CHAPTER

5

Translative Adaptation for Skills Evaluation Systems in Vietnam: Development Cooperation in Establishing the National Skill Test

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1. Introduction

Vietnam has achieved rapid economic growth since 2008 with an annual GDP growth rate of around 6 per cent. The Vietnamese government has implemented various policy measures which have successfully attracted increasing foreign direct investment (FDI). As a result, increasing the supply of a sufficient number of skilled workers has become a critical issue to sustain economic growth and achieve industrialization. However, the National Occupational Skill Standards (NOSS), which are required to evaluate and certify workers' ability to perform their duties, and vocational skills evaluation and qualification systems based on this are not sufficiently developed. In order to improve this situation, the Vietnamese government has established a national skills evaluation system, taking advantage of development cooperation from various foreign countries, and has begun national skills testing.

One characteristic of Vietnam's current skills evaluation system is that, while the government has adopted the competency-based NOSS developed in Europe, it has also adapted Japanese-style skill tests for skills evaluation. As a result, there is criticism from both inside and outside Vietnam that the government has introduced advanced country systems without a clear policy (Mori 2019). There has not been sufficient analysis of why the government decided to make such a choice and how the introduced system, which is different from European and Japanese systems, will develop in the future.

Therefore, based on the authors' work experience in Vietnam and the results of field study, this chapter examines Vietnam's initiatives to develop and implement a national skills testing system and Japan's development cooperation from two points of view: (i) how the Vietnamese government

Table 5.1. List of Available NOSS (as of August 2020)

Ministries in charge	Related areas	Number of job types
Ministry of Industry and Trade	Manufacturing, power generation and electricity, processing, industrial technology, commerce, IT, etc.	81
Ministry of Transport	Transport, road and bridge construction, etc.	36
Ministry of Agriculture and Rural Development	Agriculture, fisheries, livestock, forestry, etc.	32
Ministry of Construction	Construction and construction-related areas	27
Ministry of Culture, Sports and Tourism	Travel, hotels, restaurants, culture, sports, etc.	8
Ministry of Health	Pharmaceutical technology and medical equipment	5
Ministry of Information and Communications	Maintenance of stations of devices to transmit and receive radio waves and installation of information terminals	2
	Total	191

Source: Drafted by the authors.

and related organizations established the national skills evaluation system through development cooperation from various foreign countries, including Japan; and (ii) how they adapted foreign systems to the situation in Vietnam.

2. Introduction of a Competency-Based Skills Evaluation System and Its Challenges

2.1. The Development process of NOSS and its status

The reform of the national skills evaluation system in Vietnam started when the Vietnamese government conducted research on the competency-based training (CBT) model introduced by the International Labour Organization (ILO).[1] Later, in 2008, with the cooperation of the German international cooperation agency, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ),[2] which used to be called GTZ, the government started to develop NOSS, which is the core of CBT. As of December 2019, it had developed NOSS for 191 occupations (see Table 5.1). NOSS are

[1] This is based on information obtained during an on-site survey in 2019.

[2] In January 2011, three German organizations involved in the provision of technical cooperation (GTZ, a technical cooperation authority; DED, an agency that dispatched human resources such as volunteers; and InWEnt, a human resource development and training organization) were integrated to form the *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ). GIZ has experience of implementing projects in over 130 countries worldwide.

an important tool for skills development that can be utilized to develop vocational training programs and evaluating and certifying a workers' ability to perform their job. NOSS can be the foundation of vocational training curricula, skills evaluation frameworks, and skills evaluation, including both theoretical questions and practical assignments.

The basic process of NOSS development in Vietnam is as follows. First, the Ministry for Labour, Invalids and Social Affairs (MOLISA) draws up an annual development plan, taking into consideration the needs of industry, the requests of related government agencies, and so forth. Second, based on this development plan, relevant government agencies develop NOSS for assigned occupations requested by MOLISA. This request is made to universities, state-owned enterprises (SOEs), and other organizations under their supervision to develop NOSS. Third, these designated organizations start NOSS development by setting up a development committee. Fourth, responsible government agencies submit the NOSS developed to the Directorate of Vocational Education and Training (DVET), formerly called the General Department of Vocational Training (GDVT).[3] Finally, MOLISA examines the structure and content of the NOSS and if they are acceptable, publishes them.

2.2. Structure of NOSS

A NOSS consists of a unit structure table by task and a unit sheet which describes the content of work to be performed in each task, evaluation standards, and so forth. Table 5.2 indicates the structure of a NOSS for a metal machining job using computer numerical controlled (CNC) machine tools. The NOSS for a CNC metal machining job comprises a total of 71 work units in 11 work groups (from A to L). Specifically, it consists of two major work groups—CNC turning and CNC milling (including the CNC machining center)—and nine related peripheral work groups (including work preparation, design of parts to be processed, setting of processing procedures, development of numeric control (NC) processing programs, product quality control, equipment maintenance, and occupational safety and health).

[3] The Vocational Education Act of 2014 (74/2014/QH13) stipulated that vocational education, supervised by the Vietnamese Ministry of Education and Training (MOET), and vocational training, supervised by GDVT, should be combined for integrated implementation and operation. GDVT was restructured in accordance with the provisions of this Act, and in October 2017, it was reorganized into DVET.

Table 5.2. Structure of NOSS for CNC Metal Machining

Unit No.	Work number	Work name	Work levels				
			1	2	3	4	5
A		Work preparation					
1	A1	Grasping customer needs					○
2	A2	Production planning				○	
3	A3	Preparation for a workpiece			○		
4	A4	Preparation for machinery, tools, and equipment			○		
5	A5	Trouble-shooting during work					○
B		Design of parts to be processed					
6	B1	Planning for design of parts to be processing				○	
7	B2	Preparation for CAD/CAM systems				○	
8	B3	Design of detailed drawings for processing				○	
9	B4	Trouble-shooting during the design of parts to be processed					○
C		Setting processing processes					
10	C1	Reading of design drawings and analysis of specifications for parts			○		
11	C2	Selection of a method to create aworkpiece				○	
12	C3	Selection of machinery and equipment				○	
13	C4	Selection of turning tools				○	
14	C5	Selection of measuring instruments				○	
15	C6	Preparation of detailed processing process charts					○
16	C7	Trouble-shooting during the preparation of processes					○
D		Design of NC processing programs					
17	D1	Planning for the design of NC processing programs		○			
18	D2	NC processing programming through direct keyboard entry on the MDI panel of the CNC machine		○			
19	D3	NC processing programming through CAD/CAM software		○			
20	D4	Trouble-shooting during NC processing programming					○
E		CNC turning					
21	E1	Preparation for a CNC lathe and equipment		○			
22	E2	Preparation for materials, workpiece and fixture		○			
23	E3	Preparation of measuring instrumentsprocessing		○			
24	E4	Preparation for turning tools and other standard cutting tools		○			
25	E5	Checking of NC processing programs through CNC control software				○	
26	E6	Fixing of cutting tools based on the NC processing programs		○			
27	E7	Measurement of the tool length		○			
28	E8	Fixing of fixtures and jigs	○				
29	E9	Fixing of the workpiece		○			
30	E10	Setting of the origin of workpiece coordinate		○			
31	E11	Trial cutting of parts to be processed		○			
32	E12	Automatic processing of parts using a CNC lathe	○				
33	E13	Maintenance of machinery, tools, and measuring instruments			○		
34	E14	Trouble-shooting during processing				○	

Unit No.	Work number	Work name	Work levels				
			1	2	3	4	5
F		CNC milling (including CNC machining center work)					
35	F1	Preparation for a CNC milling machine and equipment		○			
36	F2	Preparation for materials, workpiece and fixture		○			
37	F3	Preparation of measuring instruments		○			
38	F4	Preparations for a milling cutter and other standard cutting tools		○			
39	F5	Checking of NC processing programs through CNC control software				○	
40	F6	Fixing of cutting tools based on the NC processing programs		○			
41	F7	Measurement of the tool length		○			
42	F8	Fixing of fixtures and jigs	○				
43	F9	Fixing of the workpiece		○			
44	F10	Setting of the origin of workpiece coordinate		○			
45	F11	Trial cutting of parts to be processed		○			
46	F12	Automatic processing of parts using a CNC milling machine	○				
47	F13	Maintenance of machinery, tools, and measuring instruments		○			
48	F14	Trouble-shooting during processing			○		
G		Product quality contro					
49	G1	Quality control planning for parts to be processed				○	
50	G2	Quality control during processing				○	
51	G3	Quality control for products before they are brought into the warehouse				○	
52	G4	Product quality control before delivery				○	
H		Maintenance of equipment (machinery, jigs and fixtures, cutting tools and measuring instruments)					
53	H1	Planning for the maintenance of equipment (machinery, jigs and fixtures, cutting tools and measuring instruments)			○		
54	H2	Maintenance of machinery			○		
55	H3	Maintenance of jigs and fixtures			○		
56	H4	Maintenance of cutting tools			○		
57	H5	Maintenance of measuring instruments				○	
I		Ensuring industrial safety and health					
58	I1	Application of work rules to CNC processing	○				
59	I2	Ensuring fire prevention in CNC processing	○				
60	I3	Ensuring safety when using electricityduring CNC processing	○				
61	I4	Prevention of work-related accidents during CNC processing	○				
K		Improvement of processing efficiency					
62	K1	Decision on conditions to improve CNC machinery and equipment					○
63	K2	Research in the improvement of CNC machinery and equipment					○
64	K3	Improvement of CNC machinery and equipment					○
65	K4	Application of machinery after its introduction and improvement				○	
66	K5	Guidance in the operation of CNC machinery after its introduction and improvement				○	
L		Career enhancement					
67	L1	Communication with customers					○
68	L2	Communication with colleagues					○
69	L3	Participation in skill training courses		○			
70	L4	Participation in skill competitions		○			
71	L5	Development of personnel lower in ability level than one					○

Source: National Occupational Skill Standard - CNC Metal Machining, December 2011, GDVT.

