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Transferable skills education in Technical and Vocational Education and Training (TVET) in the Republic of Korea

Abstract

Recently the government of the Republic of Korea (RoK) has tried to transform TVET, from job-specific skill education and training for specific groups, such as vocational school students, to a broader form of vocational competency education applicable for all young adults in the country. While a systematic approach to transferable skills (TS) has not yet been fully developed in RoK, there have been a number of attempts at TS education from a variety of diverse perspectives. The Vocational Basic Competence (VBC) in the Korean National Competence Standards (KNCS), Korean Collegiate Essential Skills Assessment (K-CESA), and Career Development Competency (CDC) education are the most prominent examples of TS education programs which have been undertaken in RoK. In addition, a number of innovative teaching methods and teaching materials for TS education have been utilized in pilot programs. In terms of TVET teacher education, TS education has only been introduced in some retraining programs but not in pre-service teacher training. Conflicts which exist in terms of responsibility for teaching TS reveal the inherent ambiguity of the concept of TS education which prevails in RoK. It is necessary for TS to be reflected effectively in the national TVET curriculum, and that it be based on a clear definition and conceptual framework in order to be reflected in TVET in RoK.

1 Introduction

1.1 Purpose of the study

Since the 1970‘s, the RoK government has tried to implement diverse TVET policies and strategies to support continued economic growth by training workers that posses the appropriate skills sets needed for industrial development (Jin 2010). TVET in RoK is composed of two different areas: vocational education within the formal education system and vocational training outside of the school system. The former has been mainly managed by the Ministry of Education[1] and the latter by the Ministry of Employment and Labor[2]. The rapid economic and social change seen in RoK has had a great impact on TVET policy making and implementation. Until the 1980‘s, TVET policy had been focused largely on

[1] Ministry of Education has been reformed into the Ministry of Education and Science and Technology in 2013. Before 2013, it was the Ministry of Education and Human Resources Development.

[2] In 2011, Ministry of Labor was reformed into Ministry of Employment and Labor.

vocational high schools[3]; in particular, technical high schools[4]. Along with the kind of rapid economic growth seen in RoK, the roles of vocational high schools have encountered a huge set of changes. The number of vocational secondary schools and students has sharply decreased, and more than 60% of vocational high school students chose to enter college rather than entering employment after their high school graduation. Since 1995, the Ministry of Education announced the Open Vocational Education Policy which defined the role of vocational high schools as preparing students for flexible careers including both college attendance as well as employment after high school graduation. At the same time as this decreasing demand for vocational education at vocational schools, basic vocational education such as career preparation, providing basic attitudes, knowledge and information for future work has been emphasized from the primary school level. In addition, as almost 80% of students go on to higher education at universities due to the expansion of university education, many higher education institutions are required to provide vocational education to their students. In short, the concept of vocational education in RoK has been expanded to all levels and types of education, rather than being limited to the original secondary vocational schools.

Faced with the dramatic changes in the the world of work and society in RoK, vocational education has to change its paradigm from job-specific skill training for vocational school students to much broader vocational competency for every young person. That is, transferable skills (TS) which are core competences needed to actively apply basic skills and problem solving skills to changing environment are rapidly becoming one of the main elements of vocational education policy. Recently, the Ministry of Education in RoK has introduced several policies that emphasize TS in TVET. In this article, I will review the cases of TS education in TVET in RoK and thus share the experience of its implementation.

The main research questions of this study are as follows:

1) How is TS defined in the context of RoK?

2) How has TS education been implemented at the national policy level as well as in educational practices?

3) How has TS education been reflected in teacher education in TVET?

4) What are the key findings and policy implication for TS education in TVET?

1.2 Methodology

Since this article has been produced as part of a regional study entitled Transferable Skills in TVET: Policy Implication, I followed the provided common guidelines on TS and data collection. In order to achieve the purpose of the article, I have mostly relied upon the collection and analysis of official policy documents and previous research reports. In addition,

[3] In RoK, vocational high schools have changed their names several times. They were changed to professional high schools in 2005, and changed again to specialized schools in 2010. Here, to simplify understanding, I will use specialized schools and vocational high schools interchangeably.

[4] For TVET policy reform: see JIN, M. (2010).

I interviewed a number of policy makers, teachers in schools and training centres and students in vocational schools. I also consulted with several experts in TVET policies in RoK.

