

Competences Mastering Demanded by Practice as One of the Main Directions in Specialist Training

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ABSTRACT

The relevance of the presented problems in the paper is conditioned by the fact that the process of implementation of the competence approach into the educational space of Russia is in contact with a number of theoretical inconsistencies which are directly related to understanding the formation and mastering of competences. The goal of the paper lies in justification of the structure of competence and psychological (tangent- integrative) mechanism for its formation that will allow to propose a structural-functional competence model of competence's formation in the process of learning. The leading method to study the defined problems is the method of analysis of critical incidents of professional activities of successful performers, as well as the modeling method, which allowed us to consider a scientific problem with the position of domestic systemically-active approach of individual trajectory of professional skills' formation in the learning process. Rank places are presented of basic definitions of competence-based approach, obtained in the results of research of the concept of "competence", the comparative characteristic is given of qualities included in the concept of competency and competence, psychological tangent- integrative mechanism is justified of competence's formation that made it possible to present the structural-functional model of competences, including the groups of professionally significant qualities that characterize the competency of a specialist. The structure of the competency and competences allows from the position of the activity approach to deepen knowledge about the nature and content of the competence approach and the structural-functional model allows us to consider the competence as psychological qualities' system, the back-bone of which is the intention, which opens up the wide field of activity for the justification of the key professional competences of education institutions' graduates.

KEYWORDS

Competency, competence, intention, tangent-
integrative mechanism, psychological systems.

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Introduction

Modern educational strategy focuses students on the competences' mastering which are demanded by practice. Time has shown that the process of implementation of competence approach in the educational space of Russia is in contact with a number of theoretical inconsistencies (Verbitskaya, 2012; Korchemny, 2016). It is hard enough in practice to digest the main purpose of the approach, in particular concerning the role and place of the participants in the educational process when the teacher is not just the informant, knowledge's re-translator but the organizer of the training and educational process, the

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Manager for the establishment of learning problems, patterns and situations which in their psycho-logical characteristics are the most adequate with service, industrial situations; when the student needs to manifest in learning first of all, subjectivity and especially of its qualities as creativity, responsibility, independence, initiative that facilitates the transition from the consumer into the Creator and Creator on development, change of yourself and the surrounding world (Korchemny & Klimova, 2016). Lack of theoretical clarity and lack of understanding of the nature and content of the competence approach gives rise to the trend of declining interest and sometimes a degree of mistrust (Verbitskaya, 2012; Korchemny, 2013).

In terms of strategic tasks' solution on modernization and innovative development the most important qualities of a specialist are initiative, ability to think creatively and find unconventional solutions, the ability not only to choose the right career path, but also to demonstrate independent, responsible, proactive interaction with the surrounding reality, willingness to learn throughout life (Shadrikov, 2006; Bogacheva, 2012). Because of this the competency integrates professional and personal qualities (Korchemny, 2015), directing them to the support and creation of conditions for formation and mastery of mental formations (motives, knowledge, initial abilities and skills) and targeted their use in forecasting, planning and implementation of activities in the desire for self-actualization in a socially useful sector, providing its formation in the period of professional training and advanced training (Derkach, Zazykin & Markova, 2000; Kaidash, 2006), defining and intensifying their participation in the development of their own abilities (Zeer, 2005).

Analysis of scientific literature shows that in the theory and practice of professional development equally by researchers and practitioners the terms "competency" and "competence" are used (Bogacheva, 2012; Zimnaya, 2004). However, most authors mean the common qualitatively-essential characteristics of competency (Kaidash, 2006) and first of all recognize mental nature of competency, which is determined by the motivation, mental formations (knowledge, skills, abilities), behavior (in the form of various types and methods of activities) and value – semantic orientations of the individual (Shadrikov, 2006).

