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This article provides a theoretical analysis of the scientific literature on the issue of competence, on the basis of which are provided definitions and applications of the terms competency, competence, competitive, qualification, experience, ability, and skill, including the concept of hard skills and soft skills.

The theoretical foundation of the article is based on the scientific developments of international, Russian, and Kazakhstani scientists who have studied workforce preparation and the transitioning from a «qualification-based» approach to a «competency-based» model of education.

The issue is a timely one, due to the need to produce competitive and competent specialists in the context of current forms in Kazakhstan's higher education system. The primary benefit of adopting a competency-based model is meeting the needs of the labor market while providing jobs for new graduates.

This article describes key opportunities, recommendations, and principles for the development of professional competence, including criteria and indicators for professional competency development among students, the personalization of education, and the development of creative abilities.

The primary objective of this article is to provide a theoretical basis for the gradual adoption of a competency-based model in the Kazakhstan's higher education system. The development of a competency-based model in the national context will contribute to the success of further modernization of the higher education system as the central link to the national economy. At this stage, the authors have focused on competencies and competent undergraduates, graduates, and PhD students.

The article includes significant discussion of the opportunity to establish evaluation criteria for the professional competence of students based on the competence ladder, which broadens the function of the educational system as a three-sided process, with parties connected through both vertical and horizontal relationships.

The future marker of students' professional competence will be their ability to create new knowledge, characterized as creative conscious competence, expanding on the traditional five levels of competence which limit the process of acquiring competencies to learning from a teacher and mentor.

Returning science to the university will contribute to the integration of specialists into international projects. This will in turn allow them to independently develop their own areas of study and schools, capable of collaborating with international partners and universities.

The conclusion considers key approaches for adopting and piloting a competency-based model in the system of higher education in Kazakhstan.

Key words: education, student, competency model, competitiveness, core competencies, self-assessment, outcomes evaluation, practice-oriented model, etc.

**A COMPETENCY-BASED
APPROACH: TRAINING
SPECIALISTS WITH
HIGHER EDUCATION IN
KAZAKHSTAN****Introduction**

The time has come to create a new system of education based on *competencies*. This does not mean an immediate rejection of the credit-based system. However, there is a need to outline the framework for a competency-based system of education focused on a holistic learning process. This shift, in turn, will focus the entire educational process on supporting the development of a student's character, through which he can independently allocate his time for the study of various courses. This model also assumes close coordination between schools, universities, and employers; in a credit-based system of education, these players function autonomously.

The value of the traditional credit-based system, based on short-term lecture-based courses and learning modules, has long been questioned by experts. «What counts as a credit hour at one institution may not count at another institution because credit hours do not inherently convey the amount of student learning that has taken place» [1].

A number of experts are inclined to believe that the credit-based system contributes to a decline in the quality of training for specialists around the world. «The U.S. Department of State was concerned about the selection of junior Foreign Service Information Officers, young diplomats who represent the United States in various countries. The traditional selection criteria, tests of academic aptitude and knowledge, did not predict effectiveness as a foreign service officer and were screening out too many minority candidates» [2].

Main body

Universities have become too slow to respond to the needs of the market, producing graduates who are forced to lead protracted job searches. Once they've found a job, more than 70% work outside of their area of study, according to our estimates. Based on research from the Informational Analytical Center on Employment Issues under the Ministry of Public Health of Kazakhstan, at the end of the second quarter of 2015, more than 1.8 million people – nearly 20% of the labor force – were employed outside of their area of study [3].

Specific disciplinary knowledge, technical skills and qualifications are not enough: employers want generic personal and interpersonal skills, such as communication, negotiation and teamwork as well, so that employees can work with others and engage in project work. They seek people who can cope with flexibility and change and who are capable of applying knowledge to unfamiliar contexts [4].

The primary objective of this article is to provide a theoretical basis for the gradual adoption of a competency-based model in the Kazakhstan's higher education system. The development of a competency-based model in the national context will contribute to the success of further modernization of the higher education system as the central link to the national economy. At this stage, the authors have focused on competencies and competent undergraduates, graduates, and PhD students. However, the subject of competence generally, and the professional competencies of university faculty in particular, will be examined in a separate article.

