

Research Material 2011-3

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The cover features a decorative graphic consisting of several wavy, parallel lines in shades of grey and light blue that flow across the page. Scattered throughout are several hand-drawn style circles in blue, green, and tan colors, some with faint pencil-like outlines.

2010 KRIVET Research Abstracts

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Foreword

In order to respond to the transformations of the rapidly changing era, the Korea Research Institute for Vocational Education and Training(KRIVET) was established in 1997 to carry out researches on technical and vocational education and training(TVET) and Human Resources Development(HRD).

Since its establishment, KRIVET has published compilation of abstracts from each year's research papers. It has been shared with related research institutes, policymakers, experts, educators, students and everyone who is interested in the field of HRD and TVET.

The main purpose of this annual project is to disseminate knowledge and information that has been achieved by the researchers in KRIVET which will hopefully contribute to the development of TVET around the globe. Among 32 abstracts of researches conducted in 2010, some of the noticeable topics include issues related to green growth, skills mismatch, qualifications, and promoting skills development; there also was a research on the G20 member countries linked with the G20 Seoul Summit held in November, 2011.

It is hoped that this “2010 KRIVET Research Abstracts” will serve as an instrument to exchange knowledge and experience, and act as an informative guide for the readers who may be concerned with human resources development and lifelong vocational education and training.

권대봉

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The Demand for Vocational High School Graduates and Strategies to Improve Educational Capacity

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Dong-son Choi, Mi-ran Kim

This research introduces practical strategies designed to enhance the educational capacity of vocational high schools as well as a related road map. To this end, this research investigates the career path of vocational high school graduates, traces the changes in companies' usage of vocational high school graduates, the industrial demand for the workforce produced by vocational high schools, and the changes in the main job performance levels of vocational high school graduates. In addition, as part of efforts to understand the use that is being made of the workforce that graduated from vocational high schools within each industrial sector, a survey of human resource directors and workers is also performed. Moreover, the Delphi method is employed with experts specializing in vocational high school education as part of attempts to predict the future of vocational high schools. Finally, based on the results of these research processes, a strategy to enhance the educational capacity of vocational high schools is introduced and the related policy implications are examined.

1. Results of the Analysis of the Demand and Usage of the Workforce Emanating from Vocational High Schools

While the development of the industrial structure has resulted in a decrease in the demand for craftsman in traditional manufacturing sectors, it has concurrently brought about an increase in the demand for engineering technologists. In addition, there has been a change in the conception of the decent jobs available to vocational high school graduates. In this regard, the three most sought after fields are those of: public officials in technical posts; innovative technicians involved in foundation industries such as assembling and processing; and license-based professionals.

It is possible for employees to achieve success in their lives and careers by developing their skills and building up their careers in technical posts. In this regard, an optical matching analysis of 94 workers found that the individuals who showed the highest degree of career commitment, work-family balance, role-orientation, and life satisfaction were workers who have been engaged for a long period of time in technical posts.

The following four policy implications can be drawn from the review of the results of the analysis of the perceptions of human resources directors regarding the use of the workforce graduated from vocational high schools and of the features of the companies surveyed. First, the overall quality of vocational education should be improved. Second, the high turnover rate amongst vocational high school graduates within one to two years of getting jobs makes it amply evident that the personnel management practices pertaining to such human resource should be changed. Third, in addition to skills training and work-related educational programs, attention should also be paid to what can be termed as character education. Fourth, the fact that 73.5 percent of vocational high school graduates go on to higher education institutes only serves to further highlight the need for closer links to be established between vocational high school and college and university education.

In terms of the demand within the labor market for workers that graduated from vocational high schools, employees that graduated from vocational high schools accounted for 17.9 percent of all workers in 2009, and demand is expected to exceed supply by 2018. The average monthly wage of vocational high schools graduates is 45,000 won higher than that of general high schools graduates, and their wages have increased by 6.5 percent over the last five years.

2. Educational Capacity of Vocational High Schools

The purpose of vocational high school education can be defined as that of developing and enhancing the basic learning competencies and employability needed to ensure successful careers as skilled workers. The ability to achieve this purpose is rooted in the educational capability of vocational high schools, which in turn consists of teaching and learning competencies, employment support competency, and the capacity for academic-industrial cooperation.

The ability to diagnose the educational capacity of vocational high schools is

predicated on the identification of the current conditions of vocational high schools. First, the academic achievement of vocational high school students is below average for most subjects. A look at the career path after graduation reveals that while the employment rate of vocational high school graduates has significantly decreased, the rate of employment in irregular and part time jobs has increased. Moreover, the range of occupations for which vocational high school graduates can apply has also narrowed. Vocational high schools have continuously changed their educational programs as part of their efforts to cope with the changes in the industrial structure and technology. However, the mismatch between the educational programs supplied by vocational high schools and the industrial demand for human resources that graduate from vocational high schools continues apace.

In addition, the Delphi survey revealed that most experts identify the inability to cultivate skilled workers and the social contempt for specialized or vocational high schools as the main causes of the crisis affecting vocational high school education. As far as the element with which vocational high schools should be equipped to improve their competitiveness, the experts participating in this Delphi survey for the most part agreed that the cultivation of an industrial workforce can be brought about through the enhancement of the college admission and employment support functions.

3. Enhancement of the Educational Capacity of Vocational High Schools

Based on the analysis of the actual state of the use of the workforce graduated from vocational high schools, the demand for such a workforce, and the current educational capacity of vocational high schools, this research suggests 11 tasks designed to enhance the educational capability of vocational high schools.

Utilization of Water, Wind and Solar Photovoltaic Resources and Green Jobs

Nam-chul Lee, Sang-geun Han, Na-ra Kim

This paper examines the utilization of water resources, wind resources, and solar photovoltaic resources and related green jobs, the qualification system, and government policies. While green sectors will create new jobs, they will also lead to a redefinition of many existing job profiles pertaining to water resources, wind resources, and solar photovoltaic resources.

New green jobs pertaining to the fields of water, wind, and solar photovoltaic resources will require new skills in both new and emerging occupations. The securing of a well-trained workforce capable of meeting this challenge is predicated on the establishment of the necessary education, training, and qualification systems. In this regard, in growing fields such as those related to water, wind, and solar photovoltaic resources, the focus should be on the development of skills related to energy efficiency and renewable energy implementation.

This study introduces the following policy suggestions. First, a plan related to the nurturing and utilization of human resources in the fields of water, wind, and solar photovoltaic resources should be drawn up.

Second, there is a need to guarantee qualifications and the enhancement of public relations where training programs are concerned. Third, the expansion of the industrial sector's participation in the cultivation of human resources involved in green industry technology and the related technical skills should be brought about. Fourth, it is important to conduct a systematic and continuous survey of jobs in fields related to water, wind, and solar photovoltaic resources. Fifth, there is a need to revamp the laws and institutions related to water, wind, and solar photovoltaic resources sector. Sixth, individuals, enterprises, and the government should actively seek to cope with environmental changes in terms of technology. Seventh, occupational information should be released, and career counseling pertaining to changing jobs should be enhanced.

Promoting Public Policy Pertaining to Career Education as Part of Efforts to Nurture Creative Talented Persons

Ji-yeon Lee, Yun-kyung Jeong, Jong-bum Lee

As part of efforts to nurture creative talented persons for the society of the future, this research suggests an executive policy agenda pertaining to career education. Specifically, this research deals with three key issues pertaining to career education today, all of which are assumed as the keys to promoting creativity via the invigoration of career education. First, a system to manage certification pertaining to career and vocational education is introduced. Second, guidelines for the development of professionals in the field of career education are developed. Finally, methods of promoting the current college admissions policy as relates to practical issues associated with career education are suggested. In the case of all 3 issues, the researchers diagnosed the current status, identified the related problems, and suggested alternative solutions.

Chapter 1 focuses on the background to the research, purposes, main contents, and methods used to approach the three issues addressed herein.

Chapter 2 reveals the close relationship between creativity and career education. While the first section focuses on the necessity for creativity and the components thereof, and diagnoses elements of the creativity development found within the framework of the national curriculum, the second introduces concepts, purposes, contents, instructional methods and outcomes(competencies) pertaining to career education, and reviews the current state of career education in terms of the national curriculum. Finally, the third section revolves around a comprehensive summary of the relationship between creativity and career education laid out in sections 1 and 2.

Chapter 3 deals with the first issue addressed in this study, namely student certification as far as career and vocational education is concerned. More specifically, the concept and kinds of career education certifications are examined along with the current state of such certifications. Thereafter, the executive ways of this system are introduced. However, before introducing this

system, the researchers established the basic direction, subjects, and developed indexes as well as criteria for certification. This chapter concludes with some of the support policies that should be introduced by the central government in order to promote the certification system.

Chapter 4 deals with the second subject tackled by this research, namely the guidelines for developing professionals in the field of career education. This chapter concludes that there is a need to nurture professionals in the field of career education with the competencies required to promote and develop creativity. This can in turn be achieved via a 'qualification-development - application - retraining' system for career professionals that reflects national policy, the general teacher development-application system, and the educational department of states, cities, and schools.

Chapter 5 is concerned with the college admissions policy as pertains to career education. This chapter begins by delving into the relationship between the development of creativity, career education, and the college admissions policy, and emphasizes the need for policies that would further enhance this linkage. More specifically, while section 1 identifies the relationship between the development of creativity and college admissions, section 2 summarizes the current status of college admissions policy and breaks down the obstacles to its promotion into seven points. Meanwhile, section 3 introduces the advanced case of U.S. college admissions policy as pertains to career education and section 4 deals with the qualifications and competencies required by college admissions officers in Korea, the latter of which are derived via delphi methods. Finally, section 5 proposes public policies designed to promote both career education and the current college admissions policy.

The concluding chapter, Chapter 6, integrates the results of the analysis of these three issues, and suggests ways to promote public policy pertaining to career education as part of efforts to cultivate creative talented students at the national, provincial, and individual school level in Korea.

Challenges to the Advancement of the Service Industry through HRD Policy

Chang-won Jang, Kwang-pyo Hong, Young-ki Cho, Yong-hwan Lee

In the knowledge-based society of the 21st century, the competitiveness of an economy is in large part determined by the human capital and knowledge it possesses. The construction of advanced human resources policies and systems is predicated on the government's ability to create and generate accurate statistical indices and information related to education and the labor market. Given this necessity, the establishment of a vision and strategy to bring about an advanced service industry, the estimation of manpower supply & demand, and the forging of specific human resource development policies and infrastructure have become important issues as far as human resource development policies are concerned.

This research focused on the knowledge service industries identified by the current Korean government as new economic growth engines, namely the finance, education, medical & healthcare, culture, tourism, and +ICT service sectors. More to the point, the main goals of this research were: to identify the core issues associated with advanced forward-oriented human resources policy designed to bring about sustainable economic growth and upgrade the people's overall quality of life; to construct the necessary basic infrastructure through innovative ideas rooted in the vision that was developed in accordance with the results of the empirical research; and to comprehensively link individual human resources policies to one another.

This research was divided into 8 chapters, and consisted of a general introduction to the research, an itemized discussion of the advanced countries, empirical analysis of 6 industries' current situations and the estimation of the supply and demand for educational manpower for the period 2010-2018, and the sectoral implications of the relevant policy issues.

In Chapters 1 and 2, the contents and overall framework of this study, the main issues and range of the research project, as well the mutual relationship

between the individual HRD policies focused on herein, were introduced. Meanwhile, in Chapters 3-5, the current situation, system, problems, manpower, knowledge & information, relationship between R&D and HRD in major developed countries, as well as the domestic situation, were addressed in turn.

