improving the effectiveness of vocational education and school-to-work transition.[6]

2. Relative Efficacy of Vocational Education to General Education

Vocational education usually costs more than general education. If graduates from vocational high schools could not find jobs, meet skills demands, or outperform their counterpart – general high school graduates – in terms of job quality and wage benefits in both short-term and long-term perspectives, then investment in vocational education would lose its justification. If general education would not guarantee certain level of core competencies and if there would be no alternative schemes for vocational education, general education alone would not be able to supply skilled labor needed in industries. In general, it is more difficult to attract competent students to vocational track because parents and students tend to prefer general education due to negative image of vocational education as 'second-class' or 'dead-end.'

Finding out the optimum level and extent of vocational education compared to general academic education requires the government to take into account a nation's economic development stage, employment opportunities, technological advance, and social demand for general and higher education. As scientific knowledge and technologies advances and national economy develops, the level of skills required in the labor market increases. As a result, main focus of the pre-employment VET will shifts from lower secondary level to upper secondary and post-secondary level. Rapid changes of technologies leads to corresponding changes in demands for skills, which require workers to have more general and multiple skills to adapt themselves and the ability to update their skills through continuous learning.

[5] It is important to have systematic coordination mechanisms among central government ministries, between central and local governments, and among governments, industry, and VET providers. These are needed to use available resources in more efficient ways, to promptly respond to changes in skills demand, and consequently to supply competent skilled labor. Supporting organizations such as research institutes, qualification standards setting body, are also needed to provide necessary tools, information and knowledge to governments, industry, VET providers, and students. Without these coordination mechanisms and supporting organizations, VET schools and institutions and policies would not be able to function at their highest performance level.

[6] Several countries have launched diverse policy measures to combine schooling with work experience such as Career Academies in the U.S., apprenticeship-based route to public vocational qualification in France, introduction of mandatory work experience in upper secondary education in Sweden, the Modern Apprenticeship program in the U.K., and New Apprenticeship in Australia.

Numerous countries have taken steps to increase horizontal and vertical permeability between vocational and academic courses and between secondary vocational programs and tertiary education. Double-qualifying pathways that provide qualifications for skills and further education have been developed in some OECD countries.

3. Relative Effectiveness of Public Provision to Private Provision

Private provision of VET can efficiently respond to changes in skills demand and contribute to easing the government budget constraints. However, it might exclude the poor from the market, be concentrated in certain areas which cost less, tend to respond to short-term demand and to lack long-term consistency, and result in lower quality of VET than market requirement. Public provision of VET can solve the market failure problems of private provision by providing costly VET or VET in priority areas where private sectors are reluctant to invest or by providing better geographical coverage and more equitable opportunities of VET.

Balance between the two kinds of provision and optimal level of operation of the two depend on the economic growth and employment opportunities, the readiness of private sector, market information services and related institutions like qualifications systems[7] and quality assurance mechanisms. In order to encourage private provision, the government needs to take steps for forming supportive policy environment.

4. Funding Rationale: Who Should Pay For VET?

There are two distinctive conceptions underlying funding. Most European countries have maintained the position that education should be provided free, whereas other countries have adopted the benefit principles. In the former, inequity problem may occur if students from rich family disproportionately occupy enrollment quota. In the latter, groups who benefit pay VET costs. Financial burdens of governments, students and employers depend on how much they benefit from VET. The way that benefits are estimated depends on the perspective, which is important to decide on how high tuition and employer's contribution should be relative to government subsidy. If more cost is allocated than benefit, students who have to pay higher tuition would be reluctant to enroll; VET institutes would

[7] Qualifications are expected to play various critical roles of certifying an individual as qualified, reflecting the demands of employers, and affecting VET programs of providers. Qualifications are a key catalyst to coordinate the linkage between VET and the labor market. Qualification system includes qualification standards, assessment mechanism, credit system, and qualification framework. As skills demand keeps changing, qualification system needs to be constantly updated.

provide less costly VET and more general education; and employer would reduce their participation in VET.[8] How VET costs are allocated to students/employees, governments, and employers affects quality, quantity and equity of VET.

III. Policy Experiences of Korea

Many countries have faced multiple problems in equitable access to and effective delivery of pre-employment VET with high quality, which could be analyzed from the viewpoints of 4 major policy issues discussed. These countries have tried to solve the problems with various policy measures. Chapter III will analyze the experiences of 7 pre-employment VET policies of Korea by using the 4 key policy issues as an analytical framework to identify key factors to be checked when the governments of developing countries make investment decisions on the pre-employment VET.

1. Pre-employment VET System

The pre-employment VET in Korea has been administered mainly by two Ministries: Ministry of Education(MOE) and Ministry of Labor (MOL). MOE is responsible for vocational education provided by vocational high schools, junior colleges and industrial universities, while MOL takes charge of vocational training for new entrants to labor market, incumbent workers and unemployed. Both Ministries have delegated their managing power to 16 Local Offices of Education[9] and 6 Local Offices of Labor, respectively. About 60% of the budget for vocational education in formal school system comes from private sources (students and parents), while the vocational training expenses also are borne mainly by private source - the Employment Insurance Fund.

The primary delivery mechanism for the pre-employment VET is the vocational education stream within formal education system under the Ministry of Education. Vocational education is delivered mainly by vocational high schools and junior colleges. The other delivery mechanism for the pre-employment VET is the initial training provided by public and private vocational training institutes and polytechnic colleges.

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[8] Grubb, W. Norton(2007). Vocational Education and Training: Issues for a Thematic Review. Issue paper prepared for the OECD meeting of experts, Paris, 5 Feb. 2007. p.p.16-19.

[9] Now there are 17 Offices of Education, since new city, Sejong City, is established in 2014.

<Table 1> Vocational Education and Training System in Korea

	Vocational Education	Vocational Training
Central Gov.	Ministry of Education	Ministry of Labor
Local Gov.	Offices of Education	Offices of Labor
Institutes	Vocational High Schools Junior Colleges Industrial Universities Corporate Universities	Polytechnic Colleges HRD Institutes(KCCI) In-plant Vocational Training Institutes Vocational Training Inst. of Local Gov't Private Vocational Training Institutes
Finance	60% of Budget from Private Sources	2/3 Budget from Private Sources – Employment Insurance Fund
Period of VET	2 to 4 years (V.H.S., Coll. & Univ.)	6 months to 2 years

2. Key Policies of Pre-employment VET

6 pre-employment VET policy cases are selected according to 4 key policy issues: (1) Different Modes of Delivery: Introduction of Vocational Training System and 2+1 Program, (2) Relative Efficacy of Vocational Education to General Education: 50:50 policy and Meister High School, (3) Relative Effectiveness of Public Provision to Private Provision: Opening Training Market to Private Providers, (4) Funding Rationale: Private Provision of Vocational Education and Funding of Vocational High School, Junior Colleges and Vocational Training Institutes.

1) Introduction of Vocational Training System

a) Background and Objectives

As the 1st Economic Development Plan (1962-1966) achieved its goal of fostering basic industries and the 2nd Economic Development Plan (1967-1971) further pursued promotion of export of light industry products, demands for skilled manpower in manufacturing increased so rapidly that labor shortage was anticipated.[10] For the 1st Economic Development Plan period, more than 200,000 new skilled workers and 85,000 new technicians were estimated to be needed.

