

**Vocational Training Instructors Manual for ASEAN  
GAIN  
(Guide for ASEAN Instructors)**

**Appendix  
(Revision 1.0)**



## APPENDIX

### **1 Analysis of VT Instructor's Operations and Duties and Human Resources Development (Prepared based on the "Human Resources Development System 2009" by JEED, introduction of outline)**

The Human Resources Development System 2009 is a system to allow the abilities of VT instructors who are limited in number to be fully utilized. This human resources development system was started in FY2009, with the purposes of maintaining and improving the credibility of the capacity building by the JEED and the quality of training and contributing to the development of vocational skills, focusing on human resources development.

The system aims to develop the abilities of VT instructors, mainly focusing on OJT, by clearly stating the ideal image of VT instructors and their operations.

#### **1.1 Purpose**

When the Human Resources Development System 2009 was established, its purpose was set as: "establish an environment wherein people can work with motivation for achieving the objectives of the organization, by respecting the working style of each VT instructor while capitalizing on their individual strengths and promote the instructors' operations and their capacity building according to individual objectives set by considering the skills and aptitude of the individual instructors".

#### **1.2 Roles of the organization and the ideal image of VT instructors**

The characteristic of this system is that it facilitates the setting of human resources development objectives by clearly showing the roles of the organization and the ideal image of VT instructors.

##### **(1) The roles that the JEED should play**

The major roles of the JEED are: (i) securing the safety net for employment, (ii) securing and developing human resources for small- and medium-sized enterprises, (iii) development of workers' careers, and (iv) promoting the development and diffusion of techniques for training methods and capacity building.

##### **(2) Ideal image of VT instructors**

In order to serve the role of the JEED securely, the skills expected for VT instructors is clarified as follows, and their skill building is implemented.

- ①The VT instructor understands the mission and role of instructors and has good sense and broad knowledge.
- ②The instructor has expert knowledge, skills and techniques. In addition, he/she is familiar with the situation of the actual production site and can describe the job.
- ③The instructor has the ability to detect and solve problems, and can give technical advice to job seekers and workers in the fields of skills and techniques.
- ④The instructor can utilize training methods to pass on skills and teach technologies.
- ⑤The instructor can give consultation and support related to vocational career development according to the ability and aptitude of the job seeker or the worker.
- ⑥The instructor has formed an attitude as a worker in the industry, an educator and a consultant.
- ⑦The instructor has passion, confidence and humility (he/she can win trust and be respected as an authority).

#### **1.3 Setting the human resources development objectives**

Objectives (objectives for operation and skills development) should be set by each VT instructor. However, such objectives should be consistent with the direction of the organization's objectives, otherwise the instructors will not feel a sense of fulfillment even upon accomplishing those objectives. Therefore, in this system, the working style of VT instructors expected by the organization and their necessary abilities are clarified so that they are able to set clear goals.

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**Table 5-1-1 Duties of VT Instructors (some of the ideas of the duties)**

Department	Duties	Content		
<b>Training management</b>	<b>Formulation of the training plan</b>	<b>Planning of VT courses</b>	<b>Planning management</b>	<b>Promotion of training plan</b>
		Assisting the formulation of the annual plan Development of VT courses Formulation of curriculums	Planning the annual plan Budget planning VT course process management	Evaluation and improvement of the annual plan
	<b>Preparation of equipment</b>	<b>Preparation of equipment</b>	<b>Management of equipment</b>	<b>Promotion of the preparation of equipment</b>
		Creation of equipment ledger Creation of tools ledger Creation of materials ledger Maintenance of equipment and tools	Equipment preparation planning Equipment maintenance planning	Evaluation and improvement of equipment preparation
	<b>Preparation of facility &amp; equipment</b>	<b>Preparation of facility &amp; equipment</b>	<b>Management of facility &amp; equipment</b>	<b>Promotion of the management of facility &amp; equipment</b>
		Creation of property ledger Formulation of facility & equipment ledger	Facility & equipment preparation planning	Evaluation and improvement of preparation
	<b>Preparation of training raw materials</b>	<b>Preparation of training materials</b>	<b>Management of training materials</b>	
		Creation of training materials (texts and teaching aids) Intellectual properties and copyright Collection of information for training materials	Storing and management	
	<b>Management of trainees</b>	<b>Selection of those admitted</b>	<b>Management of the selection of trainees</b>	<b>Promotion of selection management</b>
		Creation of selection and evaluation table Exams and interviews	Admission decision	Evaluation and improvement of selection method
		<b>Career formulation support</b>	<b>Career support management</b>	Coordination with “Hello Work”
		Individual instruction (respect for human rights) Group instructions Placement support	Finding of the place of employment Consultation and instructions on employment	
		<b>Follow-up of trainees</b>	<b>Follow-up management</b>	<b>Promotion of trainee assistance</b>
		Status survey on the employment situation of trainees	Providing consultation Continuous support	Evaluation and improvement of follow-up
	<b>Training management</b>	<b>Holding events</b>	<b>Management of events</b>	
Enrollment ceremony, orientation, commencement ceremony		Evaluation and improvement of events		
<b>Safety and health</b>		<b>Safety and health management</b>		

