Emerging Competency-Based Education of Diversity Context for Thai Vocational Education and Training

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Abstract - The complexity of teaching and learning strategies remains a competency-based education (CBE) in industrial education especially with the changes in new curricula. This article explains a context for the special issue and a framework for the discussion in this issue are provided. A broad interpretation of terms is postulated, e.g., competency standards systems includes methods and techniques of the human resource development policies in many advanced countries establishes competency standards which are agreed-upon, and are industry-identified knowledge, skills, and abilities required for a person employed in the workplace market; instructional strategies refers to a process of combining various distinguishable parts to create a systematic approach; implications of a systematic approach for instructional system and design changes in directly aspects to promote learning outcomes; and teachers’ competency that require effort and are aimed at achievement goal orientation. The implications of CBE can be applied to change new paradigm for Thai vocational education and training system which emphasis on teaching and learning method.

Keywords - Competency-Based Education, Competency Standards Systems, Instructional Strategies, Systematic Approach, Vocational Education

I. INTRODUCTION

In a knowledge economy, a country’s national competitiveness is transformation that affects the quality of its education system. This periodic review necessitates the Ministry of Education of Thailand amended the National Education Act B.E. 2542 (1999). The main purpose of National Education Act is to provide a basis for developing quality and standards by offering student-centered learning, school-based management, pre-service teacher reform and knowledge construction. Moreover, the teaching and learning methods of vocational teachers’ should emphasize competency-based education, and understanding of knowledge and professional development of teaching [1].

Competency-based education (CBE) is aimed at providing students with the knowledge, skills, and attitudes to enable them to recognize and solve complex problems in their domain of study or future work, i.e., authentic tasks [2]. Arguelles & Gonczi [3] proposed the advantage of CBE are learned and how it can be used in solving a complex problem, which have considered important. Knowledge application, problem-solving and heuristics are key points of CBE. The successfully realization of CBE heavily relies on the teachers, who are expected to give up their role as ‘knowledge transmitter’ and adopt the new role of ‘coach’, and instructional designer’.

Consequently, teachers are renovated with the different pedagogy approach to translate occupational/competency standards into competency-based curriculum as a meaningful sequence of learning outcomes. In addition, the Vocational Education is now involved in a real educational reform, in which CBE is the central axis. New direction and strategies are proposed and new methods of the teaching-learning-evaluation process are taken into account. In the paper there is specifically focus on vocational teachers, will be provided. The changing nature of instructional design and its implement on the focus and availability is discussed.

II. COMPETENCY STANDARDS SYSTEMS

One of the human resource development policies in many advanced countries establishes competency standards which are agreed-upon, and are industry-identified knowledge, skills, and abilities required for a person employed in the workplace market. First of all, teachers should be developed a competency-based curriculum in the context, as teacher education plays an increasingly role in perspectives on optimizing of the industrial sector.

The National Skill Standards Board of America proposes a common framework [4], as shown in Table 1, to be followed by each state or industry sector which desires to develop skill standards.
From Table 1, able to describes as follow as:
1. Occupational title is synonymous to job title, which specifies the domain of competency standards.
2. Critical work function, equivalent to collective competency, is the major responsibility in a job area.
3. Key activity, synonymous to a single skill, is the major duty or task involved in carrying out a critical work function.
4. Performance indicator provides information how to determine when someone is performing each key activity competency.
5. Technical knowledge is the related knowledge needed to perform the key activity.
6. Employability knowledge and skill is a general competency used to help perform the key activity.

The competency standards framework of Australia [5], as shown in Table 2, is similar to that of America. Several related units of competency are grouped under a functional area heading. From Table 1, able to describes as follow as:
1. Unit of competency is a set of element of competency performed.
2. Element of competency is a measurable professional competency which can be done by oneself.
3. Performance criteria specifies the level and standard to be reached when performing unit of competency.
4. Range statement describes the environments, conditions, and knowledge involved in unit of competency.
5. Evidence guide tells the assessors to collect competency evidence for assessment.
6. Key competency is a general competency which can support the development of unit of competency.

In Table 3, show comparisons between the competency standards framework of America and Australia. It seems the same structures and elements in spite of the different terms used. Also, the most importantly, competency standards emphasize on professional competencies instead of general competencies.