2 How are transferable skills (TS) defined in the Republic of Korea (RoK)?

The concept of TS in TVET in RoK was introduced in the late 1990s. Professionals from a variety of fields have adopted different names for this concept, such as core competencies, generic skills, essential skills, vocational basic competency, and so on. In addition, these concepts have been implemented within different policy contexts. At present, it is difficult to claim that there is a comprehensive and systematic concept of TS and subsequent implementation in RoK. TS still tentatively remains part of TVET. Thus, it is possible to define three main policy approaches to the adoption of TS in TVET in RoK.

2.1 Three main policy approaches

2.1.1 Korean National Competency Standards (KNCS) and Vocational Basic Competency (VBC)

The first policy approach is vocational basic competency (VBC) included in the Korean National Competency Standards (KNCS). The KNCS system has been implemented jointly by the Ministry of Education and the Ministry of Employment and Labor in 2002, mainly to better match TVET and the qualification system with the demands of the industry.

> "The Korean National Competency Standard is a concept which identifies and standardizes competencies that are required for successful job performance. It is a comprehensive concept including abilities such as knowledge, skill and attitudes necessary to perform a job, and assessment of these abilities." (www.ncs.go.kr 2014)

From the start, KNCS has used the United Kingdom and Australian National Qualification Frameworks and National Competency Standards as benchmarks. The approach and the structure of the KNCS are very similar to the Australian employability skills. The KNCS is mainly composed of 2 sub-elements: vocational basic competency (VBC) and vocational performance competency (VPC).

VPC is divided into common job skills and common industry vocational skills. The VBC is defined as the basic skills required to perform one's job successfully regardless of the type of occupation or position. Since 2004, 10 elements of VBC have been defined, as seen in Table 1.

Table 1: **Vocational Basic Competency (VBC) as defined in the Korean National Competency Standards (KNCS)**

Development area	Sub-units
Communication Skills	Document literacy, documentation skills, listening skills, language skills, basic language skills
Resource Management Capabilities	The ability to manage time, resources, budget management skills, ability to manage financial resources, human resources management skills
Problem-Solving Skills	Thinking, problem solving capability
Information Capacity	Computer literacy, information processing capabilities
Ability to Understand Organizational Structures	Global competence, ability to understand organizational systems, management ability to understand, ability to understand business
Numeracy	Basic math skills, basic statistical skills, analytical skills, chart, charting capabilities
Self-Development Capability	Self-awareness, self-management skills, career development skills
Interpersonal Skills	Teamwork skills, leadership skills, conflict management skills, negotiation skills, customer service skills
Technical Skills	Technology literacy, technology selection skills, applicable technical skills
Professional Ethics	Work ethics, ethical community

Source: www.ncs.go.kr. 2013

For each KNCS, the required levels for VBC are presented as high, medium, and low.

2.1.2 Career Development Competency (CDC)

In addition, career education has been strongly emphasized in RoK in recent years. This is due to a serious mismatch of supply and demand in the labor force which has been brought about by a reduction of jobs in comparison to the number of highly educated people entering the employment market. This situation has been creating difficulties for individuals as well as the society. Thus, the Ministry of Education has introduced a systematic policy for career education in order to develop career development competency (CDC) in students. The policy does not support the preparation for a specific job, it rather tries to strengthen entrepreneurship education which may help graduates to establish new work paths. The goal of career education should be clearly stated to strengthen the career development competency. This

competency is composed of the following four components: self-understanding and social skills, understanding the world of work, career exploration, and career design and preparation.

Table 2: **Career Development Competency (CDC)**

Goals	Sub-Goals
I. Self-Understanding and Social Skills	1. Self-Understanding/Self-Managing Skills 2. Social Competence (communication skills, interpersonal skills)
II. Understanding the World of Work	1. Understanding the World of Work 2. Improving Work Ethics
III. Career Exploration	1. Exploration of Educational Opportunities 2. Exploration of Occupational Opportunity
IV. Career Design and Preparation	1. Career Design 2. Career Preparation

Source: Ministry of Education. Goals and Indicators of School Career Education. 2012

CDC can be understood as TS in the areas of career planning and preparation.

