

Denys O. Ilnytskyi¹, Natalia V. Vasilkova²

CYCLICITY IN COMPETENCY-BASED APPROACH TO EDUCATION: INTERNATIONAL EXPERIENCE IN SUPPORTING COMPETITIVE POSITIONS OF UNIVERSITIES

The paper highlights the issues of cyclicity within the competency-based approach to education, and is a result of generalization of international experience in the field. Comparative analysis of characteristics of the basic competency models is carried out, the levels of competency possession are defined. The subjective model of the competency-based approach to education is offered and the key directions of international cooperation within this field are identified. Cyclicity in competency-based education is introduced as one of the factors of competitive advantage of a university.

Keywords: competency; subjective model; higher education; university management.

Деніс О. Ільницький, Наталія В. Василькова

ЦИКЛІЧНІСТЬ КОМПЕТЕНТНІСНОГО ПІДХОДУ В ОСВІТІ: МІЖНАРОДНИЙ ДОСВІД ПІДТРИМКИ КОНКУРЕТНОСТІ УНІВЕРСИТЕТУ

У статті на основі узагальнення світового досвіду сучасного розуміння сутності компетентнісного підходу в освіті розглянуто питання існування в його межах циклічності. Викладено порівняльну характеристику основних моделей компетенцій за різними підходами, визначено рівні володіння компетенцією. Запропоновано суб'єктивну модель компетентнісного підходу в освіті та ідентифіковано напрямки міжнародного співробітництва в цій сфері.

Ключові слова: компетенція; суб'єктивна модель; вища освіта; управління університетом.

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Денис А. Ильницкий, Наталия В. Василькова

ЦИКЛИЧНОСТЬ КОМПЕТЕНТНОСТНОГО ПОДХОДА В ОБРАЗОВАНИИ: МЕЖДУНАРОДНЫЙ ОПЫТ ПОДДЕРЖКИ КОНКУРЕНТНОСТИ УНИВЕРСИТЕТА

В статье на основе обобщения современного мирового опыта понимания сути компетентностного подхода в образовании рассмотрен вопрос существования в его пределах цикличности. Проведена сравнительная характеристика основных моделей компетенций по различным подходам, определены уровни владения компетенцией. Предложена субъективная модель компетентностного подхода в образовании и выделены направления международного сотрудничества в данной сфере.

Ключевые слова: компетенция; субъективная модель; высшее образование; управление университетом.

Problem setting. Advanced internationalization of higher education (HE), development of national education markets, scientific and technical progress etc. actualized the issue of the objectives of today's education systems and HE in particular. Activities of major HE operators – universities – are quite multifaceted: it is not only teaching and learning, but also fundamental and applied research, knowledge transfer and commercialization. The main purpose of educational activities of a

¹ Vadym Hetman Kyiv National Economic University, Ukraine.

² Vadym Hetman Kyiv National Economic University, Ukraine.

world-class university is a dynamic complementation of individual students' competencies which should help them successfully realize their aspirations and abilities in future professional and social life. While the role that knowledge plays is shifting towards knowledge as a resource, a professional should be able to manage this resource. However, in Ukraine most universities are still not fully aware of the features of application of the competency-based approach (CBA) to education, they often do not see the need for interaction with all stakeholders on a regular basis, and still emphasize the learning process primarily as knowledge acquisition. Perhaps, this is one of the reasons for weak competitive positions of our universities in international rankings.

Recent research and publications analysis. In Ukrainian scientific literature the issues of CBA implementation in education has a history of development. O. Berezyuk (2010) investigated the development of professional competencies. A. Gura (2006) looked into psychological and educational competencies of professors. Competencies in educational management have been researched by L. Danilenko and L. Karamushka (2003). Inquiries of I. Ivaniuk (2004) were aimed at an assessment of educational projects and learning programs. S. Klepko (2006) looked at competencies from the philosophy of European education and O. Lokshina (2009) investigated European secondary education. An attempt to generalize international experience in the competency-based approach to education has been made by O. Ovcharuk et al. (2004). V. Petruk (2011) researched the usage of interactive technologies in shaping basic professional competencies of technical specialists. However, the analysis of current international studies indicates that there is a definite shift to a new level of development of the problem due to a wider use of ICT products and transition to knowledge economy.

Most models of quality management in HE insist that quality management should be performed in a regular manner (Maureen and Becket, 2007). Quality management may be found in any sphere of university activities, in CBA too.