Although the government introduced vocational high schools and 5-year vocational institutes (3-year vocational high school plus 2-year junior college) in

[10] The problem of manpower shortage continued during the 1970s as the heavy and chemical industries grew substantially and construction boom in the Middle East occurred.

1963 and tried to expand them, these schools could not meet the demand. Considering that (i) the number of technical high school graduates was 10,380 in 1962 and it took 2 years of field experience after technical high school education to be a technician at that time and (ii) there were large number of adolescents including middle and high school graduates with no marketable skills, the government needed other vocational training system than formal education, which allowed much more flexibility and efficiency in designing curriculum and programs, recruiting instructors and selecting trainees. In addition, the government recognized need for more aggressive training policy which required employers to provide vocational training to their employees to solve manpower shortage problem.

In 1967 the government introduced the vocational training system by enacting 'the Vocational Training Act' to effectively respond to increasing labor market demands. Due to the delayed negotiations and decisions on the selection of responsible government agency, structure and implementation of the system, and finance among related Ministries like Economic Planning Board (EPB), Ministry of Labor, Ministry of Education, and Ministry of Commerce & Industry, it took almost 5 years for the government to enact the 'Vocational Training Act' since the government first discussed about the introduction of vocational training system.

Main objectives of the system were (i) to provide vocational training opportunities for the Korean people (i.e., adolescents without job skills and incumbent workers) to easily acquire vocational competencies needed for their jobs and enhance their employability, (ii) to provide trainees who complete training programs with socially recognized certificates so that they can be accordingly rewarded for their qualification, and (iii) to provide skilled manpower to the economy in secure manner and consequently contribute to national economic development.

Vocational Training Act specified (i) basic purposes of national vocational training, (ii) establishment of public vocational training institutes and in-company training facilities, (iii) qualification/license and training of vocational training instructors, (iv) provision of public training and (v) bearing the costs for training institutes and training. The Ministry of Labor took charge of managing vocational training system, including the employment service to those who completed vocational training.

b) Process

In order to implement vocational training policies in systematic and efficient ways, the government established 'Central Vocational Training Center' in 1968, whose main functions were (i) research & study, (ii) statistics & information, (iii) training of vocational training instructors, (iv) training of skilled workers & technicians, (v) supervision of public training institutes, and (vi) curriculum development.

Vocational training system in Korea developed significantly by continuously establishing public training institutes throughout the nation with foreign assistance in the 1970s. The costs of establishing these institutes were supplied by government budget and aids from advanced countries like Germany, U.S., Belgium, and Japan, and international development organizations like IBRD and ADB. The facilities of the vocational training institutes, introduced with professional advice by the advanced donor countries or international donor institutions, were technically advanced ones, compared to the economic level of Korea, and incomparable to those of vocational technical high schools. Practice materials and training related expenses were sufficiently supplied by the government. These institutes provided short courses of up to one year for young people without skills.

Employer-provided training policy experienced dramatic changes. In the first stage, the EPB decided to implement employer-provided training on a voluntary basis. When the government subsidy (for teachers, practical training, learning materials, and facilities & equipment) was provided, the number of enterprises which delivered in-company training increased from 15 in 1967 to 81 in 1971, while that of trainees also increased from 3,000 to 14,3000 for the same period. Right after the government stopped subsidizing in 1972, however, the number of in-house training places decreased sharply (70 in 1972 and about 40 in 1973), indicating it was the government subsidy that promoted in-company training[11]. Having experienced the failure of this policy, the government introduced a new law called 'Special Act on Vocational Training' in 1974, which mandated enterprises with more than 200 employees to provide training to certain percentage of their employees. After the Special Act, the number of enterprises that provided in-house training increased to 279 in 1975 and 476 in 1976.[12]

In addition, the government enacted the 'National Technical Qualification Law' in 1973 to officially test and recognize VET results of individuals, guide VET according to labor market demands, and enhance socio-economic status of individual workers by providing nationally recognized certifications.

c) Results

Public vocational training institutes contributed significantly to training and supplying skilled workers and technicians for steel manufacturing, industrial machinery, ship building and electronic industry. In addition, this system played an important role in terms of providing a second-chance for those who left schools earlier or unemployed without marketable job skills. This policy contributed to reducing future social costs. Since vocational training had flexibilities in terms of

[11] The government planned to provide subsidies to employers for a limited period of time until in-house training developed to certain stage.

[12] Suh, Sangsun (2002). Vocational Training System in Korea. KCCI. p.p.156-158 and p.185.

the selection of training subjects, the decision of training period, instructor's qualification, and teaching methods, it had played a critical role in supplying skilled labor in more efficient and effective ways.

As general living standards increased, school age cohort decreased, and college enrollment rate increased, however, the role of public training institutes needed to be reexamined. With declining number of trainees, these institutes were competing with vocational high schools and junior colleges for students. In the mid 1990s, Presidential Commission on Education Reform recommended that the public training institutes focus on providing programs for upgrading incumbent workers' competencies, rather than pre-employment training. In 2006, the government consolidated 19 public training institutes and 24 polytechnic colleges into 11 polytechnic colleges to make the colleges regional hubs for vocational education and training.

d) Lessons Learned

Combinations of and close linkages between formal vocational education and non-formal vocational training (i.e., public and private training institutes, enterprise-based training) can significantly enhance a nation's skills development capacity. When a country designs and implements its pre-employment VET system which encompasses formal and non-formal VET, it should consider both the government's and private sector's capacity. The government should first consider its budget capacity for operating vocational education track in formal education system and public training institutes. It also needs to check private sector's potential as an alternative crucial vocational training provider which can supply skilled manpower in prompt and efficient ways. Government-sponsored VET can work best when delivered in partnership with private providers like enterprises. The government's incentive measures would be required to induce private sector's active participation.

Plan for vocational training should be coordinated with national economic development plan. For this, it is needed to have coordination mechanism among related-ministries. During the 1960s and 1970s, Economic Planning Board played a key role in coordinating economic development plan and education and training plans in collaboration with related ministries such as Ministry of Education and Ministry of Labor.

Constant growth of nation's economy and consequent increase in labor demand, derived from sound macro-economic policies that promote investment and job creation, is a prerequisite for guaranteeing the effectiveness of pre-employment VET policies. Thus, it is crucial to forecast manpower by industry and occupation as accurately as possible before making investment decisions on the pre-employment VET. In relation to this, as a nation's economy develops toward more advanced level, roles and functions of the pre-employment VET providers should be checked and redefined constantly according to changes in labor market demands.

Another important condition for the success of VET investment is that all students and trainees should have certain level of basic cognitive skills for further vocational education and training. For Korea, this condition was fulfilled through massive literacy campaign in the 1950s and implementation of a 5-year plan for compulsory primary education between 1954 and 1959. As a result of these policies, the Korean young people were able to read, write and communicate with each other, which provided firm basis for successful implementation of vocational training system.

Strong leadership played a crucial role in expanding VET in Korea despite people's preference of general academic education. President Park recognized skilled workers/technicians as core member for country's economic development and respect them. His intention was backed up by the 'National Technical Qualification Law' in 1973. Provision of equal opportunity to anybody to be able to get certificates socially recognized by law no matter where s/he got trained contributed to enhancing socio-economic status and self-esteem of skilled workers.

2) 2+1 Program in Technical High Schools

a) Background and Objectives

'2+1 program' means 2 years of technical education in schools and one year (senior year) of field training in a firm (workplace). While technical high schools provide theory-oriented professional subject education and introductory level practice training, firms provide task-oriented workplace-based training.