In modern domestic pedagogy the concept "competency" and "competence" began to be used in the 90-ies of the XX century, although the concept of "scientific pedagogical competence" we find in works of Vygotsky L. S. (1996) in 1924. Some authors believe that competency and competence are identical notions (Zimnaya, 2004; Bogacheva, 2012), including a majority of foreign researchers (Hutmacher, 1977). There is the opposite opinion that these concepts should be distinguished and considered separately each, since they are somewhat similar, but overall different, with distinctive features (Korchemny, 2013; 2015). Competency is a characteristic of the activity's entity (Shadrikov, 2006), as an integrated structure and a systematic conjunction of generalized knowledge (Zimnaya, 2004) including the knowledge and awareness on the existing problem, potential readiness to solve problems with knowledge, content (explicit knowledge) and procedural (basic abilities, simple and complex skills) components and involves the continuous updating of these mental formations in the specific circumstances of the activity (Kaidash, 2006). Competence is a characteristic of the entity in activities that allow people effectively to solve any arising problems in changing environment activities (Korchemny, 2015).

Study of the existing regulatory concepts and definitions in the system of professional education enabled to make some generalizations about the categories "competency" and "competence". We see that competence is referred not to the activity's entity, but to the range of issues related to activities, these are functional tasks related to the activities that someone can successfully solve. Competency is referred to the entity of activity. This is the acquisition of personality by virtue of which people can solve specific tasks" (Popov, 2009). In this context, competence is characterized by the ability of the person to fulfill his professional and official duties related to his professional activities, in the form of real immediate manifestation in it of competency, in the form of such formed mental formations as the knowledge, skills, abilities, professional experience, as well as professionally significant qualities - intuition, wisdom and creativity, which allows not only to judge something, to express a strong, authoritative opinion, but effectively to exercise professionalism in dealing with emerging challenges in a particular area, regardless of their complexity.

Unfortunately, some inconsistency is introduced by some misunderstanding by the entities of the educational process of the proposed and adopted in the Russian education of the postulate about the identity of the main concepts of the competence approach - "competency" and "competence", which introduces discrepancies in the educational process both in theoretical and practical aspects. To find even a shred of scientifically grounded answer to these questions and the controversy determined the relevance and significance of our studies.

Materials and Methods

Research methods

During research the following methods were used: theoretical (synthesis, concretization, modeling,); diagnostic (interviews, questionnaires, tests, collection and compilation of independent peer review, analysis of critical incidents of professional activities by the successful performers); empirical (the study of the experience of departments, teachers and educational organizations, regulatory and methodological documents); experimental (ascertaining and control experiments included pedagogical observation); methods of mathematical statistics and graphical display of results.

The experimental base of the research

The pilot survey was conducted by SEIHPE Moscow state regional University, FSOMEIHPE "Military University" FSBEI HPE Russian Academy of national economy and public administration under the President of the Russian Federation.

The stages of the study

The study was conducted in three stages:

In the first stage the theoretical analysis of existing approaches regarding the theory and technique of psycho-pedagogical studies in the scientific literature was carried out, which enabled to formulate the problem, purpose and research methods, to draw up its plan and program.

In the second stage the content and structure of the psychological qualities of the concepts "competency" and "competence" was identified, the results were



compared with other studies that that enabled to clarify the theoretical and practical conclusions, to generalize and systematize the results obtained.

In the third stage the nature of the psychological tangent-integrative mechanism of competences' formation, holistic competence model of competences' development was theoretically justified, their testing by bringing to the wider scientific community during the scientific-practical conferences and in publications by authors was conducted, theoretical insights were refined, practical recommendations were justified.

Results and Discussion

The structure of qualities and the nature of the concept "competence" are identified

The course of interviewing of successful performers among psychologists, social workers, civil servants by the method of analysis of critical incidents of professional activity (Korchemny, 2015), comparisons with the data of the essential content of the notion of competence obtained at the Moscow state University named after M. V. Lomonosov (Bazarov, Yerofeev & Shmelev, 2014) enabled to reveal rank places regarding the essence and content of the notion "competence".