Table 5.3. Unit Structure of a CNC Metal Machining Job

	Item	Major descriptions
1	Work name	Title that enables workers to imagine what the work is
2	Work number	
3	Work description	Specific details of what constitutes the work
4	Work goal	Items that serve as goals to be achieved in the work and those to which attention must be paid to during the work
5	Required skills and knowledge	Indispensable skills and knowledge to perform the work
6	Conditions for performing work	Conditions such as materials, equipment, tools, documents, etc. necessary to perform the work
7	Skill evaluation standards	Items that provide guidelines to judge the appropriateness of abilities to perform the work. Evaluation method: Method to evaluate the abilities to perform the work. What should be evaluated, and how?

Source: Drafted by the authors.

Work in each unit is rated in five grades, in consideration of level of difficulty and complexity: Level 5 (highest) to Level 1 (lowest). As described below, the overall structure of NOSS differs greatly from the details of skills test standards in Japan, and there are also differences in the scope of abilities required for managers and supervisors at Level 5 (See Section 3.1). For example, the unit structure of a CNC metal machining job is as described in Table 5.3.

Generally speaking, competency-based skills evaluation determines whether a worker is eligible to obtain a skill certificate by assessing the achievement of work at the worksite of an enterprise based on a unit sheet corresponding to the targeted competency. This means that those who are certified for a particular work unit are presumed to be able to perform the work concerned at the worksite of an enterprise. As described above, certification for a particular work unit precisely corresponds with the ability to perform the work concerned at the worksite of an enterprise, and this characterizes competency-based skills evaluation. Table 5.4 shows the content of Unit No. 40 Work No. F6, one of the units that constitute the NOSS for the CNC metal machining job, 'Fixing of cutting tools based on the NC processing program.'

Table 5.4. Content of the Work: Fixing of Cutting Tools Based on the NC Processing Program

Work name: Fixing of cutting tools based on the NC processing program
Work No.: F6
I. Work description
Switch the inspection process for cutting tools and technical attachments to manual operation mode. And fix cutting tools based on the NC processing program
II. Work goal
- Level of precision at which cutting tools and technical attachments are fixed based on the NC processing program
- Level of carefulness, cautiousness, and accuracy; level of safety

III. Required skills and knowledge
1. Skill
   - Measurement using measuring instruments, reference to technical documents, and the operation of a CNC milling machine and a CNC machining center
   - Search for documents and assembly
2. Knowledge
   - Techniques to operate a CNC milling machine and a CNC machining center, CNC processing technology, and cutting theory
   - Checking and measurement and fixing of cutting tools

IV. Conditions for performing work
- Cutting tools and technical attachments, technical drawings, processing process slip, and NC processing program
- Manual and NC programming machine, CNC milling machine, and CNC machining center

V. Skills evaluation standards and evaluation methods

Evaluation standards	Evaluation methods
1. Fix cutting tools and technical attachments based on the NC processing program	1. Check cutting tools and technical attachments based on the NC processing program
2. Carefulness, cautiousness, accuracy, and safety	2. Directly check levels by model at the CNC milling machine and the CNC machining center based on the NC program

Source: Drafted by the authors based on GDVT (2011).

2.3. Establishment of an NOSS-based national skills evaluation system

The framework for Vietnam's national skills evaluation is built based on NOSS. Therefore, the national skill test, whose levels correspond to the work levels of NOSS, is divided into five grades from Level 5 (highest) to Level 1 (lowest). In addition to high-level skill and expertise, Level 5, the

Table 5.5. Level of National Skills Evaluation and Required Qualifications

Level	Description	Required Qualifications (One of the items specified below is mandatory)
5	Having high-level skills and being able to perform one's duties independently and responsibly through self-control. Possessing basic and specialized knowledge. Having the ability to analyze and judge and being able to draw up plans. Being able to analyze necessary information and make proposals. Being also able to manage one's team on one's own responsibility.	(1) Having two years of practical experience or more after obtaining a national vocational skill certificate Level 4 (2) Having five years of practical experience or more after obtaining a national vocational skill certificate Level 3 or completing a vocational training college course (3) Having eight years of practical experience or more after obtaining a national vocational skill certificate Level 2 or completing a middle-class vocational training course (4) Having eleven years of practical experience or more after obtaining a national vocational skill certificate Level 1 or completing an introductory vocational training course (5) Having 14 years of practical experience or more
4	Being able to perform one's complicated duties by oneself through self-control. Possessing basic and specialized knowledge. Being able to assess and analyze necessary information and make proposals. Being able to manage one's team.	(1) Completing the bachelor's course at university (2) Having two years of practical experience or more after obtaining a national vocational skill certificate Level 3 or completing a vocational training college course (3) Having six years of practical experience or more after obtaining a national vocational skill certificate Level 2 or completing a middle-class vocational training course (4) Having eight years of practical experience or more after obtaining a national vocational skill certificate Level 1 or completing an introductory vocational training course (5) Having eleven years of practical experience or more
3	Being able to perform one's complicated duties even without detailed guidance. Possessing basic and specialized knowledge. Being able to understand, assess, and analyze necessary information. Being able to guide other members in a team.	(1) Completing a vocational training college course for a job to be tested (2) Having two years of practical experience or more after obtaining a national vocational skill certificate Level 2 or completing a middle-class vocational training course (3) Having six years of practical experience or more after obtaining a national vocational skill certificate Level 1 or completing an introductory vocational training course (4) Having eight years of practical experience or more
2	Being able to perform simple, daily duties. Being able to perform complicated jobs under the guidance of a supervisor. Being able to collect information and explain about the collected information. Being able to work on a team.	(1) Completing a middle-class vocational training course for a job to be tested (2) Having two years of practical experience or more after obtaining a national vocational skill certificate Level 1 or completing an introductory vocational training course (3) Having four years of practical experience or more
1	Being able to perform simple, daily duties. Possessing basic knowledge. Being able to understand, pay attention to, and convey necessary information as required.	(1) Person engaged in a job to be tested with no qualifications particularly required (2) Having one year of practical experience or more in a job to be tested

Source: Drafted by the authors.

highest of all levels, requires the ability to analyze, judge, manage, and perform duties based on one's own responsibility. Level 1, the lowest, means having basic knowledge and being capable of performing simple, ordinary work. Details of each level of national skills evaluation are as described in Table 5.5.

2.4. The difficulty of competency-based skills evaluation and Vietnam's response

As described above, while the competency-based NOSS skills evaluation is very systematic, there are issues to be addressed when performing it in developing countries that are in the early stage of industrialization and have limited financial and human resources. The first issue is on the establishment of institutional mechanisms for industry engagement. The basic principle of competency-based skills evaluation is to assess the ability to carry out the work described in the unit sheet at the worksite of an enterprise.

The apprenticeship program in the United Kingdom, whose purpose is to acquire National Vocational Qualifications (NVQ) in the field of engineering, offers a system that enables workers to acquire qualifications for basic units (such as the operation of a lathe and basic element work) through off-the-job training (OffJT) at vocational training facilities and then acquire qualifications for applied units through on-the-job training (OJT) at the workplace of an enterprise. In this apprenticeship program, prior to the start of training, the assessors, the person in charge in an enterprise, and the trainee (who aims at acquiring qualifications) discuss and decide various issues, such as how to proceed with training for work units, how to assign work, and what should be preserved as evidence that shows the degree of work achievement. Once the training starts, the assessor visits the worksite once every one to two weeks to check the degree of work achievement by the trainee. The method used for interim evaluation is to confirm evidence, interview the trainee's superior and colleagues at the worksite to ascertain the progress in training and the degree of work achievement, and check the overall degree of achievement mainly through an interview with the trainee. In addition, the assessor provides consultation and offers advice on problems and other matters faced by the trainee and gives instructions, counsel, and so on for the next step.

When the work is completed, the assessor decides whether the trainee has demonstrated sufficient performance for the all units concerned. For reference, in the field of engineering, 1.5 years of training are required to acquire NVQ Level 2 qualifications and three years for Level 3. As is clearly indicated by the processes of the apprenticeship program mentioned above, it is impossible to carry out the entire CBT without the cooperation of enterprises. To that end, it is indispensable to build a system that urges many enterprises to understand the competency-based skills evaluation method and extend cooperation in implementing it. However, many developing countries have struggle to establish strong cooperation with industry (Mori 2019).

The second issue is the time and cost required to build a skills evaluation system. Competency-based skills evaluation takes a long time because all units in the unit sheet for a job are evaluated one by one. And this requires a great deal of work from the enterprise, assessor, and examinee (worker), including specific agreements on deliverables from work, observation of work processes and interviews by the assessor, and the organization of evidence showing that work has been performed. But many developing countries are urged to conduct skills evaluation in a short period of time, and in addition, they lack the financial resources needed to establish such a system.

Taking this situation into account, Vietnam has been developing its national skills evaluation system by combining two existing systems: competency-based skills evaluation and comprehensive skills evaluation, consisting of theoretical and practical tests.[4] There are many issues to be addressed when conducting competency-based national skills evaluation, including preparation of questions for assessment, development of assessors, and accreditation of assessment centers, but the Vietnamese government overcame these challenges through technical cooperation from Japan, South Korea, Australia, and other countries. In 2011, the first national skill test for mine excavating technology jobs was held for employees in the mine group of VINACOMIN, a SOE supervised by the Ministry of Industry and Trade (MOIT), at the Hongkang Mine Vocational Training Junior College in Quang Ninh Province. As explained in the next

[4] The term ‘comprehensive skills evaluation’ refers to the term used by the Ministry of Health, Labour and Welfare, Japan to describe the Japanese-style skills tests, which require an examinee to have a wide range of skills and knowledge required for future career progression to pass a test on a specific job. Also see Section 3.

section, national skills testing started with development cooperation from Japan.

3. Development of the National Skill Test with Japan's Development Cooperation

3.1. Overview of the Japan's national skill test

In Japan, the national skill test started in 1960 for the purpose of increasing workers' motivation to learn skills, increasing society's recognition of skills, and improving the skills and status of workers. Today, they are one of the major qualification systems in the country, and annually some 800,000 people take these tests. This section outlines: (i) their implementation and administration system; (ii) the scheme; and (iii) the testing methods.