<Table 2> Differences between '2+1' program and other technical high school

	'2+1' program	Other technical H.S.
Operation	2 years of school education 1 year of field training	3 years of school education (1-6 months field training as a form of early employment)
Contents	Job & technical competency focused Day, Night, Seasonal class	Theory & concept focused Day class

This program was introduced, as a part of 'New Economy 5-year Plan('93-'97)' coordinated by Ministry of Finance and Economy, to enhance the relevance of vocational technical high school education to labor market skill demands in 1994. Recognizing that there were severe shortages of skilled manpower in manufacturing sector and technical high school graduates could not meet labor market requirement properly, the government introduced this program as a part of plan for redesigning VET system for technicians and skilled workers. First, through this program, the government expected to increase enrollment capacity of technical high schools by 33% without constructing new schools if it would be implemented in full scale. Considering both the government's budget constraints and increasing

demand for skilled workers, this program certainly had a strong advantage. Secondly, the government intended to train high quality manpower needed in industry through solid school and industry cooperation, especially industries' active participation in training process and efficient utilization of human and physical resources and more emphasis on field practice compared to existing technical high schools.

b) Process

This program started without careful preparations due to unexpected disclosure of the policy in newspapers. The government had thought about introducing following incentive measures: (i) provision of training allowance to students and exemption of tuition during the period of field practice in firms (senior year), (ii) provision of extra credit for junior and polytechnic college admission to students who completed the program, and (iii) tax exemption of training expenses and allowance paid by firms. None of them were institutionalized so that the program faced difficulties from the beginning.[13]

The government implemented this program as a pilot base between 1994 and 1998. After finalizing official curriculum for '2+1 Program' in 1999, it applied new curriculum to schools on a voluntary base. In order to provide facilities for field training, the government (Ministry of Industry and Energy) asked large enterprises to build 100 new training centers and renovate existing 187 ones. For this, the government prepared long-term loan which large enterprises could use, but it was not fully utilized since only a small number of firms applied for the loan. The government also asked the Korean Chamber of Commerce and Industry to allow SMEs to use its 7 training centers but did not get active cooperation. Regarding expenses for field training of technical high school students in firms, the government (Ministry of Labor) provided budget needed through fund for Vocational Competency Development in Employment Insurance System. [14]

As indicated above, 4 Ministries participated in designing and implementing this program: i) Ministry of Finance and Economy: overall coordination and budget support, ii) Ministry of Education: management of pilot schools and development of curriculum, iii) Ministry of Industry and Energy: selection of participating firms, and iv) Ministry of Labor: improvement of field training conditions.

20 technical schools participated in the pilot program in 1994. Unlike the German dual system, technical schools were responsible for instruction in the firm. In other words, although firms participated in the program, they did not have any responsibilities for training, which was a major defect of the program. This

[13] Suh, Sangsun.(2002). Vocational Training System in Korea. KCCI. p.p.251-253.

[14] Lee, Yong-Soon.(2001). The Effect Analysis of Adaptability to Workplace of Technical High School Graduates Educated under the '2+1 system'. Doctoral Dissertation. Choong Nam National University. p.p. 10-14.

arrangement resulted from past experience. The Ministry of Labor piloted 'cooperative training program' between vocational training institutes of Korea Manpower Agency and firms. The apprentices were used mainly as low-wage labor. Both firms and trainees did not find any benefits from the program (Jeong, 1995). In order to prevent this problem, 2+1 program limited the role of employers to allowing the use of the plant and machinery, which might compromise the objective of the program to enhance the relevance of vocational education.

c) Results

The numbers of schools and students increased until 1996 and decreased constantly, while that of firms increased until 1998 and then decreased, as shown in <Table 4>. This trend corresponded with another policy to increase the enrollment of vocational high schools up to 50% of total enrollment of high schools (so called 50:50 policy), which was discarded in 1998 due to students' reluctance to go to vocational high schools and decrease in demand for skilled workers.

<Table 3> Schools, Students and Firms in the '2+1' Program

(unit: places and persons)

	1994	1996	1998	2000	2002	2004	2006
# of Schools	20	96	45	32	26	10	18
# of Students	3,169	13,745	9,110	7,541	4,678	6,795	
# of Firms	182	1,130	1,928	1,223	646		

Source: MOE(2006)

In the process of the policy implementation, schools, enterprises and students were faced with several problems as follows: (i) schools had difficulties in selecting enterprises that had sufficient financial and human resources to provide vocational education and doing separate school administration works and guidance for students who participated in the program; (ii) enterprises had troubles in getting training expenses and hiring and keeping trainees after training because of military service and college entrance; and (iii) students complained about lack of training opportunities in which they could get specific skills in their major areas and student welfare services in enterprises.[15]

As the number of participating schools, students, and firms kept decreasing, counter policy measures were proposed as follows: (i) provision of government subsidy to firms, (ii) enhanced services to students such as scholarship and early employment in firms where students get field training, and (iii) monitoring and evaluation of the program by the government. As of 2004, 10.5% of technical high

[15] Lee, Mugeun et al.(1998). Report on 2+1 Program in Technical High Schools. KRIVET.

schools and 3.6% of technical high school students participated in the program. There was no government subsidy to this '2+1' program since 2000. This program was discarded as the special curriculum for '2+1 program' was integrated into the 7th national curriculum in 2005 although there was high desire of some technical high schools to maintain this program.

d) Lessons Learned

In programs for linking schools and industry, it is crucial to define roles and responsibilities of all actors on the basis of program objectives and especially to have employers actively participate in the whole process of vocational education from curriculum design to evaluation. In the 2+1 program, role of employers was very limited that caused inactive involvement of employers and consequently low effectiveness of the program.

It is also required to select firms which have capacity to provide quality training to students. Due to the lack of information on firm's capacity(i.e., facilities, financial and human resources, experiences, etc.), technical schools and the government had difficulties in identifying firms suitable for field training. After selecting firms, it is necessary to provide practical support to improve their training conditions (e.g., training of instructors, curriculum development, subsidy, etc.).

Government's incentives also play a critical role in promoting school-industry cooperation work. In the 2+1 program, the government did not provide incentives to induce technical high school students and firms to participate in the program such as training allowance, tuition exemption, extra credit for college admission, and tax exemption. It also stopped the provision of subsidy to schools in 2000, which could be interpreted that the government was no longer interested in this program by employers and schools. These arrangements of incentives need well-harmonized coordination among related Ministries and consistent implementation.

All mentioned above indicate the importance of program preparation – thorough examination of current situation, projections of possible consequences of new program, identification of issues and policy measures, pilot, etc. Government-initiated/led policy without checking capacity and readiness of key actors could end up with failure.

3) 50:50 policy

a) Background and Objectives

Since the mid 1970s, Korea shifted the focus of industrial policy from labor-intensive light industry to heavy and chemical industries and technology-intensive industries. As the industrial structure changed during the 1980s, demand for skilled workers and technicians increased in manufacturing sector. However, vocational high school enrollment kept decreasing in the 1980s (45% in 1980 → 35% in 1990) due to the rapid increase in higher education opportunities and high social demand

for general and higher education. In addition, the number of firms that provided vocational training also declined sharply because they preferred paying training levy instead of providing training.