The most promising heuristic approach by the interviewed successful performers is considered the cluster in which an attempt of a creative synthesis of the native (active) and Western (behaviorist) conceptual and terminological tradition is traced (table1), which we have formulated as the integrative capacity for the mobilization (use) knowledge and skills in specific difficult (extreme) situations (Korchemny, 2015).

Table 1. The rating places of the definition "competence"

Rankplace	Contents of the competence	The authors of this view
1	Competence as an integrative capacity for the mobilization (use) of knowledge and skills in specific difficult (extreme) situations	P. A. Korchemny and successful performers in the process of conducting the interview
2	Competence as a set of qualities	E. V. Krasilnikov, A.V. Khutorskoy, V. D. Shadrikov, V. S. Lednev, N. D.Nikandrov, M. V. Ryzhakov), and Lyle M. Spencer Jr. and Sain M. Spenser
3	Competence as the awareness, scope of authority, duties	S. I. Ozhegov, N. Yu.Shvedov, V. D. Shadrikov, A.V. Khutorskoy.

Both in foreign and domestic scientific literature it is generally accepted that "competency" and "competence" are identical concepts, which determined in methodological aspect the course of their further studies. V. Hutmacher, one of the founders and theorists of the development of competence-based approach abroad, says that the concept of "competence" is closer to the conceptual field "know how" than to the field "know what" (Hutmacher, 1977). In accordance with this methodological premise the framework for further studies are built abroad, where great attention is paid to the role and place of academic and practical intelligences (Spencer & Spencer, 2005).

This conclusion is contributed to by the objective circumstance that the concept of competence and competency include the same quality components, and second, there was not conducted fairly reliable psychological and pedagogical research to determine the role and place of these qualities in activities requiring manifestations of competency and competence. Approximately with such statement of a question we faced in the 70-ies of the last century, when, actively was developed the problem of psychological training, in which the Central were concepts such as psychological readiness and psychological resilience. Interesting scientific fact was revealed (table 2), despite the fact that the manifestation of readiness and sustainability utilized the same components of the psyche, but the role and place of these components differed significantly (Karayani, Korchemny & Marchenkov, 2011; Kamyshanov & Klimova, 2016).

Table 2. Rating places of components' manifestation of psychological readiness and resilience in activities

Rating places	Expression of components of psychological	
	<i>Readiness</i>	<i>Sustainability</i>
1	Motivational	Strong-willed
2	Cognitive	Motivational
3	Intellectual	Emotional
4	Motor	Intellectual
5	Strong-willed	Cognitive
6	Emotional	Motor

Similar studies have been conducted and with the qualities, components of "competency" and "competence". The results show that "competency" and "competence" are of the same qualities. However, during the manifestation of competency in the first place are some of the qualities (motives, values, self-concept, explicit knowledge, primary skills, simple and complex skills and psycho-physiological properties), whereas in the manifestation of "competence" in the first place in rank, as leading, are the other qualities (Intuition, wisdom, intention, tacit knowledge, professional experience) (table 3).

Table 3. Comparative characteristics of the qualities that make competency and competence

COMPETENCY includes:	COMPETENCE includes:
Motives, values, self-concept, explicit knowledge, primary skills, simple and complex skills and physiological properties, methods of activity, professional and personal qualities, professional intuition and experience, intuition, wisdom, intentions, specialist knowledge, its relation to activities, theoretical and applied capacity to use knowledge	Intuition, wisdom, intention, tacit knowledge, professional experience, motives, values, self-concept, complex skills, simple and complex skills and physiological properties, methods of activity, professional and personal qualities, professional intuition and experience, attitude to the activities, theoretical and applied capacity to use knowledge



The psychological mechanism of competences' formation

Studies show that competence is not an individual professionally important quality but a kind of psychological system of characteristics, the selection of which is done with *intention*. Competency is formed in the course of subject training on the stages (steps) of an individual trajectory for skills' formation - motives, explicit knowledge, primary skills, simple and complex skills, includes cognitive, operational-technological, motivational, ethical, social, and behavioral components (Korchemny, 2015). It includes primarily mental formations - the motives, explicit knowledge and elementary skills, simple and complex skills, value orientation, habits, etc. Competency, according to I. O. Popov, is always an actual manifestation of competence (Popov, 2009). *Under normal everyday conditions of life-activity* of the performer is quite enough the presence of a *competency*, when in the course of a previously learned algorithm effectively rising tasks are solved (Korchemny, 2015).

