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Developing core competencies of students through Competence Based Assessment at Ho Chi Minh City University of Technology and Education

Abstract

Core competencies can be defined as personal attributes or underlining characteristics, which, combined with technical or professional skills, enable an individual to fulfill a role/job. Core competencies such as problem solving or teamwork are basic/fundamental for technical competencies. To meet requirements of employers in Vietnam regarding engineers' and technicians' technical competencies and core competencies, higher education institutions should support students to develop these competencies in process of learning. This paper reviews some theoretical approaches to Competence and Competence Based Assessment and applies them by developing core competencies of students at Ho Chi Minh City University of Technology and Education. The application of Competence Based Assessment in developing core competencies of students must be consistent with learning outcomes, teaching methods and assessment.

***Keywords:** Competence, Core Competence, Competence Based Assessment, Team Work competence, Problem Solving Competence.*

1 Introduction

Competence-based teaching has become an inevitable and general trend in the world, particularly in higher education. Compared to knowledge-based teaching, competence-based teaching has moved from “focus on knowledge” to “focus on competences” (Khanh & Oanh 2015). In this trend, Competence-Based Assessment (CBA) is considered a very important link to make the teaching process successful. Based on learning outcomes, curriculum or professional competence standards, CBA focuses on finding evidence to prove the various levels of applying knowledge, skills, attitude, values, and motivation in dealing with real-world problems.

Vietnam became a member of the ASEAN Economic Community (AEC) in December 2015. Joining AEC offers opportunities, but Vietnamese laborers also have to face many challenges such as foreign languages and professional competences, particularly the lack of core/general competences (problem solving, teamwork, creative thinking, critical thinking etc.). The World Bank and the Central Institute of Economic Management (CIEM) recently conducted a survey of 350 manufacturing and service sector firms in Hanoi and Ho Chi Minh City and surrounding provinces (cf. Bodewig 2012). It focused on understanding what employers think

about the skills of their current workforce and what skills they are looking for. Almost all of the employers were not satisfied with the quality of education and skills of the available workforce, especially engineers and technicians. Employers are not just looking for technical competence to do the job, but also equally expect what experts call "cognitive" and "social", or "behavioral", competences.

Ho Chi Minh City University of Technology and Education (HCMUTE) is the leading university in Vietnam in educating and training technical and vocational teachers, engineers and technicians for the whole country, especially for the Southern region. Being aware of the requirements of employers regarding core competences of engineers and technicians, HCMUTE has faced two big questions: How to improve the quality of education? How to develop core competences for students? In this paper, we focus on finding the answer for the second question. At HCMUTE we develop core competences of students through Competence Based Assessment.

2 Theoretical approach to competence

2.1 Definition of competence

The concept of competence (in the British context) or competency (in the Australian context) is derived from Latin - *Competentia* means agreement or conjunction (Deißinger & Hellwig 2011). Prins and his colleagues have explained the difference between “competence” and “competency”: Competence is given a generic or holistic meaning and refers to a person’s overall capacity whereas competency refers to specific capabilities (knowledge, skill, attitude, ability) (Prins, Nadolski, Berlanga, Drachsler, Hummel, & Koper 2008).

According to the Organization for Economic Cooperation and Development (OECD), a competency is more than just knowledge and skills. It involves the ability to meet complex demands by drawing on and mobilizing psychosocial resources (including skills and attitudes) in particular. Crick (2008) shared the same opinion as OECD considering competence includes not only knowledge and skills: “A competence is best described as ‘a complex combination of knowledge, skills, understanding, values, attitudes and desire which lead to effective, embodied human action in the world, in a particular domain. Competence is therefore distinguished from skill which is defined as the ability to perform complex acts with ease, precision and adaptability”.

Loc, Phuong, Khanh, Ry, & Que (2015) defined the concept of competence based on uniting 3 points:

- Competence is a dynamic structure, open, multi – element, multi – stratification, includes not only knowledge and skills, but also attitudes, values, beliefs, interest, motivation ... and readiness to act in practical contexts or changeable situations.
- Competence is always associated with a specific activity. The formation, development, performance of competence will be expressed in and through activities.

