

Theme	Quality Assurance for Enhancement
Title	Towards a Framework for the Quality Assurance of Practical Skill Ability
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Abstract

In a knowledge oriented society, the enhancement of competencies in higher education is essential for the accomplishment of a wide range of tasks in various professional fields. Skill mismatches have been arising among university graduates in relation to the general education received at university and the skill sets required by various enterprises. In this paper, framework for the attainment of quality assurance in practical education is described based on the activity of ACPA (Accreditation Council for Practical Abilities, Japan). The ACPA performs the certification and accreditation of courses, course providers, and educational institutions on the basis of the criteria it has established. The ACPA has created a standard skill guide that describes the association between the types of jobs needed by industry and the skills required. It is recognized that tertiary education, which covers practical skills and abilities contributes to the development of an individual's capacity for participation in a business environment. The creation of a quality assessment guideline for practical education that deals with lifelong learning practices can therefore play a role in contributing to the provision of high-quality education.

Key words: Practical Ability, Quality Assurance, Certification, Standard Skill Description, Skill Matrix

1. Introduction

Importance of Practical Capability in Higher Education

In the present-day knowledge-based world, the enhancement of competencies |-which involves the combination of knowledge, skills and human behavior- is essential for the attainment of a wide range of occupational abilities now required both by companies and in broader society. These include basic academic skills, such as literacy, foreign language, math, and science skills, as well as the ability to use information and communication technology.

In Japan, companies have implemented the enterprise-level training targeted at developing specific skills but only an individual has already been formally employed. The recent difficult circumstances in business, however, has made the implementation of adequate training problematic leading to the need for the investment of a capable person able to immediately redress this situation. In addition, skill mismatches continue to arise between universities graduates, who will already have received a general education at school, and the skill demanded by the companies.

The demand for competence in practical ability in higher education is increasing as a consequence of this mismatch in skills, especially in industries where information systems or embedded systems in electronic products are well developed. At universities, courses in practical abilities in collaboration with industry and in some cases, topical advanced contents and instructors are provided by the company. In the advanced technology area, companies already provide training and are increasingly involved in developing both occupational standards and curricula.

The competency of an individual can thus be improved in relation to the associated demand for a skill that can be readily matched to the new technologies and existing trends in globalization. As the learning of practical skills includes the ability to use information and communication technology, literacy, foreign language, business management and human communication, ICT can help facilitate such competence in various ways through computer simulations. Skills analysis of the real data based on real world situations are therefore important for the realization of new ideas.

Sustainable Tertiary Education

In higher education, tertiary education should necessarily improved, because it plays a vital role in the functioning of knowledge-based economies and democratic societies. In this respect, tertiary education is crucial for the effective creation, dissemination, and application of knowledge as well as the improvement of technical and professional

capacity. Tertiary education systems are to be adequately prepared to capitalize on the creation and use of knowledge.

As to improving general human capabilities when an individual is already employed by a company, courses of literacy and communication skills can be provided that will help promote personal skills to those seeking employment; this, however, would require a consistent approach to improving an employee's ability. Workers will need to progress the competencies required for longer careers. A higher level of competence is required in order to take advantage of the new technologies and adapt to the challenges-based economy accordingly requires mastering new kinds of knowledge and different types of skill.

In a rapidly changing knowledge-based age, workers also constantly need to acquire new skills. Moreover, with the recent global proliferation of computer and communication technologies, the importance of the production and management of knowledge has become increasingly important to the extent that it now influences working practices on a worldwide scale. Corporations are spending much more on training in attempt to increase and remain competitive in response to the growing knowledge economy. The latest innovative techniques that foster progress need to be learned at the right time in order to keep up with, and not fall behind, leading trends. Professionals expecting promotion are therefore now obliged to learn new skills and become lifelong learners that involves keeping up to date with new knowledge and technology.

Tertiary education in the area of practical education contributes to building up an individual's capacity to participate in an increasingly knowledge-based business environment. Workers must be able to use these skills effectively, act autonomously and reflectively, and join and function in globally distributed heterogeneous groups. In this regard, companies prefer to hire workers willing to constantly update their skills on a lifetime basis. Tertiary education takes the lead increasing the intellectual capacities on which knowledge production and utilization depend on and also helps promote the lifelong-learning practices necessary for upgrading individual knowledge and skills. It is therefore essential that high-level business capability in relation to technical progress and lifelong learning is taught through tertiary education.