Labor shortage was expected to continue in the 1990s as <Table 2> shows. In order to counter this problem, the government introduced new policy for reorganizing high school system(so called '50:50 policy') in 1991, primary objectives of which were i) to augment the proportion of vocational high school enrollments up to 50% of total high school enrollment by 1995, and ii) to, within this framework, increase the proportion of technical high school students in vocational high school students from 24% in 1990 to 45% by 1995.

<Table 4> Demand for Skilled Workers (1990-1996)

(unit: 1,000 persons)

	1990	1992	1994	1996
Additional Labor Demand (A)	227	254	266	245
Labor Supply in 1990 (B)	158	158	158	158
- Vocational Training Institutes	61	61	61	61
- Vocational High Schools	78	78	78	78
- General High Schools	19	19	19	19
Labor Shortage (A-B)	69	96	108	87

Source: Economic Planning Board(1990). Industrial Manpower Plan.

b) Process

To implement this policy, the government tried to expand freshmen enrollment in existing vocational high schools, to establish new schools and to convert 120 general academic high schools to comprehensive schools.[16] Enrollment of vocational high schools increased in the first part of the 1990s but began to decrease. The proportion of vocational high school students increased from 35% in 1990 to 42% in 1995, and then decreased again to 36% in 2000 and to 29% in 2005. Although the proportion of technical high school students in total vocational high school students continued to increase from 24% in 1990 to 35% in 1995, it was far below the target.

c) Results

Although the government reset the target year from 1995 to 1998, it failed to increase the proportion of vocational high school enrollment. The government discarded this policy in 1998. There were several reasons for the failure of the policy: i) lack of budget for construction of new schools; ii) lack of academic high

[16] There were 6 types of vocational high schools: agriculture, technical, commerce, fishery & marine, comprehensive and combined vocational. Comprehensive high school provides both vocational and academic track together at the same school.

schools that volunteered to become vocational high schools; iii) resistance from parents, alumni, and communities of academic high schools that were designated to be transformed to vocational high schools; and iv) opposition from teachers who were worried about the problem of oversupply of academic subjects due to transformation of academic high schools into vocational high schools. Most of these problems were not fully anticipated and discussed in the stage of policy preparation.[17]

More fundamental reasons for the policy failure can be found in economic and social aspects. The economic one was about the misinterpretation of a shortage of skilled workers. Although evidence on unemployment, labor shortages, and wages indicated that the demand for higher and middle level occupations was largely met, while the demand for semi-skilled and skilled workers was not, this did not necessarily mean that it was required to increase enrollment in vocational high schools.[18] In fact, much of the jobs that had been done by semi-skilled and skilled workers became to be done by automated machines and thus actual demands for skilled workers did not rise as anticipated.

Secondly, pre-occupied with manpower development logic, policymakers did not take into consideration seriously the social demands for general and higher education and did not implement policies for the provision of further education opportunities to vocational high school graduates. As an effective policy measure to tackle the problem of over-education, the government thought that more middle school graduates should be diverted from pursuing university education and channeled instead into vocational high schools to be prepared for jobs as skilled workers. Since there was no evidence of consistent relationship between the increasing supply of the educated and unemployment, the Korean parents did not buy the logic of the government.[19] Without accurate analysis of the present social and economic situation and future prospects, the Korean government introduced this policy and consequently failed.

The proportion of vocational high school graduates who got jobs right after graduation decreased from 76.6% in 1990 to 73.4% in 1995 and further to 51.4% in 2000, while that of vocational high school graduates who entered higher education institutes increased from 8.3% in 1990 to 19.2% in 1995 and further to 42.0% in 2000. This reverse changing trend reflected that as the knowledge-based economy progressed since the 1990s demand for core competencies and advanced skills increased.

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[17] Ministry of Education(1998). 50-Year History of the Korean Education.

[18] Gill, I. Ihm(2000). Republic of Korea. Vocational Education & Training Reform. Edited by Indermit S. Gill, Fred Fluitman and Amit Dar. The World Bank/ILO. p.p.267-268.

[19] Ibid.

d) Lessons Learned

The '50:50 policy' case implies that the rigid application of manpower demand-supply approach could be an obstacle to efficient development and utilization of human resources. In the very early stage of Korea's economic growth, manpower requirement approach had been used as an effective tool for estimating labor demands by industry and deciding on enrollment quota by level and type of schooling. However, as a nation's economy developed with changes of production modes, it seemed to hinder flexible and prompt responses of VET system to changes in skill demands. This implies that Korea should have tried different policy alternatives such as short-term vocational training program after high school graduation, and provision of incentives to induce more active participation of firms in vocational training.

VET system needs to be designed and implemented within lifelong learning context. In the case of the '50:50 policy,' the government did not pay attention to individuals' desire toward further and continuing education and so failed to provide further education opportunities after vocational high school graduation by putting too much emphasis on the supply of skilled workers needed in industries, together with the government's another intention to reduce excessive demand for higher education. This approach eventually resulted in the decrease in vocational high school enrollment.

In the policy preparation stage, the government needs to check i) whether the government or related organizations have financial capacity enough to implement policies as planned; ii) whether there would be willingness of stakeholders to actively participate in implementation process or resistance from key actors and target groups; and iii) how to solve problems anticipated.

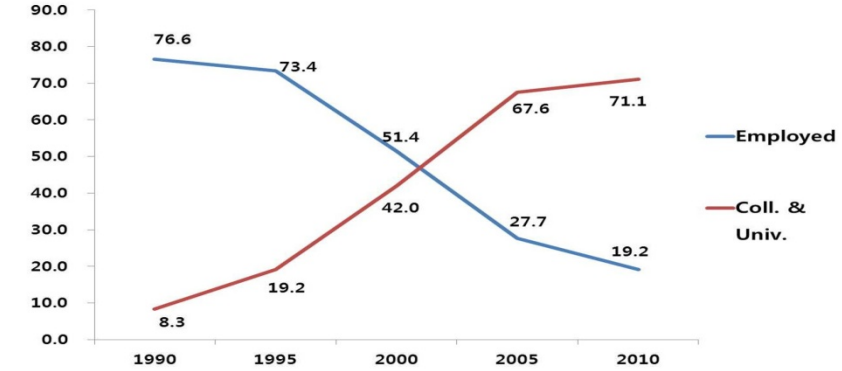
4) Meister High School

a) Background and Objectives

In the late 1990s, the Korean government felt urgent needs for redesigning the structure and programs of vocational high schools to tackle new challenges. Although demand for technicians and engineers increased as the Korean economy moved toward more advanced level, demand for mid-level skilled workers still existed. Despite changes in skill demands, however, vocational high schools failed to adapt curriculum to new skill demands like e-business, internet, information process, and cooking. SMEs, which accounted for 86% of employment in Korea, suffered from the shortage of technical workforce supplied by vocational high schools. There was also excessive demand for higher education. The percentage of vocational high school graduates who went to colleges and universities increased dramatically from 8.3% in 1990 to 71.1% in 2010, while that of vocational high school graduates who got jobs decreased from 76.6% in 1990 to 19.2% in 2010. High demand for higher education resulted in high unemployment rate of

university graduates. Due to the demographic changes, the number of students in both vocational and general academic high schools is expected to sharply decrease since 2010, as [Figure 2] indicates.