- Competence must be measured and assessed based on learning outcomes and professional standards.

Drawing on the different views of “competence”, this paper proposes the following working definition: “Competence is a flexible conjunction and application of knowledge, skills, attitudes, values, beliefs, motivations, interests, needs... to implement tasks or deal with complex real - world problems to achieve good results”.

2.2 Structure of Competence

Considering the development of competences, it is very important to clarify competence structure and components. There are also different types of competence models in the world that can be distinguished in models of competence structure (focus on the different types of competence) (horizontal models) and models of competence development (focus more on the different levels of competence: novice, advanced novice, competent, experienced, expert) (vertical models) (Grosch 2016). In the field of education, the models of competence structure have drawn more attention to researchers and are used more often than the models of competence development.

Frieling et al. (2007) distinguished models of competence structure in 4 categories (Ehlers 2013):

- Personal competences contain the attitude, values, motives, self – perception and self - organization.
- Social competences are communicative or cooperative skills in situation of interaction.
- Methodological competences are work – and department – comprehensive abilities (problem solving competence, learning competence...).
- Professional competences are abilities, capabilities, and skills, which are necessary for the accomplishment of work - specific requirements.

Based on a view that competences are required to handle new, unknown, and complex situations, Erpenbeck and Sauter (2007) have distinguished competences in personal, activity-based, functional - methodological and social - communicative competences (Ehlers 2013). Personal competence consists of self-confidence, courage and creativity. The functional-methodology competence is based on experiences, motives and hopes, which are necessary to solve a task. The social-communicative competence involves persuasiveness, willingness to agree, negotiation and openness, which are important for team work. The activity-based competence is the strength to enforce its conception.

The OECD’s Definition and Selection of Competencies (DeSeCo) Project’s conceptual framework for key competencies classifies competencies in three broad categories:

- Using tools interactively: Cater for the social and professional demands of the global economy and the information society, the individual is required to master the socio-cultural tools for interacting with knowledge, such as language, information, and

knowledge, as well as physical tools such as computers. Using tools interactively opens up new possibilities in the way individuals perceive and relate to the world.

- Interacting in heterogeneous groups: In order to deal with the diversity of pluralistic societies, individuals are required to learn, live and work with others. Interacting in heterogeneous environments includes many of the features associated with terms such as “social competencies”, “intercultural competencies”, to relate well to others; cooperate, work in teams; and to manage and resolve conflicts.
- Acting autonomously: Individuals must act autonomously in order to participate effectively in the development of society and to function well in different spheres of life including the workplace, family life and social life. Individuals need to create a personal identity in order to give their lives meaning, to define how they fit in. Acting autonomously competencies address many features associated with terms such as “act within the big picture”, “form and conduct life plans and personal projects”, and “defend and assert rights, interests, limits and needs”.

Based on The OECD’s Definition and Selection of Competencies (DeSeCo) Project’s conceptual framework for key competencies, OECD distinguishes competence in 2 groups: core competencies and technical competencies. Core competencies can be defined as personal attributes or underlying characteristics, which combined with technical or professional skills, enable an individual to fulfil a role/job. The Core Competencies do not define individuals’ technical roles and accountabilities, nor do they include the technical skills necessary to do the jobs. On the contrary, technical competencies cover the various fields of expertise relevant to the specific work.

In Vietnam, distinguishing competencies has recently become a topic of interest to researchers (Kiem, Ry & Que 2015). Vietnamese researchers’ focus is based on the OECD’s view. According to these researchers, competence can be classified into 2 groups: core/general competencies and professional/technical competencies. Core competencies and technical competencies are closely interlinked. Core competencies are the basic/fundamental of technical competencies. In contrast, the development of technical competencies will have an effect on core competencies. Ry, V.T and Que, D.X (2015) classified core competencies in 3 groups:

- Autonomous activity and personal development competencies contain self-study competence, problem-solving competence, creative competence...
- Social competencies contain communicative competence, teamwork competence...
- Tool competencies contain language competence, computer competence, calculate competence...