The principles of lifelong learning are listed as follows.

- Educators are guides to sources of knowledge.
- People learn by doing.
- People learn in groups and from one another.
- Assessment is used to guide learning strategies and identify pathways for further

learning.

- Educators develop individualized learning plans.
- Educators are lifelong learners. Initial training and ongoing professional development are linked.
- People have access to learning opportunities over a lifetime.

Education providers need to respond to these needs by creating education and training systems that equip people with new and appropriate skills. An increasing number of tertiary institutions are offering part-time, evening, weekend, and summer courses to meet the needs of working adults. New providers—private sector trainers, virtual universities, international providers, corporate universities, educational publishers, content brokers, and media companies—have arisen to complement and challenge traditional institutions.

The quality assurance in tertiary education is important, since the outcome of learning must be effectively demonstrated. Quality assurance systems need to recognize the range of formal and informal settings in which learning takes place. Quality assurance systems need to provide opportunities for learners to demonstrate their newly acquired skills and knowledge. For learners, information about the offerings and performance of providers will be required. Quality assurance systems are needed to assess learners and inform providers accordingly. Quality assurance systems can make it easier for learners to move among different types and levels of learning environments.

In order to assure the quality of practical business education, the structure of a quality assurance is important. A framework is needed so that tertiary education institutions can become more innovative and more responsible to the needs of a globally competitive knowledge society and to the changing labor market requirements in relation to a more advanced human resource base.

2. Framework of Quality Assurance in the Practical Education

Practical education for the training of young and adult employees alike is required so as to ensure that the education is adequate, coverage is sufficient, and access is equitable. In order to assure the quality of practical business education, a quality assurance structure is important because practical education is extremely diverse. This is because most of the initiatives and measures are undertaken by private enterprises or private institutions.

Private education providers, including learning institutions and industries that are developing content, are playing a growing role in practical education. Distant education

is one method by which institutions or suppliers can offer more flexible learning opportunities. In such situations, mechanisms for certifying the courses, assessing the achievements of learners, investigation of institutional and system performance, as well as promoting of learning pathways, are important.

In this chapter, the framework by which quality assurance in the practical education undertaken by ACPA will now be described.

ACPA

The Accreditation Council for Practical Abilities (ACPA) is a non-profit organization established in 2003 in Japan with the support of the government, corporations and higher education institutions such as universities. Its objective is to establish a new educational system and a practical ability certification system through cooperation between the government, industry and academia, and to conduct activities aimed at nurturing human resources needed by industries. [1]

Operations of ACPA

The ACPA functions as an intermediary to promote collaboration between three parties—companies (human resources and training departments), educational institutions (e.g. universities, companies), and individuals.

The activities of the ACPA are listed as follows:

- (1) in relation to companies—listening to and receiving presentations about a company's human resource requirements:
- (2) in relation to educational institutions—approving the institutions, and assessing and assuring the quality of their courses offered:
- (3) in relation to individuals—certifying the skills acquired by those taking high-quality courses.

Toward this objective, the ACPA performs certification and accreditation of courses, course providers, educational institutions, lecturers, and trainees based on the criteria established by the ACPA.

Certification and Accreditation

The ACPA certifies personnel training courses, educational institutions, and qualification tests based on its evaluation criteria with the aim of nurturing human resources capable of executing tasks professionally (practical abilities). The ACPA also certifies individuals who complete a certified course or pass a certified test which

signifies that they have acquired the knowledge and skills required for their occupation or assignment.

The human resource development model in relation to certification and accreditation services provided by the ACPA is shown as in Fig.1.

Qualification tests are awarded with the certification when they are recognized as effective in determining the practical ability level of each individual. ACPA promotes certification and accreditation services for institutions providing a high-quality educational environment (course materials, curricula, etc).