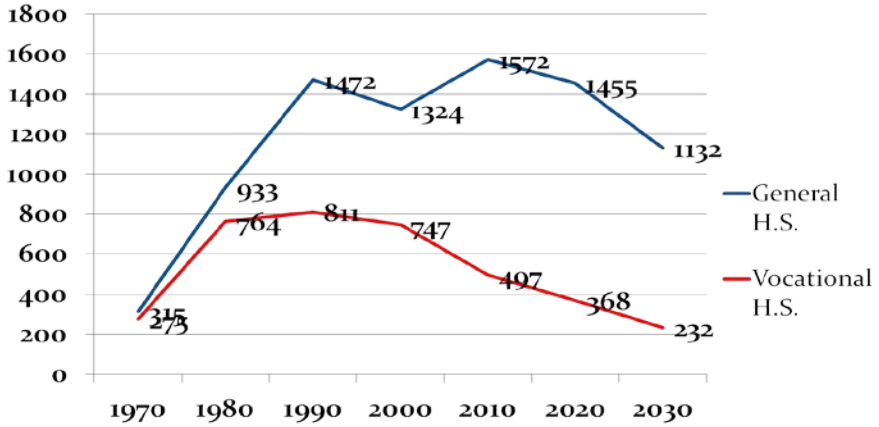
[Figure 1] Progression of Vocational High School Graduates



Source: KEDI-Educational Statistics Service

[Figure 2] Estimated Student Enrolment in General and Vocational High Schools

(unit: 1,000 persons)



Source: KRIVET(2010)

The Korean government implemented its plan for restructuring vocational high school in 2010, which was to reduce the number of vocational high schools from 691 in 2010 to 400 by 2015(50 meister high schools and 350 specialized vocational high schools. Meister high school was introduced as a new model of vocational high school to provide students with opportunity to be trained as professionals in specific areas such as mechanics, automobile, mechatronics, steel, shipbuilding, energy, electronics, communications, media-contents, medical equipment, etc.

b) Process

Since 21 meister high schools were established in 2010, there 37 as of 2014. Meister high schools selected high caliber middle school students through in-depth interview by industry people and aptitude test and provided financial support like scholarship and dormitory fees. They develop customized curriculum based on National Competency Standards(NCS), skills and manpower demands, and job analysis in collaboration with industry. They also recruited ex-CEO as a principal and industry people as a teacher.

One of the key characteristics of meister high school is the provision of customized class. Meister high schools operate special customized classes for employment-contracted companies. For example, Dong-A Meister High School made MoUs with Samsung Mobile Display, Samsung LED, Samsung Electronics, and Siemens and provide customized curriculum to students. In the 1st grade, it provides programs for acquiring basic vocational competencies. When students are promoted to the 2nd grade, they made agreement on employment and from 2nd grade they attend regular class, customized class after regular class, and workplace-based training during vacation. Right after graduation, they get employed in the company.

c) Results

Through strong school-industry relationship, meister high schools contributed improving the quality of vocational education, employment opportunities, and consequently building new positive image on vocational education. Due to the successful management of meister high schools and the policy of 'Employment First, Study while Working,' the employment ratio of vocational high school graduates increased quite substantially since 2010, as [Figure 2] shows.

[Figure 3] Employment Ratio of Vocational High School Students

Source: KEDI-Educational Statistics

d) Lessons Learned

Government leadership and its constant support can make positive changes in the performance results of vocational education institutions and the image of vocational education. After making the restructuring plan, the Korean government has provided administrative and financial support to meister high school in continuous manner and made constant efforts to induce industry cooperation. In addition, related ministries have made joint efforts under a comprehensive set of education and employment policies to provide integrated services of vocational education and employment. In the past, two ministries worked separately.

Autonomy in school management and budget security are crucial conditions for high performance of vocational schools. Meister high school principals and teachers are empowered in terms of curriculum design, budget spending, and personnel management. Sufficient amount of budget is provided in consistent manner. Close working relationship between school and industry can make real difference in the quality of vocational education and employment opportunities.

The most crucial lesson is that without changes in personnel management practice of enterprises it is extremely difficult to expect positive effect of the government policy that intends to provide open pathways to students in vocational education track. Enterprises should change their way of personnel management so that employers should provide employees with second chance to study at a college or university while they work and enterprises should reflect employees' college/university education results on their personal performance appraisal.

5) Opening Training Market to Private Providers

a) Background and Objectives

In the 1970s, the Korean government realized that it alone could not provide all vocational education and training services needed for national economic growth. Thus, it introduced 'Special Law on Vocational Training' in 1974 and enacted 'Basic Law for Vocational Training' in 1976, which mandated employers to provide vocational training (mostly initial training) for their employees. In addition, the Korean government enacted 'National Technical Qualification Law' in 1973, which made it possible for individuals to be officially certified for their skills no matter where they were trained. It contributed to reducing the risk of misjudging worker's skills by helping to identify and assess skills in a credible manner and communicating the information efficiently to employers and the labor market. These laws together with vocational training system introduced in 1967 contributed to the formation of vocational training market in Korea.

Due to the emergence of the knowledge-based economy, and consequent need for lifelong learning system, the government introduced new training system called 'Vocational Competency Development Scheme' in 1995, under the new labor policy framework of 'Employment Insurance System.' In this new system, the

government opened the training market to all private providers to enhance efficiency, effectiveness, quality and diversity of programs through competitions among public and private providers. Before 1995, vocational training market was supply-driven, government-controlled, and closed system. Access to the government fund for training was limited to public VET providers and only small number of private VET providers recognized by the government. Training areas supported by the government also were limited mainly to manufacturing sectors.

In 1995, by introducing new 'Vocational Competency Development Program' as a part of the Employment Insurance (Fund) System, the government encouraged all private and public VET providers to compete for EI Fund with each other in training market and expanded coverage of training to office work and service sectors. The government intended to make training market demand-driven open system.

b) Process

While new system opened training market to all VET providers, it used incentive system to encourage employers' and employees' active participation in lifelong vocational training through financial support from Employment Insurance Fund. In other words, employers, employees and unemployed make their own training plans for their own purposes and make request for financial support to the government. 'Worker Vocational Training Promotion Act' was enacted in 1997.

Since introducing new system, the number of trainees in skill-upgrading training increased from 679,000 in 1998 to 1,725,000 in 2003, while that of trainees in initial training decreased from 78,000 to 38,000 for the same period, indicating that new system was successful in promoting workers' lifelong vocational training.

c) Results

While this policy had positive effects on expanding choices of VET services, during the first several years consumer of training services experienced confusion due to the high level of variance among private VET providers in the quality of training offered and the lack of information on the quality of VET programs and institutes in the training market. The government strengthened monitoring & evaluation systems for quality control of VET programs and institutes and made evaluation results public to enable consumers to make informed decisions on VET programs and institutes for the best benefit of themselves.

Since the new system was implemented, huge differences between large and small firms were found in the utilization of new system and consequent benefits over contributions. For example, 70.9% of trainees in skill-upgrading programs were from large firms with 1000 or more employees in 2003. The smaller the firm size, the lower the rate of benefitted amount over contribution. This was because small firms lacked financial and human resources so that they could not use the system as much as they wanted.

d) Lessons Learned

Governments cannot afford to provide all VET services needed for nation's economy. Government-sponsored VET can work best when delivered in partnership with other providers like private vocational training institutes and enterprises to meet labor market skill demands. Government can make meaningful contribution to this arrangement by setting up the rule of the game in the training market and providing incentives for performance. For example, the Korean government made the Employment Insurance Fund available to all VET providers (i.e., private and public vocational training institutes, colleges and universities, enterprises) through fair competition and encouraged consumers (i.e., employers, employees, and unemployed) to make decisions on training for their own sake by providing financial incentives and information. In relation, constant increases and changes in labor market demands for skills in terms of quantity, quality, and type is a prerequisite for inducing private sectors to participate in training market.

