TEACHING AND LEARNING IN COMPETENCY-BASED EDUCATION

NEIL O'SULLIVAN

Innovative Together Ltd, neilos@innovate-together.com

DR ALAN BURCE

Universal Learning Systems abruce@ulsystems.com

Abstract: There is a growing trend towards competency based education in Europe this is emphasised by the implementation of European Key Competency Framework in many duristinctions. This paper reflects on the attributes of competency based education its domains and teaching approaches for effective competency teaching and learning.

Keywords: E-Learning, Competency Based Education

1. INTRODUCTION

Teaching and learning in any curriculum require common goals, shared responsibility and accountability between teachers and learners, and supportive or enabling environments to maximize success in learning. Effective learning is learning which is lasting and capable of being put to use in new and differing situations. Learning has traditionally been conceptualized as theory based on academic frameworks where achievement is judged by the ability to recall key points, information imparted or details and sequences memorized. The leap from this to the ability to recall, act and perform to set standards of ability and expertise is the leap to a framework based on competence. This paper discusses competency in teaching and learning. It further examines the type and form of learning strategies which promote competency-based learning.

We first define competency-based education. Then we review competency-based education and the domains and specific attributes of teachers and learners that are required to make competency-based education successful. This is followed by a brief discussion identifying competency-based objectives and the teaching methods and learning activities that contribute to competency development. We finish with the key qualifications points of competency-based education.

2. WHAT IS COMPETENCY-BASED EDUCATION?

Competences as defined by European bodies, as well as by educational experts, to consist of three interrelated ingredients:

1. A knowledge component (the understanding part),
2. A behavioural components (the overt behavioural repertoire) and
3. A value component (including values, beliefs and attitudes).

So a competent person performing a task will possess a combination of skills, knowledge, attitudes, and behaviours required for effective performance of the task or activity. A competence is defined as the holistic synthesis of these components. At another level, a competence again may be divided in three components or aspects.

It is the ability of a person to show:

1. A particular behaviour in
2. A particular context and with
3. A particular quality.

Defining *competency* is complex, and an educational competency even more so. The *Organization for Economic Cooperation and Development* (OECD) through PISA, (Programme for International Student Assessment) has done much work on defining competencies, and created a framework for comparing student competencies for purpose of assessment. A report completed by PISA states:

> *"A competency is more than just knowledge and skills. It involves the ability to meet complex demands, by drawing upon and*

mobilising [mobilizing] *psychosocial resources (including skills and attitudes) in a particular context. For example, the ability to communicate effectively is a competency…"* [PISA]

3. COMPETENCY-BASED TEACHING

The attributes of competency-based teaching are listed below. These teacher characteristics and expectations contribute to learner success. They also demonstrate the shared responsibility of teachers and learners to reach the goal of competence. The most important characteristic of competency-based education is that it measures learning rather than time. Students progress by demonstrating their competence, which means they prove that they have mastered the knowledge and skills (called competencies) required for a particular course, regardless of how long it takes. While more traditional models can and often do measure competency, they are time-based -- courses last about four months, and students may advance only after they have put in the study or application time. This is true even if they could have completed the coursework and passed the final exam in half the time. So, while most colleges and universities hold time requirements constant and let learning vary, competency-based learning allows us to hold learning constant and let time vary.

Attributes of Competency-based Teaching

- Understand how learners learn
- Match principles of learning and teaching
- Facilitate, rather than control learning
- Model humility, critical thinking, respect, competency & caring at all times
- Support acquisition of knowledge, skills & professional behaviours in all learning domains (cognitive, psychomotor, affective)
- Promote & expect learner accountability for learning
- Provide timely, specific feedback on learner progress beginning with learner self-assessment
- Individualize learning experiences according to needs
- Expect increasing complexity of performance as the learner progresses throughout the programme

4. TEACHING AND EFFECTIVE FACILITATION OF COMPETENCY DEVELOPMENT

Competence based education programs build from the idea that it is more important to focus on outcomes—what a student knows and can do—than on inputs like how the student learns it, where the student learns it, or how long the student takes to learn it. This break from inputs means that CBE programs are free to explore new ways to help students learn and new dimensions of what constitutes a "course." Some CBE programs are designed to allow students to learn in a variety of formats, sometimes drawing on *open educational resources* (including written materials, videos, recorded lectures, etc.) or hands-on, project-based learning. Many programs are also designed for students to progress at their own pace, rather than at a pace dictated by semesters or credit hours. This means that motivated and efficient students can complete their degrees in less time.