3.1.1. Implementation and administration system

The implementation and administration of Japan's skill tests are undertaken by four organizations, dividing the roles in this process among them. Major roles are as listed in Table 5.6. In particular, skill test commissioners appointed by the prefectural vocational ability development association (PVADA) play a major role in the implementation and administration of skill tests (preparations, testing, and marking and evaluation).

The costs of the Japan's national skill test are covered by government subsidies (employment insurance premiums paid by business owners) and test fees as a source of revenue. Specifically, part of the funds for the ability development service, one of the two categories of employment insurance services paid by business owners as stipulated in the Employment Insurance Act, is channeled to skill test implementation, creating an environment that enables their stable implementation. Table 5.7 indicates employment insurance services and employment insurance premium rates against gross salaries.

3.1.2. Scheme

Job types for skill tests are chosen from among those which are highly needed in industry and society taking into consideration the number of workers covered, the education and training provided, and other factors. As of July 2018, 130 job types were chosen.

Table 5.6. Roles of Organizations Involved in the Implementation and Administration of the Japan's National Skill Test

Ministry of Health, Labour and Welfare	Japan Vocational Ability Development Association (JAVADA)	Prefectural governments	Prefectural vocational ability development association (PVADA)
• Creation of skill test standards and their details • Drawing up and announcement of annual implementation plans • Certification of questions for tests, implementation guideline, and marking criteria • Decision on criteria for success or failure in tests • Delivery of success certificates (Grade 1 or higher)	• Creation of questions for tests based on standards and details • Creation of implementation guidelines and marking criteria	• Setting of fees for taking tests • Drawing up of implementation plans • Public announcement of implementation • Decision on success and failure and announcement of successful examinees • Delivery of success certificates (Grade 2 or lower)	• Preparation of a guide to skill tests • Collection of examinees and acceptance of their applications • Collection of fees for taking tests • Delivery of admission tickets for tests • Appointment of skill test commissioners • Implementation of tests • Judgment on success or failure in tests

Source: Drafted by the authors based on 2018 materials from JAVADA.

Table 5.7. Employment Insurance Services and Employment Insurance Premium Rates (Fiscal Year 2020)

Structure of employment insurance services	Paid by business owners	Paid by workers
Benefits for unemployment, etc.	3/1000 or 0.3%	3/1000 or 0.3%
Two employment insurance services • Employment stability service • Ability development service	3/1000 or 0.3%	———
Total	9/1000 or 0.9%	

Source: Drafted by the authors based on information from the website of the Ministry of Health, Labour and Welfare (2019a, b, c).

Note: 1. The employment insurance premium rate can be changed by the Minister of Health, Labour and Welfare if certain requirements are satisfied in light of financial conditions (flexibility clause).
2. In principle, the employment insurance premium rate is 17.5/1000 or 1.75%, but due to annual reviews, the rate of 9/1000 or 0.9% has been applied since fiscal 2019.
3. The content of employment insurance services is annually evaluated by the Employment Insurance Section of the Vocational Stability Subcommittee, and the results of evaluation are reflected in the review of budgets.

Table 5.8. Grades and Criteria for the Japan's National Skill Test

Grade	Criteria
Special Grade	Degree of skills a manager or supervisor should usually have and knowledge thereof
Grade 1 and Single Grade	Degree of skills an advanced-grade technician (person with ten years of experience or more) should usually have and knowledge thereof
Grade 2	Degree of skills a middle-grade technician (person with five years of experience or more) should usually have and knowledge thereof
Grade 3	Degree of skills an introductory-grade technician should usually have and knowledge thereof

Source: Drafted by the authors based on the Ministry of Health, Labour and Welfare (2024).

There are four grades (Special Grade, Grade 1 and Single Grade[5], Grade 2, and Grade 3), and the levels of test are as listed in Table 5.8. In particular, Grade 3 was created when the scheme was revised to cover industrial high school students or similar, and many of these high school students apply for Grade 3. The Grade 3 pass certificate is used to emphasize the applicant's ability in job hunting activities.

The standards for the national skill test and their details consolidates in a systematic way the knowledge and skills required at each level (Special Grade, Grade 1, 2, and 3) of technician. In order to show concrete differences between Vietnam's NOSS and Japan's standards, Table 5.9 illustrates the standard for the Grade 3 skill test for machining center work and its details.

The theoretical test consists of knowledge required for technicians in machining jobs (common subjects) and knowledge required for machining center work (specialized subjects), because machining center work is one area of machining work. The test covers a wide range of knowledge in a systematic way, and it includes knowledge that is indispensable or that which technicians ought to or must have, and knowledge that it is desirable for them to have. On the other hand, the practical test, which is based on the list of element work that constitutes machining center work as clarified through job analysis, comprises elements that technicians at each level (introductory, middle, and advanced) must have the ability to perform.

[5] 'Single grade' means a skill test which is not separated by grade (The Ministry of Health, Labour and Welfare 2024).

Table 5.9. Standards for Grade 3 Skill Test of Machining Center Work

Theoretical test	
[Common subjects]	5. Material dynamics
1. Mechanical processing in general	Load, stress, and strain
(1) Types and uses of machine tools	6. Drawing
(2) Types and uses of turning tools, milling cutters, drills, and grinding wheels	Graphic methods, material symbols and fit system stipulated in the Japanese Industrial Standards (JIS)
(3) Types and uses of cutting oil	7. Electricity
(4) Lubrication	(1) Electric terminology
(5) Types of hydraulic equipment	(2) How to use electric machinery and instruments
(6) Types and uses of jigs and tools to be attached	8. Safety and health
(7) Measurement methods	Detailed knowledge of safety and health
(8) Quality control	[Specialized subjects]
2. Machine elements	Machining center processing methods
Types, shapes, and uses of main components of a machine	(1) Types, structure, functions, and uses of machining center
3. Mechanical processing methods	(2) Programming
(1) Marking in general	(3) Types and uses of cutting tools
(2) Hand finishing	(4) Cutting
(3) Other processing methods	
4. Materials	Practical test
(1) Types, ingredients, qualities, and uses of metal and non-metal materials	Machining center work
(2) Heat treatment of metal materials	(1) Programming
(3) Test of materials	(2) Machining center processing methods

Source: Drafted by the authors based on the Ministry of Health, Labour and Welfare Director-General for Human Resources Development (2020).

3.1.3. Testing methods

The Japan's national skill test adopts a comprehensive skills evaluation method consisting of a theoretical test and a practical test. The theoretical test, which is not designed to simply test academic knowledge, focuses on determining whether examinees have the proper judgment and knowledge required for the performance of work.

The format for setting questions for the theoretical test, which varies from one skill test grade to another, is as follows:

- Special Grade: Choosing from among five answers (50 questions);
- Grade 1, Grade 2, and Single Grade: Choosing from among four

answers (25 questions), and true-false questions (25 questions), for a total of 50 questions;
- Grade 3: True-false questions (30 questions).

On the other hand, the practical test, which consists mainly of tests on work such as production in which examinees are actually required to perform work, is characterized by its scoring and evaluation being based on a point deduction method. The manner of working and the time required for work are also scored and evaluated using the point deduction method, and examinees pass the test with a mark of 60 per cent or higher.

In principle, the qualifying criteria is 60 points or more out of a possible 100 for the practical test, and 65 points or more for the theoretical test. The ratio of successful applicants varies from one job type to another, but on average, it is about 60 per cent for Grade 3, 35 per cent for Grade 2, and 30 per cent for Grade 1. Even experienced workers have difficulty passing the test for Grade 2 or higher unless they practice and study considerably in advance. Certificates are all the more valuable because of such difficulty, and many enterprises treat successful applicants better in the workplace. There are also many enterprises that adopt the skill test for employee ability development.

In principle, taking a skill test requires practical experience in the job type to be tested. The number of years required is as indicated in Table 5.10 but may be reduced depending on factors such as history of vocational training and academic background.

3.2. Differences between Japan's skill test standards and competency-based skills evaluation

Japan's skill testing differs from the competency-based skills evaluation used by Vietnam, NOSS, which is outlined in Section 2, and both have their strength and weaknesses. A look at the overall structure of evaluation standards shows some similarities between Japan's skill test standards (see Table 5.9) and the Vietnamese versions of NOSS (see Table 5.2). Meanwhile, as found at Level 5 (Work Group A and L), the Japan's standards and their details do not include the abilities required at the manager level, including grasping customer needs and possessing skills in communication with customers. This is probably because Japan's skill tests do not include customer service in the category of managers' and

Table 5.10. Practical Experience Requirement for the Japan's National Skill Test

Special Grade	Five years of practical experience or more after passing Grade 1 test
Grade 1	Seven years of practical experience or more
Grade 2	Two years of practical experience or more
Grade 3	Less than six months (*Note)
Single Grade	Three years of practical experience or more

Source: Drafted by the authors based on JAVADA (2018).

Note: Those enrolled in the department related to the job type to be tested and those who are receiving vocational training in the training department can also take the test for this grade.

supervisors' essential abilities.

There are also differences in the scope of the technical and operating knowledge and skills covered. In Japan, as part of skill and knowledge required for managers and supervisors, the skill test standards for the Special Grade machining job and their details include theoretical test and practical test subjects in: (i) process control; (ii) work control; (iii) quality control; (iv) cost management; (v) safety and health management; (vi) work guidance (how to draw up education and training plans, provide education and training, job instruction, job method, and job relation, as well as education and training methods); (vii) equipment control; and (viii) worksite techniques related to machining work. In other words, compared to Vietnam's NOSS, Japan's skill tests seem to require managers and supervisors to have knowledge and skills in a wider range of areas than needed directly in their current job, even if that is simply to perform machining work.

It can also be said that Japan's skill test standards comprise knowledge and element work required in the long run. For example, persons who pass the Grade 2 test are presumed to be able to carry out work that can be performed by middle-grade technicians (with five years of practical experience or more). It may be difficult for successful applicants to immediately perform exactly the same work as that done at the worksite of an enterprise, but the criteria for Grade 2 show that they can handle a wide range of work if they gain some experience. In addition, a wide range of knowledge is used effectively in such aspects as work improvements at the worksite and in the originality and ingenuity exerted for work. But work to be tested does not correspond precisely to the work that one is in charge of (or will be in charge of after employment) at the worksite of an

enterprise.