2.1.3 Essential skills for college students

The third approach to TS can be seen in the Korean Collegiate Essential Skills Assessment (K-CESA) system. Since 2006, the Ministry of Education has tried to deal with the quality of higher education in RoK and mismatch between skills needed by the labor market and the skills acquired through college education by introducing an assessment system of college educational performance. In RoK, colleges and universities have been criticized for their emphasis on the selection of students rather than on educating them. In addition, they have also been criticized for the lack of awareness and responsiveness to the demands of the business sector. By developing a measurement system to assess what students are learning during their education and by focusing on students's TS as the learning outcome, the Ministry has tried to stimulate the efforts of higher education institutions to develop students' competencies and thus to respond to the demands of the workplaces. Here, essential skills are defined as basic competencies required regardless of the types of occupation or position. With the 6 skills listed below, KRIVET and the Ministry of Education completed the development of the assessment test for essential skills, which is web-based, in 2009. The elements of essential skills for college students can be seen in Table 3.

Table 3: **Essential skills for collegiate students as defined in K-CESA**

Dimension	Sub-Dimension
• Communication	• Listening comprehension • Discussion and moderation • Reading • Writing • Speaking
• Resources-Information-Technology Processing & Application	• Resources processing and application • Information processing and application • Technology processing and application
• Interpersonal & Cooperative Skills	• Working in diverse environments, teamwork • Leadership • Systematic thinking
• Global Competency	• Attitudes to diverse cultures • Understanding of diversity • Understanding of globalization
• Higher-Order Thinking	• Analytical thinking • Inferential thinking • Evaluative thinking • Alternative thinking
• Self-Management	• Self-directed learning • Goal-oriented planning and organization • Personal, social, civic responsibility • Emotional self-control

Source: Jin, M. et.al. (2013). The Implementation of Korea Collegiate Essential Skills Assessment Test (K-CESA).

2.2 A comparison of definitions of different approaches to TS in RoK

As described previously, approaches to TS in RoK can be divided into two broad definitions. One is the vocational basic competency (VBC) definition represented in the Korean National Competency Standards (KNCS) which used the Australian employability skills model as a benchmark. The KNCS including VBC is aimed at TVET institutions such as vocational high schools and vocational training centers. The other approach is the career development competency (CDC) which can be compared to the definition presented in the Education for All (EFA) Global Monitoring Report 2012. The CDC approach emphasizes life-long career development and the development of management competencies required at all stages of life. It can be applied to different contexts and thus is needed for students of all types and at all stages of education, including vocational high schools. The Korea Collegiate Essential Skills Assessment Test (K-CESA) is somewhat similar to the KNCS with regards its focus on VBC of college students and also a relatively higher tier of employment.

Table 4: **Definitions of transferable skills in RoK**

	Ministry	Period	Contents of Transferable Skills	Target Group	Related Model
Korean National Competency Standards (KNCS)	Ministry of Labor and Employment & Ministry of Education	Since 2002	• Communication skills • Resource management skills • Problem-solving skills • Information capacity • Ability to understand the organization • Numeracy • Self-development capability • Interpersonal skills • Technical skills • Professional Ethics	Mainly junior colleges, vocational high schools, and vocational training colleges	Australian Employability Skills
Career Development Competence (CDC)	Ministry of Education	Since 2011	• Self-understanding and Social competence • Understanding the world of work • Career exploration • Career design and preparation	All school levels and types	EFA (Education for All)
Korea Collegiate Essential Skills Assessment Test (K-CESA)	Ministry of Education	Since 2006	• Communication skills • Resources-information-technology skills • Interpersonal & cooperative skills • Global competency • Higher-order thinking • Self-management	Universities and colleges	Somewhat Related to Australian Employability Skills

3 What are the TS education practices in RoK?

A number of diverse policy efforts related to TS in RoK have been carried out in terms of focus, main tool and scope. Below, I will focus on the KNCS and the implementation of the career development policy of TS in TVET.

3.1 The KNCS (including VBC) and TVET teacher training

The current government proposed the KNCS as a tool for creating a competency-based society rather than a credentials-based society. That is, the KNCS system is regarded as one of the most important policies which seeks to change the society in RoK from one in which students are spending too much time acquiring knowledge that is not useful for the present or future workplaces. However, despite being introduced in 2002, the KNCS system and

standards have not been widely accepted nor utilized. During the last 12 years, 331 vocational competency standards, out of 833, have been developed. In addition, relatively few TVET institutions have adopted the developed competency standards. In 2013, the Ministry of Education and Ministry of Employment and Labor announced a plan to develop KNCS for all sectors and, based on these, the development of learning modules by 2016. Currently, more than 100 learning modules based on the KNCS have been developed and will be disseminated to vocational high schools and junior colleges for teaching.