Teaching strategies need to be matched to the domain of learning. We briefly outline the various domains and how a competency-based curriculum may be implemented and the strategy that may be chosen.

Psychomotor domain:
- Demonstrate the expected way to perform a given skill. Allow the learner to practice for a while, and then ask for a return demonstration of that skill.

- Set up models or create a simulation exercise in the practical laboratory where learners can have repeated practice of skills with peers and/or teacher supervision.

- Arrange for sufficient practical experiences requiring skill performance of the competencies under direct supervision.

- Create a valid and reliable assessment tool for use in determining competency in skill demonstration.

Affective domain:
- Create "values clarification exercises" for personal values.

- Provide a framework for a written analysis of learner activities against the measurable outcomes

- Structure opportunities for role play requiring recognition of differing values and beliefs, with time for discussion of how these differences may affect one's ability to perform the competency

- Arrange for the discussion on different values and beliefs,

- Create a valid and reliable assessment tool for use in determining competency good practice and integrity, respect for all.

Cognitive domain:
- Develop case studies from actual practice requiring discovery or problem-based learning to determine the most appropriate, evidenced based approach to competency.

- Support learner-led discussions, structure debates to address practical situations.

- Always require that the learner provide their reasons (rationale) for their responses to knowledge questions or plans.

- Avoid the temptation to answer every learner question, especially when the learner knows or should know the answer.

Other strategies include self-study modules with suggested learning activities that the learners can complete on their own prior to interaction with fellow learners and teachers. It is important that teachers provide ample time for discussion/dialogue and clarification of concepts to be learned. They also need to encourage and help the learner use their own knowledge and ideas to find possible solutions.

One of the most effective teacher strategies for guiding the learner to discover how to proceed or act is called Socratic questioning. The primary purpose of Socratic or higher order questioning is to encourage the learner to challenge how they are thinking, what they are thinking, and what revision of their thinking will lead towards their goal of becoming a competent.

Each of these teaching strategies are aimed at helping the learner develop new ways of thinking about what they are learning, encouraging them in their discovery of new knowledge and skills using critical thinking, and supporting their efforts to integrate this new learning into their practice. The teacher becomes a coach or facilitator of learning, rather than an all-knowing sage telling the learner what to learn, how to learn it, and what to do with the new learning.

5. IMPLEMENTING COMPETENCY-BASED LEARNING

Competency-based learning is a way of structuring learning activities so that the individual learner can meet a predetermined set of competencies. Given that learners have a variety of ways of learning or learning styles, it is important for them to recognize that competency-based learning will require that they actually perform or do, rather than learn by observing. Observation, reflection and listening are important learning activities, but competency demonstration is the expected outcome for competency-based education.

The following list summarizes the key attributes of competency-based learning.

- Understand how one learns best (style)
- Understand exactly what is expected outcome(s) of learning
- Take responsibility for one's learning
- Motivated to learn – goal oriented
- Ethical person and practitioner

- Critical thinker
- Self-assess learning & performance
- Commitment to ongoing learning

6. LEARNING AND EFFECTIVE FACILITATION OF COMPETENCY-BASED EDUCATION

There are several learning activities that are competency-based. Examples of some of these activities follow related to the domain of learning.

Psychomotor domain:

- Review written description of a particular skill (text, handouts).

- Take time for repeated practice of skills in the safety using models, simulation if available, or peers as patients supervised by teachers until mastery of the skill is demonstrated.

- Seek out practical experiences that allow the learner to increase confidence as well as competence in the skills required.

- **Affective domain:**

- Review text for content on definition of values.

- Participate in selected values clarification exercises for personal values provided by teachers (self-study or group work).

- Write up an analysis of a code of behaviour and values and share with peers and teachers.

- For many learners, becoming a competent begins with observing positive role models of practice to reflect on: This is who a competent person is. This is what a competent person does.

Cognitive domain:

- Competency-based learning requires high levels of critical thinking and reflection (metacognition – thinking about thinking). Such skills are learned best with some form of discovery-based learning or problem-based learning.

- The goals of discovery or problem-based learning include helping learners become active participants in and take responsibility for their own learning, encouraging the development of critical thinking by supporting learners' efforts to retrieve and retain knowledge and apply it in practice (rather than telling them what to think or do), and creating learners who develop the habit of life-long learning in order to stay current in practice.