Respecting ideas of researchers above on competence structure in general and core competence structure in particular that there are different types of competence; we suggest a specific proposal of core competence with a clear interconnection among identified competence areas that might help to reach a common understanding of types of core competencies. The proposal of core competence is built with social and methodological competence (Frieling et al.

2007), personal and social competence (Erpenbeck & Sauter 2007), interacting in heterogeneous groups (DeSeCo), autonomous activity and personal development competencies and social competencies (Ry & Que 2015). The proposed main core competencies consist of team work competence, problem solving competence, communicative competence, cooperative competence, creative competence, critical thinking competence, self-management competence and conflict competence.

3 Theoretical approach to Competence Based Assessment

3.1 Definition of Competence Based Assessment

Competence based teaching is not only required to “teach knowledge” or “transfer knowledge”, but also focuses on developing technical competencies and core competencies of students, particularly problem solving competence, teamwork, creative competence, and critical thinking competence to adapt the social and professional demands of the global economy and the information society. Thus competence based teaching requires a change in learning outcomes, contents, teaching methods and especially assessment. In competence based teaching, assessment is required to change from “assess knowledge and skills” to “competence based assessment”. Competence-based assessment will focus on measuring different levels of applying knowledge, skills, attitudes, values, motives in performing tasks or dealing with complex real-world problems.

The same points in identifying the concept of “competence based assessment” of worldwide researchers are to collect evidence and make judgment on whether competence has achieved compared with learning outcomes or professional standards. According to Wolf (1995), “Competence -based assessment is a form of assessment that is derived from the specification of a set of outcomes; that so clearly states both the outcomes – general and specific – that assessors, students and interested third parties can all make reasonably objective judgments with respect to student achievement or non achievement of these outcomes; and that certifies student progress on the basis of demonstrated achievement of these outcomes. Assessments are not tied to time served in formal educational settings”. In this point, Alison emphasized outcomes - especially multiple outcomes, each distinctive and separately considered. Based on the learning outcomes and professional standards, assessors, students and 'third parties' should be able to understand what is being assessed, and what should be achieved.

In Guidelines for competency assessment in vocational education and training in Western Australia, competency based assessment is defined as the following: “Competency based assessment is the process of collecting evidence and making judgments on whether competence has been achieved. This confirms that an individual can perform to the standard expected in the workplace as expressed in the relevant endorsed industry/enterprise competency standards (or outcomes of accredited courses if there are no competency standards for an industry)”.

This paper builds on the following understanding of competence based assessment: Competence based assessment is an assessment approach based on learning outcomes (subjects or curriculum) or professional standards to make judgments on whether competence has been achieved through evidences associated with flexible application of knowledge, skills, attitudes, values and personal attributes such as motives, interests, needs, beliefs ... in implementing tasks or dealing with complex real - world problems”. Compared to knowledge or skills based assessment, competence based assessment must be based on learning outcomes or professional standards. Therefore, learning outcomes or professional standards have to be clear, transparent, measurable and attainable to make judgments on whether competence has been achieved objectively and precisely. Competence based assessment should be organized regularly via formative assessment and summative assessment, especially via formative assessment. Since individual’s competencies are formed and developed through implementing specific activities, so in the teaching process, competence based assessment is required to be implemented through activities combining theory with real-world problems. Competence-based assessment can be achieved through different types of assessment methods such as observation, conversation, group work, project based learning, situated learning, objective tests, essays, etc., and assessment tools such as cognitive scales, rubrics, portfolio, reports, questionnaires, situations etc. Based on intended criteria, assessors, students (self or peer assessment) and third parties participate in making judgments on whether competence has been achieved. Results from competence based assessment do not only prove individual’s levels of competencies, but also adjust teachers and learners’ activities.

3.2 Designing Competence Based Assessment tools

In order to apply the competence-based assessment in teaching, teachers need to design competence based assessment tools. The process of designing competence-based assessment tools should be based on the following steps (Thuy et al. 2015):

- Define the competence which will be assessed and performance areas of the competence.
- Define signs or characteristic features of the competence.
- Identify specific assessment criteria.
- Build the score scale.
- Consolidate the assessment tool.