Chapter 6 revolved around mid-term (by 2018) estimations of manpower forecasts for 6 knowledge industries×higher education using a model specification technique specifically suited for the Korean labor market. In terms of manpower forecasting, the industry data was classified in accordance with the SITC two-digit level; meanwhile, higher education was divided into 4 groups (including workers who graduated from 2-year junior colleges, 4-year colleges, and workers who finished graduate school). Thereafter, an attempt was made to use the results of this study as a quantitative index that can be applied to the development of human resources in knowledge-based service sectors. However, this trial study is only a first step. More to the point, because of the limited data employed and other problems, future studies must be undertaken to establish a clear link between qualitative and quantitative estimations. The advent of good estimation signal outputs can help to decrease the quantitative skills mismatch that exists in the labor market.

Chapter 7 revolved around the introduction of general and sectoral implications and policy issues. More to the point, the focus was on policy issues related to human resources development, with a particular emphasis placed on higher education policies pertaining to the issue of the coordination of fixed capacity numbers and the dissemination of R&D goods. Such an emphasis is necessitated by the need to raise the competitiveness of the workforce and to decrease the structural unemployment rate through creative R&D outputs, to bring about their dissemination in higher education, as well as their actual application in industry. In this regard, the coordination of these fixed numbers can be achieved when university departments provide an excess supply of graduates relative to the labor market demand. The problems of the skills mismatch and the asymmetry of labor market information were also raised. Other policy issues raised in this study included the problems associated with time series data and the creation of essential data, the development of methodologies for manpower forecasting, and the linking of quality with quantity as far as the evaluation of results is concerned. The final chapter of this study consisted of an overall summary of this project.

A Study on School-to-Work for University Graduates in Korea

Ahn-kook Kim, Sang-geun Han, Han-goo Ryoo,
Young-dae Lee, Soo-myung Jang

In sum, the problem of transition to work faced by university graduates stems from the excess of supply occasioned by the overwhelming number of students that opt for university education. In this regard, employment policies relating to university graduates should be linked to the reform of universities, and in particular to the raising of the quality of university education and the decreasing of the number of university students. Enhancing the quality level of university education would entail increasing the psychological costs of higher education, which in turn would result in a decrease in the number of students that opt for university education. The problem of university reform is not one that should be addressed through the market. Rather, the government should be actively involved in the reform of universities. The government should provide direct consultation to universities that face problems. University data should be made public, and a validation assessment system for universities should be introduced. The data pertaining to universities and above-mentioned assessments should be related to the assistance provided to individual universities by governments. While mergers and acquisitions should be promoted, university campuses should be sold for profit and regarded as assets.

Industry-Educational Collaboration System for the Resolution on Job Mismatch

Young-saing Kim, Sung-joon Paik, Tong Park,
Cheol-woo Park, Woo-il Shim

This study analyzes the so-called 'job mismatch' problem characterized by young college graduates inability to find jobs, and companies, particularly small and medium ones, difficulty hiring the new workforce they require. This research seeks to develop strategies to address the mismatch that revolve around the facilitation of an industry-education collaboration system(IECS) and specific schemes designed to address the current problems associated with such IECS. In particular, this study focuses on uncovering means to develop a new structure of industry-education collaboration, and the probable effect of this new IECS on job creation.

The data used for this study was collected through such means as the examination of the findings of previous research, surveys, meetings with experts, on-site inspections, and the conduct of research on other countries. The survey consisted of the polling of college students(1,000) seeking employment, managers and workers employed by small companies(500), and staff involved with the matter of industrial and educational cooperation at the college and university levels(500). The informal gathering of experts involved the heads of industry-education collaboration projects, the persons in charge of business management, employment advisors, the persons in charge of company research and development, and human resources directors.

This study has serious implications as far as the measures to improve the effectiveness of industry-education collaboration so as to resolve the job mismatch are concerned.

First, the difficulties resolving the job mismatch that exists between small and medium companies and universities and colleges stem from the existence of arranged investments that revolve around universities, and universities dominant position within the IECS. The current structure must be altered to achieve a

greater balance. In terms of creating employment opportunities, there is a need to regulate industry-education collaboration and to expand the participation of small and medium companies in this process so as to make them more employment friendly. Moreover the budget set aside for IECS as part of the support for new growth industries should be expanded.

Second, the in-depth analysis of industry-education collaboration carried out herein revealed that companies and colleges and universities have different perceptions of the IECS' structure, processes, and achievements. This gap in perceptions can be resolved through such means as the establishment of structured communication and trust building, the promotion of active networks geared towards the fostering of cooperative learning activities, the designing of customized businesses that reflect various levels and competencies, and a move away from the existing university-oriented support structure and towards a support mechanism that involves active participation on the part of companies.

Third, a network consisting of 'personnel-employment-creation of jobs,' should be established. Such a network should be used to secure the collaboration system and to create a societal atmosphere in which companies and universities pool their resources as part of their combined efforts to foster talented personnel.

Fourth, an ADS(a documentation system that enables employees to transform their tacit knowledge gained from their work experiences into explicit knowledge that can help improve their productivity and market value) program capable of fostering the hands-on practical learning and training needed to strengthen competencies should be established.

Lastly, in terms of hardware, the amenities found in industrial complexes must be improved so as to raise the quality of life of workers, which in turn would make it easier to hire new young workers. In addition, more systematic support should be provided to job seekers in terms of their ability to access data pertaining to small and medium companies. Based on the aforementioned improvement measures, it is evident that more long-term research and support is required in order for industry-education collaboration to have an impact on the resolution of the job mismatch.

Measures to Improve Skills Development Accounts

- Focusing on Quality Management -

Hye-won Ko, Cheon-soo Park, Jae-ho Chung

Skills development accounts, which are used in voucher-based training programs, represented 71 percent of the total budget set aside for the training of the unemployed in 2010, and will supposedly account for the whole training budget in 2011. This research examines the current state of the promotion of skills development accounts, and suggests future improvements.

The research objectives and methods employed herein were as follows. First, current state and performance were identified through an analysis of the statistical data released by the Ministry of Employment and Labor, and HRD-Net data. Second, case studies involving Germany and the U.S. were conducted with regards to the evaluation of training courses and the assessment of training institutions. Third, professional conferences in which officials of the Ministry of Employment and Labor, and Job Centers, experts, and training institutions participated were held. Fourth, interviews were conducted with those involved in training institutions so as to identify the problems related to the quality of training.

Based on this analysis, the following suggestions for future improvement were made. Let us begin by looking at the standpoint of trainees. First, raising the level of expenses borne by the trainees who participate in training provided by training institutions to which the government has given poor ratings may represent a mechanism to improve the quality of vocational training services. Second, rather than supporting training without limitation as is currently the case, a lifetime ceiling on training costs should, as is done in the U.S., be imposed. This can be regarded as a possible alternative to facilitate awareness amongst trainees that skills developments accounts are their right. Third, although improvements to the trainee selection system are being prepared, such as the reinforcing of the Commission for Account Issuance, further strengthening of the standards for skills development account issuance is required to select

trainees who are truly seeking employment. It is also necessary to operate skills development accounts as a program that is not geared towards not all unemployed, but rather those who are still unemployed 3-6 months after registering for employment, or to operate the system in such a manner that it is those who are not employed who are targeted. Fourth, it is well known that many participants engage in what can be referred to as 'training shopping', and that some of these participants do not complete the training. Therefore, it may be necessary to reduce the limit cost of skills development accounts, and to restrict access to training courses.

The next points are related to training institutions and training courses. First, the motivation of training institutions to prepare quality management systems needs to be reinforced. For example, it is necessary to introduce an incentive program in which additional points are given to those training institutions that adopt a quality management system such as ISO. Second, it is necessary to allow only those training institutions with certain evaluation ratings to open training courses using skills development accounts. Third, in order to encourage training institutions to pursue best practices amidst increasing difficulties in terms of guidance, management and supervision occasioned by the expansion of the number of training institutions and courses, the employment rate and employment retention rate should be reflected in the evaluation of the suitability of training courses for skills development accounts. Fourth, training courses for skills development accounts should be prepared according to labor market demands. Fifth, the current method of evaluating the suitability of training courses for skills development accounts based on a centralized approach needs to be abandoned in favor of an approach that is focused on local employment centers. Sixth, the activation of the education and training market through the coexistence of government-supported and privately-supported training requires that capabilities, when it comes to the conduct of privately-supported training, be reflected in the evaluation of the suitability of training courses for skills development accounts. Seventh, it is essential that minimum standards be established with regards to the provision of counseling for trainees pertaining to the evaluation of the suitability of training courses for skills development accounts, and to increase the weight of employment performance and trainee counseling in assessing training institutions.

The final points are related to the government. First, the utilization of records management needs to be enhanced. The training records pertaining to skills

development accounts are currently managed as part of the Ministry of Employment and Labor's Human Resource Development Training Information Network(HRD-net). As these records can serve as an important basic background for the résumés submitted to companies, as well as training records that can be utilized in foreign countries, the utilization of these records needs to be reinforced. Second, it is necessary to examine the introduction of training accreditation as a means to improve the prior evaluation and assessment of the suitability of training courses for skills development accounts.

Establishment of a System that Promotes Skills Development in Small-and Medium-sized Enterprises

Yoon-hee Park, Young-saing Kim, Su-won Kim

1. Overview

Korean SMEs play a pivotal role in the national economy, accounting for 99.9% of all enterprises (3 million SMEs), 87.5% of total employment (10.8 million employees), and 49.4% of production (SMBA, 2010). While the economic status of SMEs is considerably important in Korea, SMEs face difficulties in terms of productivity and competitiveness. It has been recognized that these difficulties mainly arise from the lack of skills formation. Subsequently, in order to help SMEs develop human resources, the Korean government has adopted various skills development policies to encourage them to train their workers. In particular, the Korean government has used policy strategies focused on employees within SMEs, which do not have an inferior training infrastructure relative to large companies. However, even though policy outcomes for SMEs have been identified in terms of increasing the number of places, budget, and number of participating employees, the participation rate of SMEs is still much lower than that of large enterprises. Thus, the task of increasing SME participation in the development of the skills of their employees is one that must still be carried out.

There are numerous possible reasons why SMEs do not actively implement education and training for their employees: concern about production failures caused by absences for education and training purposes, lack of time and budget, lack of information about education and training programs and methods, training contents and methods that are irrelevant to SMEs' situation, ignorance on the part of management, lack of awareness about the need for skills development because of the conduct of simple and routine work, and concerns about poaching. However, the fundamental difference between SMEs and large companies lies in the characteristics of the work they carry out, and the means

used to develop skills. More to the point, while large companies have rather specific job duties, SMEs do not tend to have clearly defined job roles, and one employee is thus likely to be responsible for several jobs. As a result, SMEs face difficulties whenever one of their employees must attend education and training programs.

Furthermore, in terms of the means of skills development, formal learning such as classroom-based training is frequently used in large companies, whereas formal as well as informal learning are utilized in the case of SMEs. Informal learning focuses on the interaction between people and the relationships with others on the job. Essentially, it has been recognized that informal learning in SMEs plays a critical role in delivering specific job skills and information from seniors to juniors, as well as in maintaining the sustainable survival of organizations. In addition, SMEs face the challenge of not knowing how to develop employees' job competencies because they do not have a suitable infrastructure to support the development of their skills. On the other hand, large companies are endowed with the necessary infrastructure.

As previously mentioned, the main reason for the low participation rate of SMEs in education and training arises from the characteristics of their own work environment. That being said, the implementation and means of support provided by government-supported programs for SMEs should be fundamentally reviewed to determine whether they are suitable for the actual situation of SMEs. To this end, this study analyzes the status of skills development in SMEs and the problems of government-supported policy programs, and suggests the direction as well as measures which must be put in place in order to establish a system to promote skills development in SMEs.