		Instructions on safety and health Creation of safety manuals	Evaluation and improvement of safety and health management instructions Environmental preservation management		
		<b>Training implementation</b>	<b>Training management</b>	<b>Promotion of training management</b>	
		Preparation for training implementation Training implementation Evaluation of training implementation	Evaluation and improvement of instruction method Evaluation and improvement of training materials	Evaluation and improvement of PDCA	
<b>Development support management</b>	<b>Technical support</b>	<b>Technical support</b>	<b>Technical support management</b>	<b>Promotion of technical support</b>	
		Collection and provision of technical information Collection and provision of information on training materials	Planning and adjustment of contracted research	Research on technical trends	
	<b>Support for employers</b>	<b>Support for associations and companies</b>	<b>Management of support for associations and companies</b>		
		Support for skill building Support for employment management	Support planning and management		
	<b>Collection of information on companies</b>	<b>Visits to associations and companies</b>	<b>Management of visits to associations and companies</b>		
		Survey on the actual situation of skill building companies	Management of survey on the actual situation		
		<b>Survey on company information</b>	<b>Management of information collection</b>		
		Creation of survey sheet Company survey	Understanding the situation of regional industry Information collection and analysis		
	<b>Institution administration and management</b>	<b>Public relations and recruiting</b>	<b>Public relations and recruiting</b>	<b>Management of public relations and recruiting</b>	<b>Promotion of public relations and recruiting</b>
			Creation of public relations draft Public relations activity Understanding the application for trainees and students	Selection of the place to post public relations information Public relations planning Analysis and evaluation of application	Evaluation and improvement of public relations
<b>Operation of systems and divisions</b>		<b>Operation of systems</b>	<b>Management of systems operation</b>	<b>Promotion of systems operation</b>	
		Preparation for holding conferences Creation of materials and minutes	Operation of systems conferences PDCA cycle promotion	Evaluation and improvement of operation	

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	Operation of committees	Holding committees	Management of committees operation	Promotion of committees operation
		Coping with various events for those outside the organization Preparation for committees	Facilitation of committees Progress management	Evaluation and improvement of operation
Human resources development	Human resources development	Development of new VT instructors	Development of young VT instructors	Development of mid-level VT instructors
		Advice and instruction on areas of expertise Acquisition of expertise Training management support Institution administration and management support	Planning the instruction Acquisition of expertise Performance instruction	Management of instruction plan Acquisition of expertise Performance instruction

### 1.4 Development stages

In order to promote the human resources development through the process of operation (OJT), all VT instructors are positioned in four development stages (newcomer, mid-level, quasi-veteran, and veteran), and operations and development assignments are set for each stage. At the same time, a system of ranks (such as senior VT instructors and chief VT instructors) is set for supporting problem solving for each instructor, with the expectation of proactive efforts as a team. Thus, the system provides an occasion for individual VT instructors to work by capitalizing on their strengths.

(1) Newcomer group (around 25 years old)

Instructors of this group are expected to acquire accomplishments as a VT instructor, and to have an ability to implement and manage a VT institution.

(2) Mid-level group (around 32 years old)

VT instructors of this group are expected to be able to implement and manage a VT institution while accumulating various experiences and also provide OJT to junior fellow VT instructors.

(3) Quasi-veteran group (around 40 years old)

VT instructors of this group play a central role in promoting the implementation and management of a VT institution and provide OJT to junior fellow VT instructors.

(4) Veteran group (around 52 years old)

Instructors of this group are in charge of management and the development of junior fellow instructors regarding the training instruction/implementation and training management.

### 1.5 Recommendations on the VT instructors development program in developing countries

It is known from past experience of VT support that VT instructor's operations are not always clear. Even in Japan, VT instructor's operations became clear only in 2009, when the Human Resources Development System 2009 started. It took 51 years from the enactment of the Vocational Training Act (VT Act) in 1958. Although VT measures have changed and the operations provided by VT instructors also went through transition during this period, they were written clearly for the first time in 2009, and the operations were visualized.