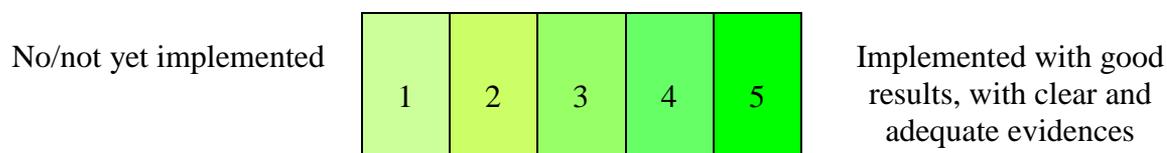
Ex: Designing a tool to assess problem solving competence

We designed an assessment tool for problem solving competence based on Polya's Problem Solving Techniques (Polya) and Problem solving rubric (Association of American colleges and universities – AACU). The performance areas, signs and specific criteria of the problem solving competence are described in a table below:

Table 1: The description of the problem solving competence

Performance areas	Signs/characteristic features	Specific criteria
Define the problem	Define the problem	<ul style="list-style-type: none"> - State the problem clearly - Identify underlying issues - Transform practical problem into cognitive problem to discover or solve.
Develop a plan to solve the problem	Develop a plan to solve the problem.	<ul style="list-style-type: none"> - Develop a specific and concise plan for collecting and classifying information associated with the problem. - Develop a specific plan for applying selected information to solve the problem. - Develop a specific plan to solve the problem and evaluate outcomes.
Collect and analyze information	<ul style="list-style-type: none"> - Collect information associated with the problem - Analyze information. 	<ul style="list-style-type: none"> - Collect information from different sources - Classify information. - Select appropriate information to solve the problem. - Propose solutions to solve the problem. - Evaluate potential solutions. - Select the best solution.
Implement solution	Implement solution	<ul style="list-style-type: none"> - Apply the appropriate information to solve the problem. - Provide a logical interpretation or evidences to solve the problem. - Combine the solved problem with similar problems in practical context. - Generalize major outcomes.
Evaluate outcomes	<ul style="list-style-type: none"> - Evaluate outcomes - Revise as needed 	<ul style="list-style-type: none"> - Review results relative to the problem. - Define advantages and disadvantages of the outcomes. - Propose new solutions and revise as needed. - Give the final conclusion associated with the problem.

After describing the problem-solving competence, a checklist was built to assess the learners' problem-solving competence. To quantify the problem-solving competence in each criterion, we scored on 5-grade scale (1 is the lowest score and 5 are the highest score):



The score scale is detailed as follows:

- 1 point: No/not yet implemented
- 2 points: Implemented, but no clear results
- 3 points: Implemented with the initial results, with evidences but not clear
- 4 points: Implemented with rather good results, with clear evidences
- 5 points: Implemented with good results, with clear and adequate evidences

The maximum point for each criterion is 5. The maximum total point is 100.

Table 2: **The checklist of the problem solving competence**

Performance areas	Specific criteria	Point(s)
Define the problem	State the problem clearly	
	Identify underlying issues	
	Transform practical problem into cognitive problem to discover or solve.	
Collect and analyze information	Collect information from different sources	
	Classify information.	
	Select appropriate information to solve the problem.	
	Propose solutions/hypotheses to solve the problem.	
	Evaluate potential solutions.	
	Select the best solution.	
Develop a plan to solve the problem	Develop a specific and concise plan for collecting and classifying information associated with the problem.	
	Develop a specific plan for applying selected information to solve the problem.	
	Develop a specific plan to solve the problem and evaluate outcomes.	
Implement solution	Apply the appropriate information to solve the problem.	
	Provide a logical interpretation or evidences to solve the problem.	
	Combine the solved problem with similar problems in practical context.	
	Generalize major outcomes.	
Evaluate outcomes	Review outcomes relative to the problem.	
	Define advantages and disadvantages of the outcomes.	
	Propose new solutions and revise as needed.	
	Give the final conclusion.	
TOTAL		

4 Developing core competences of students through Competence Based Assessment at Ho Chi Minh City University of Technology and Education