We praise the achievements in outlining the CBA with secondary education (Ovcharuk et al., 2004) and the implementation of national qualifications frameworks that were successfully implemented, e.g. in the mining industry (Salov and Pismennikova, 2013). Some authors consider CBA through the prism of competence (Beh, 2012). On the other hand, there are also publications that consider features of CBA application to teach some courses (Petrozhalko, 2008), and CBA as a methodology of training in higher school (Lunyachek, 2013). However, these and other works give almost no reference to the fact that subjects should regularly review the principles of activity and relationships with others, share knowledge and return to interaction.

The research objectives. Based on the outlined arguments the objectives of our research are set as following: to summarize the international experience in understanding the nature of CBA in education; to identify the components that determine the cyclicity within CBA; to reveal key features of alternative competency models; to determine the level of competency mastery and to offer a CBA model that takes into account cyclicity.

Key research findings.

The competency-based approach to education. More than 30 years ago the American Management Association has identified 5 clusters of competencies (Hayes,

1979, 1980a, 1980b), which were associated with effective managerial behaviour, they also encouraged the American Association of Colleges and Schools of Business to implement them in accreditation requirements, and to promote CBA in university business schools in the USA (Albanese, 1989). However, this does not mean that the interest in competencies had just appeared. We shall call to the identified 7 stages of development of the competency concept: 1) Greek philosophy; 2) contemporary philosophy and sociology; 3) changes in the work world; 4) learning for job; 5) cognitive psychology; 6) psychology of industrial organization; 7) the stage of global changes (Guerrero et al., 2012).

There are several models of CBA in the world (Table 1). The model based on the behavioural theory originates from the United States; the model based on workplace represents the UK School; the model based on business strategy has emerged in Japan and the USA; the model based on the cognitive approach is a characteristic of European and American schools of thought; the model based on the holistic approach has spread in the United States, Spain, Puerto Rico, and the UK. Many models and approaches were divided by A. Gonzci and J. Athenasou (2004) into 3 groups of understanding competencies: 1) competency as a list of tasks; 2) competency as a set of characteristics; 3) competency as a holistic or integrated relationships.

In the USA they clearly separate the concept of competence and competency, and our paper emphasizes the term "competency". Methodological assistance in the development and use of competency models for workforce development was provided by the US Department of Labour, Employment and Training Administration (Technical assistance guide..., 2012). Competencies are often used as the basis for standards introduction that determine the level of knowledge and skills necessary for success in a workplace and possible measurement criteria for assessing competencies achievement. Our study is based on the following clear definition of competency.

Definition. A *competency* is the capability to apply or use a set of related knowledge, skills, and abilities required to successfully perform "critical work functions" or tasks in a defined work setting. Not to be confused with competence, a competency describes a behaviour, but does not attempt to describe a level of performance (Technical assistance guide..., 2012: 4).

The issue of competencies is considered as the most important one for those who have completed higher school and either looking for a job, or thinking about choosing a place and profession to continue studies. Therefore, we should be aware of the place of competencies in the hierarchy of learning outcomes as clearly demonstrated by Figure 1. This understanding, according to the report of the National Postsecondary Education Cooperative Working Group on Competency-Based Initiatives in Postsecondary Education, lays at the basis of policies pursued by the US Department of Education to train and educate at levels that come after the completion of higher school (Jones et al., 2002). Actually, CBA is also underlies the concept of lifelong learning where individuals periodically return to training for enhancement and development of individual competencies.

Apparently competencies are not the only outcome of learning, but all of them require evaluation in order to give employers and workers information about their level and quality. Indeed, the quality of education is not measured with the number of

Table 1. Comparative characteristic of basic competency models

	Model of competency based on				
	workplace	behavioural theory	business strategy	cognitive approach	holistic approach
characteristic	Based on the important job functions that have significant impact on the achievement of expected results. The objective is employee's awareness of themselves in relation to their objectives and other functions. To establish competency to diversify relations in the organization, and compare the expected results of employees and their skills and knowledge. Performance standards are developed and established by industry. Standards are based on the results. It is conceived that the ability reflects the ability of the individual. Sectors of the industry agree on a set of characteristics that correspond to the competent performance.	Abilities reflect the capacity of an individual and describe what he has to do and what not to do. This approach is primarily determined by the behaviour of in individual performance and examines particular results in a pre-defined context. Groups of competencies are developed through research, based on excellent performers. Standards are focused on results. Specifications superior performance is based on educational research.	Competence is a reality that allows directing efforts of a company in the certain way, and so, requires certain skills from staff. It introduces the concept of core competence.	Competencies attributed to cognitive activity, defined as "the capacity and readiness to actions and interpretations". On the other hand, it defines the competencies and their indicators that are based on Bloom's taxonomy (used by N. Bloom to categorize knowledge) (Airasian et al., 2000)	Competency is defined as the result of a combination of basic personal skills such as communication, self-development, creativity, conflict analysis and resolution. Aspects form the main target competencies, which allow the existence of cognitive, functional, behavioural and ethical competencies and which together define professional competency. It is a reflection of the workplace, but assignments are the catalyst for generating of competencies. Formation of reflective and critical personality, impressive and innovative learning through collaboration, co-leadership of learning and teaching, and development of core competencies that are transferable and transversal, is fundamental to this approach.
field	labour	labour/ education	labour	education	education / labour
approach	empirical	behavioural	behavioural	constructivist, rationalist, empirical	gestalt, systematic, existentialist
restriction	Analyses the functions of business, but not individual competencies. Objectives and business functions are formulated exclusively in relation to job; market, technology, social institutions and relationships.	Based mainly on the observation of behaviour of individuals as opposed to tasks that job requires, rather than what a person really does, without taking into account personal qualities.		Evaluates the competencies based solely on knowledge and performance, but not taking into account all other personal resources and the environment in which the work is performed.	