More specifically, a review of the concepts of skills development, importance of skills development within SMEs, and of the laws and regulations pertaining to skills development was carried out. Second, the outcomes of government policies and programs that support SMEs were reviewed and the problems of skills development in SMEs were analyzed on the basis of a review of the available literature. Third, the current status and needs of SMEs were investigated by conducting surveys and in-depth interviews with human resource managers as well as employees of SMEs. Fourth, the implications for the skills development policy in Korea were suggested on the basis of a review of overseas cases such as Japan and Britain. Finally, the direction and measures needed to promote an increased participation rate amongst SMEs as pertains to

skills development, as well as to encourage them to voluntarily develop employees' education and training, were introduced.

2. Policy Implications of Establishing a System to Promote Skills Development in SMEs

- Desirable direction in terms of the establishment of a system to promote skills development in SMEs
 - Establishment of a skills development system focused on SMEs and their employees based on the demand for education and training
 - Establishment of a market-friendly skills development system, which is oriented toward on-site training or learning activities within SMEs
 - Establishment of customized skills development systems
- Measures to establish a system to promote skills development within SMEs
 - Establishment of a skills development system focused on SMEs and their employees in terms of the demand for education and training
 - Establishment of skills development systems that reflect the needs of SMEs in terms of education and training programs
 - Review of the provision of costs for on-site training so as to make possible substantial support for education and training as well as learning activities that are based on various learning approaches, including formal learning, informal learning, and blended learning
 - Introduction of a consulting system related to education and training as well as to learning activities within SMEs
 - Promotion of best skills development practices and government-supported policies and programs for SMEs
 - Simplification of the administrative process with regards to the reimbursement of costs for government-supported programs
 - Review of training in-house trainers or instructors who can train employees within SMEs
 - Establishment of a market-friendly system for skills development geared towards on-the-job training in SMEs

- Implementation of government skills development policies that can support various learning activities such as informal learning, formal learning, and blended learning
- Support for informal learning to help SMEs voluntarily enhance firm-specific skills by offering manuals or guidelines
- Review of the provision of the costs for on the job training
- Establishment of customized and prior skills development support systems
 - Change of the direction of support towards one which can lead and induce SMEs to participate in skills development
 - Establishment of a customized supporting system that is suitable for an SME's individual situation and needs
 - Provision of skills development training programs for SMEs via consultants who can help SMEs participate in education and training as well as implement learning activities

Analysis on Lifelong VET for the Minority Group as a Strategy to Achieve Social Cohesion

Young-hoon Oh, Il-gyu Kang, Hyoung-han Yoon,
Tae-kyun Yoo, Jin-wook Kim

The purpose of this study is to, through the analysis of the effects of lifelong VET on social cohesion, establish policies for lifelong vocational education and training(VET) for the disadvantaged. To this end, we identified the relationship between lifelong VET and social cohesion through theoretical discussions; thereafter, we selected social cohesion indicators with which to analyze the effects of lifelong VET for disadvantaged groups on social cohesion, and to forge proper VET policies. While the term "disadvantaged" is a very inclusive one, we focused on four such groups: the working poor, the disabled, North Korean defectors, and married immigrants. In addition, a survey of ordinary people was also conducted in order to compare their level of social cohesion to that of the disadvantaged groups.

This study concluded that the following relationship exists between lifelong VET and social cohesion. Lifelong VET develops human and social capital, which in turn leads to economic and non-economic achievements. In particular, we assumed that larger economic and non-economic achievements would result in higher levels of social cohesion.

This study defined the effects of lifelong VET as the development of human and social capital, economic and non-economic achievements, and social cohesion. However, as we tacitly assumed that lifelong VET has a positive effect on human capital, we excluded the latter and focused on its effects on the other three aspects. The analysis of each aspect was focused on the difference between the disadvantaged groups who participated in lifelong VET programs and those who didn't. This study also examined the effects of participation in VET programs on the level of social cohesion, and the overall effect of lifelong VET on the disadvantaged groups through a comparison with ordinary people.

The study revealed several factors that undermine participation in lifelong

VET. These include financial problems while receiving VET: shortage of proper VET programs, lack of computer skills, and the high number of people who don't know how to find the relevant information. In addition, the study found that it is essential to train and secure professionals who can work as a bridge capable of fostering social cohesion as far as married immigrants, North Korean defectors, and the disabled are concerned.

Meanwhile, the analysis of the effects of VET on social cohesion revealed that lifelong VET for the disadvantaged had a positive effect on elements of social capital such as economic earnings, non-economic achievements, and social cohesion. However, this effect was in fact minimal. The study showed that VET is more effective in improving non-economic achievements than economic ones.

Based on the results of the study, the following policies to promote lifelong VET's contributions to social cohesion were introduced.

First, as stable economic activities are the first step to achieving social cohesion, lifelong VET for disadvantaged groups should be focused on strengthening their competitiveness within the job market.

Second, evaluations of the effectiveness of VET for disadvantaged groups should be conducted from a long-term perspective. In addition, there is also a need to pursue package policies that would provide lifelong VET participants with diverse welfare services other than support directed towards job placement and training.

Third, the ability to search for information and use computers should be strengthened at the national level. It is necessary to build a system that helps disadvantaged groups gain access to information about the VET programs offered by the Ministry of Employment and Labor and the Ministry of Education, Science and Technology.

Fourth, lifelong VET should be provided as a universal service. Along with efforts to strengthen the substance of lifelong VET, it is also important to improve policies so as to secure disadvantaged groups' access to lifelong VET.

Fifth, a cooperative system that effectively connects government agencies, funds, and local human resources should be established. This can be achieved by establishing and operating local lifelong VET networks located in the center of regions. Finally, more in-depth discussions should be held on the formation of an organization that would take charge of the system.

Research on Knowledge Technology Entrepreneurship for Youth

Tong Park, An-kook Kim, Gyu-hee Hwang,
Jong-sun Lee, Bong-ju Lee

The purpose of this research is to suggest a recipe for knowledge and technology start-ups that youth, such as college students and graduate school students, can directly take part in. To this end, this denouement is regarded as one of the means to break through the serious crisis of youth unemployment amidst the ongoing global economic recession.

This research was intended not only to suggest an alternative solution to the present problem of youth unemployment, but also to establish a proposal for the training and cultivating of creative and innovative start-ups that will emerge at the forefront of a 'Creative Economy' focused on knowledge and technology. To this end, the following matters were analyzed.

First, the concepts of 'youth' and 'knowledge technology' were defined, and then the present status of the youth start-ups was analyzed based on the KOSIS(Korean Statistical Information System) data provided by the Small and Medium Business Administration(SMBA). Thereafter, Korean and foreign theoretical perspectives on the youth start-ups were reviewed, and the direction of this research was sought.

Second, the policies for youth start-ups put in place by individual ministries, as well as the problems therewith, were identified and synthetically assessed. Considering the reality that the government has promoted the diversity of start-ups and job creation policies, this study analyzed the effectiveness of its youth start-ups support policy as one of the means to expand youth employment.

Third, the actual conditions of college students, professors and business incubator center occupants as pertains to youth knowledge and technology start-ups were analyzed. To this end, a survey of the actual conditions that focused on the general status of youth employment, the awareness of the youth

start-ups, start-up education, start-up activity, problems of youth employment, and recipes for the invigoration of the youth start-ups was conducted.

Fourth, some of the Korean and foreign cases that could function as role models for the invigoration of youth knowledge and technology start-ups in Korea were analyzed. Based on an analysis of the actual conditions of youth knowledge and technology start-ups and the start-up activity support system in places such as Silicon Valley, US and Otaniemi, Finland that have been at the forefront of the second IT revolution revolving around the Smartphone, the implications for Korean circumstances were first derived, and then utilized to form policy initiatives.

Finally, based on the foregoing analysis and implications, detailed agendas for invigorating youth start-ups in Korea were examined. Here, initiatives for youth start-ups and the invigoration of students' business incubation clubs through lived experience-based start-up education, successful start-up role model development and the expansion and buildup of an industry-academia fusion complex, were suggested.

Critical Success Factors of 10 Innovative Junior Colleges in Korea

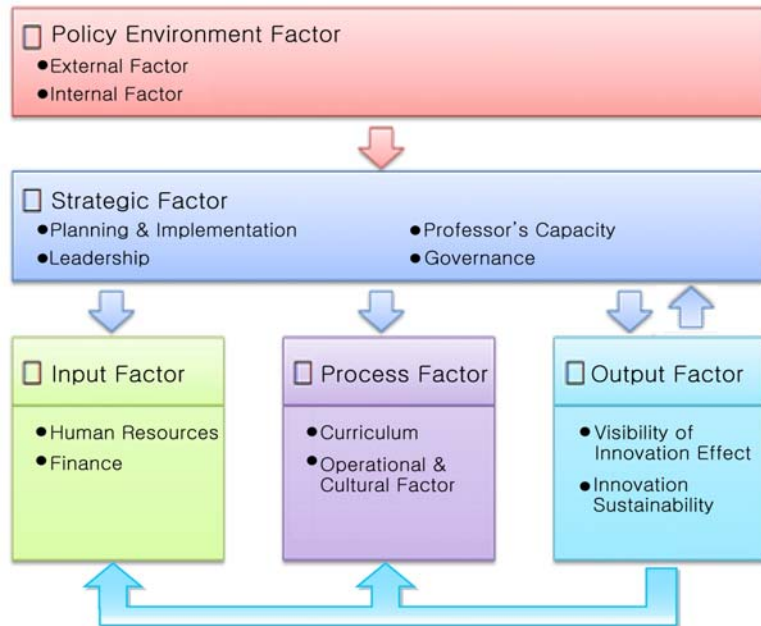
Sung-joon Paik, Hyung-han Yoon

This study seeks to identify critical success factors which contribute to building innovation in junior colleges and the sequential relationship that exist between them. This it is hoped will make it possible to provide meaningful information and insight to presidents, chairmen of the board of trustees of private colleges, and professors and administrators who are responsible for college innovation. To this end, this study (i) developed a conceptual framework and checklist which can be used to analyze instances of innovation at junior colleges and identify critical success factors and the relations between them; (ii) applied the conceptual framework and checklist to the analysis of 10 innovative junior colleges and identified critical success factors and the relations between them; and (iii) based on this analysis, developed an analytical framework for planning and implementing innovation at the junior college level, and a checklist with which to diagnose colleges' policy environment and innovative capacities and identify the tasks and strategies pertaining to college innovation.