The theory of competence was deeply described by the following authors: P. Benner, R. Boyatzis, D. Dubois, H. Dreyfus & S. Dreyfus, C. Fogg, A. Lucia, R. Lepsinger, B. Mansfield, T. Maynard & J. Furlong, W. Rothwell, J. SEppman and L. Spencer & M. Spencer, that enhance the competence through personal characteristics can be mental/ intellectual/ cognitive/ social/ emotional/ behavioral, and physical/psychomotor attributes required for the job.

The theoretical framework for a competency-based approach can be traced to the work of Russian experts: V.E. Baderko, L.I. Berestova, G.E. Belitskaya, N.A. Grishanova, N.F. Yefremova, E.F. Zeyer, N.V. Kuzmina, V.N. Kunitzina, M.I. Lukyanova, A.K. Markova, I.B. Mikheyeva, Y.G. Tatur, N. Khomskiy, A.V. Khutorskaya, and others.

Over the past decade, Kazakhstani authors have made significant contributions to the study of a competency-based approach: A.A. Beisenbayeva, Y.V. Golovanova, L.L. Yerakhtina, I.B. Zhaksenbayeva, I.A. Zimnyaya, B. Kenzhebekov, N.Y. Kifir, Y.S. Kozhayev, M.Z. Matkebasov, A.I. Matayeva, M.L. Mirkhanova, G.Z. Namatova, G.R. Rakhimzhanova, A.A. Nurzhanova, S. Tauoayeva, and others.

Within the scientific community, a number of conflicting interpretations exist for the terms *competency* and *competence*. We support the definition put forth by R. Sadler in his paper «Making competent judgments of competence», in which «competency»

is often taken to mean an identifiable skill or practice. «Competence», in contrast, involves being able to select from and then orchestrate a set of competencies to achieve a particular end within a particular context» [5].

At the same time, there are similarities with the understanding of competence. For example, R. Boyatzis [6] sought to expand the interpretation of the concept to include a psychological and pedagogical context. «the ability to demonstrate a system or sequence of behavior that is functionally related to attaining a performance goal.» which is also supported by M. Bradley & R. Seidman & S. Paineaud [7]. Such an interpretation is viable, in our opinion, for the purposes of examining competence as a phenomenon in education.

Having compared various definitions of *competence*, we will use the term to refer to the combination of knowledge, ability, and experience which become a skill through continuous development. Experience and skill are different concepts, although in daily life these terms are likely to be used interchangeably. Experience refers to «practical contact with and observation of facts or events» [8]. Skill refers to «the ability to do something well» [9]. «Ability is the capacity to act in a specific situation» [10]. A competency-based model assumes that experience and skill are interrelated in a practice-oriented model, corresponding to *change management* in a rapidly-changing reality.

As a result of the emergence of the term *competence*, it is necessary to distinguish between the concepts of *qualification* and *competence*. For instance, M. Pladenhauer used *qualification, education, and educational objectives* previously discussed. *competency* now seems to be the more accurate, adequate and simply more modern expression [11]. We consider this position to be somewhat one-sided, as it appears to be an attempt to substitute one term for another.

To clarify, in the mid-1970s, D. Mertens first described the theory of «key competencies» [12]. Three fundamental European documents, «Secondary Education in Europe» (1992) [13], «Key Competencies for Europe» (1996), and the required qualifications published by the International Labor Organization in the 1990s for specialists in the system of postsecondary education, training, and retraining, laid the foundation for a competency-based approach in Western Europe [14].

Based on the above, there have traditionally been two approaches to defining professional requirements: «qualification-based» and «competency-based». A «qualification-based» approach

covers a large number of disciplines, each of which is taught based on the logical presentation of content using passive learning models, in which mastery of acquired competencies is determined at the end of the learning process. A «competency-based» approach promotes a model which does not reject required qualifications, but instead attempts to provide a holistic introduction to the requirements of a specialist. Prioritized educational techniques include the following: problem-based learning, project-based methods, ICT (information and communication technology), modular training, etc. «The quality of education is based on the degree to which students are fully introduced to their future professional sphere» [15].