- Teamwork is an essential component of this type of learning as many learning activities are structured for groups of learners working together to discover the best solution to a given need or problem in both theoretical and practical work.

- Other cognitive learning activities creating and following an individualized learning plan, self-directed reading and completion of suggested activities that will add to one's knowledge and experience base, and self-directed use (browsing) of the world wide web or internet and intranet (if available) for resources related to topics being learned.

- Prepare for and lead seminar discussions.

- Keep a journal or log of progress in learning

7. COMPETENCY-BASED EDUCATION PRACTICE

Defining Competency-based Objectives

Competency-based education and its teaching and learning approaches have received a good deal of support in education systems in recent years. Competency-based education is characterised by the learner's engagement and activity in all aspects of acquiring the knowledge, skills and professional behaviours needed to demonstrate practice in a specific discipline.

Many contributors state that competency-based education must involve teaching and learning strategies that facilitate the development and the demonstration of a competency. A critical feature of competency-based education must include a clear, evidence-based definition of the learning outcomes and objectives. The learning objectives must include demonstrated for performance criteria of the role (i.e., the specific competencies). This clarity is vital to both teachers and students. The expected outcomes of learning, how performance is measured and how the learning objectives relate to the outcomes must be clear.

When writing competency-based objectives consider the following questions:

When reviewing objectives, ask the following questions:

Objective	*Is the objective related to intended outcome(s), rather than the process for achieving the outcome(s)?*
Performance	*Is the performance of the learner relevant to the learning outcome?*
Conditions	*Are the conditions, the context, of the performance relevant to the learning outcome?*
Criteria	*Are the criteria relevant to the learning outcome? Are they tangible? Are they measurable? Are they sufficient?*

Performance	*What will the learners be able to do?*
Conditions	*What are the conditions under which they have to perform?*
Criteria	*How will we/they know if they perform successfully?*

8. PEDAGOGICAL CONSIDERATIONS IN COMPETENCY-BASED EDUCATION

Competency-based education must include attention to the learner's needs and styles, providing the time needed for the learner to acquire and repeatedly perform or demonstrate the expected competencies (knowledge, skills, professional behaviours) and creating a supportive environment for learning. Competency-based education can be pursued through various teaching approaches. However, all curricula need to be evidence-based and outcome focused and all teaching strategies need to be matched to their learning domain (psychomotor, cognitive and affective).

Competence based learning places an emphasis on powerful or rich learning environments that enable students to engage in meaningful learning processes. The most distinctive features of this approach may be summarized as follows:

- *Meaningful contexts*
  The teacher will create or to look for meaningful contexts in which students will in a natural way experience the relevance and the meaning of the competences to be acquired.

- *Multidisciplinary approach*
  Competences are holistic and as a consequence the educative approach needs to be integrative and holistic too.

- *Constructive learning*
  The philosophy of competence based education has its roots in the social constructivism. So, learners engage in a process of constructing their own knowledge by interaction with their environment, rather than as a process of absorbing the knowledge that the traditional teacher might try to transfer to them. By focusing on the construction of models, products, guidelines, rules of thumb, reports, or other tangible outputs the learning easily and naturally will turn out to be constructivist.

- *Cooperative, interactive learning (with peers, teachers.)*
  The basic idea behind competence based education is to help learners to develop and construct their own knowledge and seek ways to make optimal use of other people's competence in their learning journey. This is what social constructivism is about. For learning outcomes aimed at developing individual and personal competences, the approach must take diversity of learner needs into consideration to meet the leaners goals and objectives. This requires an open approach in which education includes dialogues between learners and educators about expectation, needs, goals, choices etc.

- *Discovery learning*
  Discovery learning as opposed to receptive learning means making content available and accessible and that the way of acquiring this knowledge or competences, could not be just a process of providing information, but should always be embedded in a discovery based approach.

and provide true measures of student learning. It is required to:

1. Measure student learning rather than time.
2. Harness the power of technology for teaching and learning. Computer-mediated instruction gives the ability to individualize learning for each student. Because each student learns at a different pace and comes to college knowing different things, this is a fundamental requirement of competency-based education.
3. Fundamentally change the faculty role. When faculty serve as lecturers, holding scheduled classes for a prescribed number of weeks, teaching takes place at the lecturers' pace. For most students, this will be the wrong pace. Some will need to go more slowly; others are able to move faster. Competency-based learning shifts the role of the faculty from that of "a sage on the stage" to a "guide on the side." Faculty members work with students, guiding learning, answering questions, leading discussions, and helping students synthesize and apply knowledge.
4. Define competencies and develop valid, reliable assessments. The fundamental premise of competency-based education is that we define what students should know and be able to do, and they graduate when they have demonstrated their competency. This means defining competencies very clearly.