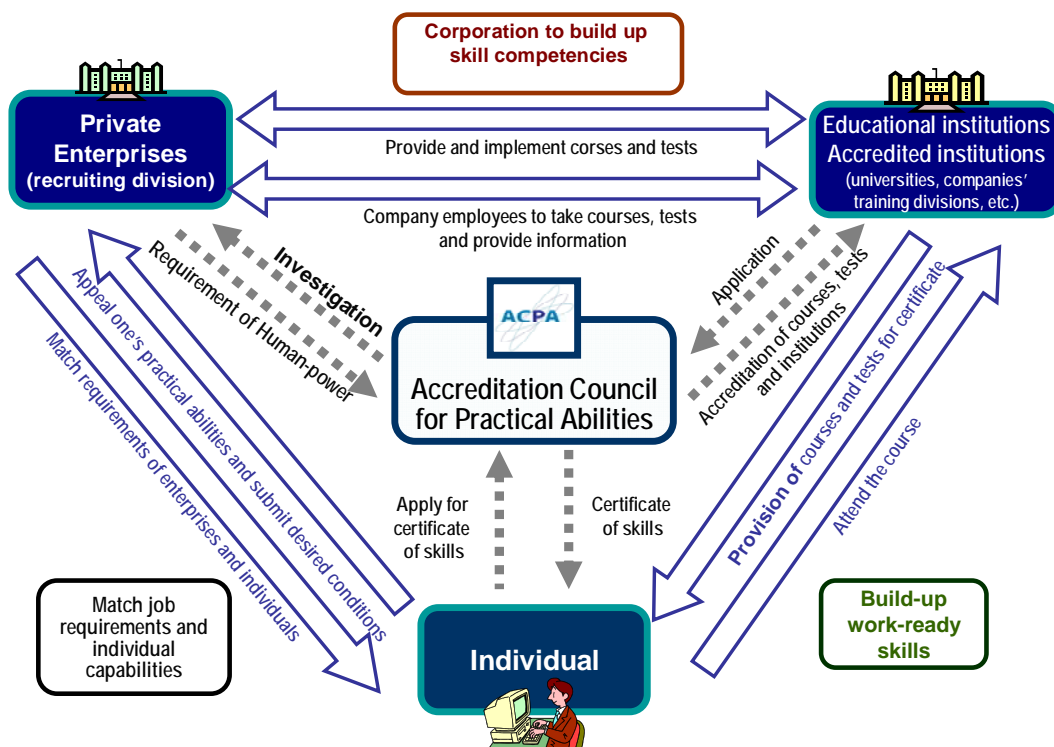


Fig.1 ACPA Personnel Skill Training Model

The following certification and accreditation services have been launched in April 2006, and are currently available.

1. Course certification (in the domain of ICT, business and management, and language [English])
2. Test certification
3. Institution certification (course-providing institutions and course-executing institutions)
4. Certification of individuals

The quality assurance by the certification is based on a standard skill description currently offered by ACPA and the measure of individual authorization to a certification is effective. ACPA carefully inspects each course provided by educational institutions, corporations, etc., and clarifies the positioning of each course for the benefit of the public, so that trainees can utilize this information as a guideline for acquiring practical abilities.

By employing this certification and accreditation procedure, the process of imparting practical abilities that match the needs of industry requirements, will hopefully lead to , industries and universities being more able to work together towards continuously improving the quality of their courses for students and workers.

ACPA Standard Skills Guide

ACPA sets out the knowledge and skills which are required in practical business in the form of the Standard Skills Description and certifies the courses and tests as well as issues certifications of practical abilities for each individual.

The ACPA Standard Skills Guide consists of a skill standard matrix which depicts the relationship between the skill item required by work and the skill items description which describes skill contents in detail.

- The skill standard matrix describes the relationship between job categories and skills in the form of a table showing which skills are required for each occupational category. The table therefore sets out clearly the required skill for each level.
- The skill items description depicts details of each skill.
- A series of documents that describe the outline of the ACPA Standard Skill Description in the field of Information Communication Technology, Business Management, and Language field, especially English.
- The ICT Standard Skill Description has been used for the certification service since 2006.
- The Business Management Standard Skill Description has been used for the certification service since 2007.
- The Language Standard Skill Description reference has recently begun to be used for the certification service in 2009.