Along with the current policy emphasis on the KNCS, VBC, which is one of the main elements of the KNCS, is expected to be emphasized as well. However, VBC is not the main focus for now. In 2004, learning materials for VBC have been developed. The teaching guide books for each of the 10 VBCs have also been developed both in document and e-book form. While teaching materials for VBC have been developed, only a few schools and institutions utilize them[5]. No systematic program for the teaching of VBC for teachers in vocational training institutions currently exist. As most teachers in vocational training institutes are job-specific skills teachers and vocational training institutions are supposed to provide job-specific skills, it is, to some degree, understandable that VBC is not dealt with seriously.

In order to become a vocational teacher in a vocational training centre in RoK, a teacher has to have a relevant qualification in the specific area and take training courses (as outlined in Table 4) at the Human Resource Development Institute (HRDI) of the Korea University of Technology and Education. The courses focus on liberal arts and teaching methodology. It is notable that VBC is not linked or represented in these courses.

Table 5: **Mandatory education courses for anyone seeking to acquire a new license or upgrade their license and become a vocational training teacher**

Classification	Level	Class Hours	Education Field
Vocational teacher training course (new vocational teacher course)	Second or third class of the certificate	140 hours	Liberal arts, teaching skills
Enhanced training course (upgrading course)	First or second class of the certificate	71 hours	Liberal arts, teaching skills

Source: hrdi.kut.ac.kr. 2013

[5] This is the finding from an interview with staff working at a vocational teacher training center (Korea University of Technology and Education) and the organization responsible for VBC development (Human Resources Development Service of Korea)

VBC has not been actively introduced into the teaching and learning process in TVET or teacher training courses. Put simply, as of now, the clarification of the definition and the teaching materials for the VBC in KNCS has been largely neglected.

3.2 VBC in vocational high schools

3.2.1 Adoption of the KNCS and the Vocational Basic Competency Assessment Test (VBCAT)

While VBC in vocational high schools was introduced as a part of the KNCS, its implementation has been quite different from that of the KNCS in vocational institutions. In the context of vocational high schools, one of the strongest policy tools for emphasizing VBC was to adopt the Vocational Basic Competence Assessment Test (VBCAT) as an alternative assessment to regular academic achievement test for vocational high school students. After a 2-year development period, the first exam was administered to all vocational high school students in 2012. The test is composed of three parts: vocational basic competence, vocational specific competence and 'successful working life' skills, as outlined in Table 6. Since the test for the 'successful working life' has not been developed, four kinds of tests were administered.

Table 6: **Composition of Vocational Basic Competency Assessment Tests (VBCAT)**

Division	Domain	Contents
Vocational Basic Competence	Communication skills (Korean)	Problems to assess reading skills and listening skills in work place contexts
	Communication skills (English)	Problems to assess English reading skills and listening skills in basic practical contexts
	Mathematical literacy	Problems to assess the ability to utilize mathematical knowledge in work place contexts
Vocational Specific Competence	Problem-solving skills	Problems to assess the problem solving skills required within individual vocational fields (agricultural, industrial, business, home-economics, maritime affairs and fisheries)

While the espoused VBCAT seeks to evaluate VBC for future employability and thus requires different methods and contents of evaluation, the main parts of the test were similar to the traditional subjects such as Korean language, math, and English. To many teachers and students, VBCAT is a simplified version of conventional academic achievement tests.

> "The tests were quite easy. I did not pay too much attention to them. I got good grades, though. I felt good but I don't think the tests assess my competency." (Student A at a technical school in Seoul)

"Math problems or Korean language problems were really easy if you have some common sense." (Student B at a technical school in Seoul)

Another important feature of VBCAT is that it represents a real workplace environment, such as a marketing office, hospital, shipping company, and is related to work activities. To allow for this feature of the assessment, the Ministry of Education required the Chamber of Commerce to develop and administer the exam. This in itself is a unique assessment policy initiative considering that most national standardized tests are managed by national public centers such as the Korean Institute for Curriculum and Evaluation (KICE). In relation to this policy and practice, a number of professionals and stakeholders have been critical of this process, suggesting that education could be directly controlled by employers (Labor Union of Korean Teachers 2011).

Unlike other achievement exams, VBCAT is a computer-based test (CBT). With this new type of exam, students tend to be more interested in the test but also show difficulty in adjusting to it.