The basic idea is to aim for skill building by clarifying the skill building policy for VT instructors to promote their operations with pride, based on the purpose of the establishment of VT organization. What is important here is the visualization of operations and skill development.

It is considered that such visualization and the setting of skill development objectives should be effective as skill building measures for VT instructors in developing countries. However, VT instructor's operations differ by the situation of each country and VT institution, and it should not be sufficient to simply import the division of operations in Japan as it is. It should be newly created by considering the state of affairs in the country, budget, allocated staff and so on. At the same

time, the mere clarification of the operations may only result in evaluation, and not in actual human resources development. A system fully considering human resources should be established.

## 2 Skill Map

### 2.1 Outline of skill map

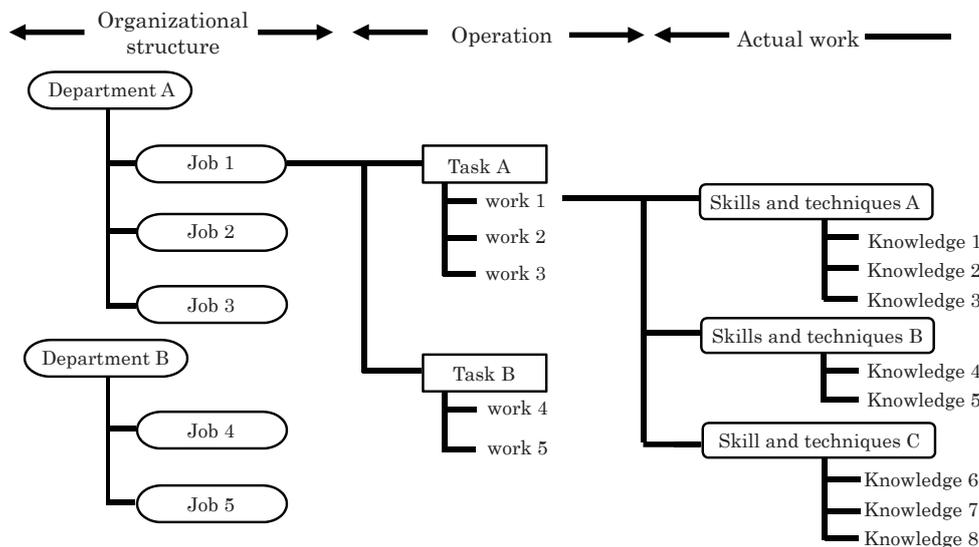
Human resources development in companies should be implemented according to the plan. The plan should be in line with one's everyday operation and should have a systematic and phased curriculum. The first step that should be taken is to clarify the tasks in everyday operation (operations analysis), and to create map that systematically summarizes such duties (skill map). By creating a skill map, issues can be shared within the organization and the problems of human resources development that can be clarified.

The skill map has a tree-like structure (Figure 5-2-1). It is also divided into three layers, namely "organizational structure", "operation" and "actual work".

In the first layer, the organizational structure, the entire operation function of the company is divided roughly into "departments" according to types and systems. Under each department comes "duties", which are divided by the operation functions.

In the second layer, operation, further segmentation is implemented into "tasks", which are the minimum units of operation function that can be allocated separately to each duty. Each task is further divided into "works", which is the indivisible unit of the series of related actions conducted by a single worker.

In the third layer, each work is divided into "skills and techniques", which represents the specific actions for work implementation. All skills and techniques are further divided into "knowledge" on judgment standards and on points of improvement.



**Figure 5-2-1 Example of Point of View for Skill Map**

(Source: Excerpt from the list of skill map of the Vocation Training Station Support System (TETRAS) by JEED: <http://www.tetras.uitec.jeed.or.jp/ShougaiTaikei/>)

(Note: The origin of quotations may change the contents and their expression without notification, now or in the future.)

In addition, the skill map sets level segmentation for tasks. The setting standards are as follows:

Level 1: Work to nurture the foundation of corporate profit

Level 2: Work to generate corporate profit

Level 3: Work to lead the corporate profit

Level 4: Work to create corporate profit

### 2.2 Formats of skill map

There are 1 to 4 formats of skill map.

Format 1 shows the entire picture from a bird's-eye view.