By contrast, competency-based skills evaluation is characterized by precise correspondence between work (unit) certification and the ability to perform work at the worksite of enterprises. NOSS allows workers to easily obtain a clear understanding of the entire work, because the unit sheet describes work details in concrete terms. If examinees pass a test for work units that constitute machining center work, for example, they are recognized as being able to perform the work concerned at the worksite of an enterprise. In terms of knowledge, however, each unit only describes the knowledge required for the performance of work in that unit. For this reason, snippets of knowledge tend to be scattered throughout a unit sheet. This makes it rather difficult to understand the entire scope of knowledge required.

Reflecting differences in the knowledge and skills covered as described above, Japanese-style skill tests differ from competency-based skills evaluation in terms of the method of conducting skills evaluation as well. Rather than measure the ability to perform duties at the worksite of an enterprise, the Japan's national skill test assesses skills through theoretical tests and practical tests, which cover in a comprehensive way the skills and knowledge that technicians at each level (Special Grade and Grades 1, 2, and 3) must have and that it is desirable for them to have. The theoretical test consists of questions chosen from the systematically organized knowledge that technicians must have and the knowledge that it is desirable for them to have.

In Japan, the practical test is usually conducted at vocational training institutions or corporate training centers. For the practical test in machining center work, for example, the members of the committee that comprises representatives from industry and education and training providers carefully select from many types of element work those which they consider as particularly important to provide a comprehensive set of assignments (see Table 5.9). Therefore, if examinees can accomplish such assignments, they can also process similar products other than these. Worded differently, assignments are given by selecting the types of work that enable the assessor to evaluate the technical level of applicants if their performance in such work is evaluated. In addition to products given as assignments, the practical test evaluates the time required for work and the manner of work [items related to safety work, proper work

procedures, work methods, and 3S (*Seiri*, *Seiton*, and *Seiso*)[6]].

In contrast, competency-based skills evaluation basically assesses the ability to perform detailed unit work through a job at the worksite of an enterprise (see Section 2.4). Some unit work, however, is performed at practical training stations (workshops) with similar work conditions (such as equipment, machinery, instruments and tools, materials, and furnishings) and work environments (such as temperature, humidity, brightness, and workspace), although less frequently.

In short, competency-based skills evaluation aims at evaluating in a systematic way whether examinees can successfully perform the particular type of work they are required to do in their current job (or a job they are going to have in the immediate future). It clearly evaluates the skills required for the current job, but if long-term career development is taken into consideration, it somewhat lacks flexibility, because the scope of knowledge and skills it covers is limited (Mori 2019). The reason for this is probably the high liquidity of labor markets as typified by the phenomenon that businesses offer clear job descriptions and hire people who suit them and that many people change jobs rather than work for the same company for a long period of time.

On the other hand, it can be said that Japan's skill tests are designed to evaluate not only the skills required for the current job but also skills that have benefits for future transfers and promotions in the internal labor market in mind. For this reason, the evaluation standards and the scope of the skills covered are lenient if favorably evaluated, and unclear if strictly evaluated. This seems to be related to two facts that: (i) in-company promotion, including job rotation, is relatively common under the long-term employment system; and (ii) there are internal labor markets (Koike and Inoki 1990). Another possible reason is the influence of Japanese culture when making job descriptions: it is not very common to clearly and concretely indicate all tasks required for a particular position in a job description. In other words, it can be seen that CBT and the Japan's national skill test have developed in European or Anglo-Saxon countries, and Japan, respectively, based on the corporate cultures and systems, industry-academia partnerships, and other factors in these

[6] See Chapter 3 about the definition of 3S, which is part of 5S which include *Seiketsu* and *Shitsuke*.

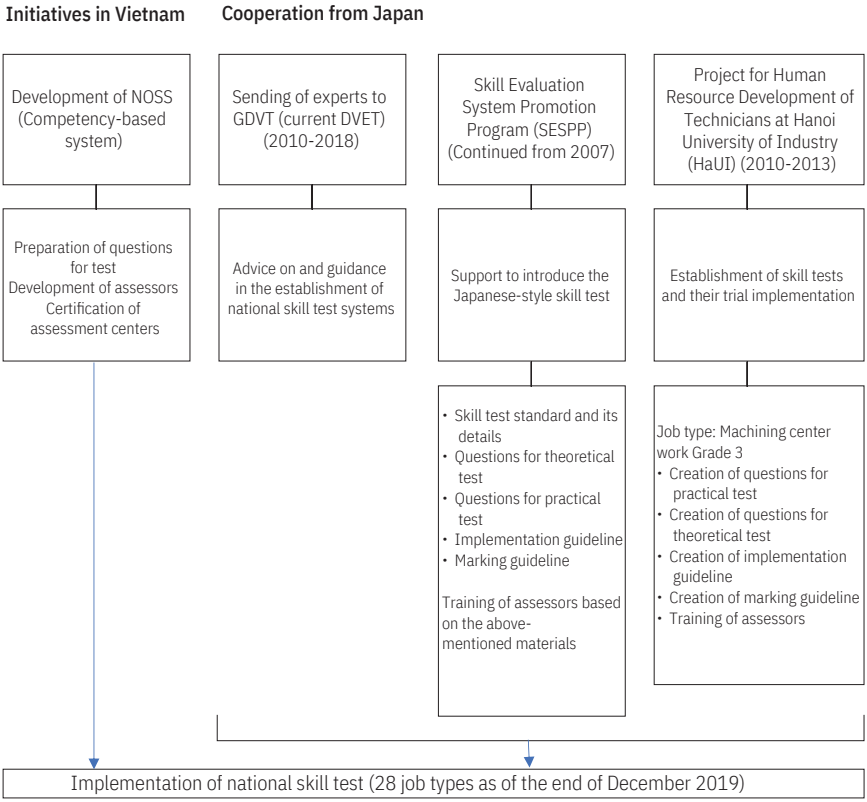
respective countries. Of course, as exemplified by the phenomenon that Japanese-affiliated businesses are seeing their long-term employment system collapsing (Brown, Green, and Lauder 2001), the skills evaluation methods are likely to undergo changes as society and industry change.

3.3. Japan's development cooperation in the implementation of national skills evaluation in Vietnam

When Vietnam conducted national skills evaluation, Japan extended development cooperation in three ways (see Figure 5.1): (i) dispatching JICA experts to DVET; (ii) implementing the Project for Human Resource Development of Technicians at Hanoi University of Industry (HaUI) (hereafter called the HaUI-JICA Project); and (iii) implementing the Skills Evaluation System Promotion Program (SESPP).

First, from 2010 to 2018 three JICA experts were dispatched to GDVT, (renamed DVET later) for two to three years for each. The major duty of these experts was to introduce Japan's skill testing system and its methods used to conduct skill tests and support Vietnam's initiatives for adopting them. For example, as indicated in Figure 5.1, the JICA experts dispatched to GDVT provided cooperation before the first national skill test for the mine excavating technology job described in Section 2.3 was carried out. GDVT/DVET learned the way Japan conducted skill tests through information and advice provided by the experts as well as knowledge and experience gained from SESPP. In addition, making the most of knowledge acquired mainly from South Korean and Australian methods, GDTV developed questions for theoretical tests and practical tests, developed assessors through assessors training programs, accredited the assessment centers, and performed other tasks.

These JICA experts also cooperated with the HaUI-JICA Project and SESPP described later. In particular, they worked closely with SESPP in deciding the programs to be offered, the persons eligible for joining the programs, the places where the programs were implemented, program periods, and other details. This is in part because those experts were dispatched from the Ministry of Health, Labour and Welfare, which has funded and supervised SESPP. Further details of two other projects involved more deeply in the implementation of national skills evaluation—the HaUI-JICA Project and SESPP—are described below.



Source: Drafted by the authors based on the JTB SESPP secretariat (2019), Hayaki (2012), Furuta (2015), Uchino (2018), and Mori et al. (2013).

Figure 5.1. Initiatives of Vietnam for the Implementation of the National Skill Test and Japan's Technical Cooperation

3.4. Establishment of a skill test in the HaUI-JICA Project

As described in Chapter 3, the HaUI-JICA Project was implemented from 2010 to 2013 with the aim of: (i) introducing a permanent management cycle that enabled the university to improve education and training to meet the needs of industry; (ii) conducting pilot skills tests; and (iii) establishing a better system to support students' job hunting (JICA 2014). The major result on which this chapter focuses is the conducting of pilot and national skill test for machining center work, which corresponds to Level 2.

3.4.1. Reason to select machining center work for a pilot skill test

In the beginning, Japanese experts and HaUI management staff had different thought on the target job for a pilot skill test.

The JICA experts dispatched to GDVT recommended that turning and milling would be suitable as the first job type related to metal machining in launching the national skill test, and the JICA experts dispatched to HaUI also submitted a similar proposal to the university. In machining jobs, conventional turning machine and milling machine are widely used. If the process of learning skills and techniques is considered, a student can acquire skills and techniques more smoothly if he/she first learns basic processing techniques through work at general-purpose lathes and milling machines and then shifts to processing using numerically controlled (NC) machine tools. From the viewpoint of evaluating workers' skills through general-purpose machines, it is possible to evaluate the basic and important items in machining work such as: (i) whether workers perform work using appropriate methods and procedures; and (ii) whether they process workpieces under appropriate cutting conditions.

However, HaUI strongly requested skills evaluations for machining center work. The reasons for this request were: (i) that processing work using NC machine tools was generally more appealing to industry than that using lathes and milling machines, because it was based on the latest technology; (ii) that many Japanese-affiliated and Vietnamese enterprises were using machining centers in their factories; and (iii) that by conducting skill tests for machining center work at the university and making the most of machining centers installed there through JICA technical cooperation and other projects, HaUI could emphasize the high level of its education and training and consequently attract the attention of industry and improve its reputation. As the result of several discussions and taking into account the importance of respecting HaUI's sense of ownership and the government's definite promise for support, the Japanese experts compromised and agreed to establish skill tests for machining center work.