"I felt very excited to take CBT but it was somewhat difficult to calculate the math problem without the paper test sheets." (Student C at technical school in Seoul)

Until 2015, VBCAT will be administered as a pilot. Therefore, during the pilot phase, the results of VBCAT will not be utilized as policy indicators for school performance. Schools, however, can use them as a form of self-diagnosis of their students' competency levels.

In education system of RoK, all changes to the national evaluation system can potentially have a strong impact on the teaching methodologies and materials used in schools. However, it is difficult for VBCAT to have a strong impact on vocational high school education as it was introduced without any accompanying changes to the overall curriculum in vocational high schools. Vocational high schools belong to the national education system and operate in accordance with a standardized national curriculum. In the national curriculum, VBC has not been effectively introduced. Textbooks, teachers training practices, along with the national curriculum must be reformed in order to allow VBC and VBCAT to have a strong influence on TVET.

3.2.2 VBC pilot programs in vocational high schools

Along with the adoption of VBCAT for vocational high schools, the Ministry of Education selected and supported four vocational high schools as part of a pilot project. The pilot project was implemented between 2010 and 2012 and was composed of four elements as seen in Table 7.

Table 7: **Main VBC activities of one pilot school**

Category	Activities	Features
Regular curricular course	Adopting a new independent course for VBC	Independent subjects for VBC and development of text book
Extra-curricular activity	Industry visit Conduct education in the workplace Certificate for Chinese letters Certificate for physical health	Understanding real contexts and the importance of VBC
Club activity	Diverse club activities	Develop essential competencies such as communication skills, interpersonal skills by working together
Compensatory class after regular school hours	English reading Korean language Math class	Essential math, English and Korean language for the workplace

Source: Park,D. Pilot Schools for Vocational Basic Competence Development. 2012

After the 3-year pilot project, one of the most important products of this exercise was the adoption of the subject, 'Successful Lifelong Careers' and the integration of VBC into the regular curriculum. A textbook for a 'Successful Lifelong Careers' was developed and was accredited as a formal textbook. Presently, vocational high schools can choose this course as one of the required electives if they wish to. In this textbook, VBC such as work ethics, etiquette, communicational skills, amongst others, are included. Cognitive competencies such as English language or numeracy competency are on the other hand not included.

In the pilot vocational high schools, teachers attempted to teach VBC in the general classes, such as math or English classes, with the cooperation of the subject teacher by making a matrix of the elements of VBC within the general textbook. This turned out to be one of the most important but difficult parts in teaching VBC in vocational high schools. As teachers have their own teaching subjects and follow a standard curriculum and textbook, it is difficult to decide who should teach these new/integrative courses. General subject teachers, such as Korean language, math, and English teachers, are reluctant to adopt VBC elements in their teaching.

> "There is a 'ping-pong game' among teachers responsible for VBC. For example, Korean language teachers insist that communication skills for work should be taught by 'job-specific' teachers because they are related to the workplace, while job specific teachers argue that Korean language teachers should focus on these skills as they are mainly related to language skills." (A Korean language teacher at a vocational high school responsible for VBCAT)

3.2.3 TVET teacher training policy

The Ministry of Education has provided support to teacher training for VBC education in vocational schools. The teacher retraining institute under the college of Agriculture/Life Sciences at the Seoul National University has provided such VBC training for teachers over the last 2 years. Details are summarized in Table 8.

Table 8: **Teacher VBC training**

Training Courses	Targeted Training	Time	Number of Teachers (2011)	Number of Teachers (2012)
VBC teaching for teachers in meister high schools[6]	Meister high school teachers	60	38	58
VBC course	Specialized high school / meister high school teachers	60	109	42
Meister high school project-type course of study (basic / enhanced)	Meister high school teachers	30	18	258
		30	23	86
VBC teaching for pilot school teachers	Teachers in VBC pilot schools	30	23	23
VBC teaching for high school professional basic skills course map	Specialized high school /meister high school teachers	30	32	-
Total			238	467

Source: Training Center for Vocational Teachers, Seoul National University. The performance of teacher training. 2012

[6] Since 2008, Ministry of Education introduced meister high schools, a new type of vocational high school which tries to educate technicians and workers by providing excellent educational programs and strong support for students along with direct cooperation with the industry. There are 42 meister high schools in RoK. While it is too early to evaluate the performance of these new schools, what is certain is that these schools are able to recruit students with high academic achievement and motivation who would not go to conventional vocational high schools.