People learn at different rates and in different ways, so a handful of demonstrations or activities may be sufficient for one learner to demonstrate competence while the same level of performance of this skill with another will require much more to meet the same learning outcome. This understanding of the learner and learner needs is the primary reason why competency-based education may include direct observation of competency demonstration over time and the clear definitions and classifications of learning outcomes and objectives.

Another point to consider for example a learner with a lack of motivation to learn most often results in learners dropping out of the programme.

- *Reflective learning*
  Competence based learning also places an emphasis on the learning processes of the learner. As the learner reflects on their own needs, motivation, approach, progress, results etc. they develop learning competences that may be considered "learning to learn".

- *Personal learning*
  In the competence oriented theories learning is conceived as a process of constructing the learner's own personal knowledge and competences. Information, knowledge, strategies, only become meaningful for a person if they become an integral part of their own personal body of knowledge and competences. In education this implies that students need to be able to identify with the contexts, the persons, the situations and interests that are included in the learning domains involved.

SUMMARY

Competency consists of three interrelated ingredients: a knowledge component (the understanding part), behavioural components (the overt behavioural repertoire) and a value component (including values, beliefs and attitudes). Teaching and learning strategies need to match to the appropriate domains of learning. Competence based learning places an emphasis on powerful or rich learning environments that enable teachers and students to engage in meaningful learning processes.

An important aspect to competency-based education is that practice-based learning requires direct supervision and multiple opportunities for the learners to demonstrate their competency in practice over a period of time. Competency objectives must include outcomes, criteria, performance standards, conditions that are tangible, measurable and relevant.

Implemented effectively, competency-based education can improve quality and consistency, reduce costs, shorten the time required to graduate,

LITRATURE

"Ways of Learning: Learning Theories and Learning Styles in ..." 23 Aug. 2014
<http://books.google.com/books?id=8UN9AgAAQBA

J&pg=PR10&lpg=PR10&dq=.+%E2%80%9CEffective+learning+is+learning+which+is+lasting+and+capable+of+being+put+to+use+in+new+and+differing+situations.%E2%80%9D&source=bl&ots=mK_1WJPE-k&sig=aGKDvFb1I_RJCGj2uoMGv75Us9o>

"The Professional Competencies of a European ..." 2013. 28 Aug. 2014 <http://www.psychotherapy-competency.eu/Documents/Expert_Panel_Reports.pdf>

"download - Aqueduct." 2011. 28 Aug. 2014 <http://the-aqueduct.eu/download/Aqueduct-Framework.doc>

Pritchard A. *Ways of learning: learning theories and learning styles in the classroom*, 2nd Edition. London: Routledge, 2009. Preface, p. x.

Fullerton JF, Gherissi A, Johnson PG, Thompson JB. (2011). Competence and competency: Core concepts for international midwifery practice. International Journal of Childbirth 1(1). 2011. DOI:10.1891/2156-5287.1.1.4

Postmontier B. Discovery-based learning: Student manual. Philadephia: University of Pennsylvania School of Nursing 2008.

Barrows H, Tablyn R. Problem-based learning. An approach to medical education. New York: Springer 1980.

Creedy D. Problem-based learning in nurse education: An Australian view. Journal of Advanced Nursing 17: 1992, pp. 723-727.

Frost M. An analysis of the scope and value of problem based learning in the education of health care professionals. Journal of Advanced Nursing 6 (4): 1996, pp. 1047-1053.

Op cit., Fullerton et al., p. 9. Knowles MS, Holton EF, Swanson RA. The adult learner 6th Edition. Boston: Elsevier, 2005. http://changingminds.org/techniques/questioning/socratic_questions.htm

"Overview of learning styles - Learning Styles Online.com." 2004. 28 Aug. 2014 <http://www.learning-styles-online.com/overview/>

Li ST, Tancredi DG, Co JP, West DC. Factors associated with successful self-directed learning using individualize learning plans during pediatric residency. Acad Pediatr 10 (2): 2010, pp. 124-130.