To establish competitive training market that would provide a level ground field for all VET institutes, the government needs to institutionalize monitoring & evaluation system and information service on the performance of VET providers. Without accurate information on performance, consumers cannot make right decisions.

6) Private Provision of Vocational Education

a) Background and Objectives

As the Korean economy had kept expanding with successful implementation of national economic development plans during the 1960s and 1970s, demand for skilled labor also constantly increased. As a way of responding to increasing demand for skilled workers, the Korean government enacted a 'Law for Promoting Industrial Education' in 1963 and implemented a five-year plan for promoting science & technology education (1967-1971). Expenditure on vocational education in total MOE spending increased from 0.8% in 1965 to 3.0% in 1969 and to 5.1% in 1978.[20] Due to budget constraints, however, the government could not provide vocational education service as much as required. To expand the provision of VET programs, the government utilized private sector's capacity and willingness to invest in VET.

b) Process

In order to utilize private sector's capacity to provide VET services, the government made related laws and regulations. For example, the government

[20] KRIVET (1998.12). Centennial History of Vocational Education and Training in Korea. p.76, p.408.

encouraged private school foundations to establish vocational high schools by specifying that (i) 'central and local governments can provide financial subsidies to private schools on their request when governments acknowledge the necessity of support' and (ii) 'central and local governments must give a priority of the government subsidies to school foundations that establish and operate vocational schools' in the Private School Law. In addition, the government tried to guarantee the same quality of education service provision as public schools by specifying (i) the conditions for the establishment and operation of private school foundations and (ii) 'teachers in private schools must have the same level of qualifications as those in public schools' in the 'Private School Law' enacted in 1963. This law defined 'private schools' as schools that were stipulated in the 'Education Law' and established by school foundations, which implied that private schools had the same legal status as public schools in terms of school management.

With respect to funding for vocational high schools, school foundation provided initial costs for construction of school buildings and purchase of facilities & equipment for opening the school, while the government provided personnel expenses and operational cost like teacher salary and cost for classroom teaching. For junior colleges, school foundation bore initial costs for establishing a college, while students & parents provided most of operating costs.

Sharp contrast was observed in the budget sources between vocational high schools and junior colleges. For example, the government provided about 2/3 of the vocational high school budget and 37.3% was borne by students' fee in 1999. For junior colleges, 96% of whose students were enrolled in private colleges, 76.1% of the budget came from students' fee and 17.8% from donation and service fee. Contribution from the government was only 4.2% of the junior college budget.

c) Results

The private sector has played a great role in providing and financing vocational education. As shown in <Table 6>, the proportion of private vocational high school students in total number of vocational high school students increased from 38.8% in 1965 to 61.5% in 1985, indicating that during the developmental period private vocational high schools contributed greatly to training and supplying skilled workers. For junior college, the proportion increased from 83.7% in 1980 to 95.8% in 2005, while for university it did from 71.5% to 78.5% for the same period.

However, there was an interesting result from heavily relying on private provision, that called policy makers' attention. In 1980 when the government increased enrollment quota of colleges and universities by 30%, most private colleges and universities chose to increase their enrollment in the humanities and social sciences over natural sciences and engineering areas.[21] From the private

[21] In 1980, 72% of junior colleges and 68% of universities were private.

institution's point of view, it was much easier and less expensive to increase enrollment in social sciences than in engineering fields.

<Table 5> Budget of VE Institutes by Funding Source (1999)

(unit: billion won, %)

	Total	Student	Government	School Foundation	Others - donation
Total	4,804	2,869(59.7)	1,298(27.0)	64(1.3)	571(11.9)
Public	1,374	392(28.6)	895(65.1)	11(0.8)	75(5.5)
Private	3,430	2,477(72.2)	403(11.7)	53(1.6)	496(14.5)
Voc. H.S.	1,880	702(37.3)	1,079(57.4)	17(0.9)	82(4.4)
Public	1,070	278(26.0)	744(69.5)	-	48(4.5)
Private	810	424(52.3)	335(41.3)	17(2.1)	34(4.2)
Junior Coll.	2,483	1,889(76.1)	105(4.2)	47(1.9)	441(17.8)
Public	110	42(38.2)	50(45.4)	11(9.8)	7(6.6)
Private	2,373	1,847(77.8)	55(2.3)	36(1.5)	434(18.4)
Industrial U.	440	278(63.2)	114(26.0)	-	47(10.9)
Public	194	73(37.5)	101(52.3)	-	20(10.3)
Private	246	205(83.6)	13(5.2)	-	27(11.2)

Source: Paik(1999). Vocational & Technical Education Finance in Korea. KRIVET. p.96.
Note: For industrial university, funding from school foundation was included in 'government.'

<Table 6> Student Ratio in Private Schools

	General H.S.	Vocational H.S.	Junior Coll.	University
1965	58.8	38.8	79.7	75.4
1970	60.4	48.1	57.0	75.4
1975	60.4	52.4	69.8	72.8
1980	61.8	56.5	83.7	71.5
1985	59.8	61.5	90.5	73.9
1990	61.7	61.7	91.7	75.5
1995	62.5	56.7	96.2	75.1
2000	57.1	50.9	95.9	77.7
2005	49.5	48.8	95.8	78.5

Source: MOE & KEDI. Statistical Yearbook of Education.

As a result, the proportion of engineering in junior colleges decreased from 59.6% in 1980 to 36.2% in 2005, while those of social sciences increased from 9.9% to 21.6% for the same period, as shown in <Table 7>. This does not seem to follow the changing pattern of the industrial structure. For universities, slightly different changes were observed. The proportion of engineering decreased from 26.1% in

1980 to 21.4% in 1985, and increased to 29.2% in 2003, while that of social sciences increased from 21.1% to 26.7% for the same period.[22]

<Table 7> Composition Ratio of Junior College Students by Field of Study

(Unit : Person, %)

Year	Total	Humanities	Social Sciences	Natural Science	Engineering	Agri. Fore. Fish & Marine & Home Econ.	Medical S. & Pharmacy	Arts & Physical Ed.	Teaching Profession
1965	23,159 (100.0)	1,247 (5.4)	3,258 (14.1)	2,487 (10.7)	8,860 (38.3)	4,140 (17.9)	481 (2.1)	2,683 (11.6)	-
1975	62,287 (100.0)	-	4,691 (7.5)	4,412 (7.1)	27,693 (44.5)	11,251 (18.1)	10,159 (16.3)	4,081 (6.6)	-
1980	165,051 (100.0)	632 (0.4)	16,328 (9.9)	15,552 (9.4)	98,396 (59.6)	11,788 (7.1)	15,448 (9.4)	6,907 (4.2)	-
1985	242,117 (100.0)	4,802 (2.0)	44,164 (18.2)	10,926 (4.5)	97,799 (40.4)	19,308 (8.0)	31,974 (13.2)	18,706 (7.7)	14,438 (6.0)
1990	323,825 (100.0)	10,419 (3.2)	58,441 (18.0)	14,641 (4.6)	134,195 (41.4)	25,979 (8.0)	37,532 (11.6)	28,759 (8.9)	13,859 (4.3)
1995	569820 (100.0)	25,114 (4.4)	118,505 (20.8)	1,366 (0.2)	254,015 (44.6)	39,096 (6.9)	56,142 (9.9)	58,641 (10.3)	16,941 (3.0)
2000	913,273 (100.0)	34,952 (3.8)	183,717 (20.1)	23,805 (2.6)	397,449 (43.5)	61,407 (6.7)	73,064 (8.0)	114,098 (12.5)	24,781 (2.7)
2005	853,089 (100.0)	32905 (3.9)	184,542 (21.6)	18,392 (2.2)	308,693 (36.2)	43,462 (5.1)	88,871 (10.4)	144,127 (16.9)	32,097 (3.8)

Source: Ministry of Education & Human Resources Development · Korean Educational Development Institute (each year). Statistical Yearbook of Education.

d) Lessons Learned

It is crucial in encouraging the private sector to invest in VET to have clear laws and regulations on the establishment and management of private VET schools and institutes. In the Korean case, 'Private School Law' and 'Education Law' provided management security of private schools and guaranteed no discrimination against private schools in terms of the recognition of VET results and government supports.