But life especially needs a permanent, sustainable outcome *in a changing environment*. And in this moment, previously formed mental formation begin to manifest itself, that is the necessary *competence*, as a specific result of professional training, reflected in the integrative ability to additional mobilization of domestic and external resources in a situation of uncertainty. A Central role in mobilizing additional resources belongs to the *intention* suggesting the presence of conscious purpose, determination, a complete absence of doubt about the necessity of such action. If in itself, the desire determines what one seeks, then *intention* defines why the person is committed to it, as if it sets the distant goal, immediate achievement of which by conventional, proven methods and ways is impossible, that requires the mobilization of psychic powers in the form of additional, efficient, consistent actions. The intention promotes the storage of necessary information in memory in a special "activated" form (Bernstein, 1990), which allows it to be in constant readiness for prompt action in changing environment that facilitates the implementation of certain appropriate actions and operations at the right time and in a certain direction while maintaining the necessary and sufficient motivation. The intention influences the consequences (Bernstein, 1990).

In other words, **intention** is a conscious focusing of energy in the psychic apparatus of the person to achieve a specific goal. Not accidentally, many dictionaries underline the basic idea that: **intention** is a conscious goal, a driving powerful force, sense of desire or action, because of which there is a significant change in our lives. In other words, the intention means to have determination and a willingness to act. It transfers us from the world of illusions and desires into the world of concrete actions, and helps to translate into reality all our dreams, all our "*castles in the air*".

Figuratively speaking, the intention is a certain quality in the mental apparatus of man, the effect of which is similar to the functioning of the immune system. If the body gets a pathogenic bacterium, we are not aware, if there is antithesis (antidote) to this pathogen in the body. The immune system automatically sends through the blood the antidote to the pathogen that allows it to quickly block, neutralize, and sometimes to destroy, as a source of human disease. All of these steps and operations occur unconsciously, and as if are automatically regulated by the human body at the physiological level, where the role of the immune system is primary and the role of consciousness is minimal.

To implement those functions, facing the intention its activities in vocational education needs to be provided with a reliable psychological mechanism, which can be acted by a psychological tangent-integrative mechanism. The notion tangent in our understanding is selective, spot, aim, address. It is that with the help of intention not any quality is actualized, but those are selected which are most appropriate to the environment, and in General will contribute to the effective achievement of the goal. In this mechanism, the intention plays the role to identify, isolate, pinpoint, accurate selection of the many existing in the human psyche of professionally important qualities, only those that are vital for the effective achievement of the worthwhile goal, performing at the same time as generating and strategic functions. It is the isolation of many important groups of qualities, (for example for teachers intellectually-stimulating, spiritual, moral, ethical, personal and pedagogical, organizational-communicative, activity- innovative and possibly other groups), the most important and necessary for the current situation, integrating them around professionally important qualities, thus forming a kind of psychological system of connections with one to the other of qualities, which will ultimately be the most adequate competence for this situation. The selection process required for the situation of qualities takes place involuntarily, unconsciously, as if automatically (Korchemny & Klimova, 2016.).Condition for favorable course acts a strong motivation for people to achieve the purpose, painted with positive emotions.

In the educational organization in the process of students' learning the groups of qualities are formed for each specialty (Chitaeva, 2009; Shadrikov, 2009), which can be grouped in components. For example, for future teacher are: spiritual-moral, professional-ethical, intellectually-stimulating, activity-innovative, organizational-communicative and personal-teaching groups of qualities (see figure 1).The current system of qualities (the leading and the attached, complementary qualities in the whole are necessary for the current situation is a psychological system of qualities, in the form of competence to effectively achieve the goal (Stehr et al., 2002).A Central role in the selection and inclusion of necessary for particular competence qualities fulfills the *intention*, in close connection with the psychological tangent-integrative mechanism.