3.4.2. Development of test questions and assignments

In formulating a Level 2 skill test for machining center work, HaUI aims to develop theoretical and practical test questions that meet the actual

situation of Vietnam and the needs of enterprises, while referring to Grade 3 machining center work standards and their details in Japan's skill tests.

Their test questions were developed in line with the NOSS for CNC metal machining, which was also adjusted in accordance with the situation in Vietnam and HaUI's strategies. The NOSS on which the Level 2 skill test was based has been drafted with the cooperation of GIZ, but at a meeting of the NOSS Development Committee, the authors, who participated as observers, were requested to make comments on the structure of NOSS and give advice on the division of levels for work units. In particular, they proposed to shift the basic knowledge and work that operators should acquire to Level 2, because they were currently positioned as Level 3 or 4. Based on this advice, the Vice President of HaUI, who presided over the discussions, revised the division of levels for work units.

The practical test for Grade 3 machining center work in Japan consists of a written test for practical skills and an assignment, in which examinees make a program for assigned diagram, and draw the programmed diagram by using a CNC machine tool. However, it does not include an assignment for processing a workpiece using a machine. As the result of consultations, it was decided to adopt processing using a machine as an assignment for the practical skill test, as emphasized on the Vietnamese side. Consequently, the skills evaluation test for machining center work has comprised: (i) a theoretical test; (ii) a written test for practical skill; and (iii) a practical test (processing using a machine). Accordingly, HaUI started developing questions for these tests.

In deciding the areas of questions for theoretical tests and the scope of questions to be set, the university referred to the standard and details for Grade 3 machining center work in Japan's skill tests. The scope of subjects for theoretical tests in Japan is very broad, and many of them are not included in the curriculum of vocational colleges in Vietnam. It was decided, therefore, that for Level 2 (equivalent to Grade 3 in Japan) machining center work, questions should be set in 13 areas taking into consideration the subjects included in the curricula of vocational college courses in Vietnam.

The HaUI working group members, with technical guidance from JICA experts, also decided to develop a written test for practical skill with three elements: (i) selection of tools suitable for processing; (ii) calculation of

offset volume for workpiece coordinates; and (iii) programming. The questions for the corresponding skills test in Japan include the completion of a program by entering commands and values in all processes from the start of programming to its end. But the assignment asking examinees to develop a main program and subprograms in all processes from the start to the end demands too high a level of ability and takes too long to be completed. Therefore, taking into consideration the practical skill training provided for machining center work at Vietnamese vocational colleges, the question for Level 2 machining center work has asked examinees to complete programming by entering appropriate commands and values in the blank spaces for just 10 processes.

Following the Level 2 mine excavating technology skill test which was conducted as the first national skill test, the theoretical test consisted of 50 questions with three choices. The Grade 3 theoretical test in Japan comprises 30 true-false questions. Test questions were drafted using the procedures described below. First, the JICA experts presented and explained several samples of practical test assignments and theoretical test questions. Second, six members of the working group consulted with one another to decide assignments and areas for which they were responsible and developed assignments and questions while referring to the samples presented. Third, all of the six members reviewed and revised the assignments and questions. Fourth, they improved the assignments for practical tests through trial processing with machine tools to check cutting conditions and programs. Finally, they reviewed all processes and questions together to complete a final version of the questions. After several trials, a prescribed set of practical assignments was completed. Meanwhile, a total of 210 questions in 13 areas were completed for the theoretical test, and it was decided that one test should be made up of 50 questions chosen from among various areas.

Practical skills assessment using machines has consisted of top surface processing using a face mill, profile processing using an end mill, and chamfering, and drilling. This is unique to Vietnam, since the practical test in Japan does not assess skills using a machine. It is assumed in Japan that technicians who already have processing skills using general-purpose machines (such as ordinary lathes and milling machines) take the skill test, and their cutting skill have been proven by skill tests for turning, milling, and other similar types of work. Therefore, the practical test in Japan excludes mechanical processing assignments to evaluate processing

skill and instead focuses on programming. In Vietnam, on the other hand, when machining center work was developed as a job type for skills testing, tests for machining job types such as turning and milling had not been established. For this reason, there was no skill test to evaluate machining skill at all. Taking this situation into consideration, the working group discussed the importance of evaluating processing and measuring skills in machining center work and decided to assess processing skills using a machine. But setting machining skills tests by adopting the opinions of the counterpart made it possible to evaluate not only the processing skill of examinees but also their skills in fixing and removing materials, their measuring skill using micrometers and vernier calipers, and other skills. This is worthy of note in that it sheds light on the evaluation of basic skills, an evaluation item not found in Japan's practical tests.

In developing these tests, the JICA experts focused on providing examples, giving advice for problem-solving, and waiting for the members of the working group to complete questions on their own while managing the overall schedule, rather than setting questions by themselves. They also held a meeting with the working group members once every two weeks to examine and revise the content of test questions as well as their degree of difficulty and appropriateness, to complete test questions properly. Through these regular meetings with specific agenda, the group members learned how to develop appropriate test questions, thus improving their ability for skill test development steadily.

Following the completion of test questions, the working group started to draft an implementation guideline for the practical tests, as well as marking criteria and procedures and other guidelines. In parallel, the training of assessors was implemented. The implementation guideline in Japan described work procedures mainly by text, but this makes it difficult to grasp the entire flow of work. Thus, in developing a Vietnamese version of the implementation guidelines, as the JICA experts provided the idea of introducing a flow chart at the meetings with the HaUI working group members. They decided to include such a chart in the implementation guide. As a result, the guide became user-friendly and enabled users to understand work procedures easily without long texts and reduce mistakes. It can be said that this is the result of continuous improvements through adopting the ideas of the counterpart.

When the implementation guidelines for practical tests, marking criteria

and procedures, and other guidelines were completed, a pilot skill test was carried out using second-year students in the machining course of HaUI's Vietnam-Japan Center as examinees. Through this pilot skill test, the six members of the working group, who served as assessors, improved their practical ability to implement and operate the skill test. And based on the results obtained from the pilot test, they revised and finalized the implementation guidelines for practical tests, marking criteria and procedures, and other documents.

3.4.3. Implementation of the national skill test for CNC machining center work

In October 2012, HaUI submitted an application to acquire the accreditation of Level 2 machining center work as a national skill test to GDVT, together with the results of pilot skill test and a total of 17 kinds of documents, including the implementation guidelines for practical tests, scoring criteria and procedures, and other implementation documents. Later, in November 2012, HaUI was accredited by GDVT as a national skill assessment center for a machining center work. In addition, GDVT strongly requested the university to conduct Level 2 machining center work as the national skill test, and HaUI hastily decided to do so within December. In strongly requesting the university to conduct the skill test for Level 2 machining center work, it is inferred that GDVT suggested HaUI conduct the national skill test for three main reasons. The first reason was that Level 2 machining center work is the first job type addressed by the national skill test in the field of machining and that this is expected to appeal greatly to manufacturing-related enterprises. In addition, if this succeeded, GDVT would be able to accumulate knowledge on the establishment of subsequent skill tests for machining job types. Second, GDVT may have valued the application documents, including implementation documents, submitted by HaUI for accreditation. They would have expected that HaUI could conduct the national skill test successfully by utilizing these documents developed based on the pilot skill test. Finally, since the HaUI-JICA Project was scheduled to end at the end of January 2013, various kinds of technical advice would be obtained by conducting the test before the closure of the project and the departure of the JICA experts.

HaUI working group members who worked as assessors during the pilot skill test were appointed as assessors again for the national skill test.

Following GDVT's request to add four new external assessors from the outside when the test was conducted, a system was put in place in which the training of these additional assessors was undertaken by JICA experts and the leader of HaUI's working group.

As the result of a review by the working group, the BT-30 machining center manufactured by a Taiwanese electronics company, Foxconn, which the assessors were familiar with handling, was used. It was also decided that the maximum number of examinees should be 10, with three units from the machining center (one being a spare) prepared. The members of the working group played a leading role in preparing for and conducting this skill test, and the JICA experts took the attitude of giving advice and paid attention so that they did not provide too much guidance.

Machining centers used by enterprises vary from one manufacturer to another in terms of performance, functionality, programming, operation method, and so forth. Therefore, the working group looked for Japanese-affiliated, Vietnamese, and other enterprises that used Foxconn's BT-30 machining center for production and collected examinees so that a sufficient number could be secured. As a result, the president of a Japanese-affiliated manufacturer of electric and electronic equipment, who was active at the Japanese Chamber of Commerce and Industry, offered to let 10 employees take the skill test as part of its employee training program. The national skill test for machining work was the first of its kind in Vietnam and the first experience for examinees from a Japanese-affiliated enterprise. Since they could not even imagine what the test was going to entail, they were somewhat concerned. Therefore, the project decided that the skill test should be carried out after they received training to prepare them for taking the test. Roles were divided among HaUI working group members when preparatory lectures were given. Based on this process, a national skill test for Level 2 machining center work was conducted at HaUI in December 2012. As a result, four of the 10 examinees passed the test.

The HaUI-JICA Project was completed in January 2013. Subsequently, Level 3 machining center work was developed while making the most of the experience gained from the development of Level 2 machining center work. Currently, Level 2 and 3 machining center work tests are conducted as the national skill test.

3.5. Technical cooperation through SESPP

SESPP has been conducting its activities in Vietnam since 2007.[7] By implementing three programs: (i) Skills Evaluation Method (SEM); (ii) Skills Assessor Training (SAT); and (iii) Skills Evaluation Trials (SET), as described in Table 5.11, SESPP aims to develop the capacity of assessors who can conduct and administer skill tests by learning Japanese-style testing and evaluation methods, including practical test questions. It also strives to help Vietnam to establish a system that enables it to conduct and administer skill test independently. The SESPP secretariat works with Japanese experts and the Ministry of Health, Labour and Welfare, Japan, to draw up implementation plans and carry out programs by dispatching experts in the areas requested. The Public-Private Joint Committee,[8] which is convened between December of each year and January of the next year, examines reports on the implementation of the current year's plans and its results. In these, suggestions for improvement, policy for the coming year, the needs of corporate users, the opinions and requests of participants (including Japanese-affiliated enterprises), and other matters are presented and, based on the results of the examinations, develops annual implementation plans for the following year. The major programs of SESPP are as listed in Table 5.11.