[22] Before 1980, the proportion of engineering-major junior college students increased from 38.3% in 1965 to 59.6% in 1980, while that of university students from 16.7% to 26.1% for the same period.

In addition, in order to induce and maintain private sector's involvement in the provision of VET, the government needs to be able to provide public funds to where the private providers need. The Korean government provided subsidies to private vocational high schools for their operation.

Increase in employment opportunities in VET skill areas is a critical prerequisite for private sector to participate in VET market. Due to the rapid economic growth over 3 – 4 decades, the Korean economy could absorb increasing number of graduates from VET institutes, which contributed to private foundations' decision to establish and run vocational high schools and junior colleges.

The government needs to be cautious about disproportionate distribution of students by major area when it plans to encourage private sector's involvement in the provision of VET. Government intervention to prevent market failure is required. In addition, information on the labor market skill demands and government incentives, both administrative and financial, will be helpful in guiding private sector's investment towards more productive ends.

7) Funding of Vocational High School, Junior College, and Vocational Training Institute

a) Background and current situation

For vocational high school education, the government paid about 2/3 of direct cost. Tuition of vocational high school has been lower than that of general academic high schools, while educational expenditure per student in vocational high school has been higher than that in general high schools. The Korean government has provided larger portion of subsidy to vocational high schools, because (i) vocational education at the secondary level is a quasi-public good and (ii) equity problem with low income students who are more in vocational high schools should be addressed.

For junior colleges, students and parents did bear most cost for education. About ¾ of the junior college revenue came from tuition, which resulted from the fact that approximately 90% of junior colleges in Korea are private. With respect to the funding of junior colleges, the role of the government has been very limited. Due to the government budget constraints and lack of financial capacity of school foundations, students and parents are the major source of direct cost of junior college education. Public characteristics of junior college education that produces technicians needed for national economy require that the current funding structure of junior college which is heavily dependent on tuition needs to be redesigned.

Employers began to finance vocational training for their employees since the mid 1970s. Levy system was implemented in which employers either provided in-house training to their employees or had to pay levy to be used for public training. In 1995, Employment Insurance Fund (EIF) System in which firms pay certain proportion of total payroll of employees for their training and get refunded after

providing training was introduced. In this system, individual workers also can get subsidy for their education and training from the EIF. Through EIF employers have paid training cost for job-specific VET.

b) Lessons Learned

Funding policy for pre-employment VET should ensure both the budget requirement needed to provide certain level of quality VET and the stability of funding for sustainable implementation of VET policy. Government alone cannot provide all the pre-employment VET services. Considering its budget capacity and funding rationale based on 'benefit principle' and 'equity,' the government should decide on how much the government invests in what areas (e.g., strategic industries) and at what level (e.g., secondary, tertiary, non-formal). Government needs to take into account both parents' and employers' ability and willingness to pay VET cost when it plans budget for VET.

IV. Lessons Learned

Provision of the pre-employment VET costs lots of financial and human resources. Given resource constraints, the governments in developing countries need to make right decisions on investment in the pre-employment VET. This study was attempted to identify key factors that are worth to be considered when the government designs and implements the pre-employment VET policies and systems by reviewing the evolvement process of pre-employment VET systems over the past 4 decades and analyzing key pre-employment VET policies in Korea. This chapter presents key factors to be considered and strategies to be adopted when the government makes the pre-employment VET policies.

1. Key factors

In previous chapter, 6 policy cases of Korea were selected and analyzed by key policy issue. From the analyses of 6 policy cases, 10 common key factors can be identified, although their relative importance is different by key policy issue. For each factor, related policy implications are discussed.[23] Checking these factors is a pre-requisite for developing efficient and effective policies in pre-employment VET which will consequently improve the economic outcomes.

[23] Key factors are not mutually exclusive. For example, 'changes in employment opportunities and skill demands' is applied to three policy issues – relative efficacy of vocational education to general education, different modes of delivery, and relative effectiveness of public provision to private provision.

(1) **Changes in employment opportunities and skill demands** (Level and speed of economic growth): Before making investment decisions on the pre-employment VET, the government should check and analyze the current status and future prospect of nation's and local economy and demands for relevant skills. Based on the analyses, the central and local governments can decide the level, magnitude and contents of the pre-employment VET. In other words, the level and speed of economic growth need to be constantly checked to review the appropriateness of current distribution of students in pre-employment VET provision by skill type and level needed, to redefine roles and responsibilities of VET providers, related agencies, and institutions and to promptly adapt the pre-employment VET policies and systems to changes in economic environment. Rapid economic growth also can lead to a strong private provision of VET. In this case it is important to avoid over-subsidized public services which can crowd out private supply. Demand for skills is to be estimated from macroeconomic development plans that promote investments and jobs. In that sense, it is required for the government to closely connect national and local economic development policies and VET policies.

(2) **Society's perception on VET and Preference of Academic Programs**: From the implementation point of view, it is important to know the extent to which and the reasons why parents and students prefer general academic and higher education to VET and to estimate their ability and willingness to pay the pre-employment VET cost. If there were high level of disparity in esteem or in the quality of education for nurturing basic cognitive skills between VET institutes and their academic counterparts, the government needs to take this into consideration when designing action plans, setting specific targets, and deciding implementation strategies and to take certain steps to address these problems and increase society's preferences to VET, for example by providing open horizontal and vertical pathways to academic and further & higher education or by preparing young people for labor market entry with technical qualification as well as for higher education through the revision of curriculum. It is critical to provide opportunities for further continuing education to graduates from pre-employment VET institutes within lifelong learning framework so that they can maintain and upgrade their skills to pursue their careers towards better lives. Without these opportunities, pre-employment VET could not attract competent students and trainees needed.

(3) **Capacity and readiness of existing VET providers** (vocational education schools, vocational training institutes, and firms): It is necessary to check the current availability of VET providers by level and type, their capacity and effectiveness in terms of quantity and quality of their graduates, and cost. If there were not many pre-employment VET institutes and private sector were not ready to

provide VET services yet, then the government needs to establish and run vocational schools in formal education system, and public vocational training institutes outside the school system to remedy market failure, and to encourage private enterprises to actively engage in VET activities. Besides, the government needs to check the quality of VET. If existing VET schools and institutes were unable to provide the quality level required by labor market, compared to other alternatives like general high school, the government needs to first introduce policies for enhancing VET quality.