Along with the adoption of VBCAT, the local education agency also provided training related to VBC and VBCAT. In the evaluation of vocational teachers‘ performance, neither their teaching on VBC nor the performance of students in relation to VBC has been adequately reflected yet.

3.3 Policy efforts aimed at Career Development Competency (CDC)

3.3.1 Developing the curriculum and teaching materials

The goals and performance indicators of career education were published in book format and first distributed to metropolitan and provincial offices of education and schools nationwide in March 2012. They were included in the training and education courses for careers teachers to equip them with necessary knowledge. Smart workbooks utilizing tablet PCs were also developed and a variety of workbooks aimed at career education were created according to the goals of career education. In addition, the important role played by work-based learning and its effectiveness in supporting students' career exploration was emphasized. A wide variety of methods to expand workplace learning have also been devised. Both at middle and high school levels, a subject entitled “Careers and Occupations” was introduced as an elective subject. The 2009 Curriculum Revision provided students with the basis for career-related, integrated and diverse education through career education across all spectrums of the school system. For example, career education was introduced through curriculum subjects as well as through non-curriculum courses, such as voluntary activities, club activities and work-based learning. As of 2012, the percentage of current middle and high schools that have adopted the course stood at 43.4 per cent (Ministry of Education, 2012).

3.3.2 The placement of career teachers

In parallel, the Ministry of Education also announced a plan to place teachers, specialised in career education, in schools. (For the purposes of this article, a career teacher is defined as a teacher who takes complete charge of career education in every school.) The Ministry of Education established a plan to place a career teacher in all middle and high schools by 2014 and had successfully placed about 4,500 such teachers as of 2013. Based on a basic plan for hiring and allocating career teachers, special training was offered with the aim to provide an additional qualification for teachers. In order to become a career teacher, a teacher needs to complete 650 hours of training that is provided by the Ministry of Education and/or the local education office.

4 Key findings and suggestion

4.1 Espoused importance of TS, fractured TS policies: the need to develop a basic structure of a new national framework

RoK has been attempting to introduce TS in a variety of ways but as of yet does not have, either a unified conceptual framework, or even its key components at national level. KRIVET has introduced the conceptual framework of VBC, based on the analysis of the diverse concepts and definitions which have prevailed in RoK (Joo et al. 2011). However, this framework has not been implemented into the national curriculum or within vocational training courses as an official national policy. There appear to be great difficulties in integrating the different approaches with such different policy perspectives. There is a need for further discussions and consultations with and among key stakeholders in terms of how to approach TS and which student group to focus on. It is essential to establish a national framework for TS endorsed by the government in order to implement TS education effectively.

Many conflicts and a great deal of confusion related to the TS education framework remain and are largely the result of the ambiguity surrounding the concept itself. Even though it is possible to draw some common elements from the diverse definitions which exist of TS in RoK, there is no commonly agreed upon or shared definition of TS. Considering the practical setting of TVET, without a clear definition of the concept itself, TS education cannot possibly survive. For example, looking at the implementation process of TS education in RoK, cognitive areas and TS are divided at a certain level and are being dealt with in quite different ways. Cognitive competencies, such as communication and math skills, tend to be closely related to existing subject areas such as Korean language and math, and thus there seems to be confusion and conflict in the responsibility of teaching them. The confusion relates to the question whether to deal with cognitive competencies under the existing textbook-oriented curriculum or not. What is the relationship between TS and general academic subjects? With more active participation and discussion with and consultations amongst key stakeholders, such as teachers in general subjects as well as vocational subjects teachers, researchers, business representatives, the government of RoK must develop a much clearer defnition of TS.

4.2 Diverse models of TS curricula

There are two different approaches to TS education in schools; the stand-alone approach and the overall integrated curriculum approach. Specialized vocational high schools or VBC pilot project schools have shown that introducing specific courses such as “Successful Lifelong Careers” or “Careers and Occupations” can be adopted without significant resistance from teachers if there are other teachers who can actually teach these subjects. However, this approach has tended to make TS a marginalized area, and teachers have tended to be somewhat nonchalant or dismissive as a result. If the levels of TS competencies are to be raised through subjects in schools, students will not be able to develop TS effectively through marginalized subjects. However, it is clear that an integrated approach is difficult to put into

practice. The matter of having cooperative teachers of different subject backgrounds who lack the basic know-how of how to to integrate TS in teaching are known to be the primary barriers to progress. As it has been observed in the case of the pilot schools in RoK, while there were diverse attempts for integrative teaching of VBC, it is difficult to implement it in regular schools outside a pilot project. It is difficult to implement VBC in an integrative manner when there is lack of support for and research on curriculum operation models. There needs to be more research and program development if a TS curriculum is to be effectively implemented.