Source: compiled from (Guerreiro et al., 2012).

hours that a student has spent in a classroom, but with the quality of acquired competencies. Special attention should be paid to the part that is between learning and practical experience (Figure 1), as it is the area where competencies are acquired, where persons turn to or come back from time to time to acquire new or actualize individual competencies (which can be considered as one of the demonstrations of cyclicity in CBA).

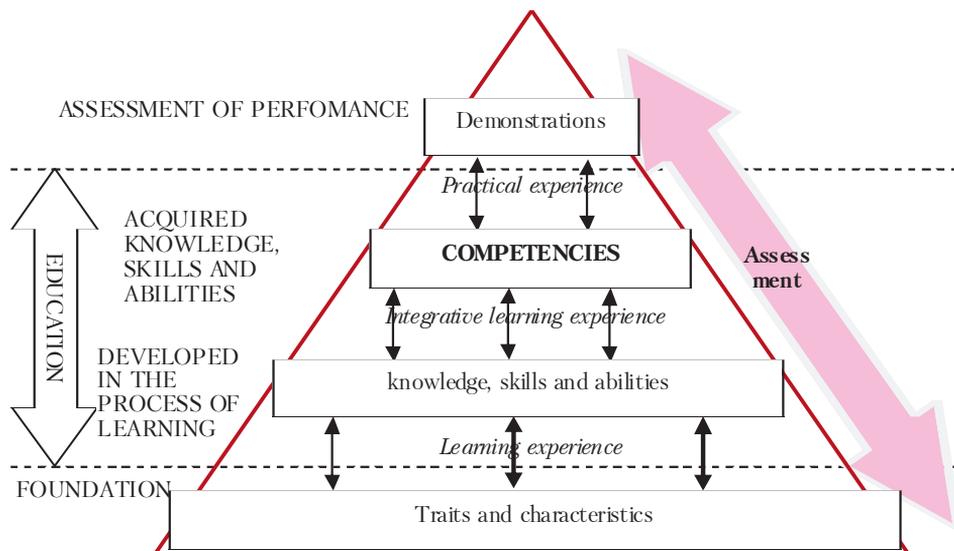


Figure 1. The place of competencies in the hierarchy of Postsecondary outcomes, developed by the authors on the basis of (Jones et al., 2002)

In many countries, mainly in the USA, there is a wide discussion about moving away from measuring success and effectiveness of student learning based on the credit hours to the assessment of competencies, improvement or replacement of credit-model system (Fain, 2012). Higher education, based on CBA, is actively debated (Why We Need..., 2014). Experts of the Carnegie Foundation for the Advancement of Teaching pointed out the disadvantages of using credit hours and warned in 1906 and 1938, but it was their light hand which made credit hours spread around the country and the world. One of the other main arguments named in favour of CBA is its ability to consider the experience that students get outside university.

Level of competency possession. In pedagogy it is widely referred to 4 levels of competencies training suggested by J. Flower (1999) namely: 1) unconscious incompetence; 2) conscious incompetence; 3) conscious competence; 4) unconscious competence³. More rational in the practice of CBA in universities is to define 3 levels of competency mastery, as for example, used at the University of Chicago (Chicago State..., 2011):

- **level 1:** "beginner" or a person, who can demonstrate competency only in terms of regular monitoring and mentoring. The aim of further learning and development for all managers of middle level is the movement of proficiency level higher;

³ Its highest demonstration is sometimes called conscious competence of unconscious competence.