Lifelong human resources development system

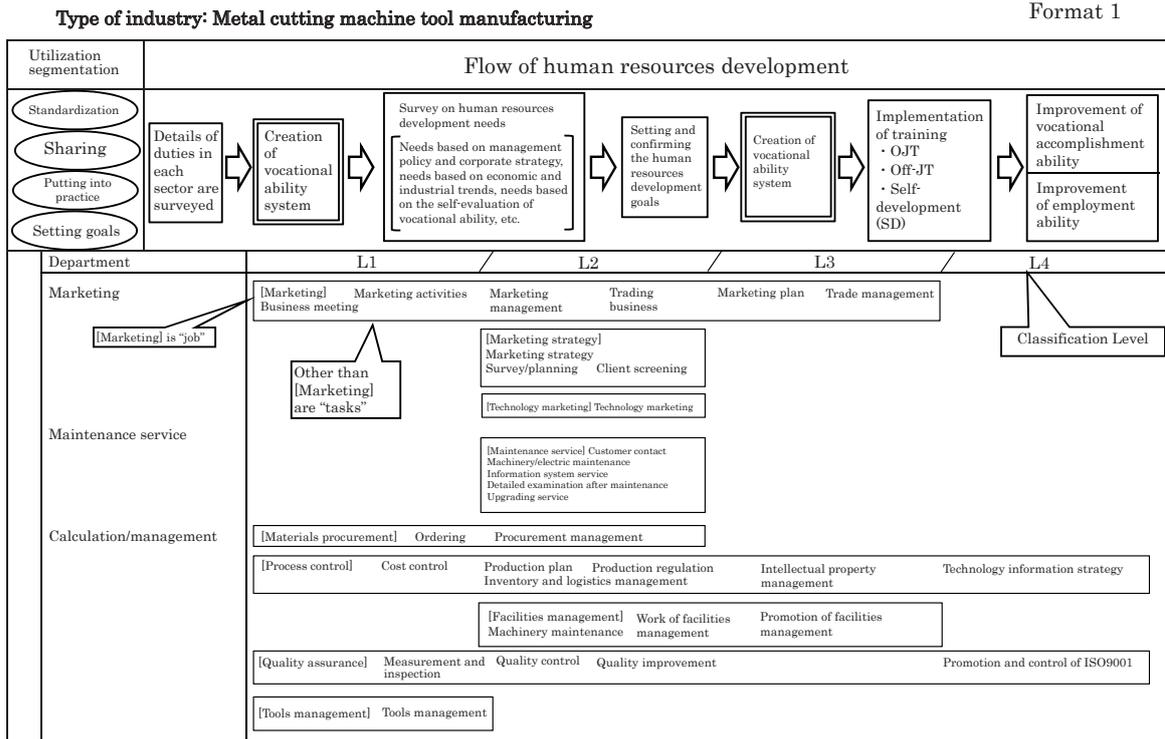


Figure 5-2-2 Format of Skill Map (excerpt)

(Source: Excerpt from the list of skill map of the Vocation Training Station Support System (TETRAS) by JEED: <http://www.tetras.uitec.jeed.or.jp/ShougaiTaikai/>)

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Format 2 shows the “work” in a systematic and phased manner.

Type of industry: Metal cutting machine tool manufacturing

Skill map by “job”

Format 2

Department	Job	Level	L1	L2	L3	L4
Marketing	Marketing		Marketing activities	Marketing management	Marketing plan	
			Business meeting	Trading business	Trade plan	
	Marketing strategy		Work	Marketing strategy Survey/planning Clients screening		
	Technology marketing			Technology marketing		
Maintenance service	Maintenance service			Customer contact		
				Machinery/electric maintenance		
				Information system		
				Detailed examination after maintenance Upgrading service		

Figure 5-2-3 Format 2 of Skill Map (excerpt)

(Source: Excerpt from the list of skill map of the Vocation Training Station Support System (TETRAS) by JEED: <http://www.tetras.uitec.jeed.or.jp/ShougaiTaikai/>)

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Format 3 shows the relationship between the “task” and “work” under it.

Type of industry: Metal cutting machine tool manufacturing

**Work by “jobs”**

Format 3

Department	Job	Level	L1	L2	L3	L4
Manufacturing	Turning processing		Lathe processing Outside diameter processing Groove processing Knurling Inside diameter processing Screw processing NC lathe processing Programming (NC lathe processing) Setup Processing			

**Figure 5-2-4 Format 3 of Skill Map (excerpt)**

(Source: Excerpt from the list of skill map of the Vocation Training Station Support System (TETRAS) by JEED: <http://www.tetras.uitec.jeed.or.jp/ShougaiTaikei/>)

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Format 4 shows the “skills and techniques” necessary for the “work” and the required “knowledge”.