In June 2018, as the result of dispatch of JICA experts to GDVT and support from SESPP, the Japan's national skill test for turning and milling (Grade 3) was recognized as equivalent to the Vietnam's national skill test for Level 2 (see Tables 5.5 and 5.8); the former was conducted at Hanoi Industrial Vocational College (HIVC) and the latter at HaUI. The assignments for practical test were adjusted in terms of work time, tolerance, and roughness requirement as explained below, taking into consideration the actual conditions in Vietnam.

The work time (test time) for Level 2 milling work was slightly extended

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7 Information as of December 2023 (SESPP 2023).

8 The Public-Private Joint Committee, which provides a forum for information gathering and exchange to formulate plans for the following year, is convened once a year with representatives from DVET, which is involved in the implementation of SESPP, evaluation centers (such as HaUI, Hanoi Industrial Vocational College (HIVC), and Saigon High Tech Park Training Center (SHTP-TC)), Japanese-affiliated enterprises, the Japanese embassy, the JICA Vietnam office, the JETRO Hanoi office, the Ministry of Health, Labour and Welfare, the SESPP secretariat, and other related organizations in attendance. The annual meeting of the Committee is hosted by the SESPP secretariat.

Table 5.11. Major Programs of SESPP

Programs	Description
1. Skill Evaluation Method (SEM)	Training to learn how to create questions for theoretical test and practical test based on the skill test standard and its details
2. Skill Assessor Training (SAT)	Training to give necessary knowledge and skills to conduct and administer skill test. Learning the duties and roles of assessors in the process of preparation, implementation, marking, and evaluation for skill test through subjects and practical exercises
3. Skill Evaluation Trial (SET)	Training in which persons who have completed SAT aim at improving their practical abilities by conducting and administering skill evaluation trial as a skill assessor on a trial basis (Eligible persons are those who have completed SAT). In SET, the questions for theoretical test and practical test in Japan are used, and tests are conducted in the same way as in Japan for evaluation.

Source: Drafted by the authors.

because the rigidity of milling machines installed at vocational training facilities in Vietnam was low, making heavy cutting impossible. The reason for this is that while the standard work time for practical test assignments in Japan is set on the assumption that a vertical milling machine with integrated spindle head and column is used for processing, SESPP experts made an alternative proposal, arguing that the standard work time needed to be extended slightly, because vertical milling machines installed at many of the vocational training facilities in Vietnam did not have such an integrated structure and their rigidity was low. Therefore, the SESPP experts and their counterpart worked together to cut materials on a trial basis using a less rigid vertical milling machine as pointed out, examine the materials processed, and calculate the time required for processing. As a result, both parties confirmed that it was appropriate to extend the standard work time by 15 minutes, thus setting a standard work time suitable for Vietnamese machines.

In relation to the dimensional tolerance and roughness of finished materials used in the evaluation standards for practical test assignments, the evaluation items for Level 2 turning were reworked, to better consider the turning tools widely used in Vietnam. The reason for this is that Chinese-made carbide tips are widely used at vocational training facilities in Vietnam. If compared with Japanese- and American-made ones, these carbide tips are less expensive but have a low level of processing performance (roughness of finished surface and processing accuracy), and there was concern that they would fail to satisfy processing specifications

Table 5.12. Number of Certified Assessors (by Job Type and Grade)

	Job types	Number of certified assessors
1.	Grade 3 turning	14
2.	Grade 2 turning	11
3.	Grade 3 milling	5
4.	Grade 3 mechanical inspection	16
5.	Grade 2 mechanical inspection	6
6.	Grade 2 information network cabling	4
7.	Grade 2 sequence control work	5
	Total	61

Note: All numbers indicate the total number of certified assessors, because some of them are certified for both Grade 2 and 3.
Source: Drafted using data on the results of SESPP projects implemented in fiscal 2019.

in the practical test assignments. Following the comments of the SESPP experts, their counterpart actually manufactured test assignments using a lathe to confirm the processing accuracy of the manufactured products. As a result, they decided to adopt a method of marking by slightly relaxing the standards for the roughness of finished surface and processing dimensional tolerance.

In addition to turning and milling, SESPP has been helping the Vietnamese government establish national skill tests for mechanical inspection, information network cabling, and sequence control. In particular, there are strong needs for turning and mechanical inspection among Japanese-affiliated enterprises. In the case of turning, the capacity is set for 10 examinees due to the number of machines available, but there are 20-25 applicants for each round of test. While the capacity for mechanical inspection is 20 examinees, 70-80 people apply in each round of testing. For this reason, adjustments are continuing to be made so that a disproportionate number of examinees are not assigned to particular corporate test sites and that examinees are evenly distributed there. As of 2019, through SESPP, a total of 61 (certified) assessors capable of conducting and administering Japanese-style skill tests have been produced (see Table 5.12). They are expected to play a central role as assessors when the job types with which they are concerned are adopted as one of the national skill tests.

As of October 2019, the national skill test has been expanded to cover 28

job types, including welding, industrial electricity, industrial electronics, mechatronics, automotive technology, CNC metal machining, turning, and milling, and by 2017, the number of examinees had grown so much that it exceeded 23,000.

3.6. Differences between SESPP and the HaUI-JICA Project

Due to differences in the main modality of technical assistance, the implementation and guidance strategy of SESPP differs from that of the HaUI-JICA Project. SESPP is introducing the Japan's national skill testing system into Vietnam and providing support for adopting it, aiming at developing assessor capacities to conduct and administer skill tests. And it has extended support for job types for which a national skill test has not been conducted in Vietnam and for which there are high needs among Japanese-affiliated enterprises. Therefore, in conducting skill tests, it focuses on using Japan's skill test questions rather than urging counterparts to develop them from scratch, providing assessor training and carrying out skill evaluation trials in the same way as in Japan, and lets assessors understand and learn the Japanese way of testing as it is.

For this reason, relevant Japan's skill tests have been partially revised to suit the actual situation in Vietnam, including the condition of machines installed in vocational training facilities in the country and the turning tools widely used there, and such revisions as the slightly extended work time and partly relaxed evaluation standards can somewhat be cited as examples of translative adaptation, but other aspects of the tests are all conducted in the same way as in Japan and are based on the same standards as those used in Japan. The first priority is therefore to learn the Japanese way of testing and provide guidance but recognize the need to revise this according to the results of implementation and in a way that suits the actual situation in Vietnam, keeping in mind that in the future national skill tests will be conducted more widely.

Since SESPP's main implementation modality is to dispatch Japanese experts for a short term, spanning around one week, it has used an instruction method featuring short-term intensive training in which experts demonstrate and teach how to evaluate, lets trainees evaluate through role play and practical exercises, and confirms the results of training. But this is intended to provide short-term guidance, and therefore, there is naturally a limit to the method in which experts train

assessors while confirming whether their counterparts fully understand the content of guidance and make it an integral part of their knowledge and skills.

On the other hand, the HaUI-JICA Project developed all elements that were needed for Level 2 machining center work, including test questions and implementation guidelines, while referring to Japan's skill test standards, questions and implementation guidelines for practical tests, NOSS for machining center work, and so forth. In this project, the JICA experts collaborated with their counterparts to examine the content of the test questions, verify the appropriateness of the degree of difficulty, and so forth, taking into account the actual situation in Vietnam, and they completed these tasks by adopting the Vietnamese experts' ideas as required. For example, from the viewpoint of Japanese experts, they adapted themselves in a way that met the intentions of their counterparts and suited the situation in the country by: (i) selecting machining center work as a job type for skill tests; (ii) determining the scope of questions for theoretical testing while taking into consideration the actual situation of Vietnam; (iii) setting a processing assignment using a machine for practical testing; (iv) deciding specifications for programing assignments; (v) creating evaluation items and standards that corresponded to assignments for practical tests; and (vi) formulating implementation guidelines for those practical tests that adopted a flow chart.

This project allowed the JICA experts to work with their counterparts for a long period of time (about two years), which enabled them to perform their duties while confirming their counterparts' degree of understanding and the application abilities they had cultivated. As a result, they were able to respond flexibly to their counterparts according to the level of what the latter had learned. In other words, while SESPP, which provided support by directly introducing techniques using the short-term development method, is close to the 'normative approach' as mentioned in Chapter 2, the HaUI-JICA Project adopted a 'hands-on' approach, and from the viewpoint of Japanese experts, this encouraged adaptation in the work process. However, this relies on the viewpoint of Japanese experts. Therefore, as the result of field research, the following section describes how the Vietnamese counterparts, the beneficiary of the technical cooperation project, perceived the process.

4. Findings of the Field Study

4.1. Research method

The research adopted a qualitative research based on interview data. Thus, the authors conducted the interviews with TVET institutions, government, and industry involved in national skill tests in Vietnam from October 14 to 19, 2019 (see Table 5.13).

4.2. Adoption of Japan's national skill testing system

The interview data indicate that the Vietnamese government has introduced and implemented various foreign countries' models according to job types for skill testing by adapting them to the situation of the country. For example, Japan's model was introduced for skill test for machining center work, turning, and milling. South Korea's model was introduced for welding and Australia's for tourism-related jobs. The evaluation method slightly differs according to the job types concerned, but a comprehensive skills evaluation method, consisting of theoretical tests (test time varies from one skill level to another but ranges from 60 to 100 minutes) and practical tests (test time varies from one skill level to another but ranges from two to four hours), has been applied for job types except jobs in the tourism sector for which a competency-based

Table 5.13. Profile of Interviewees

No	Pseudonym (Organization)	Number of Interviewees	Pseudonym (Interviewee)
1	HaUI*	4	Board Member A, Former Board Member A, Senior Expert A, Head of Department A
2	Vocational College A	2	Board Member A, Director A
	TVET Institutions	6	
1	Government Agency A	3	Director A, Staff A, Staff B
2	Public Research Institution A	1	Deputy Director A
	Government	4	
1	Japanese Automotive Parts Supplier A	2	Director A, Director B
2	Japanese Mechanical Parts Supplier A	2	Director A, Manager A
3	Japanese Business Association A	1	Manager A
	Industry	5	
	Total Number of Interviewees	**15**	

Note: *The actual name of organization was shown since it is obvious that this research focuses on HaUI.

evaluation method is applied.