The tendency of a number of authors to equate competence and competitiveness is likely due to the nuances of translating the terms from English. Yet competitiveness is closely tied to the concept of professional competencies and is defined as a socio-economic criterion [16].

The subject of a competency-based approach is only partially addressed if we fail to tie it to the now-classic four-stage model of competence levels. In the early 1940s, the renowned psychologist Abraham Maslow postulated his theory of «Four Stages of Learning» [17]. Later in 1970s, McClelland played a key role in further developing competencies [18]. Initially described as «Four Stages for Learning Any New Skill», the theory was developed at the Gordon Training International by its employee Noel Burch in the 1970s [19].

This model was later expanded to include additional fifth and sixth levels. B. Budenhamer and M. Hall [20] added a fifth level of competence which they called «conscious competence of unconscious competence» – the state of a student (or expert), which allows him to teach and train others through conscious use of their unconscious knowledge. An additional sixth level is called «creative conscious competence», in which a person is capable of creating new knowledge based on his the knowledge, ability, skills, and competencies acquired from previous levels [21].

We assert that each level of a university education corresponds with a specific level of competence. Note, however, that this article describes a Kazakhstani model of higher education. We recognize that the level of an undergraduate student in the Western model of education is, in the majority of instances, *de facto* higher than that of his Kazakhstani counterpart, due to differences in

the approach to choosing a future profession and, more generally, in differences in career awareness as a whole.

National public opinion surveys confirm that students do not tend to independently choose their own career path, nor are their choices based on personal interest and talents. Instead, these choices tend to be made at the insistence of older family members, based on the opportunities afforded by a specific profession or based on tuition costs in a particular department or university. Within a number of professions, an «oversaturation» of specialists has been observed for years. These include lawyers, economists, and specialists in the sphere of international relations.

For example, the undergraduate student corresponds to the level of *unconscious incompetence*, who, through mastery of course material, smoothly transitions to the level of *conscious incompetence*. During the initial stage, mentorship is needed for the student to learn the basics of his science; in the second stage, interactive methods of learning should be integrated.

The master's student has reached the level of *conscious incompetence*, and must develop necessary skills. At this stage of learning, training techniques and games-based learning methods are effective for reinforcing skills as they become habits.

The doctoral student must have an elevated level of *conscious competence*, and at this stage coaching methods of learning can be useful for raising consciousness and fostering skills-acquisition through independent student work. At this level in particular, the relationship between student and teacher is defined by co-creation and collaboration; the goal of the teacher is not to provide instruction, but instead to ask the student questions which will expand his consciousness. This type of engagement creates students who are capable of independent problem-solving.

At the post-doctoral level, a person reaches the stage of *unconscious competence*, which leads him, as an expert, to the next highest levels, specifically *conscious competence of unconscious competence* and *creative conscious competence*. At the post-doctorate level, the role of the tutor, participating in the formation of an individualized learning trajectory for the master's student, is taken over by the supervisor, whose primary objective is less to facilitate learning as much as to motivate a young scientist to achieve success in creative endeavors and seek new opportunities.

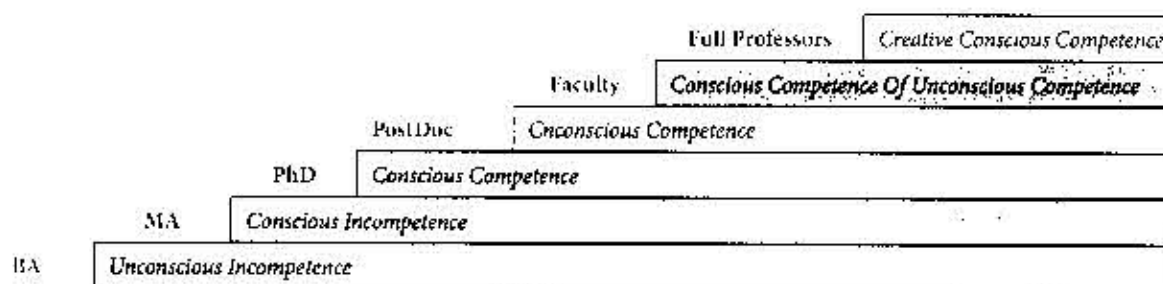


Image 1. Competence Ladder, is proposed by B. Beccamuter and M. Hall

In the territory of the former Soviet Union, increasing consciousness among school-aged children has not been practiced due to the nature of the social system, which can be characterized as total paternalism. Paternalistic habits have been preserved to the present day throughout the post-Soviet space. For this reason, undergraduate students experience difficulty defining the goals of their chosen professions during their first two years of study. This is the very reason why we have placed undergraduate students on the lowest rung of the competence ladder.