ACPA describes the skill inventory and skill items in the three domains of ICT, Business and Language have been developed. Overview of skill categories is shown in Fig. 2. The ACPA skill inventory is itemized so as to describe the detailed components appertaining to knowledge and practical skills. The numbers of skill items

and components are shown in Table 1.

Table 1. Numbers of Skill Items and Components

Domain	Skill Items	Skill Components
ICT	343	1137
Business and Management	220	1141
Language	108	234
Total	671	2512

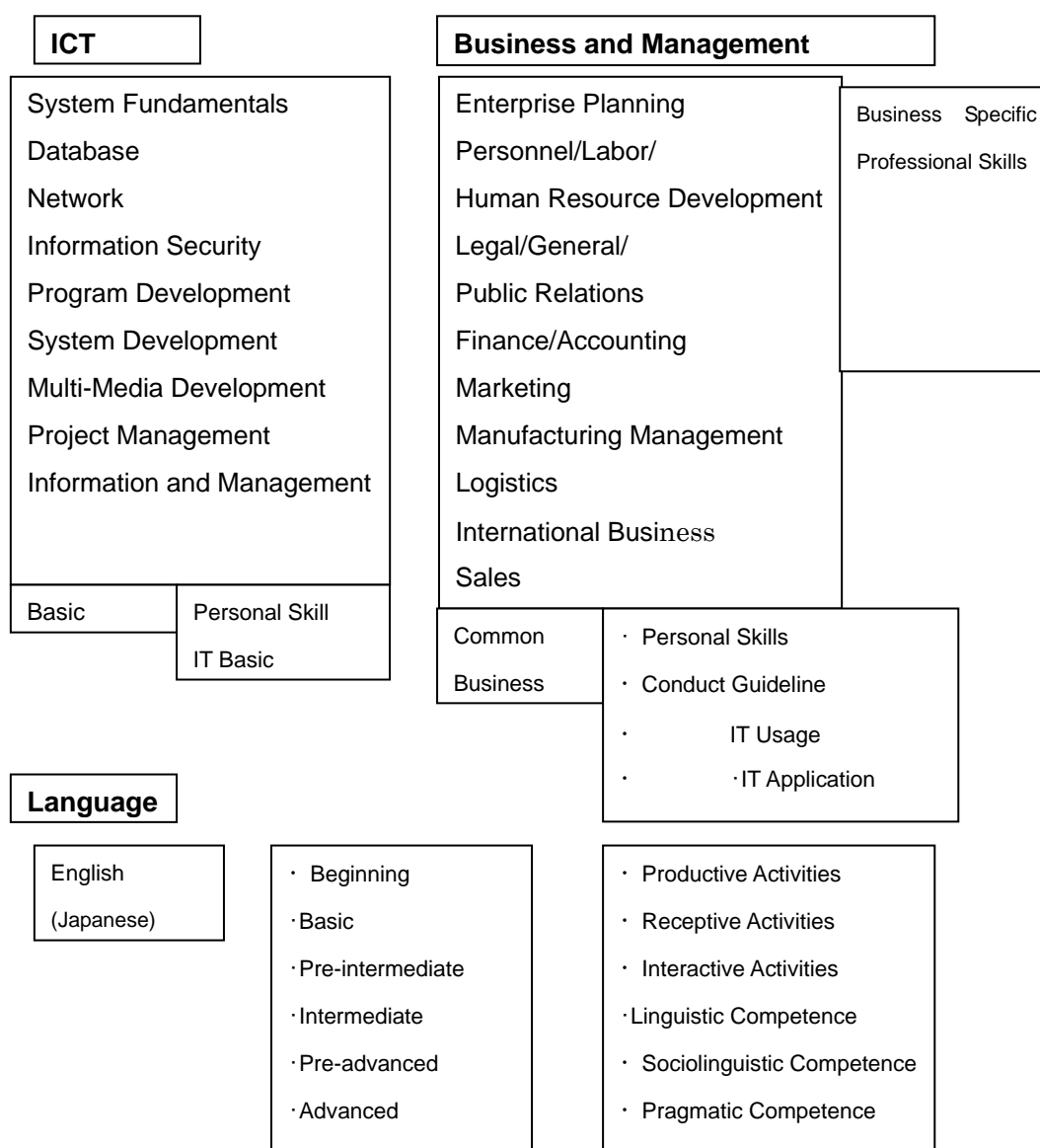


Fig. 2 Overview of Skill Categories

ACPA Standard Skill Matrix

The ACPA standard skill matrix has been developed in the fields of information technology and business management. It describes the required skill items that link occupational category to skills. Example of skill matrix of ICT domain is shown in Fig. 3.