Type of industry: Metal cutting machine tool manufacturing

**Details of “work” by “job”**

Format 4

Job	Turning processing	Level	L1
Task	Lathe processing		
Work	Skills/Technique	Details of works	
1 Outside diameter processing	1	Be capable of setting outside diameter processing conditions	
		Know how to read a machinery drawing Know about the machinability of each material Know about the three elements of cutting condition	
2	2	Be capable of selecting adequate cutting tools	
		Know about the names and functions of the parts of cutting tools	
		Know about the materials of cutting tools	
		Know about coating	

**Figure 5-2-5 Format 4 of Skill Map (excerpt)**

(Source: Excerpt from the list of skill map of the Vocation Training Station Support System (TETRAS) by JEED: <http://www.tetras.uitec.jeed.or.jp/ShougaiTaikei/>)

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**2.3 Skill map model**

Even if a department in charge of human resources development in each company wants to create a skill map, it may be difficult if daily operations are excessive, because the process takes a lot of work and time. JEED develops and publishes a standard skill map model for each job category, from the perspective of ensuring the convenience of users. As of June 2013, 93 industries (approximately 2,700 duties), primarily according to the small classification by the Japan Standard Industry Classification are developed.

**Table 5-2-1 93 Industries of Skill Map Model Published by JEED**

Large classification		Medium classification	Implemented industries
A	Agriculture, forestry	Agriculture	(1) Rice cropping, cropping of grain other than rice (2) Vegetable cropping (open culture) (3) Vegetable cropping (facilities culture) (4) Dairy farming (5) Forestry
D	Construction business	Comprehensive construction	(1) Civil engineering work (2) Landscaping work (3) Construction work
		Construction by occupation	(1) Carpenters' work (2) Scaffolding work (3) Steel-frame work (4) Reinforcement placing work (5) Plastering work (6) Sheet-metal and metal work (7) Painters' work (8) Floor and interior work
		Facilities construction	(1) Electric work (2) Telecommunications work (3) Air conditioning and ventilation facilities work (4) Water supply/plumbing and sanitary work
E	Manufacturing	Food manufacturing	(1) Bread manufacturing (2) Ready-to-eat food manufacturing (3) Meat-processed food manufacturing
		Textile industry	(1) Outer garment and shirt manufacturing (excluding Japanese style)
		Furniture and fixture manufacturing	(1) Wood furniture manufacturing
		Pulp, paper, paper processed products manufacturing	(1) Paper containers manufacturing
		Printing and related business	(1) Printing (2) Bookbinding
		Plastic products manufacturing	(1) Industrial plastics products manufacturing
		Ceramics and earth and rock products manufacturing	(1) Glass containers manufacturing
		Iron and steel business	(1) Pig iron and cast metal manufacturing (2) Forged product manufacturing
		Metal products manufacturing	(1) Machinery blade manufacturing (2) Construction-metal product manufacturing (3) Metal-press product manufacturing (4) Metal heat-treating business
		Nonferrous metal manufacturing	(1) Nonferrous metal forging ([forging, die-cast] manufacturing)
		Conventional machinery and tool manufacturing	(1) Logistics and transportation facilities manufacturing
Manufacturing of machinery and tools for production	(1) Construction machinery and mining machinery manufacturing (2) Metalworking machinery manufacturing (3) Machinery and tool manufacturing (4) Manufacturing of molds for plastic injection and molding (5) Manufacturing of dies for metal press		