The following critical success factors were identified through the analyses of 10 innovative junior colleges: (1) policy environment factors: (i) external factors - proximity to industrial areas & enterprises and cities, will and capacity of enterprises to participate in industry-college cooperation, decrease in student age cohort, changes in students' preference for college education and in industries' demand for skills, and governments' support policies for junior colleges; (ii) internal factors - extent of concentration of similar major fields/departments, and variety of majors. (2) strategy factors: (i) planning & implementation - clear goal setting and implementation of action plans that can be distinguished from 4-year universities, performance evaluation & management, promotion of partnership with industry, enhancement of employment, fostering major areas where a comparative advantage exists, identifying students' demands for college education and publicity work, and active utilization of governments' financial

support programs; (ii) leadership - college president's leadership (clear understanding of the characteristics of junior college education, sense of urgency, new vision, empowerment, performance evaluation & management), board of trustees chairman's leadership (initiative action towards innovative college management, active investment in college education), and collective leadership through identifying and empowering champions in college departments; (iii) capacity of professors (curriculum development) and administrators and active participation in college innovation process; (iv) governance - less interference from the board of trustees in college management, rational decision-making process and consensus building, and fair recruitment and placement procedures. (3) input factors: (i) human resources - recruitment of professors with industry experience and high quality students; (ii) finance - securing funds and efficient budget spending (4) process factors: (i) curriculum - project classes for enhancing problem-solving ability and creativity, tailor-made training programs that fully meet industries' skill demands, employment-oriented informal programs, career guidance for individual students, and emphasis on future workers' integrity and humanity, (ii) operational and cultural factors - professors' performance appraisal in terms of providing high quality vocational education, evaluation of students' performance in terms of employability, project management based on performance evaluation, building organizational cultures which value learning and innovation, professors' affection for students, and innovation of the administrative system and improvement of workers' welfare. (5) output factors: (i) visibility of innovation effect - high employment rate; (ii) innovation sustainability - consistency in leadership, government policies for promoting and maintaining industry-college cooperation, and systemic approach to college management and institutionalization.

The results of the above analysis reveal that, among the critical success factors mentioned above, college president's and board of trustees' chairman's leadership, curriculum, and professor's performance appraisal play particularly crucial roles in terms of initiating, planning, and implementing college innovation. The following analytical framework was developed based on the critical success factors mentioned above and the relationship between them:



[Figure 1] Analytical Framework

Measures to Facilitate Employment Information Service for the Aged

Ki-hong Kim, Chang-won Jang, In-sun Shim

1. Research Overview

This study diagnoses and analyzes the participation status of older workers and the current status and problems associated with employment support services. Moreover, an attempt is made, through the survey and analysis of the use of support services as a means to expand the utilization of the aging workforce, to draw up a comprehensive plan to strengthen employment support services.

In order to reach objective and reasonable research results, this study makes use of research methods that include a review of the relevant literature, field interviews, experts consultations, and surveys.

2. Research Results

- 1) Reinforcement of employment support services for older workers
- 2) Reinforcement and improvement of employment support services for older workers
 - (1) Dedicated infrastructure for employment support service
 - A. Establishment of a central development center and regional support centers for older workers
 - B. Expansion and characterization of public and private support centers associated with regional retirement professionals
 - C. Introduction of vocational career cards connected with lifelong learning accounts and vocational manpower development accounts
 - D. Introduction of learning vacations for incumbents

(2) Strengthening links between institutional support services employment

- A. Consolidation of cooperation amongst authorities related to employment support services
- B. Construction of an integrated information network related to employment support services
- C. Standardization of support programs related to employment support services
- D. Operation of councils linked to both public and private sector employment support services

(3) Improving employment support services

- A. Improving legal, administrative, and financial support so as to strengthen employment support services
- B. Enhancing the expertise of the staff related to employment support services
- C. Securing suitable jobs for older workers and the introduction of pools
- D. Strengthening support for the dedicated staff of employment support services
- E. Development and dissemination of work package programs for older workers
- F. Development and dissemination of employment support service manuals for older workers

Study of the Various Domains and Factors Pertaining to Core Competencies

In-joong Ju, Mi-sug Jin, Dong-yeol Park

This study seeks to develop a KRIVET Core Competency Model(KCCM). This is brought about by comparing and analyzing the various competency models developed by KRIVET for each level of education(high school, university) and, based on this fundamental framework, linking the domains and factors of each competency model.

As part of these efforts, examples of competency models developed in Korea and abroad were introduced. The model was verified through four applications of the Delphi method and the holding of meetings of experts on domestic and foreign competency models for each level of education.

Foreign competency models are usually broken down into three categories, namely those for teenagers, those for laborers, and those associated with adults engaged in lifelong education. The competency models for adults engaged in lifelong education include the EFF in the U.S. and the OECD's lifetime competency system. The study also found that competency models are magnified to match industrial demand, can be characterized as educational programs for training purposes, or connected with functions as well as qualifications.

The competency models of each organization can essentially be divided based on their objective or elements. In turn, these objectives can be divided into those for teenagers and adults. In the case of teenagers, the models tend to be focused on school education. These include those developed by the NYPI(National Youth Policy Institute), KEDI(Korean Educational Development Institution), and KICE(Korea Institute of Curriculum and Evaluation). As far as adults are concerned, the models tend to focus on industries and lifelong education. Examples include the KRIVET model, which is focused on industries, defines core competencies, and suggests domain setting and levels; as well as the KEDI(Korean Educational Development Institution) and KICE(Korea Institute of Curriculum and Evaluation) models concerned with lifelong

education for adults as well as industries.

The basic KRIVET competency model was verified using Delphi method taking into account scope, domain, factors and details of core competencies. The KRIVET competency model developed as part of this research was able to define the basic common knowledge, skills and attitudes needed to perform most types and levels of jobs; moreover, this basic model was composed of 3 domains, 8 factors, 24 details of factors. The KRIVET competency model drawn from this basic model was designed based on the competency models for vocational high schools, colleges, university students, and laborers.

The application of this competency model revealed the need for the establishment of plans that are focused on the designing of development and operating systems for core competencies. Development plans for educational training programs are focused on the level of education.

The study also delved into the factors associated with the setting of levels and the development of a standard of achievement for each factor and schools as part of plans for the development of core competency standards. Furthermore, the study ended with examples of plans for the application of tools for the development of core competencies and plans for the development of verification standards for qualifications.

Current Situations and Tasks of Higher Education Certification System in Preparation for Global Manpower Exchanges

Il-gyu Kang, Tong Park, Sang-hee Kang

This research seeks to foster a better understanding of the research needs and to conduct theoretical deliberations on the current state and tasks associated with the higher education certification system. Moreover, an attempt is also made to derive developmental tasks pertaining to higher education in preparation for the expansion of global exchanges of manpower.

The survey on the current state of the certification system found that while many people felt that a global certification system was necessary, the current certification system was regarded as being laden with a series of problems that ranged from indifference at the company level” to “low awareness.” In this regard, it is important that proactive support be provided at the government level, the numerous certification institutions currently scattered here and there be integrated and operated on a sectoral basis, and that efforts to promote the certification system be expanded as well.

There is a need to establish the basic direction of the higher education certification system in preparation for the expansion of global manpower exchanges. The advent of the 21st century has been accompanied by a growing competition amongst nations throughout all sectors of society. It is inevitable within such a knowledge-based competition society that global manpower exchanges will be expanded. Such changes within the international environment serve as both a threat and an opportunity for Korea. Here, the globalization of the domestic workforce should be perceived as an essential component of any attempt to maximize the opportunities that arise within an international society.

Therefore, higher education certification systems in the global manpower exchange era should be geared towards increasing national competitiveness through the fostering of global manpower, and be utilized as a significant axis

for national development within a knowledge-based competition society. The expansion of official approval of certification systems amongst nations is also needed. As seen from the analysis of other countries, there is a need to expand the exchange of individual capacities amongst nations through the certification system, and to utilize such systems as an important means to bring about joint cooperation and development amongst nations. In this regard, it is incumbent that mutual recognition of each party's higher education certification system be included in FTA agreements, and that global exchanges of manpower be expanded. First, the higher education certification system should be geared towards the imminent expansion of global manpower exchanges. Second, quality improvements should be sought in terms of internal stability. Third, complementarity amongst nations must be achieved. Fourth, the internationalization of the certification system must be brought about. Fifth, sustainability should be pursued. Sixth, fairness must be ensured.

○ Suggestions

The role of a macro-level higher education certification system is important. Establishing a flexible certification system is necessary. Systematic support at the government level must be sought in order to induce the voluntary participation of professors. This can be achieved by having the tasks carried out as part of the operation of the certification system, such as the preparing of subject portfolios, and the time spent on such ends be reflected in the assessments of professors' performance. In this regard, simplifying the preparation of certifications would inevitably enhance the belief that the data prepared by individual schools is both realistic and reliable. The universities, governments, and companies must play an enhance role in terms of bringing innovation to higher education. In conclusion, the task of improving higher education must be overseen by those engaged in the field of higher education. The taking of the above-mentioned steps will go a long way towards resolving the problems faced by higher education from both the standpoint of suppliers and consumers.

The higher education certification system must be linked to global manpower exchanges. The introduction of an international local expert certification system and the linking of this certification system to those used in individual fields represent necessary steps. However, the expansion of global campuses based on the linking of certification systems and universities' attempts to bring about

globalization; exchange of students; expansion of student exchange programs; further development of the multi-degree system; fostering of overseas internship programs; and the expansion of exchange programs rooted in the concepts of international education and specialization are also needed. The linking of certification systems to overseas employment is also important. Particularly important steps that must be taken include the achievement of the global standardization of the education certification system and certification standards, the promotion of the establishment of a multilateral international cooperative body, and the linking of Korea's certification system and overseas employment through regular meetings of the above-mentioned multilateral international cooperative body.

Vocational Education and Training Policies of G20 Member Countries (I)

- Case Studies of Selected Countries -

Ji-hee Choi, Il-gue Kang, Young-sun Ra, Ahn-kook Kim,
Sang-min Suh, Dong-han Hur

The study entitled 'Vocational Education and Training Institutions in G20 Member Countries' is part of a three-year project. While the focus during the first year of the study is on the examination of the VET systems in place in advanced economies, as well as the uncovering of their major strengths, the emphasis in the second year is on the exploration of the VET institutions of emerging economies and the assessment of the path these institutions should take in order to help these countries continue to grow at a high rate. Finally, during the third year, the emphasis will be placed on the search for an international cooperation model that is rooted in the exchange of VET practices amongst countries within and outside of the G20.

Based on the characteristics of the institutions developed by these countries, the emphasis during the first year of this study was on four advanced economies, namely Germany, France, Japan, and Australia. China, one of the BRIC countries, was also included as a subject of analysis during the first year of the study. This selection was based on the fact that contrary to the four advanced economies dealt with herein, the institutions of China display the features of an emerging economy. As such, it was felt that its inclusion could help to foster a better understanding of the institutions of other emerging economies.

The first year of the study includes a comprehensive examination of the VET institutions of the five countries mentioned above. One of the overarching premises of this study is that the economic and political institutions developed within each country have a bearing on its VET institutions.

Given the distinctive economic and political institutions in place in each of these countries, it was surmised that distinctive VET systems would also have

been developed. To this end, one major goal of this study was to reveal the main features of each distinctive VET system.

Germany, Switzerland, Finland, Denmark and Norway represent classic cases of corporative market economies(CME). While France is considered to be a corporative market economy, it has specific features which distinguish it from Germany and the Nordic nations. Japan, the only Asian country in the G7, has developed a corporative model that reflects Asian culture. Australia was the only liberal market economy(LME) selected in our study. Australia was included for two reasons. While it is a liberal market economy like the United Kingdom, Canada, and the United States, Australia is also known to have developed the most successful VET system of all the LMEs. China is not an advanced economy, but its remarkable economic performance over the past decades has catapulted it to the status of the second largest economy in the world.

In this study, we described the key elements of the VET institutions in each of the five countries. We also examined their initial VET institutions based on ISCED levels. The researchers looked at both initial(IVET) and continuing VET(CVET) institutions. In addition, special country-specific VET topics such as VET teachers, VET curriculums, and the role of social partnerships were also explored. An attempt was also made to identify the features of each country's VET systems that could be considered as their best practices, and to provide a more in-depth description of these practices. Thereafter, the implications of the VET institutions and of the best VET practices in each country were ascertained.