Example of Standard Skills Matrix

[Requisite achievement]

★...Having basic knowledge. ★★...Having comprehensive knowledge. ★★★...Able to utilize obtained skills effectively.

Skill Matrix (Extract)		Level 0		Level 1				
Category	Skill Item	General	System Development	IT Administration (SE)	Operation	Customer Service	Sales	Administration Staff
IT Basic	Internet	★★	★★★	★★★	★★★	★★	★★	★★
	Business Tool	★★	★★★	★★★	★★★	★★★	★★★	★★★
	Computer Fundamentals	★	★★★	★★★	★★★	★★	★★	★★
Personal Skill	Communication	★	★★	★★	★★	★★	★★	★★
	Leadership	★	★	★	★	★	★	★
	Negotiation	★	★	★	★	★	★★	★
	Management		★	★	★	★	★	★
System Fundamentals	OS	★	★★	★★	★★	★★	★★	★
	System Basic Technology			★				
	System Configuration			★				
	Requirement Definition			★				
	Platform Design			★				
	Introduction Planning			★				
	Evaluation Method			★				
	Server Application			★				
	Server Implementation			★				

Fig.3 Example of the ACPA Standard Skill Matrix in the ICT Domain.

Level of Skill Competency

Practical business abilities are considered a combination of technical knowledge, skills, and experience, and required abilities that vary depending on the level determined by the length of engagement of each worker.

The definition of each level of skill competency is shown in Table 2(a). These definitions have been compiled based on the IT Skill Standard (ITSS) established by the Ministry of Economy, Trade and Industry. The entry level is further divided into the following three levels of occupational specialty as indicated in Table 2(b).

Table 2(a) Level Description of Skill Competency

Entry Level	<p>Capable of performing the given duties under the guidance of a person(s) at a higher level of the same occupational category, or by utilizing own skills and is able to identify and solve problems.</p> <p>University juniors or seniors, postgraduates, new employees in the first few years of working, etc.</p>
Intermediate Level	<p>Capable of performing the given duties of the occupational category without assistance from others. In addition, capable of giving guidance to personnel at the entry level, and playing a leading role in technological, methodological and business operational aspects within the company and for a particular project.</p> <p>Employees in mid-career.</p>
Advanced Level	<p>Capable of leading technological development and commercialization and playing an important role in formulating a strategy as the manager of an occupational category.</p> <p>High-achievers who possess advanced expertise and fully use this to lead the business.</p>

Table 2(b) Entry Level Description

Entry level	
Level 0	- Preparation stage prior to employment. Those who prepare for work.
Level 1	<p>- Applicable to employees in their first year of working. Professional skills are not established, and technical knowledge is limited. Have to build up expertise through practice.</p> <p>- Capable of performing certain assignments relating to simple routine jobs of the occupational category under the close guidance of a superior(s).</p> <p>- Have experience of being involved in at least one project and have been engaged in some operations relating to a project under the guidance of a superior(s).</p>
Level 2	<p>- Applicable to employees in their first few years of working. Have to build up practical experience based on technical knowledge, and acquire higher expertise of their field.</p> <p>- Capable of performing simple routine jobs by themselves under the general guidance of a superior(s).</p>

	- Have experience of being involved in at least two projects and have been engaged in overall operations of a small-scale project under the guidance of a superior(s).
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Advantages of ACPA Standard Skill Guide

The ACPA standard skill matrix is useful to companies (employers) for preventing mismatch between employers and employees.

- (1) It clearly defines the kind of personnel that is required;
- (2) It ensures that personnel acquire clearly defined practical abilities through high-quality courses;
- (3) It enables companies to quickly utilize those that have already acquired such abilities in their workforce and to flexibly assign them to new projects.