HCMUTE has implemented the training programs (150 credits) according to the CDIO approach (Conceive; Design; Implement; Operate) since the school year of 2012 - 2013. CDIO is a methodology to build the curriculum, implement training and develop training toward assuring comprehensive education quality at undergraduate level. CDIO is an innovative educational framework for producing the next generation of engineers. The CDIO program is based on the principle that product, process, and system lifecycle development and deployment are the appropriate context for engineering education. CDIO is a model of the entire product, process, and system lifecycle. Therefore, applying the CDIO approach must

carefully consider the consistency of learning outcomes, teaching and learning methods and assessment (Nhut & Trinh (translators) 2009).

With the CDIO framework, students need to gain four main knowledge and skill blocks: (1) technical knowledge and reasoning; (2) professional and personal skills and attitudes; (3) interpersonal skills and attitudes; (4) CDIO in social and enterprise context (Nhut & Trinh (translators) 2009). HCMUTE has integrated core competencies into training specialized on technical knowledge through technical subjects and optional subjects such as Presentation skill, Effective Plan skill, System thinking

Developing core competencies of students through Competence-Based Assessment must be linked closely with both learning outcomes and teaching and learning methods. In Competence-Based Assessment, students are required to apply knowledge, skills, attitudes, motives and beliefs to deal with complex real-world problems. Such problems are often built as a learning project. We encourage students to implement learning projects and assess their results. In the course of the learning project, students often work together in small groups (typically of about five students). The students have to define the problem, collect and analyze information, develop concrete plans, implement proposed solutions and finally evaluate the results. Individuals are not only required to learn and work with others, but also relate well to others, co-operate, manage and resolve conflicts in their team. These activities are the performance areas of problem solving, team work etc. and have been pointed out in designed Competence-Based Assessment Tools. Therefore, students' core competencies are completely quantified by using these tools (the checklist). We can identify different levels of developing core competencies of students according to quantified results. An overview of a proposed plan to develop core competencies of students through Competence-Based Assessment in System Thinking subject is illustrated in the following.

Table 3: **Description of the plan to develop core competencies of students through Competence Based Assessment**

Learning Outcomes	Contents	Teaching Methods	Assessment Tools	Evidences
Phase 1: Overview of System				
<ul style="list-style-type: none"> - Describe a system; - Analyze and design a system; - Develop the problem-solving competence and teamwork competence. 	<ol style="list-style-type: none"> 1. The definition of system 2. Describe a system 3. Analyze and design a system 	<ul style="list-style-type: none"> - Group work - Project based learning 	<u>Project topic 1</u> Build a system (a bridge, a house, a device, a gift ...) by recycling waste materials such as milk cartons, plastic bottles, cardboards, papers, textiles (clothes, woolen), aluminum (beverage cans)...	<ul style="list-style-type: none"> - A system by recycling waste materials - A PPT report
Phase 2: Thinking and Technical Thinking				
<ul style="list-style-type: none"> - Present the characteristics of thinking and technical thinking; - Apply thinking manipulations (analysis, synthesis, comparison, generalization ...) in dealing with problems in practical contexts; - Develop the problem solving competence and teamwork competence and creative competence. 	<ol style="list-style-type: none"> 1. Overview of thinking 2. Definition of thinking 3. Characteristic of thinking 4. Classification of thinking 5. Thinking manipulations 	<ul style="list-style-type: none"> - Group work - Situated learning 	<u>Situated Learning</u> Read the article “We did not do anything wrong but somehow, we lost (Nokia CEO - Stephen Elop) and lessons from Nokia” and answer the following questions: <ol style="list-style-type: none"> 1. Analyze the reasons why Nokia has lost by comparing to Apple, Samsung and Sony. 2. Review the Nokia development strategy. 3. Propose solutions to make Nokia exist and develop. 	PPT report
	<ul style="list-style-type: none"> - Definition of technical thinking - Characteristic of technical thinking - Structure of technical thinking 	<ul style="list-style-type: none"> - Group work - Project based learning 	<u>Project topic 2</u> Build a tower from 200 straws and scotch tapes. <u>Criteria:</u> The highest tower that stands the longest time will be the winner <u>Team size:</u> Suggested team size is 5 - 7 students	A tower from straws and scotch tapes