- **level 2:** independent demonstration of competency at the minimum required level. This level is a standard, it aims to achieve any standard program for performance improvement or training efforts;

- **level 3:** at which a performer has achieved full mastery of competency, can work without supervision, capable to carry out instructions for others and is ready to use competency to a wide range of different situations, including new ones.

On the other hand today scholars propose to consider 5 levels of competency, for which the index of individual competency is used (Succar et al., 2013). Conceptual knowledge and applied skills are divided by two major dividing lines – educational barriers and the barriers of time and repetition⁴ – into 5 levels (Figure 2). We should disclose the relationship between learning barriers and barriers of time and repetition, on the one hand, and educational and practical experiences that help determine the location of competencies in the hierarchy of learning outcomes, on the other (Figure 1). As Figure 2 shows, a student can move in the acquisition of competency from the level at which competency is almost absent to the expert level.

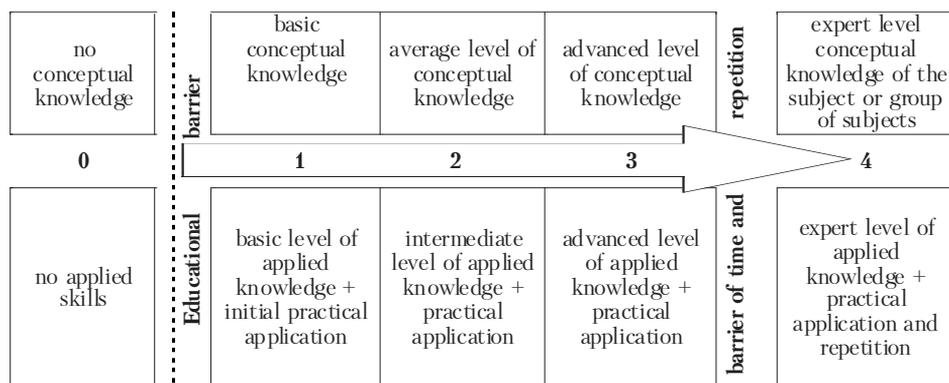


Figure 2. Structure of the index of individual competency, compiled from (Succar et al., 2013)

It should be borne in mind that over time, a person can lose some components of competency, or they may change due to scientific and technical progress etc., which require periodic renewal of the achieved level of competency, which is another demonstration of cyclicity in the competency-based approach. In practice, it is shaped⁵ in the form of training, certification or recertification, which has been required for a long time for some specific professions, but for others the rate of change is minimal (however, this rate can change dramatically under the influence of various factors) and assessment is unnecessary.

Subjects of CBA in education. A study on practical application of the CBA to education resulted in constructing a subjective model, which supports the education sector to ensure the needs of the labour market and workers themselves (Figure 3). In this model the largest factor of cyclicity in CBA is incorporated. As a framework for this model the following logic can be suggested:

⁴ This repetition sets one more factor of cyclicity in the CBA.

⁵ Forms may be different, but most of them provide an evaluation that must be ensured at a high quality level.

- Representatives of the labour market (trade unions, employers and employers' associations etc.) determine the full range of competencies (knowledge, skills and applications) for each profession, position. The best example of the CBA visualization at the highest level is the competency model by the US Department of Labour, Employment and Training Administration (Technical assistance guide..., 2012).

- People, wishing to obtain a position, may acquire competencies at all levels of education from pre-university, university and post-university. They make a choice between providers of educational services from free to paid, with significant differentiation of services in terms of cost and quality.

- HE institutions determine a range of competencies, which students can acquire during their study, certified by a respective diploma from a particular university. Sometimes even small universities may be recognized as the best for teaching specific competencies and cooperate on this basis with other universities. Assessment of learning outcomes and adjustment on this basis of the course of study for each student creates conditions for individualization in obtaining of desired competencies. Responsibility for education quality is imperative for activities of universities at the education market.

- Non-university education usually differs significantly from the university one by its quality, the quality of acquired competencies, covering all age groups. It also includes experience obtained during the period the employee worked in different positions and different companies (organizations).

- Bodies of state regulation are also finding their place in this model, which may differ in national peculiarities, detailing the role of state. We believe that the state must perform a catalytic role in the interaction between the labour market, educational institutions and individuals who acquire competencies. Its tasks may be to support scientific and practical research in this area, definition of requirements for accreditation of educational institutions, coordination of professional organizations and interaction of all actors on a regular basis. Another example would be to coordinate efforts of professional orientation of young people, which also has a certain periodicity.