In addition, the matrix is useful in human resource evaluation and development. More specifically, the standard skill matrix serves as a basis for defining the practical abilities that each employee should possess, and enables the evaluation of abilities using universal criteria, through an objective assessment of skills acquisition. It also enables the proposal and implementation of education and training plans for human resource development based on such evaluations, as well as the implementation of effective human resource development based on a long-term perspective by means of high-quality ACPA-certified courses.

For educational institutions (course-executing institutions and course-providing institutions), the ACPA standard skill matrix is useful in improving the recognition of courses by means of ACPA course certification because

- (1) The course-executing and course-providing institutions can both earn greater trust from customers and they can expect to increase the recognition of their courses;
- (2) In ACPA-certified courses, acquired skills are defined based on the ACPA standard skill matrix, so mismatches concerning the aspiration of those taking the course can be avoided.

ACPA is also useful in developing educational materials suited to current needs.

- (1) The ACPA standard skill matrix makes it possible to understand current skill requirements and projected future scenarios, and to create educational materials that aim at realize these;
- (2) Since the ACPA standard skill matrix is updated each year, it is possible to develop human resource development tools suited to current changes and needs.

For individuals, the ACPA standard skill matrix is useful for understanding the work description of occupations.

- (1) It enables individuals to gain a deeper understanding of the details of the work and occupations they are interested in, and to seek courses for acquiring the necessary skills applicable to a particular type of work;
- (2) Acquiring a strong foundation of work knowledge before joining a company results in strong performance assessments by the employer and more rapid career advancement.

The standard skill matrix is also useful for up-skilling for personal development.

- (1) The ACPA standard skill matrix can be used as an indicator for systematic up-skilling;
- (2) Having acquired skills recognized with ACPA skills certificates help to maintain motivation for systematic up-skilling;
- (3) Skill certificates enable people to better market their acquired skills and helps individuals to improve and become more respected professionals;
- (4) In executing a career plan, it is possible to become competent in practical work skills and avoid a possible mismatch.

3. Conclusion and Discussion

A framework of quality assurance in the practical education was described introducing the ACPA standard skill guide. The certification and accreditation of courses, course providers, and educational institutions based on specific criteria were also described. It has been demonstrated how the standard skill guide, which sets out the types of jobs needed by industries in relation to required skills, can be improved to achieve the quality assurance associated for the achievement of practical abilities.

Advantages of the ACPA standard skill guide and important examples of its use have also been outlined.

The lessons obtained from the ACPA approach so far can be described as follows;

1. The standard skill guide has been useful for identifying the skill items required in the individual courses and tests.
2. The need for high quality of courses and tests linked to the skill items of the standard skill description has been identified.
3. The institutions supplying courses and tests have made efforts to develop the high quality materials and resources.
4. Learners who obtained the certificate of skills have used this in job-recruitment.

The enhancement of competencies which concerns the combination of knowledge, skills and human behavior is essential to meeting the needs of firms and wider society for a greater range of work skills.

A global framework will be needed in order to encourage institutions and suppliers offering practical education to be more innovative and responsible to the needs of a globally competitive knowledge society and to the changing labor market in relation to advanced human resources. The creation of a quality assessment guideline for practical education that deals with lifelong learning practices will also contribute to the provision of high-quality education. Furthermore, tertiary education, which covers practical skills and abilities has been show to contribute to the development of an individual's capacity for participation in a business.

Continuous execution of tertiary education can additionally help to enhance the skill competence necessary for a higher professional qualification and in this respect increases self empowerment. In a globalised age, it is also useful that learners acquire advanced skills effectively by way of the overseas involvement and cooperation. In this regard it will be necessary to learn proficiency in business according to the rate of technological progress, by way of distant education through E-Learning. Tertiary education can thus contribute to the enhancement of personal creativity leading to both personal satisfaction and innovative company development, as well as higher living standard.

In this way, we believe that INQAAHE will play an important role in tertiary education in the future. As a new member working specifically in this field, we therefore expect to make a significant contribution to the establishment of the global framework for tertiary education in the 21st century.

[1] <http://www.acpa.jp> :Accreditation Council for Practical Abilities.