In our opinion, the scientific literature describes a simplified view on the formation of competencies that are, in fact, represented by the collection of a large number of professionally important qualities. Our research has shown that this process is more complex. On the formation of competence simultaneously are sent the efforts of several academic subjects."The right balance of forces and the scientific problems would have been then,-writes L. S. Vygotsky (1996), if scientific "pedagogical competence had been distributed as follows between the individual teaching disciplines: 1) history of educational systems, 2) history of pedagogical ideas, 3) theoretical pedagogy, 4) experimental pedagogy, 5) educational psychology. In other words, for the formation of scientific-pedagogical competence is necessary to use, as they say today a modular approach, where each competence will be formed by some subjects, and sometimes departments, each of which will make a contribution.

In relation to the subject of our study it can be assumed that in the process of formation and development of competences, the main attention should be paid not so much on the leading professionally important quality that can be



prescribed in the state standard as professional competence, but on many academic subjects which will form the other qualities that will complement and ensure the effective operation of the leading quality, that is, the relationships that are formed between the qualities in the process of professional training. We should be primarily interested in not leading qualities (competence), not so much in their structure, movement system, but much in modification and change of the relationships of these qualities (functions) between them, which contributes to the emergence of new groups that were unknown at the previous stage of training (Vygotsky, 1982). Therefore, the significant difference in the transition from one stage to another is often not intra-functional change of generated qualities but changes of inter-functional connections, the inter-functional structure that do not remain the same in the formation of a specialist. There is no permanent formula that would determine the necessary relationship of the necessary quality (competence) and the employer's requirements and was suitable for all stages of development, as at every stage and form of development or loss of skills we have a kind of their changing relationship. The main idea is that out of sight must not be lost the method of attempts and errors in order to achieve these cross-functional changes, such psychological systems and their component characteristics that will enable to form the necessary competences and to support them professionally.

The legality of this approach can be supported by such a methodological approach of PhD *John Raver*, who first proposed for understanding of the process of organizing and combining of competencies, to draw an analogy with chemistry (Spencer & Spencer, 2005). Psychologists know that the individual qualities of a person are primary. On the example of sensations it is visible that in the nature, along with their main characteristics such as quality, intensity, duration, spatial localization, emotional tone, one of which is the *simplicity* of the sensations (Itelson, 2002), when some of the sensations being primary, which cannot be divided into simpler. Other sensations act as secondary, complicated. One can obtain them from "mixing" certain primary sensations. For example, mixing in a certain proportion red, green, blue or violet colors one can produce all other colors on which is built the technique of three-color printing. From this perspective, primary colors can be considered basic. Mixing two or more primary (simple) colors, one can obtain new, more complex tone color, which is used by artists (Itelson, 2002). Similar arguments it is possible to result and on the examples of sound, of taste.

It can be assumed that the organization and combination of professionally significant qualities, around the leading quality is carried out in analogy with occurring chemical processes, where instead of chemical elements are human qualities. That is, as the human immune system selects the most important chemical component of the human body by the blood and sends it to fight the virus, and the intention, identifies and selects from existing the adequate to the situation and purpose the primary professionally important quality. Around this primary quality, the intention with tangent-integrative mechanism, groups other earlier formed in the process of professional training important qualities (on the example of a teacher: intellectually- stimulating, spiritually-moral, personally-pedagogical, organizationally-communicative activity-innovative and perhaps other human qualities), which are complementary, reinforce, strengthen selected primary quality, make it more sustainable, reliable and motivated, forming a

certain system of interrelated psychological system of important qualities. In addition the system-forming factor is the intention.