As mentioned in Section 2.4, it is difficult to use the competency-based skills evaluation method in developing countries immediately, because it means heavy burdens in terms of time, labor, and cost. According to the interview data, it is likely that, realizing this situation, Vietnamese counterparts adopted the Japanese-style skill test as a practical choice:

> Competency-based evaluation should be performed on a unit-by-unit basis but cannot be done so in Vietnam at present. The reasons are: (i) there are not enough assessors, because a sufficient number of assessors have not been developed; (ii) the workplaces of enterprises are not in a position in which such evaluation can be performed; and (iii) it is too costly. Therefore, given the present situation in Vietnam, it is unreasonable to apply the competency-based evaluation method. From Japan's skills evaluation system, the Vietnamese experts learned how to evaluate using Japan's national skill testing method (which evaluates skills through theoretical and practical tests) and the point deduction method. Japan's system is extremely effective when it is adapted to what Vietnam is today. (Deputy Director A, Public Research Institution A)

In this respect, the assessment centers expressed similar opinions:

> When NOSS for machining center work was developed from 2011 to 2012, it was based on competency, but I think that the evaluation systems are changing with the times. During the HaUI-JICA Project, a competency-based evaluation system was developed, and GDVT (current DVET) tried it, and as a result, it did not work well, and therefore, the department changed it to Japanese-style comprehensive skills evaluation. HaUI has not attempted a European approach. We have performed skills evaluation with the support of the Japan Vocational Ability Development Association (JAVADA). I think that the SESPP being implemented by JAVADA best suits the actual situation in Vietnam. (Former Board Member A, HaUI)

> It takes too much time and labor to obtain qualifications through unit-by-unit evaluation. It is more economical to set assignments (questions for theoretical and practical tests) by picking the knowledge and skills required for all units that constitute a job type. Japan's comprehensive skills evaluation system is suitable for the present situation in Vietnam. (Senior Expert A, HaUI)

According to the results of the interviews, the Vietnamese counterparts do not see the needs to categorize their skills evaluation system into as a particular type, such as a European or Japanese one. While the skills standards are based on competency, the skills evaluation method follows the Japan's national skill test. This combination seems to lack consistency from the viewpoint of the donor countries from which these models originate. However, the Vietnamese counterparts consider that it is quite natural to extract implementable elements from existing models, taking into consideration local abilities and circumstances:

> I think the matter of choosing an approach depends on the managers. For me, I think simply like this. I don't know much about other evaluation systems, but as a teacher and an expert in vocational education management, through my experience of approaching the Japan's skills evaluation system, I see that your system is easy to use, and for the time being applicable, and can attract workers to take part in the assessment. For Vietnam now, I think this model is the most appropriate. (Senior Expert A, HaUI)

Another characteristic of the Vietnamese way of thinking is that emphasis is placed on the current situation of the country. Recognizing that the country lacks human and financial resources to conduct competency-based skills evaluation, government agencies also expressed similar opinions when adopting Japan's skill tests as a realistic choice:

> Now we use the competency-based assessment standard. But for testing and certification we still adapt the Japanese scoring standard. This standard is very good, and it is not only accepted by governmental agencies but also industry and the business community. […] Actually, the competency-based standard evaluates the skills of labor

> on one single unit of competency. But in the situation of Vietnam, it is quite difficult to adapt, because of the lack of human resources. Also, I think Vietnam is not ready for this kind of evaluation, as it is conducted mostly at the companies. Moreover, I myself can understand the flow of this evaluation's cost but our experts have not experienced how to calculate it. (Deputy Director A, Public Research Institution A)

This sounds a short-term thinking, but it is practical that they intend to start from what they can do immediately.

On the other hand, the skills assessment centers that implement skill tests and government agencies that control them have shown different perceptions of the selection results of skills evaluation methods. The former regards Japanese-style skill tests as a positive choice as indicated by the comments quoted above. However, the latter adopts them as a passive choice as a remedy for the situation where competency-based skills evaluation is not realistic, even though it is highly desirable. It seems that the government agencies maintain that their intention is to expand competency-based skills evaluation in the future:

> So, we know that what we are adopting is not a 100 per cent competency-based standard, but basically, we are trying to adapt it. […] The Australian model is relatively clear and not as complicated as the German model. Also, Australia is supporting ASEAN to develop the ASEAN Qualifications Reference Framework (AQRF). (Deputy Director A, Public Research Institution A)

As described above, the government considers it difficult to conduct competency-based skills evaluation immediately, but competency-based skills evaluation is an ideal option. For example, in the tourism sector in which cooperation from private enterprises and industry associations are secured, the government has been conducting competency-based skills evaluation in an almost complete manner. Tourism-related job types, for which skills are evaluated based on competency, consist of housekeeping and front desk operations, with bed making, guest-room cleaning, and other sorts of work included in the former. Hue Tourism College has workshops, equipment, and machinery for practical exercises that enable

skills evaluation for these types of work, and skills evaluation is conducted through work test (practical test) and interviews on a trial basis:

> Yes. We have conducted the evaluation (by applying the competency-based model) on 2 careers: housekeeping and front office. […] I think in the near future Vietnam will not be able to do the true evaluation of the competency assessment. We lack the resources of experts, we are not allowed to set the high price for conducting the assessment as the laborers are not rich in general, etc. (Deputy Director A, Public Research Institution A)

Nonetheless, it is too costly to install facilities, equipment, machinery, and other infrastructure for practical exercises at many TVET institutions. Therefore, government officials also understand the difficulty in expanding competency-based skills evaluation nationwide at this moment.

The interview data show that the intention of the Vietnamese side was to adopt Japanese-style skill test as the most realistic choice. However, this does not assure that the government agencies will apply Japanese-style skill tests to all sectors and, furthermore, maintain them over in the long run. This is mainly because, in theory, the government officials prefer competency-based skills evaluation, in which the evaluation criteria precisely correspond to the content of actual work to be performed at enterprises.

4.3. Process of translative adaptation at skills assessment centers

Section 3.3 discussed the translative adaptation based on the views of Japanese experts in the HaUI-JICA Project. This section analyzes the perceptions of the Vietnamese counterparts. First, they chose CNC metal machining rather than more basic turning and milling as skill to be tested, and they seem to believe confidently that such a decision was appropriate:

> In my opinion, we utilize everything we have in hand. Japanese experts approached from low level to high level, but we did the opposite way, and it was okay. (Senior Expert A, HaUI)

Meanwhile, a former HaUI board member commented that it was essential to revise the test questions and assignments:

> I think that the assignments presented by JAVADA are ideal. But they are difficult for enterprises and examinees if they are used in Vietnam as they are, and therefore, it is necessary to develop assignments that suit the actual situation in Vietnam. (Former Board Member A, HaUI)

This comment coincides with that of Director A at Government Agency A, who said, 'I do not think that advanced country models work in Vietnam if they are introduced as they are. It is necessary to build models that suit the actual situation in Vietnam.' Previously, the Vietnamese government strongly intended to introduce advanced countries' models directly or borrow models from advanced countries (Mori and Stroud 2021). There have been growing signs, however, that it is gradually inclining itself toward translative adaptation through models that are revised so that they suit the actual situation in Vietnam. As described above, the results indicate that with respect to the overall framework of skills to be tested as well as test questions and assignments, the government has a strong intention to translate the Japanese-style skill test in a way that suits the situation in Vietnam.

The HaUI-JICA Project was completed in January 2013. Subsequently, Level 3 machining center work was developed while making the most of the experience gained from the development of Level 2 machining center work. Currently, Level 2 and 3 machining center work are conducted as the national skills test:

> The development of Level 3 machining center work used the same method as that of Level 2 machining center work. The development of Level 2 was undertaken through collaboration between the JICA experts and the members of the working group. Such collaborative work also placed emphasis on the development of human resources, helping improve the practical abilities of Vietnamese staff members and enabling the smooth development of Level 3. (Head of Department A, HaUI)

The ability to continue the national skill test seems to have been established

by digesting and internalizing Japanese experts' advice flexibly:

> But for Japanese partners, when developing a project, you figure out a specific roadmap: training partners, giving instructions on working method with clear explanations. The Japanese way is more systematic, and most importantly, Japanese experts help their partners improve their capacity. (Head of Department A, HaUI)

This indicates that HaUI expanded the skill tests in a more autonomous way based on the abilities enhanced through the project.

With respect to job types other than machining center work, HaUI has also received technical cooperation from other countries, mainly in providing support for the development of the national skill test for welding. The university recognizes that these countries have different development cooperation strategies from Japan:

> Country A emphasizes results. Results are obtained because Country A lets its counterpart divide roles when conducting skill test, but the ability to implement the entire skill test project is not acquired. In addition, the counterparts' ability development is not emphasized in the course of the project. (Head of Department A, HaUI)

In other words, the Japan's development cooperation projects tend to concentrate on the development of human resources, taking an approach in which Japanese experts assist their counterparts to perform their respective jobs and take the lead in delivering results. It takes time before results are produced, but the university recognizes that the counterparts' abilities are improved during the process in which the project is advanced.

HaUI, whose abilities were improved as mentioned above, is in marked contrast to other skills assessment centers. Assessment centers are DVET-certified organizations that conduct national skill tests. As of December 2018, a total of 41 organizations, including vocational colleges, universities, and SOEs, are accredited, but their abilities vary considerably. Assessment centers consist mainly of vocational colleges or other TVET institutions, in which lecturers and other staff from specialized departments (such as machinery and electricity) undertake relevant duties for skills tests,

concurrently with their regular teaching tasks. Only a small number of the assessment centers have personnel dedicated to skills evaluation. For example, Vocational College A, which serves as an assessment center, has faced challenges in undertaking all the duties required of a skills assessment center, particularly the public relations that would secure a sufficient number of examinees from industry. This is because their staff are busy with the duties of their specialized departments. In addition, unlike HaUI, the college has not led the development of test questions, even though their staff participate in the committee for the development of test questions as a member.