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Large classification		Medium classification	Implemented industries
		Professional-use machinery and tool manufacturing	(1) Measurement instruments manufacturing (2) Manufacturing of lenses and prisms for optical machinery
		Electronic components, devices, electronic circuits manufacturing	(1) Integrated circuit manufacturing (2) Electronic circuit board manufacturing (3) Electronic circuit mounting board manufacturing
		Electric machinery and tools manufacturing	(1) Consumer electric machinery and tool manufacturing
		Information and communications electronics equipment manufacturing	(1) Information and communications electronics equipment manufacturing (related to embedding) (2) Manufacturing of information and communications electronics equipment machinery and tools and related machinery and tools
		Transportation equipment and tool manufacturing	(1) Automotive part and accessory manufacturing
G	Information and communications	Information service business	(1) Information service business
H	Transportation, postal service	Road passenger transportation	(1) Transportation of reserved general passenger cars (including the transportation of share-ride general passenger cars)
		Road freight transportation	(1) Transportation of general freight cars
I	Wholesale, retailing	Wholesale of various commodities	(1) Wholesale trade of various commodities
		Wholesale of textile and apparel	(1) Wholesale of apparel
		Wholesale of food and beverages	(1) Wholesale of food and beverages (2) Wholesale of alcoholic beverages
		Wholesale of architectural materials, minerals, metal stocks and others	(1) Wholesale of architectural materials, minerals, metal stocks and others
		Wholesale of machinery and tools	(1) Wholesale of machinery and tool
		Other types of wholesale trade	(1) Other types of wholesale trade
		Retailing of various commodities	(1) Department store, Hypermarket (2) Other types of various commodities retailing
		Retailing of textile, apparel and personal belongings	(1) Retailing of women's apparel (franchise) (2) Retailing of women's apparel (non-franchise)
		Retailing of food and beverage	(1) Retailing of meals
		Retailing of machinery and tools	(1) Automotive retailing (2) Retailing of electric machinery and tools
		Other types of retail trade	(1) Home improvement retailer
L	Academic research, expertise and technical service	Expertise service	(1) Labor and Social Security Attorney office
		Technical service	(1) Architectural designing (2) Surveying (3) Other civil engineering and construction services (4) Non-destructive testing service (5) Other technical services

## 2 Skill Map

Large classification		Medium classification	Implemented industries
M	Accommodations, eating and drinking services	Accommodations	(1) Inn (2) Hotel
		Eating and drinking places	(1) Specialized restaurant (Japanese cuisine)
N	Daily living services, entertainment	Laundry, barber, beauty salon, bathhouse	(1) General laundry
		Other daily living services	(1) Travel agency (2) Funeral business
		Entertainment	(1) Bowling alleys (2) Workout gyms
O	Education, learning support	School education	(1) Specialized training colleges, schools for specialized education
P	Medical healthcare, welfare	Social insurance, social welfare, nursing care service	(1) Home-visit nursing care service (2) Fee-based homes for the elderly
R	Services	Waste treatment business	(1) Industrial waste treatment business
		Repairing of machinery, etc. (excluding those stated separately)	(1) Furniture repairing
		Employment referral service, worker dispatch service	(1) Employment referral service (2) Worker dispatch service
		Other service businesses	(1) Building maintenance business (2) Security service

(Source: Excerpt from the list of skill map of the Vocation Training Station Support System (TETRAS) by JEED: <http://www.tetras.uitec.jeed.or.jp/ShougaiTaikei/>)

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### 3 Vocational Ability Evaluation Standards

The Vocational Ability Evaluation Standards given here are the official evaluation standards for vocational ability that form the center of “the Vocational Ability Evaluation System” in Japan. Based on the job analysis in a wide variety of industries and job categories, including cross-categorical clerical work, manufacturing, construction and service businesses, the standards cover 52 industries, 267 job categories, 616 duties and approximately 6,700 ability units (as of the end of May, 2014).

Here, an explanation is given by taking the example of “screw manufacturing industry–screw manufacturing job category” from the manufacturing industry.

#### 3.1 Characteristics of the Vocational Ability Evaluation Standards

- In addition to the knowledge and skill/technology that should be held in order to implement work effectively and efficiently, the standards also specify the action that will result in achievements.
- The content of the work is segmented and summarized in a certain unit called “Ability Unit”. By combining these ability units, it becomes possible to cope with the composition of duties in each company and a wide variety of duties for individual workers.
- The standards are set by selecting job categories and duties from the perspective of improving the competitiveness of the business world and human resources development and considering the human resources needs in the business world.
- The standards can be utilized not only for evaluating vocational ability but also as a guideline for career development and capacity building.

#### 3.2 Composition of the Vocational Ability Evaluation Standards

- The content of work is segmented as: “Job Category” → “Duty” → “Activity”. The vocational ability required for each activity is specified and is streamlined as an “Ability Unit”.
- Ability unit is comprised of “Common Ability Unit” and “Selected Ability Unit”.
- Ability unit is further segmented into several items called “Ability Details”, and the “Standards for Job Performance” and “Required Knowledge” are specified.