“Competency” has various definitions. It is divided into seven categories according to the Australian Competency Standard [5], including ability to
1. Collect, analyze, and organize information.
2. Communicate ideas and information.
3. Plan and organize activities.
4. Work with others and in teams.
5. Use mathematical ideas and techniques.
7. Use technologies.
It is classified into two main categories according to the Texas Skill Standard of the United States: “academic knowledge and skills” [6]. Academic knowledge and skills include knowledge and skills in four categories: 1) reading, 2) writing, 3) mathematics, and 4) science. Competence knowledge and skills include know the ability to 1) adapt, 2) analyze and solve problems, 3) reach consensus, 4) collect and analyze, 5) lead, 6) listen, 7) make decisions, 8) organize and plan, 9) develop personal career and life, 10) speak, 11) apply information and communication technologies, 12) use interpersonal skills, and 13) participate in team work.

III. INSTRUCTIONAL STRATEGIES

Competency can be described as using a precise language to specify performance. This precision involves the consistent use of an “action verb” as the beginning word [7]. The action verb, also called active verb, has the meaning of acting, performing, or executing, and always provides important information about the content of a competency or skill. An action verb is usually used to describe skill, competency, basic academic ability, educational objective, curriculum design, learning assessment, learner profile, curriculum vitae, and recruitment advertisement [8].

An action verb also needs an object. The object, a noun or a noun phrase, is the performing target of the action verb. Aside form this, it may need to specify the condition or circumstance to increase precision. Hence, a competency statement has the form of “action + verb + object + condition” [8]. The emphasis on workplace tasks has been accompanied in many cases by a competency-based education (CBE) approach to teaching. In the CBE classroom students learn to accomplish the actual tasks that they will be expected to perform on the job.

When students master one task, they move on to another, working at their own speed. Moreover, CBE calls for the use of authentic assessment methods in evaluating student achievement; often actual evaluation tools or methods from the workplace are used in the classroom, and frequently industry standards are used to measure student performance [9]. Generally, the form of a task analysis, in which each job task is made teachable by being placed in a framework that contains some or all of the following components:
1. Duty Areas – Represents a category or job responsibilities, a grouping of similar tasks.
2. Task Statements – Describes a measurable item of knowledge, skill, or behavior related to the occupational area.
3. Performance Objectives – Explain what the student must do to demonstrate that he/she has mastered this task/competency.
4. Criteria-Referenced Measures – Tells how the student performance will be assessed.
5. Enabling Objectives – Offers suggested steps leading to mastery of the performance objective, including:
   - subskills
   - related skills
   - supporting concepts
   - theory behind a psychomotor skills
   - reinforcement of prior learning
   - parts of the performance required

6. Instructional Activities – Presents suggested assignments contributing to the student’s mastery, including such activities as
   - group project (research, site visit)
   - individual project (research, site visit, model)
   - written work (reports, charts, portfolio)
   - oral work (reports, panels)
   - critical thinking activities (case study, role-play)
   - demonstrations / simulation
   - guest speakers with student preparation / response
   - audiovisual presentations with student critique
   - visual presentations (bulletin boards, posters, print-outs, video, multimedia show)

7. Resources – Lists a variety of aids for teaching the task

As a result, the framework gives teachers a basic plan of organization, recommended methods and standards for evaluation, and suggested teaching strategies.

IV. IMPLICATIONS OF A SYSTEMATIC APPROACH FOR INSTRUCTIONAL SYSTEM AND DESIGN

Author found that implications of a systematic approach for instructional system and design can be proposed the following components [8]:

Stage 1: First is a needs analysis, in which actual needs are determined and sound of social demands, for improve curriculum, for updated automotive technology, for change in automotive procedures, or some combination of needs. If the need for training is confirmed, a job analysis is next (the DACUM approach recommended). Next is task verification, which can extend involvement in the job analysis from experts’ workers and can provide a means of rating the importance and difficulty of each task and obtaining other valuable decision-making information. It provides into sixth components:

   1.1 Conduct needs analysis
   1.2 Conduct job analysis
   1.3 Conduct task verification
   1.4 Select tasks for training
   1.5 Conduct standard task analysis
   1.6 Conduct literacy task analysis