It would be ideal to foster this level of consciousness through the school curriculum. We are in agreement with W.G. Spady, who argued in the 1990s that a focus on outcomes within education is in part the result of our shift from the Industrial Age to the Information Age, in which a «complex, technologically dominated, multicultural, constantly changing world demands far higher learning results from schools than they have ever produced» [22].

It is for this reason we have so thoroughly examined the model of a competence ladder, as the development of educational programs and a learning approach which considers this model will contribute to the training of competent specialists in diverse spheres. The result will be specialists who are not only capable of affiliating with international projects, but also capable of independently developing their own projects, as well as schools which can collaborate with international partners and universities.

In contrast to the work of N.M. Edwards and S.I. Osipova, we recommend examining the problem from this angle. However, in order to initiate breakthrough projects, we must begin with integration into the international sphere for scientific projects. In their book, the authors listed above examine the issue of training scientists for effectively integration into the international scientific community in the context of the transformation of the academic environment. They propose to resolve this issue through the establishment of a corresponding competence for scientists,

taught through an educational model for formal, non-formal, and informal education [23].

The issue of returning science to universities has been discussed for decades. Much has already been done and continues to be done to achieve this goal. The competence ladder helps to analyze the weaknesses and strengths of the national model of education and science. Why are Kazakhstani universities only in the second echelon in international ratings, and why have our scientists not integrated into the international scientific elite?

One factor we have identified is the need to address not only professional competencies, but also *soft skills*, which receive little attention in national universities. These skills tend to be gained through extracurricular activities, including trainings and seminars. For example, the preparation of business leaders in Western countries places extensive emphasis not only on the development of hard skills, but also the development of soft skills [24].

In addition, a competent specialist who is both conscious and professional can alter his own perceptions and attitudes and, consequently, develop a personal value system. «With much wider access to other cultures, people are confronted with different value systems, which challenge «our notions of who we are, and where the boundaries are around our own identity» [25].

Delaware County Community College (DCCC) has identified that the following are critical skills for navigating modern life: competence, experience, specialty, life skills (needs, abilities, interests, values), the ability to analyze the impact of the arts and humanities to life, the ability to analyze social, political, business and economic systems in order to ensure the effective functioning of them, as well as environmental, and critical thinking [26]. For this reason, today's master's and PhD students must have a wide range of competencies needed for navigating life and adapting to a rapidly-changing and interconnected world [27].

Conclusion

A review of the system of higher education in Kazakhstan has demonstrated that the traditional form of transferring knowledge through mentorship persists today. This has contributed to a passive model of learning in which students demonstrate a very low level of interest in mastering required skills and increasing their competitiveness in the labor market.

On one hand, higher education makes a significant contribution to the development of an educated society, which should value life-long learning. On the other hand, education is a reserve for the emergence of new values, which can contribute to a new level of national development enriched by qualified specialists, capable of maximizing their potential and contributing to the development of society.

The need for a transition from a credit-based system to a competency-based model of education raises a number of questions about *how* to change higher education. The labor market is placing new demands on educational

institutions, and therefore it is critical to identify the needs of the market. The ability to orchestrate competencies, by definition, lies outside (and at a higher level than) the given or specified set of basic competencies. In the other direction, as decomposition progresses downwards potentially to the atomistic level, it typically becomes harder and harder to conceptualize the components working together, partly because the number of possible interactions of all orders among competencies escalates rapidly [28].

The future marker of students' professional competence will be their ability to create new knowledge, characterized as *creative conscious competence*, which expands on the traditional five levels of competence which limit the process of acquiring competencies to learning from a teacher and mentor.

We believe that this article will serve as a guide for future educational programs and policies. Faculty and administrators can use the competency-based model of education for the development of an effective system of professional training of specialists now and in the future.

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