4.3 The key missing competency: innovative/entrepreneurial competency in TS

In the present discussions, the emphasis on innovative/creative competency is insufficient. The discussions on TS have tended to intensively center on only the most basic and essential competencies and should now put a stronger emphasis on creativity and innovation. Competencies related to innovation and creativity are necessary in TVET which is especially true in the current age of rapid changes in and evolution of technology and rapidly changing value systems. Especially in the case of RoK, it is imperative to foster creative competencies to help develop new jobs, since RoK faces the dual problem of an oversupply of highly educated workers who face a lack of opportunities in the job market. From this perspective, emphasizing creative and innovative competencies as key competencies is absolutely necessary.

4.4 The need to develop teaching methodologies for TS

4.4.1 Innovative teaching methodologies

School education has been hitherto based around the model of concept-centred teaching and learning processes based largely on textbooks. However, TS is difficult to be taught via this kind of traditional teaching methodology. Precisely how TS can be developed remains unclear. The exact relationship between the foundational method of teaching and the acquisition of competencies also needs to be better understood. In order to understand how basic concepts are learned, there is a need for extensive research and creation of evidence; to answer whether TS is learned through actual experiences or appropriate learning in specific fields of knowledge.

With regard to implementation, teachers and/or administrators' agreement needs to be sought. Currently in RoK, it is difficult to completely remove or counteract teacher resistance without clearly explaining to them how their subject areas are connected to their students' development of TS competencies. In addition, the results of research into TS teaching and learning can provide useful feedback to teacher training programs and curriculum development. In order to integrate TS in teacher education/training processes, it is essential to reach an agreement on common TS values through ongoing discussions and consultations with those who teach on teacher training programs.

4.4.2 Alternative assessment methods for TS education

In the case of RoK, assessment is mainly based on problems set in real contexts. TS is not just about objective knowledge but it is also about knowing how to use TS in real life situations and contexts. However, adequate assessment of TS has not yet been developed. As seen in K-CESA or VBCAT, these assessment methods have their limitations.

The workplace contexts for assessment is created, however, students‘ actual abilities or applied abilities are not examined. New assessment methods that measure TS need to be developed. For example, TS assessment can be conducted through continuous observations of activities. Mutual evaluation methods, including individualized and small group observations or interviews can also be considered. Additionally, the question of how to ensure teachers‘ objectivity and reduce teachers‘ burden of conducting this kind of evaluation in classes of 30 or more students need to be considered

4.5 The complexity of TS training for teachers in TVET: the need to reform the teacher education policy

In order to provide better quality TS education, it is essential to train teachers who possess TS themselves. The system of teacher training in RoK has until now been heavily focused on training in specific TVET fields, with the result that many teachers are relatively inflexible and unprepared to teach TS. Hence, it appears that implementing TS education could be difficult for the TVET teachers currently in service, since attitudes and long-established work practices are sometimes difficult to change. From the experience gained in several pilot schools that introduced TS programs, it was possible to see that retraining programs, especially short-time programs on TS education, were inadequate to guarantee effective implementation of TS education. Effective implementation of TS education can only be ensured if teacher education and allocation are reformed.

At the level of pre-service teacher training, courses for TS education should be provided in order to train teacher candidates in the basic principles of TS. It is also necessary for teacher trainees to develop their awareness of TS inherent in their specific TVET fields and enhance their teaching abilities more generally. Although teacher assessment in RoK is multi-dimensional and evaluates prospective teachers‘ abilities through interviews, simulated instruction and written tests, these methods still focus on teaching skills and subject knowledge. TS, including being able to better develop and maintain personal relationships and develop relationships through cooperation, are currently not being assessed. For all the reasons discussed in this article, TS should be implemented at all levels of teacher training, from teacher pre-service training through to selection, re-training and in-serivce professional development.

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CITATION:

Jin, M. (2014). Transferable skills education in Technical and Vocational Education and Training (TVET) in the Republic of Korea. In: TVET@Asia, issue 3, 1-17. Online: http://www.tvet-online.asia/issue3/jin_tvet3.pdf (retrieved 30.06.2014)

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