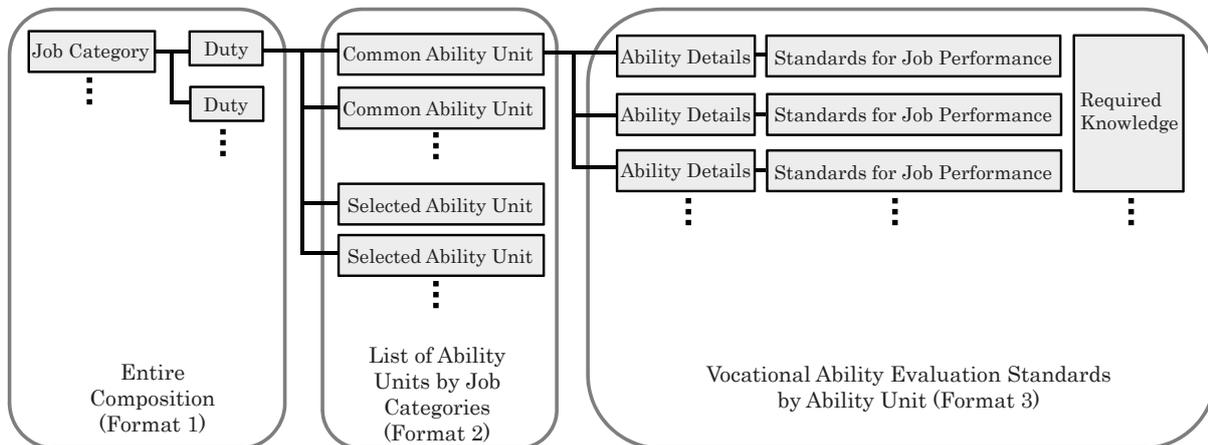


Figure 5-3-1 Composition of the Vocational Ability Evaluation Standards

### 3.3 Classification according to the roles and assignments

Focusing on the roles expected from the company, the staff including the newcomer, person responsible of certain work, and those at the level of division head and sector head are categorized roughly into four levels, from Level 1 (L1) to Level 4 (L4).

**Table 5-3-1 Classification of Manufacturing Industry (screw manufacturing industry)**

Level	Engineering	Manufacturing
Level 4 (L4)	Level of capacity necessary for assuming the leadership of an organization as a person in charge of a large organization, by setting organizational objectives and making extensive and comprehensive judgments and decisions.	Level of capacity necessary to set production plan and organizational objectives and to assume the leadership of the entire organization to achieve them as a person in charge of a large manufacturing line.
Level 3 (L3)	- Management Level of capacity necessary for creating an operational plan and implementing management operation of a mid- to small-sized organization, as a person who is responsible for such organization, based on management policy. - Specialists Level of capacity necessary for generating corporate profit through technical development or solution in the area in charge with high-level expertise.	- Management Level of capacity necessary for managing and supervising the work site as a person in charge of a mid- to small-sized manufacturing line. - Specialists Level of capacity necessary for contributing in adding high value to products by implementing precise work and solving problems with high-level skills.
Level 2 (L2)	Level of capacity necessary for implementing operation as one of the main members of a group or a team, while utilizing one's inventiveness and making autonomous judgment, improvements and suggestions.	
Level 1 (L1)	Level of capacity necessary for securely implementing formulaic operation as a person in charge, based on the instructions and advice from one's supervisors.	

### 3.4 List of Ability Units by Job Category

- The “List of Ability Units by Job Category” is given in order to cope with the composition of duties in each company and the difference of duties for individual workers with the combination of “Ability Units”.
- The “Common Ability Units” set the vocational ability essential for implementing work, regardless of the specific content of the duties of individual workers.
- The “Selected Ability Units” set the vocational ability that differs according to the duties by the individual worker. Among them, one or more ability units are selected according to the content of the duties of individual worker.
- By combining the “Common Ability Units” and “Selected Ability Units”, vocational ability evaluation standards appropriate for the content of the duties of individual workers can be made.

**[Example of job category related to manufacturing industry, “screw manufacturing”]**

Job Category	Screw manufacturing
Job Description	Manufacturing of screws in the screw manufacturing industry. It is categorized into three job categories, namely flatting/former, rolling/tapping, and secondary processing cutting.

**Table 5-3-2 Common Ability Units**

Duty	Name of Ability Unit	Level 1	Level 2	Level 3		Level 4
				Specialist	Manager	
Common to all duties	Complying with safety, health and other rules	47C014L11	47C015L22	47C016L34		
	Problem solving through improvement activities	47C017L11	47C018L22	47C019L34		
	Implementation of operation through collaboration with concerned personnel	47C020L11	47C021L22	47C022L34		
	Improvement and inheritance of skills			47C023L33	—	
	Manufacturing management					47C024L44

**3.5 Vocational Ability Evaluation Standards by Ability Unit**

- “Vocational Ability Evaluation Standards by Ability Unit” are comprised of several “Ability Details”. They are basically set in line with the plan-do-see work cycle.
- The “Standards for Job Performance” are set for each ability detail.
- The “Standards for Job Performance” include competency in addition to skills and technology. They are listed as some typical examples of job behavior that can work as criteria for evaluation.
- The “Required Knowledge” is listed items that should be understood as a premise for job performance.