Finally, the area of international cooperation in the field of VET was identified as an important policy issue which needs to be further explored in the future. Recently, major players such as the United States, Canada, and the EU have competed with one another to attract foreign students into their educational institutions(particularly higher educational institutions). In this regard, the Socrates program and the EU's Bologna Process were introduced as examples of this effort that is taking place in Europe. Most recently, Australia has joined in the process by updating their qualification systems. The consistent march of globalization is expected to result in the further enhancement of international cooperation and integration in the field of VET. This can be regarded as the central value of this study on the VET systems of countries with diverse cultures and in individual regions, and as such needs to be further explored in the future.

Study on the Qualification of Service Industry (I)

- Focusing on Health and Social Welfare Service Industry -

Jong-sung Park, Sang-jin Kim, Sang-ho Kim, In-joong Ju

This study presents measures to improve the qualifications of individuals engaged in the health and social welfare service industry and seeks to derive new qualifications for the industry. These two ends are to be brought about by conducting an in-depth analysis of the state of qualifications in the health and social welfare service industry. In order to achieve this goal, we examined such matters as the distinctive features and scope of the service industry, the state of vocations and qualifications within the health and social welfare service industry, the state of vocations and qualifications within the health and social welfare service industries of foreign countries, the development of new demands pertaining to qualifications, and schemes for the improvement of qualifications.

More specifically, the study delved into the state of qualifications within the industry, the use of qualifications and related laws, as well as the current status, cases, and issues involving areas where private qualifications are prohibited. As far as the development of new demands for qualifications in the health and social welfare service industry is concerned, the study introduced standards for new qualification items (① need for the service, ② job specialty, ③ need to recognize capability, ④ job potential) and, based on these standards, developed newly required qualifications. The research methodology employed in this study included documentary analysis and research, the formation of a council of experts, surveys, and interviews.

In terms of policy suggestions, the study identified a clear need to deregulate those areas where private qualification is prohibited, to form a qualification disputes mediation committee, and to bring about a more qualitative management of the private qualification market and a thorough examination of the development of qualifications.

A Survey on Korean's Work Mentality and Ethics (2010)

Eon Lim, Cheon-soo Park, Ji-hee Choi

The Korea Research Institute for Vocational Education and Training(KRIVET) has carried out the "Survey of Koreans' Occupational Consciousness" every four years since 1998. In this regard, the Survey of Koreans' Occupational Consciousness(2010) constitutes the fourth such survey. The present study seeks to shed light on the current state of Koreans' occupational consciousness and work ethics, as well as on the changes in the pertinent patterns. Occupational consciousness is defined in this study as people's values, perceptions, and attitudes towards their occupation, and includes perceptions of the importance of work, work values, professionalism, occupational status, and work ethics. In addition, the perceptions of the economic activities of the young & elderly, women and foreign workers were also investigated. 1500 household surveys of Koreans between the ages of 16 to 64 were conducted.

The major findings of this study with respect to the concept and structure of occupational consciousness are as follows. First, the multi-dimensionality of the perception of the importance of work, a factor that has been overlooked in previous research, was clearly shown in this study. The perception on the importance of work consists of two aspects, namely the normative perception and the recognition of the importance of work as one of the elements of life. While the correlation between the two was found to be .24, 23% of respondents strongly recognized the importance of work as an element of life. They did not however perceive the importance of work normatively.

Second, two factors related to the perception of the degree of professionalism in their own occupation were identified. These were professionalism and the socioeconomic status of one's own job. More to the point, 32% of respondents thought that their jobs required specialized knowledge, professional skills, and creativity but did not guarantee high income or social status.

A comparison with G20 and Nordic countries reveals that Koreans' occupational consciousness shares some similarities with that of both the

advanced countries and developing ones. Koreans think along the same lines as developing countries in the sense that job security is considered as a highly important factor and that it's a shame to take monetary reward without working for it. On the other hand, Koreans show similarity with advanced countries in that few people agree that work should be the most important issue or worthy of sacrificing leisure time.

While 45.7% of people were found to spend more than one hour during work taking care of personal matters, 11.72% spent more than 2 hours doing so. Meanwhile, 32.2% of employees thought that it was acceptable to receive gifts related to business.

The following changes in Koreans' occupational consciousness and work ethics were identified. First, the range of the occupational status index has been reduced from 1990 to 2010, with a marked tendency of regressing toward the mean identified. Second, the importance of income in choosing a job has increased sharply(21.5% in 2002 to 36.3% in 2009). On the other hand, the importance of job security has decreased(34.4% in 2002 to 30.4% in 2009). Since 2006, income has become the most important factor when choosing jobs, followed by job security. Meanwhile, intrinsic values such as job satisfaction, self-realization and interest, have become relatively less important factors.

Cultivating Technological Human Resources in response to the Greening of the Iron and Steel Industry

Gyu-hee Hwang, Hyun-soo Kim, Sang-don Lee, Sang-jin Kim

This study forecasts the future skills demand and introduces the desired direction in terms of the cultivation of the workforce in the steel industry. What's more, the analysis methodology utilized in this study can also be used to plan the direction for the cultivation of the workforce of other energy intensive industries and the manufacturing sector in general in the face of improvements in environmental performance, including energy efficiency.

This study reviews the likely job changes and workforce cultivation within the steel industry occasioned by improvements in environmental performance, including energy efficiency. All in all, a systematic approach to the review of the following clusters of environmentally sustainable technologies and techniques is adopted.

- (1) Alternative fuels and resources
- (2) Energy efficiency processes
- (3) Recycling on an individual industry basis
- (4) Environmentally friendly products
- (5) Carbon capture and storage
- (6) Environmental monitoring systems

This study forecasts the skills that will be required based on technology outlooks prepared in accordance with TRM by IEA scenarios, and shows how the skills composition ratio will change. Thereafter, the changes in the demand for related jobs and skills is deduced based on new technological area diagnostics created in conjunction with experts in related technologies, as well as experts in the fields of job analysis and training & education. Finally, on the basis of this outlook for changes in skills and jobs, a new overall direction for education & training is presented.

The desired direction of education & training is introduced below based on the difficulties associated with various technology and differentiation from existing technology.

1. Technology areas where the demand for new R&D workforce is high

This area, which can be likened to eco-friendly original-base technology, is one focused on R&D at the current level rather than commercialization, and includes hydrogen fuel(hydrogen production), coal chemistry and light weight material for structures. This particular area requires comprehensive consideration, such as international carbon emission regulation and the assesment of the economic situation, before actualization and commercialization can be brought about. The R&D workforce skilled in the pertinent technologies should be cultivated through related research projects conducted at the university level. There is a need for not only engineering departments directly related to the steel industry, such as material, metal, chemical and mechanical engineering, but also pure science departments, such as physics, chemistry and biology, to draw up plans to cultivate an elite workforce and bring about the long-term development of research.

2. Technologies where a high demand for new engineering & technical workforce exists

This area attracts the most attention in terms of the improving of the environmental performance of the steel industry. It includes alternative fuels and resources and high temperature dust collection. This technology area also contains currently emerging or actualized technologies for which active workforce cultivation is required, such as alternative fuels and eco-friendly post-processing. The forging of comprehensive ties to environmental engineering as well as fields more traditionally closely related to the steel industry, such as material, metal, chemical and mechanical engineering, has become very important. To this end, this requires converged education at the undergraduate level. There is a need to actively promote the opening of a steel-related subject within the pertinent departments and the improvement of the curriculum. In addition, government level support is also necessary.

3. Technologies expected to result in the greening of the existing R&D workforce

This area is one in which greening is being brought about by improving current technology levels through such means as energy efficiency, eco-friendly post-processing and eco-friendly products. Rather than fostering separate workforce cultivation plans, research development opportunities should be expanded, with existing researcher participating in this process. However, government supervision of the research that should be implemented at the enterprise level is not advisable; rather, entrepreneurs need to be the ones that propel advancements in research forward. For its part, the government is expected to promote on-offline forums through which researchers in private companies can have systematic and prompt access to the necessary information.

4. Technologies related to the greening of the existing engineer & technical workforce:

Closely related to the greening of the cement industry, this area constitutes the technology area where the demand for new engineers & technical workforce, as well as the re-education/training of the existing workforce, is the highest. The technologies in this area are designed to achieve greening via the application of technologies ranging from energy efficiency to eco-friendly products, and include the use of steel slag as an alternative to limestone, high efficiency coolers, waste heat generation, and chloride by-pass systems. The ability to induce flexible responses to such fast technological developments will require not only training & education, but also the rearranging of related certificates.

Mutual Recognition of Qualifications in Korea, China and Japan as Part of Efforts to Promote Human Resources Exchange

Jeong-yoon Cho, Hyun-soo Kim, Young-real Choi, Hak-soo Oh,
Fujimoto Makoto, Li Tianyu, Zhiquan Zhao

The geographic proximity of Korea, China and Japan has ensured that their mutual political and economic dependency has gradually increased, which in turn has made cooperation in various fields essential. Moreover, the continuous expansion of the economic scope and influence of all three nations within the world market has only served to further heighten the need for the construction of a Korea-China-Japan trilateral cooperation system in the Northeast Asian region.

Korea has responded to this trend by not only activating regional economic cooperation in Northeast Asia, but also, as part of its efforts to bring about regional economic integration, creating a system for formal and informal negotiations between Korea, China, and Japan through the holding of regular summits of the ASEAN+3 gathering first staged in November 2000. It was against this backdrop that the 'Joint Declaration on the Promotion of Tripartite Cooperation between South Korea, China, and Japan' was adopted during the fifth Korea-China-Japan regular summit meeting held in October 2003.

This 'Joint Declaration on the Promotion of Tripartite Cooperation between South Korea, China, and Japan' constitutes the first trilateral summit document promoting cooperation reached between the three countries, and serves as the basic framework for economic cooperation in the Northeast Asian region.

In addition, a look at their overall industrial structures and the current state of their foreign trade reveals that Korea, China, and Japan have in fact already begun to lay the basic foundation for the establishment of a free trade area. De facto labor force exchanges are already taking place among Korea, China and Japan. The need to adjust the supply and demand of labor has gradually

increased amidst the domestic shortage of the mid-to high end workforce required for the development of main industries. In this regard, all three countries have sought to prepare policies at the national level to pave the way for the import of such a workforce. To this end, the time has come to discuss the creation of a plan to promote labor force mobility through the reaching of FTAs or RTAs.

The proposed exchange of high-end labor on the basis of national qualifications in technological and technical fields, and in accordance with national technical and vocational qualification systems, makes it necessary to propose standards for promoting a mutual recognition agreement (MRA) on qualifications, and to prepare the policy basis needed to enable mutual exchanges of highly certified labor.

In this study, experts from Korea, China, and Japan engage in joint research designed to foster the examination of the possibility of labor force exchanges based on trilateral MRA regarding qualifications in the IT, tourism, and automobile sectors.

Furthermore, this study also introduces the basic policy direction for the creation of a common regional qualification framework for not only Korea, but also for Asia and the Pacific region. This direction revolves around the linking of the regional qualification framework (RQF) with the multilateral cooperation system.

From this perspective, this study first examines the possibility of labor force exchanges in the IT, tourism, and automobile sectors via the conclusion of a Korea-China-Japan FTA. Second, based on the MRA plan introduced herein, a plan to activate labor force exchanges between the three countries is also presented.

Technological Convergence and Organizational Creativity

- Effect of Organizational Factors & Existence of Knowledge Sources on Organizational Achievement -

Gyu-hee Hwang, Yong-gil Lee, Jong-ho Jeon, Min-soo Shin

This study focuses on the fact that technological convergence has emerged as the mainstream in terms of recent technological development, and tries to identify the conditions under which related elements positively affect the outcome. Technological convergence is defined herein as new technologies created through the hybridization of different technologies. This study considered the development of patents as the expression of organizational creativity, and maintained that such creativity can be verified based on an examination of patent information. On the basis of this definition of technological convergence and organizational creativity, different countermeasures to increase the organizational creativity expressed through technological development were introduced for various business types and sizes of enterprise.