Assessing levels of developing students’ core competences must be based on results of performance areas of these competencies in concrete learning situations. Performance areas of core competencies will be expressed in the process of implement learning projects. We encourage students to implement learning projects according to the above plan with 5 steps as follows:

Step 1: Define the learning project topic, time allowed, team size and criteria

The lecturer states the learning project topic, time allowed, team size, and assessment criteria. The learning project topics are always a combination of theories and practical problems. Criteria are designed clearly and precisely.

Step 2: Develop specific plans to implement the learning project

Students make specific plans to implement the learning project. The plan often consists of time, resources, contents, intended results...

Step 3: Implement the learning project

Students implement the learning project according to their plan.

Step 4: Present results

Students present their results in front of the class. Questions concerning the projects will be asked by the other members.

Step 5: Assess results

The lecturer and the students assess results together based on the checklists.

The results of developing core competencies for student through competence based assessment will be analyzed in more detail in the following.

To help students to draw closer connections between the knowledge of analyzing and designing a system and building a real system as well as developing problem-solving competence and teamwork competence, students are required to implement the project topic 1: “Build a system (a bridge, a house, a device, a gift ...) by recycling waste materials such as milk cartons, plastic bottles, cardboards, papers, textiles (clothes, woolen), aluminum (beverage cans)...”. The allowed time is one week. The team size is 5 - 7 students.

Example: A group of students from the Faculty of Electrical and Electronics Engineering built the model of Han River Bridge by recycling bamboo sticks, bulbs and wires. Students applied electrical and electronics knowledge to make the model of the bridge which can be rotated. This product can be used as a visual model in teaching. In this learning project about building a system by recycling waste materials, students from the Faculty of Electrical and Electronics Engineering defined the problem through answering questions: How is the system built? Which waste materials are used in building the system? How do they build the system by recycling waste material? What is the system for? The defined problem was to build the bridge system from waste material such as carton, paper, bamboo sticks.



Figure 1: The model of Han River Bridge from bamboo sticks, bulbs and wires

Besides defining the problem, students collected information to clarify the defined problem: What is the model of the bridge? What are waste materials? What are waste materials for? How do students make the bridge system rotatable? This information was analyzed and synthesized to help in proposing solutions. Students analyzed advantages and disadvantages of each solution, the ability and condition of the implementation, and selected the best appropriate solution: building the model of Han River Bridge rotated by recycling waste material such as bamboo sticks, bulbs and wires.

After collecting and analyzing information to propose a feasible solution, students made a specific plan to implement the learning project. Some points were done in the plan by students such as:

- Pointing out activities concerning with building the bridge need to be done;
- Listing waste materials used to build the bridge;
- Assigning tasks to each member of the group;
- Determining specific time for each member to complete the task;
- Showing intended results.

Students implemented the proposed solution according to the plan. Each member in the group did not only do the assigned tasks, but also cooperated with the other members to revise and complete the model. The leader Mr. Tuan said: “Each member in our team gave their own ideas to build a system by recycling waste materials. We analyzed and evaluated these ideas together. In the process of implementing the learning project, the lecturer is always accompanies and helps us to overcome differences in our ideas. We learned how to deal with the problem and work together”. When the Han River bridge model was finished, students evaluated the result by reviewing as well as pointing out advantages and disadvantages of the model. The group revised the rotation system of the bridge when the switch was turned on.

In this learning project, competence-based assessment is consistent with learning outcomes, helping the students to develop problem solving competence. Students did not only apply knowledge of analyzing and designing a system to deal with a real problem, but also defined the problem, collected and analyzed information, developed the plan, implemented the proposed solution and evaluated the result. These performance areas of the problem-solving

competence of students were quantified by the lecturer and the students. In this case, students' problem-solving competence gained 95/100 points.