It is inferred that few assessment centers manage to assign dedicated staff for skills testing and secure the support from industry, as HaUI had done by taking advantage of the results of the HaUI-JICA Project. HaUI not only conducts and administers national skill tests but also offers short-term training courses for company employees based on the requests from their employers (see Chapter 4). Since it has developed strong relationship with enterprises through these activities, they can secure an enough number of examinees from industry. Furthermore, the results of vocational education and training that have long been obtained through JICA projects are favorably evaluated by the MOIT and DVET, and because of this, HaUI has been commissioned to develop NOSS and test questions for many job types. In short, there are large differences in ability among assessment centers.

Nor can it be said definitely that improvement of the Vietnamese counterpart's abilities as mentioned above is something that is universally found in Japan's technical cooperation. It is pointed out, for example, that in SESPP, another development cooperation project of Japan, there are few examples of adaptation as described above:

> I think Vietnam did not go exactly the same way as JAVADA, rather a little adjustment has been made. In my opinion, we should review the two systems. We want to combine the JAVADA model with the Vietnamese model to form a more appropriate skills assessment system for Vietnam. I think the core of the Japanese model should remain the same but there should be some adjustments. (Senior Expert A, HaUI)

This is largely owing to factors such as its project implementation

modality, which features the short-term dispatch of experts. The following section discusses whether this implementation method cannot encourage translative adaptation.

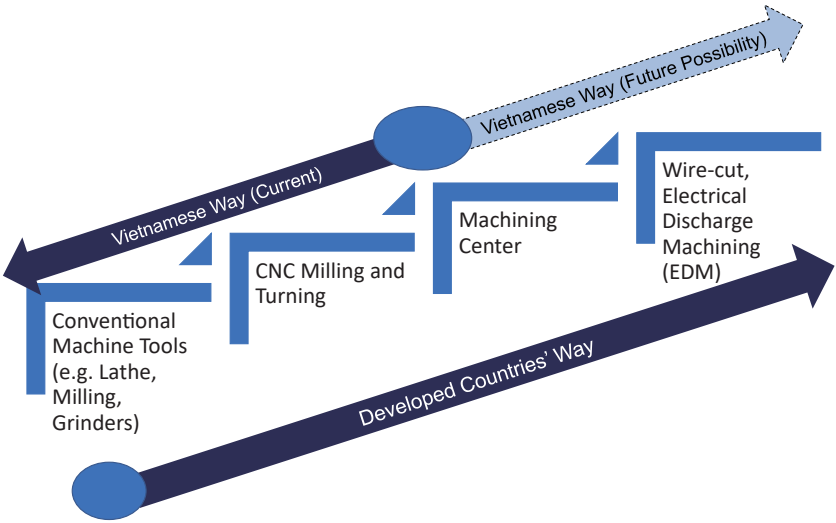
5. Discussion

5.1. Necessity for clashes of opinion during the formative period of activities

As described above, translative adaptation has begun as Japanese experts exchanged opinions with their counterparts but eventually respected their intentions, in the case of the HaUI-JICA Project in which HaUI has established skill tests. The existence of this ownership of the counterparts and the respect for it were factors in establishing the counterparts' independence further and contributing to the subsequent development and sustainability of skill tests.

What is important here, however, is the fact that there were exchanges of opinion or sound clashes of opinions when the skills to be tested were narrowed down. This process allowed the counterparts to refine their opinions and policy, and probably contributed to making their activities more sustainable. In this respect, HaUI's case has something in common with that of CIAST described in Chapter 4. Without this process, or if the Japanese experts had simply accepted the opinions of HaUI from the very beginning, the results achieved would have been less, or subsequent activities would have been made less sustainable.

If HaUI had easily compromised with the opinions of Japanese experts, what results would have been brought? As they advised, the typical way of vocational training and skills evaluation is to proceed from basic to applied skills. Accordingly, the assignments for practical training for machining jobs usually start from processing with conventional machines (such as turning and milling machines) and advance to that using NC machines (NC turning and machining centers). But HaUI's initiative for establishing the national skill test for machining center work followed exactly the opposite pattern (see Figure 5.2). As a result, it took six years from the time when the national skill test for Level 2 machining center work was developed to the time when the tests were completed for Level 2 milling and Level 2 turning. These tests could have been established in a shorter period of time if they just followed the guidance from Japanese experts. In doing so, however, they would not have obtained a stronger



Source: Drafted by the authors.

Figure 5.2. Development Paths of Machining Job Skill Tests between Vietnam and Developed Countries

sense of ownership and a willingness to continue activities.

The authors cannot anticipate the results of different scenarios as discussed above. However, at present, HaUI is at least operating the national skill tests built through Japan's development cooperation as its own. Possible reasons for this success are: (i) that the Vietnamese counterparts had a certain intention about the future course in and after the project from the beginning; and (ii) that there were exchange or sound clashes of opinions between them and Japanese experts at the early stages.

5.2. Dynamism of translative adaptation

The results of field interviews show that policymakers and an implementing agency, HaUI interpret the current conclusion on the skills evaluation system, a hybrid skills evaluation system that combines competency-based skills standards and Japanese-style skill tests, in a different way. The former regards the system as a passive choice, having the intention of shifting to a competency-based system in the long run. On the other hand, the latter, HaUI in particular, regards the present situation as highly positive.

This indicates the dynamism of translative adaptation. Under the present circumstances, there are three scenarios for the future course of skills evaluation systems in Vietnam. The first is to further develop the current hybrid system, which seems to be slightly arbitrary from the donors' viewpoints. This means building a model that is different from that of advanced countries. The second scenario is to keep the Japanese-style skill tests strictly as a short-term solution and shift to completely competency-based skills evaluation in the long run particularly when a system of cooperation with industry is established, according to the views of government officials interviewed. The third scenario is the choice of shifting to a completely the comprehensive skills evaluation system based on the Japan's national skill testing method. Under the present circumstances, however, it seems that government officials have a stronger intention of maintaining competency-based skills standards.

The authors believe that a skills evaluation system that combines competency-based skills evaluation, which originates from Europe, with assignments for Japan's comprehensive skills evaluation suits the actual situation of Vietnam.

In developing countries where industry engagement in TVET is weak, it is more realistic to conduct skill tests at TVET institutions by clarifying basic work and applied and practical work based on job analysis setting training assignments for basic work. Training assignments may not correspond precisely to the details of applied and practical work performed at the worksite of enterprises. Nevertheless, it is possible to provide high quality training through setting assignment which require complex and multi skills. But it is difficult to predict the dynamism and strategies of Vietnamese stakeholders involved in TVET, as typified by the fact that they selected CNC metal machining as the target job for the pilot skills test rather than operation of conventional machine tools.

5.3. Methods of technical assistance and translative adaptation

Aside from the general evaluation of development cooperation projects based on the standards of the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD), the HaUI-JICA Project, and SESPP, are in striking contrast with each other in light of technical assistance modalities and translative adaptation. The former, which followed the 'hands-on' approach, encouraged translative

adaptation, while the latter has been promoting the almost direct import of the Japan's national skill test in the 'normative' approach.

As described above, this difference is largely due to whether or not experts were dispatched to Vietnam and stationed there over a long period of time. Certainly, there is no doubt that in order to provide hands-on guidance and make project activities and results tailor-made, it would be desirable for Japanese experts to be physically stay close to their counterparts at all times, exchange opinions closely through formal and informal discussions, and establish close relationships and rapport. But as the period of development cooperation tends to become shorter and budgets are being limited, dispatching many international experts overseas would become increasingly difficult. Is it impossible to encourage translative adaptation under these circumstances? It may be difficult, but in order to maintain the characteristics of Japan's development cooperation, the authors believe that it is essential to find methods that enable the country to promote translative adaptation despite these restrictions. Even if technical assistance is provided on a short-term basis, there should be a way to allow counterparts to have a stronger sense of ownership about their activities and results and thus encourage translative adaptation of foreign models. In this respect, the Manufacturing Human Resources Development Program in Dong Nai Province described in Chapter 7 gives some hints.

6. Conclusions

Based on the authors' experience and the results of field interviews, this chapter examined the development process of a hybrid national skills evaluation system in Vietnam that integrates competency-based skills evaluation and the Japan's national skill test and discussed the relationships between translative adaptation and Japan's development cooperation in the process. The research presented a very unique case of adaptation of foreign skills evaluation systems. The Vietnamese counterparts translated the Japan's skill testing system through development cooperation projects and combined it with competency-based skills evaluation learned from international organizations and European donor countries. Behind this uniqueness are two elements. For one thing, the Vietnamese counterparts have a flexible and pragmatic way of thinking in which they are open to various types of skills evaluation systems in developed countries. Moreover, they have become increasingly aware of the need to adapt

developed countries' models in their social, economic, and institutional contexts. The research findings also suggest that sound clashes of opinions in the formulation stages are an important factor in the success of translative adaptation.

On the other hand, it is necessary to closely watch what course Vietnam's national skills evaluation system will take in the future. The current hybrid system has delivered a number of results, but there are challenges remaining. For example, the abilities of skills assessment centers for industry engagement vary a lot. In addition, the evaluation criteria and methods are not sufficiently standardized among skills assessment centers. At the moment, it is hard to predict how Vietnam will overcome these challenges and whether it will continue to evolve its current model as a new type of skills evaluation system or shift to the complete adoption of the European or Japanese models. In other words, translative adaptation is a dynamic process. In order not to hinder this dynamism, donor countries need to avoid attempting to force the Vietnamese system to conform to their own types, while presenting their own and other examples for reference.

As Vietnam has become increasingly aware of the necessity to adapt foreign models for their social, economic, and institutional contents, the future development of the country's national skills evaluation system and its factors will provide interesting lessons for other developing countries.

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