A quantitative analysis of the number of patents in Korea and America, and a qualitative analysis of American patents were implemented by combining the HCCP(Human Capital Corporate Panel) prepared by KRIVET(Korea Research Institute for Vocational Education & Training) with the Korean Innovation Survey published by STEPI(Science & Technology Policy Institute), and utilizing the patent information available in Korea & America. Through this process, the effect of organizational factors and knowledge sources on patents, which were regarded as organizational achievements, was analyzed, with the main focus being on newly appearing technological convergences achieved through the hybridization of different technologies. In addition, through this process, this study was able to highlight the importance of organizational factors and external/internal information resources as a means to actively counteract technological convergence, as well as the differences that exist in terms of the importance of each element for individual business types and enterprise sizes.

This study highlights the importance of organizational factors (in a narrow sense) [factors triggering organizational creativity such as ‘the presentation of communication-free opinions’, ‘communication-between departments’, ‘compensation satisfaction-fair compensation’, ‘leadership-trustworthy management’, ‘spontaneity-guiding spontaneity’] and internal information sources (in a broad sense) [acquiring information from clients/demanding enterprises, information sources and acquiring technology from subsidiary companies]. It also concludes that exchanging information with external sources constitutes a more important factor for some business types than organizational factors.

The fact that the results of this analysis can be used to craft technology development strategies which can be used by individual enterprises to improve technological development efficiency means that active responses to external resources other than utilizing internal resources may be required in some technological areas. Moreover, in terms of the national technological development strategy, there is a need to in fact forge strategies that are geared towards individual technological areas. However, there are obvious limitations associated with this kind of suggestion.

The current analysis, which is based on 105 samples, has many limitations in terms of the fostering of suggestions as far as technological development strategies for individual technological areas are concerned. As there are only 15 American patent holding enterprises, this makes more detailed analyses possible. This can be regarded as another limitation of this study. That being said, the current analysis should be considered as an attempt, based on a limited number of samples, to bring about new analysis methods designed to foster technological development strategies for specific technological areas. In this regard, more in-depth technological development strategies can in the future be developed based on analyses that make use of an expanded number of samples

The Labor Market for College Professors in Korea

Kim, Me Rhan; Park, Tae Joon; Chae, Chang Kyun;
Kim, Sunwoong; Ryoo, Jaewoo

1. Objectives of the Study

Although there remain many issues and controversies concerning the Korean higher education system reform, only few previous research has been conducted on the basic facts and economic characteristics of college professors. This study investigates employment structure, changes of economic status, mobility, wage, and performance evaluation system of college professors. By doing so, it aims to examine the fundamental economic facts about college professors, and attempts to derive implications on manpower policies for the higher education personnel.

2. Data and Method

We used four data sets with respect to employment and wages: (1) Statistical Yearbook of Education from the Ministry of Education, Science and Technology; (2) Wage Structure Survey from the Ministry of Labor; (3) Individual Wage and Employment History of Private Colleges from the Korea Teachers Pension; and (4) Academic Research and Development Activities in Korea from National Research Foundation of Korea. In addition, we surveyed the wage system and the performance evaluation system at the institutional level.

3. Conclusion

(1) The number of workers employed at higher education institutions is about 230,000 man-days in 2010, which has grown by average of 6.87% per year since 1990. This rapid growth was led mainly by private institutions and

accompanied by growing proportion of part-time lecturers. As a result, employment structure in academic labor market became more segmented between regular (professors in tenure track positions) and non-regular workers (part-time lecturers) during the last 20 years. The deregulation of college quota in 1995 has caused significant increase in the number of institutions while the labor market has remained the same where wages and employment were set by laws and regulations; the gap between regular and non-regular workers widened.

(2) Since 1990s, the relative wages have been declining and professorship has been losing its attractiveness as a profession. The number of Ph.D.'s earned from institutions overseas has rapidly dropped compared to the vacancies in universities. Since universities want to procure talented professors to improve the quality of their reputation, competition among universities for recruiting more talented professors is expected to get fierce in the future. One of the main characteristics of private colleges is that their finance depends heavily on tuition paid by the students. The intensifying competition among higher education institutions bears conflict between colleges and their students: the colleges want to raise revenues by raising tuition while the students attempt to suppress additional tuition burdens.

(3) Inter-college mobility of professors has increased in the last decade. In case of four-year universities, half of newly employed professors were previously teaching at private higher institutions. The turnover rate is higher when the reputation, attractiveness of the location, salary level, is lower. Also younger and less experienced professors are more likely to move. The research output is not a significant factor in determining the mobility. A better performance evaluation system is necessary in order for the market mechanism to work more appropriately in the college professors' labor market.

(4) Higher education institutions have maintained seniority-based wage system for long: about 45% of private institutions for higher education stick to the seniority-based system and only 10.5% of them adopt the annual salary system. The majority (84%) of higher education institutions evaluate professors' performance every year, but only 31% of them link the evaluation results with the salaries. The Korean government announced that the national and public universities must adopt performance-based annual salary system in the future, but many legislative and institutional arrangements need to be changed prior to the new salary system.

Inter-institutional Collaboration Related to the Career and Vocational Education of Students with Disabilities

Dong-sun Choi, Hyoung-han Yoon, Jong-ho Jeon, Sun-og Roh

The goal of this study is to suggest various school and community-based inter-institutional collaboration pertaining to effective career and vocational education. Such an endeavor is undertaken as part of efforts to establish the foundation for the transition and independence of students with disabilities. To this end, this study used the following methodologies: literature reviews, on-the-spot visits and case analyses, delphi analysis with 24 specialists, and discussions with professionals and practitioners. Based upon the findings gleaned from the on-the-spot visits, delphi analysis, and discussions, the following policy recommendations were introduced in conjunction as far as effective inter-institutional collaboration is concerned:

First, community-based inter-institutional collaboration should be organized as part of effective career and vocational education for students with disabilities. The collaboration system can be classified into ‘primary agencies’ that assume basic control of career and vocational education, and ‘secondary organizations’ that would provide supplementary opportunities for career and vocational education.

Second, ‘community-centered collaborative career-vocational programs’ should be developed and managed as part of efforts to invigorate inter-institutional collaboration. Countermeasures that can facilitate the participation of various organizations in the planning of Individualized Education Plans (IEP) or Individualized Transition Plans (ITP) should in particular be drawn up.

Third, sufficient opportunities for in-service training should be given in order to raise the expertise levels of practitioners. In-service training could in particular provide good opportunities for exchanges of information between practitioners.

Fourth, along with attempts to qualitatively enhance expertise, countermeasures should also be prepared to bring about the quantitative expansion of career and

vocational education. More to the point, steps should be taken to ensure that the proper amount of human resources is assigned to the various related organizations (including special schools, rehabilitation centers, etc.).

Fifth, various countermeasures should be prepared with regards to the exchange of information. Specifically, proper systems should be prepared for the exchange of information. These should encompass community organizations related to career and vocational education, businesses that provide opportunities for work-based training, job information, and information about business that hire persons with disabilities. In addition, information about students with disabilities should be systematically managed, and network systems should be set up to ensure the systematic management of information.

Sixth, the legal and institutional improvements needed to foster inter-institutional collaboration should be reviewed.

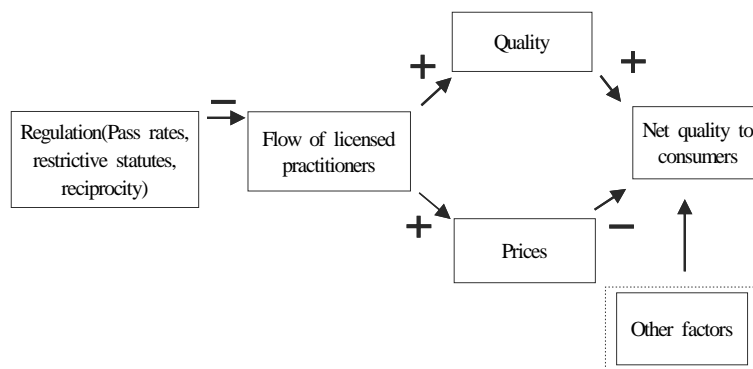
Economic Effect of Qualifications in Korea (I)

Sang-ho Kim, Jong-sung Park, Sang-jin Kim

This study deals with the economic effect of the certification & license system in Korea, with a special focus on the national certification and licenses provided by the various Korean ministries. Because of a general lack of data and research methodology-related difficulties, most research papers on this topic have focused on national technical certification or private certification.

This study has two purposes. First we'll study the economic effect of the qualification system in Korea, a topic which includes the study of the correlation between GDP(or price index) and qualifications. The other purpose is to conduct case studies of some certifications provided by Korean ministries. Such an endeavor is designed to facilitate the development of a framework for the evaluation of the various national licenses and certifications provided by ministries. To this point, no study of the effect of national licenses and certifications, and in particular their impact of consumers, has been conducted.

This study adopted Kleiner's model of analysis. This model was used to ascertain the gains and losses associated with licensed occupations. Figure 1 is the study model. This model was also used to analyze whether there is a positive or negative relation to the net quality provided to consumers. This can be regarded as the ultimate aim of this study. The evaluation framework used to asses the economic effect of qualifications and licenses is for its part presented in Table 1.



[Figure 1] Regulation's Impact on Net Quality

Source: Kleiner(2006: 49)

Does this ensure quality or restrict competition?

<Table 1> The evaluation framework on the economic effect of the qualifications and licenses

	Target Group	Goal Area	Indicators	etc
Labor Supplier	Practitioners	Employment- Effects Income Effects Other Effects	Net Employment Effects Net Income Effects	All Vocational- Certifications & Licenses
Labor Demander	Firms	Labor (Prices) Productivity (Quality)	Accessibility of Labor (Regulation) Input/Output Per Capita Labor Pr- oductivity	All Vocational- Certifications & Licenses - National Technical- Certifications, National Certifications - Licenses - Semi Licenses
	Consumers	Accessibility (Price) Satisfaction (Quality)	Service Availability Appropriate Service- Pricing Service Satisfaction Quality	All Vocational- Certifications & Licenses - Certifications and Licenses Related to the Service Sector - Licenses - Semi Licenses

We conducted a survey of individuals who have received the necessary qualifications, service consumers, and experts related to the qualifications needed to become social workers, librarians, and childcare teachers.

To this end, we examined, through a multi-dimensional approach, the question of whether Korea's qualification (license) system has an impact on the economy. First of all, from a qualified (licensed) person's point of view, the professional qualifications (license) have a very positive effect on income and employment. Second, most consumers were found to believe that service prices tend to rise along with qualified practitioners' income. Third, there is no clear relationship between the ratio of qualified individuals with each industry and real value-added per person. Finally, we can deduce that while proper occupational regulations have a positive effect on the market excessive regulations do not.

The provision of licenses by specific authorities can be regarded as a constitutional restriction on occupational freedom. Given the fact that this authority is currently vested in individual government departments, we propose the establishment of a "Qualification and License Management Commission" that would be endowed with a greater degree of professionalism and objectivity than individual government departments.