In Project Topic 2, students were required to tackle the problem: "Build a tower from 200 straws and scotch tape". The topic helps students link more closely about the knowledge of technical thinking related to structure and building a technical system as well as developing problem-solving competence and teamwork competence. The assessment criteria are that the highest tower and the last one standing will be the winners. The team size is suggested is 5 - 7 students. The time is allowed 30 minutes. Students implement the project in the classroom.

To build the tower be the highest and the most solid from 200 straws and scotch tape, students need co-operate to give different ideas about a model of the tower and select the most relevant model. After selecting the tower model, the leaders assign specific tasks to the members. The members build the tower within the limited time. The results must be presented in front of the class when the time is up.



Figure 2: The results of building towers from straws and scotch tapes

We divided the class into 5 groups. All groups had 200 straws and scotch tape to build the tower. After 30 minutes, the tower of group 5 was the highest and stood for the longest time. The tower of groups 2 and 4 were lower than the tower of group 5 but stood as long as the tower of group 5. The tower of group 3 collapsed in about 2.5 minutes while the tower of group 1 did the same 2 minutes later. Giving reasons why the tower of group 3 did not gain the criteria, a member of the group, said: "We started building the tower when we did not link the model of the tower and the way of building. The members did the task according to their individual ways. We did not cooperate in the progress of building the tower". Members in group 1 faced the same problems like group 3. Each member did not relate well to others in the process of building the tower. In contrast, the members of group 5 built the model tower based on different ideas from the beginning. The leader assigned tasks for each member following the proposed model. Each member focused on doing the assigned tasks as well as he/she cooperated with other the members to carry out various activities of building the tower. Group 5 did not build the tower in time, but also meet the criteria well. The result of group work in this learning project shows that some students in our class still meet difficulties in relating well to others; co-operating and resolving conflicts in small groups.

According to Vietnam Development Report 2014, next to job-specific technical skills, team work and problem-solving skills are considered to be important behavioral and cognitive skills for workers. Employers are expecting that workers are critical thinkers, can solve problems and communicate well (Bodewig, Badiani-Magnusson, Macdonald, Newhouse & Rutkowski 2013). In higher education, technical or core competencies are developed through applying knowledge in tackling real situations. Some main causes can explain the shortage of core competencies of Vietnamese student such as:

- Applying teacher centered training approach from primary school level until higher education made students more passive. In this approach, students are mainly required to remember knowledge instead of applying knowledge in a practical context. Lecturers focus more on presenting knowledge than organizing for students working in small group to deal with real - world problems.
- One of the main psychological characteristics of most of Vietnamese students is that they are not willing to share their opinions in working groups. So some of them prefer to work according to their own way rather than collaborating with other students.
- A part of students is expecting to pass the examination instead of developing technical and core competencies.

The application of Competence Based Assessment at HCMUTE is one of many ways to change from teacher-centered training to student-centered training. Instead of concentrating on remembering knowledge, students have to apply knowledge to real-life situations. Students have good opportunities to develop their core competencies in the process of studying.

5 Conclusion

Competence Based Assessment (CBA) is one of very important components of competence-based teaching process. CBA links closely together with learning outcomes, content and teaching methods. Thus, the application of CBA to develop core competencies of students must be consistent with other components of the teaching process. This consistency will contribute to create a sustainable change in the quality of education in higher education institutions in Vietnam.

Lecturers as well as students need to change the way of teaching and learning in CBA. Instead of focusing on presenting and requiring students to remember knowledge, lecturers should design learning situations associated with practical contexts and encourage students to co-operate in dealing with these learning situations to construct technical competencies as well as core competencies by themselves. Through applying knowledge in dealing with real-world problems, students will learn how to define and solve problems effectively. Besides experiencing themselves in leaning situations, students also learn how to relate well to others to solve specific problems.

CBA provides good opportunities for students to support their development of core competencies gradually in the process of learning. The students in our class were encouraged to

overcome the psychological barrier in sharing their opinions with others when they worked in small groups to implement learning projects. Their problem-solving and team work competencies have been developed through concrete evidence associated with flexible application of knowledge, skills, attitudes, values and personal attributes in implementing tasks or dealing with complex real-world problems.

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