Stage 2: Based on information collected in stage

1. The instructional programs and materials to be developed, which instruction will be individualized, and support instructional media. The development of learning must focus on objectives for each task or group of tasks, followed by the competency analysis profile. Then, the development of learning can apply to student competency measures. It provides into fourth components:

   2.1 Determine training approach
   2.2 Develop learning objectives
   2.3 Develop performance measures
   2.4 Develop training plan

Stage 3: Should develop main components, although depending on the type of materials to be produced. It provides into sixth components:

   3.1 Perform competency profile
   3.2 Draft learning guides/modules
   3.3 Construct learning aids
   3.4 Construct curriculum guide/lesson plan
   3.5 Construct supportive media
   3.6 Pilot-test/revise materials

Stage 4: It provides into fourth components:

   4.1 Implement training plan
   4.2 conduct training
   4.3 conduct formative evaluation
   4.4 document training

Stage 5: The final stage should be done the formative evaluation complete. The important step is to conduct the summative evaluation to collect data for use in decisions on maintaining or improving the education. This involves gathering data on the overall instructional process, program outcomes, student follow-up, and cost-effectiveness. Completion of the evaluation stage produces the performance data and feedback vital to any education or training system concerned with quality and improving its worth. It provides into third components:

   5.1 Conduct summative evaluation
   5.2 Analyze information collected
   5.3 Initiate corrective actions
V. VOCATIONAL TEACHERS COMPETENCIES

Author classified teachers’ competency into six categories by referring and integrating the theoretical frameworks suggested in previous research [10] [11] [12] [13]. The categorization system, including:

1. Mental capacity: the ability to discover and solve problems by using analytical thinking, forward thinking, deductive reasoning, and creative thinking skills.
2. Value systems: the ability to be responsible and pro-active, implement and follow through plans, tolerate frustration and stress, plan long-term, and maintain a consistent belief system.
3. Interpersonal skills: the ability to be respectful and caring, and to use the right tones and registers for the communication context.
4. Management ability: being able to plan, do, check and delegate work, and use a systematic decision-making process, standard operating procedures, and a reward and punishment system.
5. Professional capacity: including declarative and procedural knowledge embedded in one’s long-term working memory that can be retrieved when necessary.
6. Personality traits: being adventurous, curious, caring, confident, innovative, problem-solving, open-minded, and motivated.

IV. CONCLUSION

This article explains a context for the special issue and a framework for the discussion in this issue are provided. A broad interpretation of terms is postulated, e.g., competency standards systems includes methods and techniques of the human resource development policies in many advanced countries establishes competency standards which are agreed-upon, and are industry-identified knowledge, skills, and abilities required for a person employed in the workplace market.; instructional strategies refers to a process of combining various distinguishable parts to create a systematic approach; implications of a systematic approach for instructional system and design changes in directly aspects to promote learning outcomes; and teachers’ competency that require effort and are aimed at achievement goal orientation. The implications of CBE can be applied to change new paradigm for Thai vocational education and training system which emphasis on teaching and learning method.

REFERENCES

### Table 1 Competency Standards Framework of America

<table>
<thead>
<tr>
<th>General Term</th>
<th>America</th>
<th>Australia</th>
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<tbody>
<tr>
<td>Occupational Title:</td>
<td>occupational name in industry sectors</td>
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<tr>
<td>Critical Work Function:</td>
<td>main responsibilities associated with occupation</td>
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<td>Key Activity:</td>
<td>identifiable and measurable competencies</td>
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<tr>
<td>Performance Indicator:</td>
<td>effective performance in key activity</td>
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<td>Technical knowledge:</td>
<td>knowledge associated with key activity</td>
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<td>Employability knowledge and skill:</td>
<td>general competencies for key activity</td>
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### Table 2 Competency Standards Framework of Australia

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<td>Unit of Competency:</td>
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<td>Element of Competency:</td>
<td>observable, measurable, and identifiable competency</td>
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<td>Performance Criteria:</td>
<td>criteria to be reached when performing unit of competency</td>
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<tr>
<td>Range Statement:</td>
<td>environment and knowledge associated with unit of competency</td>
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<td>Evidence Guide:</td>
<td>guidance for gathering evidence and assessment</td>
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<td>Key Competency:</td>
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### Table 3 Comparisons of Structure of Competency Standards

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<thead>
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