Education and Labor Market Linkage and Outcome (II)

Jae-sik Jun, Tae-jun Park, Me-rhan Kim, Ju-hong Min, Min-kyoung Kim,
Dong-gyun Shin, Won-sub Jang, Jae-min Park, Jin-young Kim

This three-year study entitled “Linkages between Education, the Labor Market, and Performance” seeks to not only find an effective linkage between education and the labor market, but also to analyze how this connection could bring about better performance, a denouement that may in turn have implications for human resources policy. The first year of this study (2009) was focused on how educational investments had been made, and what such investments had, amidst a variety of educational policies and environmental changes (mainly focusing on university education), achieved in terms of life career paths. Meanwhile, the second year of this study (2010) was mainly focused on defining the ‘linkages’, ‘linkage system,’ and ‘linkage media’ that exist between education and the labor market, and identifying, based on this research, relevant areas and analyzing their short and long-term impact.

The following six detailed sub-topics were selected: i) Effects of education and ability on wages as far as the linkage between education and the labor market is concerned; ii) Preparation for employment at the college level and labor market outcomes; iii) Firms' choices in terms of the transition from education to the labor market; iv) Creativity and outcomes related to the linkage between education and the labor market; v) Certification and outcomes related to the linkage between education and the labor market; and vi) Relationship between one's major and landing a secure job and its influence on job training. The results of the analysis of these 6 sub-topics is presented below.

In recent years, the educational field and labor market have increasingly worked in conjunction with one another. For instance, while the educational field has moved towards teaching what industry requires, the labor market has provided the educational field with access to the skills they necessitate. However, such efforts remain at the introductory stage, with only certain industries involved. This has paved the way for the emergence of many

inefficiency-related issues as well as socioeconomic problems. These have included workers (supply) inconsistency, high youth unemployment amongst college graduates, mismatch between students' majors and the jobs available, and over-training(over-zeducation). While the current round of jobless growth is expected to result in these problems becoming worse in the future, the mismatch in terms of the links between education and the labor market is forecasted to entail particularly serious social and economic side effects. This situation can be overcome by harmonizing education and labor market policies. More to the point, the basic direction and the core of these policies should correspond. Based on the above findings, the following policy proposal is introduced. First, in order to maximize investment in education and the effectiveness thereof, students' learning aptitudes learning should be regarded as an important variable in the student selection process. Moreover, the relative rate of the capacity toward learning should continue to increase once students enter the labor market as well. Second, the government should provide new employment opportunities and support to individuals and universities. Third, various support measures are needed to promote the belief that working for small businesses can have a positive impact on one's overall life experience. In addition, this phenomenon should not be perceived as a labor problem that solely affects small businesses. Fourth, industry-academy cooperation policy should include a greater emphasis on research and development activities, with special attention paid to college level and the characteristics of majors. Fifth, the government should significantly expand creativity education as the latter improves problem solving skills, which in turn leads to numerous positive labor market outcomes. Sixth, greater interest and investment on the part of users (businesses) can help to enhance the role of certificates. Despite the government's efforts to forge better policies, the latter cannot be firmly entrenched as long as users do not show a greater interest and faith in such certificates. Seventh, given the relationship between landing a secure job and one's major, there is a need to diversify college education courses. This can be achieved, for example, by redesigning the college education system into separate academic and professional tracks and activating a double major system.

Development of KRIVET Occupational Outlook Index (2010)

Sang-geun Han, Yun-kyoung Jeong, Hea-jung Chang,
Na-ra Kim, Jong-sun Lee

This study, which follows up on the 2009 project about jobs in the manufacturing and construction industries, has as its main objective the development of a comprehensive occupation prospect index. This is achieved by carrying out a survey about jobs in occupations such as social services, personal care and services, sales, management, farming, fishing, and forestry occupations.

The following are the concrete objectives of this study.

First, an occupation experts pool was organized, and occupational prospect indexes pertaining to social service, personal care and services, sales, management, farming, fishing and forestry occupations were surveyed and analyzed.

Second, individual occupational attributes were analyzed based on various standards such as general occupation prospect and sectoral occupation prospect indexes, and from the standpoint of occupational issues such as promising occupations for women.

Third, a comparison of the primary results of the 2007~2008 study and the secondary results of the 2009~2010 study was carried out.

Fourth, based on the results of this study, an attempt was made to ascertain the implications for career education and educational training, and to suggest pertinent policies and future tasks for individual occupation prospect indexes.

Fifth, a source book entitled 「Korea's Occupation Prospect Index(2010)」 was published as part of efforts to provide the general public with basic data about occupational choice.

This study consisted of five major stages: the analysis of the industrial and occupational structures; organization of an occupational experts pool and on-line survey system; survey of occupational prospect indexes; results of the study and analysis of related issues; development of the index and policy suggestions; analysis of the results of the study and publication of the index. The methods

used in the various stages of the study consist of data survey and analysis, experts conference, occupational survey, statistical analysis, and the holding of a seminar.

The goal was to obtain 30 responses from individuals engaged in each of the 153 jobs identified, or a total of 4,590 responses. The survey consisted of seven evaluation areas, namely compensation, employment conditions, employment stability, career growth prospects, working condition, professionalism, and employment equality, as well as 23 detailed items.

We studied two groups, one at the present point and the other ten years down the road.

The food processing related occupations listed in the KECO minor group showed the highest promise ten years from now. This was followed by environment-press-timber-furniture-craft and production occupations, food service-related occupations, machine-related occupations, construction-related occupations, and material-related occupations(metal-glass-clay-cement).

Law-police-correction related occupations showed the highest promise amongst the ten years down the road group, followed by management occupations, finance and insurance-related occupations, education and natural science-social science research-related occupations, business-finance-office work-related occupations, IT-related occupations, health care-related occupations, and food service-related occupations.

The most promising occupations identified by the KECO amongst the ten years down the road group were judge and prosecutor. This was followed by dentist, doctor, life science researcher, patent agent, lawyer, IT consultant, and computer security expert.

Based on the analysis conducted herein, various issues pertaining to the outlook for occupations were discussed. These include promising occupations for women, the status of natural science and engineering occupations, the occupations desired by adolescents and the future prospects thereof, new and emerging jobs, decent occupations beyond educational background, and the confirmation of the validity of the results of the study. What's more, this study also raised the political issue associated with these topics.

**Strategies to Enhance the Effectiveness of International
Development Cooperation in Education and Training (II)**
- For Promoting International Development and Cooperation
Professionals -

Cheol-hee Kim, Sung-joon Paik, Dong-son Choi,
Sang-tae Kim, Sung-sang Yoo

This research seeks to provide support for the establishment of systematical education and training policy in international development and cooperation through such means as the definition of international development and cooperation professionals, the conduct of a feasibility analysis of the industry and jobs, the development of an understanding of the current facts pertaining to Korean international development and cooperation, the grasping of the conditions of the public and private sector institutions involved in the development and cooperation field, the conduct of case studies on developed countries' education and training of professionals, a job analysis of the education and training sector for international development and cooperation, and the development of education and training programs.

This research suggests that the desired policy should encompass: i) the need to bring about the quantitative expansion and qualitative improvement as far as the development of professionals in the field of international development and cooperation is concerned; ii) the mitigation of the disparity between the supply and demand for labor and the forging of close links between the education and labor market; iii) the provision of support for the fostering of the consulting industry and the revitalization of the private sector; iv) the development of programs for professionals suited to the Korean development model; and v) the establishment of an infrastructure for the development, distribution, and utilization of professionals.

The study also makes the following suggestions in terms of the relevant government departments (including local governments): the setting up of a basic

plan for the education and training of professionals; the establishment of the necessary institutional structures (administrative and financial); the pursuit of cooperation with the main actors involved in development work; the establishment of a linkage system and the efficient management thereof; the enhancement of actors' degree of specialization and the provision of support for the establishment of a professional development infrastructure.

The study concludes that responsible institutions need to engage capable professionals; restructure their professional DBs and improve the effective use thereof; increase the efficiency of education and training institutes; strengthen cooperation with human resource development institutes like universities; provide incentives to existing human resources such as volunteers; and increase the hiring of retired individuals.

Innovation of Lifelong Vocational Competency Development System (III)

Chang-Kyun Chae, Eun Lim, Seung-bo Kim,
Kil-sang Yoo, Pil-gyu Paik

There is no consensus about the efficiency or effectiveness of vocational training in Korea. More to the point, although several studies have been conducted on the topic, differing conclusions have been reached.

However, most researchers agree that vocational training has not contributed to enhancing equity. In this regard, the government has failed to provide special unemployment training-related support to the most at risk members of society, who are treated the same as regular unemployed individuals. Moreover, as employee training is provided through employers, less-skilled employees in dire need of additional training find themselves unable to receive the necessary training. This is because employers prefer to train more capable employees so as to be able to more easily retrieve their training outlays. What's more, SMEs by and large provide less training to their employees than large companies.

These problems can only be resolved through the reconstruction of the vocational training system in Korea, a task which was addressed in the present study. Some of the main issues which were tackled herein are the collection and distribution of training funds, the improvement of unemployment and employee training, the enhancement of colleges' participation in vocational training, and the construction of a training infrastructure.

In order to enhance the equity of training distribution, this study introduced a revamped version of the training fund collection and distribution system. In addition, policies designed to improve the effectiveness and efficiency of unemployment training were suggested. Several policy suggestions were also made herein pertaining to the expansion of SMEs' participation in employee training. Meanwhile, as part of efforts to enhance the overall quality of training, policies that revolved around the expansion of colleges' participation in

vocational training were introduced. Finally, several policies designed to increase training participants or potential candidates' access to training-related information, as well as to provide them with substantial consulting, were also suggested in this research.

Green Growth and Skills Development Policy

Young-sun Ra, Hye-won Kho, Sang-ho Kim, Sang-chol Park

As part of the policy of supporting green growth, this study reviews the effect of increasing employment in related fields, investigates green jobs, and promotes the development of green skilled human resources. Moreover, it also focuses on the emerging renewable energy sector. As part of these efforts, four rounds of the 「Green Growth and Skills Development Forum」 were held in 2010, and a workforce demand survey of 503 renewable energy corporations was conducted.

○ Main results

First, green growth has an obvious positive effect on employment and the labor market. However, the further enhancement of the positive effect of green growth must be brought about through a combination of legislation and the expansion of the awareness of environmental protection that lie at the centre of social & economic policy development.

Second, although the volume of jobs created by green growth remains relatively small, the restructuring of economic sectors and occupational competencies has resulted in the green growth strategy helping to prevent job losses. Under such circumstances, it becomes important to forge links between green growth and skills development through the advent of green certification.

Third, advanced countries such as the US, Germany, and Sweden were found to actively support skills development through the implementation of legal and institutional systems. These countries tend to stress the fact that green growth represents not only a core national project, but also an opportunity to create jobs through the provision of skills development programs, as well as a means to resolve the skills gap.

Fourth, our survey included several small scale firms of less than 50 employees involved in the solar energy, photovoltaic, wind power, and geothermal

energy fields. The principal skills demanded were found to be related to the establishment & construction of the renewable equipment sector. While one-fourth of firms answered that there was a strong likelihood that they might require new recruits, the need to retrain existing employees was found to be rather low.

Fifth, we examined the Korean government's green manpower plan, the green technical workforce education & training programs at the tertiary level, as well as the vocational development training programs offered by polytechnics.

○ Policy suggestions

1. Creating positive effects on employment and the labor market :
 - 1) Establishment of green workforce training plan in support of green industrial policy, 2) Identification of green skills & technical needs and related analysis, 3) Education and training pertaining to green job relocation; and 4) Construction of green employment statistical and information infrastructure.
2. Utilizing green jobs:
 - 1) Linkage of training programs and national job standards; 2) Creation of a green certification system.
3. Legislative and institutional foundation for green employment:
 - 1) Enactment of 「Green Jobs Act」 and 「Green Job Skills Development Act」 ; 2) Linkage of the training of the green industry workforce and related institutions; 3) development of green industry through selection and concentration.
4. Workforce development in the renewable energy sector:
 - 1) Establishment of national-level policy measures pertaining to renewable energy workforce training; 2) Creation of demand-oriented vocational education and training in the renewable energy sector; 3) development of workforces for specific segments of the renewable energy sector; 4) Reeducation and retraining as part of job relocation in the renewable energy sector.