**Table 5-3-3 Example of Unit No. 47S044L22**

Level 1	Level 2	Level 3		Level 4	Common
		Specialist	Manager		
Selected Ability Unit	Ability Unit	Rolling			Development-technology
	Outline	Ability to implement the rolling and casting of screw part			

Unit No. 47S044L22

Ability Details	Standards for Job Performance	Quality Assurance		
(1) Rolling work planning	<ul style="list-style-type: none"> <li>○ In order to prevent reproduction in cases where there is waste due to excessive production or a lack of production, the quantity of production, scheduled time and quantity of materials used (weight or numbers).</li> <li>○ The performance, specification and handling method of a mold for rolling, rolling processer and other facilities used are confirmed.</li> <li>○ A mold for rolling is prepared and attached appropriately to rolling processer.</li> <li>○ The mold is checked for galling, rough surface, or cracks before it is attached, and test processing is implemented.</li> <li>○ Instructions on rolling work are given to colleagues and junior staff.</li> </ul>		Production management	
(2) Rolling work implementation	<ul style="list-style-type: none"> <li>○ Conditions of rolling machinery and ancillary machinery are set according to the use of the product.</li> <li>○ High-precision rolling work is implemented whilst adjusting the parameters for the mold in order to ensure the correct dimensions of the processed product.</li> <li>○ Blanks are set adequately in mold.</li> <li>○ Even small anomalies in rolling machinery and ancillary machinery are not overlooked, and measures are taken to prevent malfunctioning and trouble.</li> <li>○ Rolling machinery, ancillary machinery and molds are inspected after finishing the work.</li> <li>○ The efficiency of processing work is improved by organizing, streamlining, cleaning, sanitizing and ensuring discipline on the work site of the rolling work.</li> </ul>			Screw manufacturing
(3) Work evaluation	<ul style="list-style-type: none"> <li>○ Adjustment and maintenance of molds used for rolling machinery and ancillary machinery are implemented correctly and promptly.</li> <li>○ Early breakage, galling, defects in the dimensions and surface of products are closely checked, and any uncertainties are confirmed with the supervisor.</li> <li>○ Any defective products and facility trouble are confirmed with the situation and cause and reported to one's supervisor, and adequate measures are taken.</li> </ul>			
		Surface treatment		

● Required Knowledge

<ol style="list-style-type: none"> <li>1. Rolling process in general                             <ul style="list-style-type: none"> <li>• Types and characteristics of rolling process</li> </ul> </li> <li>2. Materials                             <ul style="list-style-type: none"> <li>• Types, property and use of metal materials</li> <li>• Types of defects of metal materials</li> <li>• Material Testing</li> </ul> </li> <li>3. Rolling method                             <ul style="list-style-type: none"> <li>• Types, structure and use of rolling machinery and ancillary machinery</li> </ul> </li> <li>• Types and use of jigs and tools used for rolling process</li> <li>• Rolling method</li> <li>• Cause of defects caused in rolling processed products and prevention method</li> </ol>	<ol style="list-style-type: none"> <li>4. Machine Oil                             <ul style="list-style-type: none"> <li>• Use of lubricant oil, hydraulic actuation oil, grease and processing oil agent</li> <li>• Degradation, replacement, disposal</li> </ul> </li> <li>5. Method of processing with machinery                             <ul style="list-style-type: none"> <li>• Types and use of machine tools</li> <li>• Hand-finishing and other processing method</li> </ul> </li> <li>6. Graphic method and material symbols set by JIS</li> <li>7. Electricity                             <ul style="list-style-type: none"> <li>• Electricity terms and how to use electric machinery and tools</li> </ul> </li> <li>8. Relevant laws and regulations                             <ul style="list-style-type: none"> <li>• Relevant laws related to Basic Environment Act</li> </ul> </li> <li>9. Safety and Sanitary                             <ul style="list-style-type: none"> <li>• Detailed knowledge on safety and sanitary</li> </ul> </li> </ol>	Inspection		
			Packing, storage, shipment	
				Mold building