(4) **Cognitive skills of students and trainees**: If students or trainees do not have basic competencies (e.g., literacy, numeracy) required to learn knowledge and skills for employment, it would be difficult to get the most cost-effective results from the investment in the pre-employment VET. High level of basic skills of graduates from primary school or lower secondary school provides policy makers with larger flexibility in designing the pre-employment VET systems and policies. Thus, it is fundamentally crucial to provide high quality basic education for further education and lifelong learning (cognitive skills which enhance student's adaptability to changes in skills demand) and to check whether VET students and trainees have basic cognitive skills when they enter VET institutes. If they don't, programs for basic cognitive skills need to be provided in VET institutes. From the viewpoint of education sector investment strategy at national level, it would be desirable that the investment priority be given to basic education first, and then move to secondary schooling or pre-employment VET.

(5) **Government's policies to induce private sector to the pre-employment VET and to form training market**: Given the government's budget constraints and public sector's inherent inefficiency in responding to changes in skill demands, it is required for governments to induce the private sector to participate in the provision of VET. Without clear definition of roles & responsibilities of private sector (enterprises and private vocational training institutes) and the consistency and sustainability of policies for encouraging the private sector's participation in the provision of the pre-employment VET, however, private sector would not invest in VET and participate in the training market. The government needs to check whether it has clear laws, regulations, and financial incentives that guarantee management security of private VET institutes and enterprises and equal treatment of VET results, and promote training market that is open to all private providers. In other words, the government needs to take the lead in forming the training market. In addition, it is crucial to have training market that operates according to market principle. In order to develop and maintain the training market, the government needs to provide financial incentives and information to both providers and trainees. Development of training market would relieve the public sector of the financial burden and increase the efficiency and sustainability of the VET system.

(6) **Government's financial capacity and funding rationale**: Given the government's budget constraints of developing countries, two key issues they face are how to mobilize the government budget for the pre-employment VET and how to allocate this budget in most effective ways. The government budget for the pre-employment VET could be influenced by political leadership, national economic development plan, or experience on the cost-effectiveness of the pre-employment VET investment. With respect to the second issue, the government needs to prioritize investment targets on the basis of national economic development plan (key industry sectors), current capacity of VET provision, government's budget capacity, private sector's (employers, parents, students, employees and private institutes) financial capacity, and financial needs of the disadvantaged groups. For example, the government may focus its budget investment on the secondary level VET and manufacturing sector, compared to post-secondary level and other industry sectors, and provide financial aid programs for the poor.

(7) **Private sector's capacity and willingness to finance and provide VET**: If employers have financial and human resources to provide VET to their new employees, if parents have ability and willingness to pay VET cost, and if private foundations or institutes are willing to provide VET services, the government could share the financial burden of VET provision with employers, parents and private foundations or institutes. In this case, the scope and level of VET provision could be expanded. Especially employer's capacity and willingness is extremely crucial to implement close school-industry cooperation schemes to enhance quality and relevance of VET through demand-driven approach. In the opposite case where there is no active involvement of private sector, however, the government would be required to invest more in VET and suffer from severe budget constraints. Thus, it is necessary for the government to estimate the extent to which employers, parents, and other private actors can afford to provide VET before making pre-employment VET development plans.

(8) **Supporting mechanisms** (qualification system, quality assurance, and information service): In order to enhance the quality, relevance and efficiency of the pre-employment VET system and to promote VET market, it is necessary to have well-designed supporting mechanisms like qualification system, monitoring & evaluation and information service. Qualification is crucial in that it connects the VET programs/curriculum with labor market skill demands and it also functions as a standard for assessing the performance of VET programs and providers. Monitoring & evaluation or quality assurance mechanism for individuals, VET programs and institutes is required to guarantee certain level of quality of VET services and investment effect. Information on the performance of VET programs & institutes and job opportunities enables VET consumers (individuals, firms) to

make right decisions on their investment in VET and promotes constructive competition among VET providers which leads to quality improvement. Information on enterprises is also crucial to select companies for school-industry joint programs. These supporting mechanisms are pre-requisites for effective VET market and pre-employment VET.

(9) **Political leadership**: Like in other policies, political leadership is one of the most crucial elements that make the pre-employment VET policy formulated, financed, implemented and further developed in a consistent and sustainable manner. Political leadership also can play a great role in changing social recognition on skilled workers and technicians by making institutional arrangement by which they can be socially and economically recognized as much as their counterparts and by emphasizing their contribution to national economic development. Political leadership needs to have solid policy rationale that is based on empirical evidence and relevant key actors like congressmen, government officials, VET providers, and employers can agree with.

(10) **Cooperation/Coordination mechanism among Ministries of central government and among stakeholders**: In order to have closer linkage between economic development plan and VET development plans or between VET programs and labor market skill demands and consequently to have synergy effect, relevant Ministries (e.g., Ministry of Economy/Finance, Ministry of Education, Ministry of Labor, …) or stakeholders (i.e., central and local governments, employers, labor unions, and VET institutes) need to work together. At the institutional level, strong links between employers and VET providers and flexible management with higher level of autonomy will lead to more efficient demand-oriented system. For this, well-designed cooperation/coordination mechanism is required, where all stakeholders can exchange information, discuss problems and challenges, and develop most efficient and effective solutions which benefit both consumers and providers. It is necessary that coordinating body have actual implementation power to make related actors work as agreed.

2. Strategies

After checking key factors mentioned above, the government needs to adopt following strategies when making investment plans.

(1) **Long-term approach based on the analyses of economy and society**: Investment in the pre-employment VET requires large amount of government budget and private financial resources. Technologies and knowledge develop so quickly that skill demands in terms of both quantity and quality change very rapidly. Thus, it is important to analyze changing trends of skill demands by type

and level and future investment effect from the long-term perspective and to make investment decisions based on the results of these analyses.

(2) **Comprehensive / holistic approach**: The pre-employment VET system includes not only VET providers and programs but also qualification system, quality assurance mechanism, and information services. VET programs itself can be provided through various combinations of different VET institutes. Policy coordination is also required among stakeholders like ministries in central government and between central and local governments. In addition, the pre-employment VET needs to be integrated in the lifelong learning framework – linkage of the pre-employment VET to basic education, academic general education, other levels and types of the pre-employment VET and higher education. Thus, it is crucial to take a comprehensive approach to the pre-employment VET. And also policy coordination with policies on macro-economy, industrial investment, trade, and technology are needed so that pre-employment VET can be fully integrated into national development strategies.

(3) Demand-driven approach: Enhancing quality and relevance of VET is an important contributor to improving efficiency and effectiveness of the pre-employment VET investment. This can be best achieved by demand-driven approach, which commands close school-industry linkage and school autonomy. Curriculum development & implementation, monitoring & evaluation of students' skill development and their certification, and teacher training are made possible through systematic working relationships between schools and enterprises and empowerment of schools and teachers.

(4) **Flexibility and responsiveness to changing market conditions**: In order to enhance and maintain the efficiency and effectiveness of the pre-employment VET system, it is important to make the system flexible and responsive to changes in skill demands. As the economy develops, skill demands also change. Thus, volume and contents of the pre-employment VET, its delivery modes and funding mechanism need to be promptly adapted to new environment. As, with economic growth, the higher level of skills and competencies are demanded, it would be necessary to defer vocational specialization to post-secondary level and to integrate more general education content into vocational education program. Delegation of decision-making power to lower levels of administrative units and schools and empowerment of teachers are needed for flexible responses to changing environment and enhancing efficiency and effectiveness of VET, together with accountability measures.

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