5. Reorganization of the vocational education & training curriculum & programs in the green technology sector: 1) Promotion of research on workforce demand in the green industry sector and workforce training programs; 2) Introduction of green technology guidelines; 3) Provision of support for software and hardware pertaining to the reorganization of green technology-related vocational education and training programs; 4) Introduction of Project Financing(PF) schemes for green skills development.

Survey on National Skills Outlook (2010)

Hyung-man Kim, Ho-young Oh, Sang-jin Kim, Seong-min Hong

This study seeks to uncover the stylized facts regarding the supply and demand for skills in the labor market. As part of these efforts, a conceptual and theatrical framework capable of forecasting the skills required by the labor market was constructed. This report consists of two parts. While the first focuses on the related concepts and theories found in previous studies and suggests appropriate skills perspective methods and techniques, the second, based on the above-mentioned theatrical framework, revolves around the collection and analysis of data pertaining to the demand for skills in the labor market.

The ensuing section involves the collection and analysis of the data obtained via a survey of enterprises prepared on the basis of the skills perspective framework. The survey involved the interviewing of members of 1,500 manufacturing industry enterprises using a stylized questionnaire. The survey focused on four overarching aspects: the number of vacancies and the types thereof; the skills shortage and mismatch of job seekers; the skills gap of incumbent workers; and education and training as well as qualifications.

A serious skills imbalance was uncovered in the manufacturing industry. The skills gap and mismatch was found to be more pronounced in the case of new workers than incumbent ones. Thus, the quantitative expansion of the labor market, as well as the skills gap and mismatch has resulted in young graduates facing difficulties finding jobs. On the other hand, this disparity in terms of skills, which is closely related to the manpower shortage affecting small and medium enterprises, is also reflected in occupations requiring craft skills or so-called 'dirty jobs.' Eventually, small enterprises will also face a shortage both in terms of manpower and skills.

While the results of this study help to shed some light on the stylized facts about the skills imbalance, it is not without its limitations. In this regard, the following countermeasures are introduced:

First, it is important to accumulate information about skills throughout a continuous survey based on time series. Time series data not only provides information about long-term trends in terms of skills, but also serves as the basis for forecasting skill-related needs.

Second, there is a need to build a system based on which the skill needs in the labor market can be forecast. This system should facilitate the development of a model capable of projecting the supply and demand for skills, and accumulate and manage the data required for forecasting through continuous surveys. In other words, this system should, through periodical perspective results, provide policy makers and skill demanders alike signals about skills imbalances. Education and training must play an important role in alleviating the skills imbalance.

Third, special consideration must be given to the forecasting of the supply of skills where the development of skills is concerned. The collection of salient schooling or skill level specific information not only facilitates stakeholders' ability to make reasonable education and training-related choices, but also reinforces the link between education and the labor market.

Fourth, the government, educational and training institutions and industries must be endowed the necessary authority. In Korea, the Sector Human Resources Development Council (SHRDC) should be able to play a key role where the establishment of such governance is concerned. To this end, the SHRDC should produce information about industry-specific skills or occupational-specific skills.

Finally, the scope of the variables employed in the survey presented herein should be expanded through such means as the introduction of a more detailed classification of occupations, schooling levels, and local regions. The results of the outlook for skills should be linked to detailed job duties. Moreover, the provision of more detailed information will help to enhance the role of skill-related signals in the labor market.

Analysis of Vocational Education & Training on the Private Sector and Resolution for its Competitiveness

Cheon-soo Park, Su-won Kim, Jae-ho Chung,
Hyun-seung Cho, Soon-won Kwon

The recent development of technology has brought about rapid societal changes that have included the move beyond virtual reality and into augmented reality. The job performance skills required by workers have also become more advanced and continuously changed. On the other hand, the number of idle youth workers has increased due to the continued trend towards higher education degrees, a phenomenon that has not reflected the demands of the Korean labor market. Job transfers have also increased amidst the frequent restructuring of enterprises. The changes in the economic structure have resulted in the continuous development of vocational abilities during one's lifetime emerging as an essential element needed to stabilize employment, maintain the competitiveness of enterprises, and ensure continuous national economic growth.

This study identified the main criteria associated with the private vocational ability development market, analyzed the size of this market, and delved into its relationship with the labor market. The end goal of vocational ability development is for workers to achieve a higher level of productivity and raise their economic status. The majority of the training facilities that constitute the main suppliers within the private vocational ability development market are in fact small-sized institutions. The study found that the competitiveness gap was very big, and this even amongst large-sized institutions. In this regard, rather than focusing on the forced liquidation or merger of training facilities, incentives should be provided to existing institutions in order to incite them to voluntarily strengthen their competitiveness.

Based on a survey of trainees, this study also analyzed the current state of the demands of the private vocational ability market. As far as employed trainees are concerned, the low degree of connectivity that exists between vocational ability development and elements of personnel management, such as

salary increases and promotion, renders it necessary for enterprises to strengthen the linkages between these two factors. Meanwhile, there is a need, where unemployed trainees are concerned, for the government to pay attention to the activation of employment through the reinforcement of vocational training and employment.

Given the actual state of the private vocational ability development market, the following measures are introduced to strengthen its competitiveness. First, based on the importance of distributing information when it comes to ensuring the efficiency and competitiveness of the market, it is essential that the information infrastructure be strengthened. Second, it is important that various inducement systems capable of improving the overall immersion of trainees be introduced. Third, the need to strengthen consultations related to vocational training renders it necessary to also heighten the vocational specialization of trainees and to supplement the consultation function of employment centers and training facilities. Fourth, it is also incumbent that the improvement of vocational specialization be institutionalized, and that training contents be designed based on industrial demand. Lastly, weaknesses at each training stage can be improved through the fostering of the competencies of those in charge of the development of the training process, the securing and maintenance of training lecturers and instructors, and the strengthening of the feedback system used to evaluate the training facilities.

Establishment of Career Education Model Linked to Curriculum (III)

Yun-kyung Jeong, Ji-yeon Lee, Young-dae Lee, Dong-son Choi,
Na-ra Kim, Youn-keung Jung, Mi-suk Nam, Suk-min Jang

This research has as its ultimate goal the establishment of an operational model that effectively integrates the school curriculum's educational objectives and motivations with 'career development capacity.' Such an undertaking is designed to simultaneously develop curriculum education and the career competencies needed throughout one's life.

This year's research involved proposing an operational model for curriculum integration that was based on the fundamental research conducted during the first year (2008), and the career education materials collected as part of the pilot study carried out during the second year (2009). Thereafter, the third year of this research was completed with the formulation of career education teaching and learning materials.

This study unfolded as follows. First, in cooperation with the Ministry of Education, Science and Technology and the Provincial Education Offices, a total of 6 schools (two elementary, middle, and high schools) were chosen as 'research schools'. Monitoring measures and surveys were drafted as part of the framework for the analysis of the operational plans pertaining to integrated career education at the research schools, as well as related procedures, and operational results. Second, based on the operational plans for these research schools, curriculum-integrated career education courses were intensively conducted for 1 semester, namely from March to the end of July 2010. In addition, surveys, participant observation sessions, and interviews were carried out in accordance with the above-mentioned monitoring measures established for the integrated career education schools. Third, the effectiveness of integrated career education and the overall adequacy of pilot schools were analyzed. Fourth, based on a comprehensive analysis of the results, an operational model for curriculum-integrated career education was proposed to the research schools.

Finally, the data related to integrated career education was modified, developed, and disseminated to the research schools so that they could incorporate integrated career education within their school curricula.

The following results were obtained from the application of integrated career education within the research schools. First, a clear enhancement of the research school teachers' awareness of integrated career education was recorded. Second, when combined with the results of student surveys, we discovered that integrated career education courses had, by a small margin, an effect on increasing students' awareness of career education and career development competencies.

The plan to vitalize integrated career education can be broken down into three levels: central government and the Ministry of Education, Science and Technology, the provincial level, and the frontline school level.

Facilitating Official Development Assistance(ODA) of Vocational Education and Training in ASEAN Countries to the Realization of New Asia Community (I)

Young-real Choi, Jung-yun Cho, Ho-young Oh,
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○ Overview

This study examines the possibility of public-private partnerships with regards to official development assistance in the field of vocational education and training(VET). The study was motivated by ASEAN countries growing role as strategic partners for Korea, and the Korean government's desire to increase the volume of ODA to ASEAN nations. Moreover, the failure of the conventional aid framework has rendered it necessary within the international community to uncover or develop a new approach which may enhance the effectiveness and sustainability of ODA. To this end, this study proposes a public-private partnership(PPP) as an alternative as far as VET assistance in ASEAN countries is concerned.

An analysis of the VET sector of 5 ASEAN nations (Vietnam, Indonesia, the Philippines, Cambodia, Laos) was conducted to ascertain the feasibility of PPP in conjunction with ODA. In this regard, the current economic and labor status of ASEAN countries, ASEAN's VET institutional framework, Korea's ODA system, and Korea's corporate social responsibility activities within these 5 Asian countries were all examined in turn. The research methods used in this study included reviews of existing literature, interviews, workshops, seminars, and domestic and foreign surveys.

○ Implications of the study

The implications of this study can be divided into two broad categories: domestic and foreign policy suggestions.

Domestically, Korea must take the following steps in order to enhance ODA in the VET area using the PPP approach. First, a clear definition of PPP must be established.

Second, there is a need to establish an organized support system for Korean corporations who already have local production facilities in developing countries. The survey results also hinted at the fact that the Korean government should try to resolve the current problems related to corporate CSR activities, and actively invite companies to participate in the ODA framework. To this end: 1) a consultative body for public private partnerships should be established; 2) the government should increase the overall understanding of PPP by reinforcing public relations; 3) the public and private sectors should come together and set up an ODA information system; and 4) the conventional institutional system should be modified.

Third, PPP should be utilized as an integrated aid modality capable of serving different purposes and playing various roles for individual participants. In this regard, PPP stakeholders need to develop a clear understanding of each partner's purpose beforehand, harmonize such goals, and establish distinctive roles for each entity.

Fourth, PPP in VET should provide aid that reflects the socioeconomic circumstances of the recipient countries.

Fifth, PPP should be focused on the education and training sector.

Sixth, the government should establish the overall direction for VET partnerships.

Finally, the government should establish partnership guidelines for corporations and NGOs, and differentiate such undertakings from current KOICA NGO support programs.

The study also has implications for the VET sector of the five ASEAN nations under analysis. For Vietnam, equal emphasis should be placed on the enhancement of the quality of vocational education and training. Vietnam is still at the nascent stage in terms of PPP, in that while the government approves the establishment of private training institutions, it does not provide financial incentives.

Cambodia should focus on short-term vocational training as well as on promoting long-term vocational education. Cambodia is considered to be at the emerging stage of PPP, in that the government provides subsidies to private VET institutions.

In the case of Indonesia, there is a need to simultaneously promote vocational education and training. Indonesia is also included in the emerging stage of PPP characterized by government support for private institutions.

In the Philippines, which is also in the emerging stage of PPP, the emphasis should be on short-term training.

Lastly, Laos must focus on establishing a solid foundation for VET. Laos can be regarded as being at the nascent stage of PPP.

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