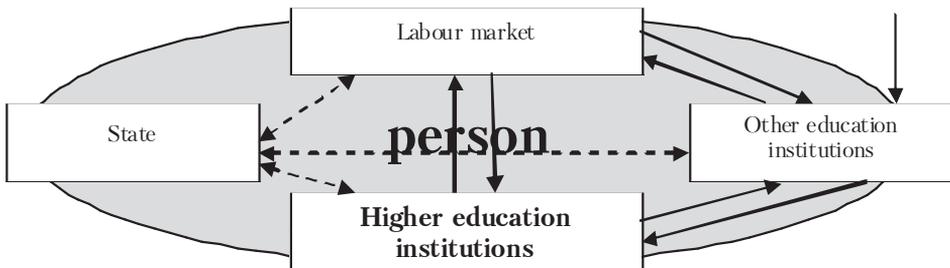


Figure 3. General model of interaction within the CBA, developed by the authors

Also, the subjects of the model are the end-users who are to provide the labour market, workers, institutions of education with clear signals about their expectations and their transformation over time. These customers, from our point of view, are both employers (involved in the assignment, the redistribution of the fruits of labour of employees, and create a system of effective motivation for performance) and employees (who are developing their own competencies and participate in appropriation, redistribution of results of their work).

There is a variety of *cycles* in human life: day changes night, the moon grows and grows old, changes of the seasons; taxes are paid once a month, quarter, year; learning is divided into lessons and semesters. There are also many other examples. They all repeat at regular intervals and each time they are different, although they have some similar features. One can hardly ever say that a person held all stages, cycles of learning, because it is just impossible to know everything, be able to do everything, but this may be desired. People return to learning, but every time they get new experience. In CBA we can identify the following inherent cycles:

- person regularly refers to educational institutions to acquire new knowledge, skills, and training, which is cycled too;
- labour market from time to time sends employees to gain new competencies motivating them with career opportunities;
- labour market appeals to researchers and consultants to identify and clarify the limits of competency in certain professions;
- state exercises regulatory, incentive or deterrent effects on all subjects, establishing rules of competition at the market and monitoring the situation;
- labour market and state, along with the representatives of educational institutions and professional organizations conduct quality assessment of individual competency, personal and institutional certification and accreditation, for educational institutions too.

Other cycles may be identified and their length also may be very different, but the main thing is the consciousness that nowadays within the CBA subjects periodically, regularly, cyclically interact with a variety of issues. In higher school education lasts 11 years, at the undergraduate level – 4 years, at the graduate level – 1–2 years, professional requirements and standards are revised, refined, training programs improved etc. The total length of cycles is limited only by the desire and the capability of subjects, duration of persons' life or existence of a legal entity.

The international dimension of CBA. Obviously, each national labour market has individual features, as well as its own of socioeconomic development, but they all share many common characteristics in terms of competencies that representatives of professions should perform. Some researchers distinguish global, general competencies, which are true to type for almost everyone, but have features depending on a profession. Globalization unifies requirements for professions and positions. Therefore, it is reasonable to develop international cooperation to identify the contents of professional competency, which should take into account the results of studies in this direction, which shall also be international.

Even more room for international cooperation in the CBA has got educational market, which every year feels the breath of internationalization processes. American universities have successfully implemented CBA into teaching for years, so now they have leading positions in most international university rankings. CBA in HE enables mobility of teachers, students and alumni, both within countries and between them. It unifies the training standards, but universities still have a lot of space to find their own unique marketing niche in the face of the exasperation of global competition in education. Organizations that offer international accreditation for universities and educational programs in their activities base on the principle of cyclicity and CBA.

It is the CBA that largely lay in the base of cooperation between the EU countries in the Tuning project (A Tuning Guide to..., 2010). The implementation of cooperation in this area is designed not only to provide the market with competent staff under international standards, but also to strengthen the competitive position of educational systems in the world, as well as universities.

Conclusions. Some researchers call spread of practice of issue of diplomas, which are based on CBA, a "quiet revolution" (Marguerite, 2014). One of the demonstrations of this trend is widespread massive open online courses (known as MOOC), which set the prerequisites for the diplomas for those students who obtain competencies in this way. Taking USA as example, we can see much interest in this form of education, 37 mln Americans have some experience of university education, got some credit, but did not complete the study. Obviously, educational institutions have got interest too as the consequent expansion of the base of the educational market.

Cyclicity in CBA evidenced in different ways, and it objectively is the key to successful application, as in the present circumstances it is impossible for a person to obtain all necessary competencies at once and not to return to their development in the future. It manifests itself primarily in the need for regular interaction between all stakeholders in the process of identifying competencies and their components, training them and their assessment. Each subject in its work should take into account the cyclicity and the time required for it, even when we talk about universities.

Perhaps this is why Ukrainians have a proverb: "live a century – learn through the century".

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