The structure and content of the model

On the basis of system-activity approach (Lomov, 1996) structurally functional model for formation of competence of the teacher was developed, including intellectually-stimulating, spiritually-moral, professionally-ethical, personally- pedagogical, organizationally-communicative activity-innovative groups of qualities, which together can provide such backbone quality (professional competence) as a pedagogical culture of the teacher. These components of the model, in collaboration and under the organizing principle of psychological tangent-integrative mechanism provide the organization of process of formation of teachers' competences. Under the result of the operation of the proposed structural-functional model of process of competences' formation in our case is understood a certain level of formation of pedagogical culture of the teacher (Figure 1).

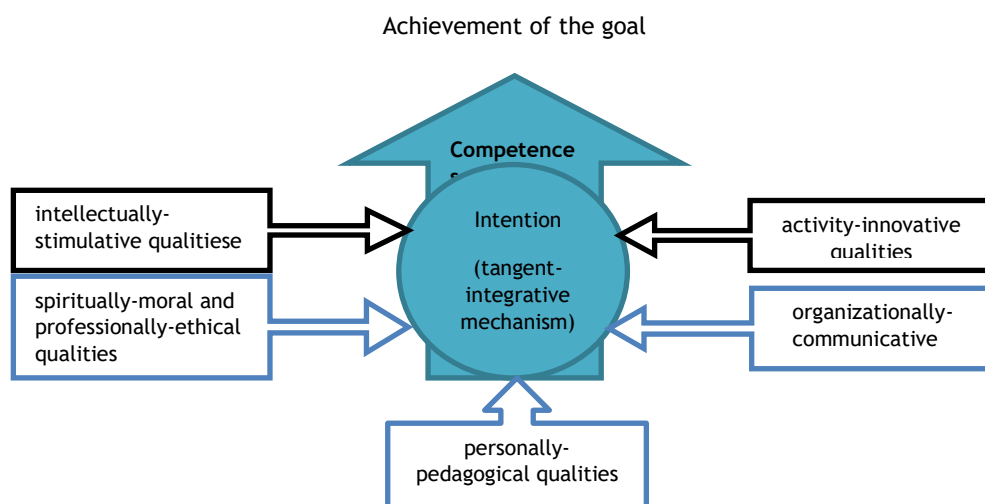


Figure 1. Structural-functional competence model of competence's formation (teaching culture) in the process of the teacher's training

The presented model is the basis for the formation of key professional competences of the teachers of educational organizations in educational activities, which is especially important in the conditions of introduction of competence approach in Russian education.

The stages of implementation of the model

The implementation of this model involves the following stages of the experimental work:

- testing of justified theoretical postulates in the conducting of international scientific and practical conferences, symposia, as well as their publication in peer-reviewed by journals of High Attestation Commission to bring to the wider scientific community, carrying out discussions, making appropriate adjustments;



- clarifying in the state educational standards of a content and quantitative composition of General cultural and professional competencies of the trained masters, specialists, bachelors;
- selection and coordination with the Ministry of education and science of the Russian Federation, rectors of educational institutions of the pilot universities, the time and timing of the formative experiment.

Results and Discussions

The study of psychological and pedagogical literature enables to state on the absence of special studies devoted to the structural components of the concepts "competency" and "competence", psychological mechanism of competences' formation and thus its holistic structural-functional model. The nature and structure of basic competences through the underlying qualities of the learner was considered in "Competence at work" (Spencer & Spencer, 2005). The content of the main provisions of the author's structural-functional model of competences' formation and its main content was presented at the international scientific conferences: XVIII international scientific-practical conference "the University in the XXI century: old paradigms and contemporary challenges". April 8, 2016. (Ekaterinburg Humanitarian University); XXV all-Russian readings of students, postgraduates and young scientists with international participation "XXI century: Humanities and social Sciences" April 14, 2016 Tula, Tula state University; at the international scientific-practical conference "Russia and the world: the development of civilizations". April 7, 2016 (Moscow, NANO HE "Institute of world civilizations"; XI Levitovsky readings "Socio-cultural determination of subjects of educational process" on April 20-21, 2016 (Moscow state regional University). Some aspects of the problem have been published by the authors in the pages of peer-reviewed by High Attestation Commission RF scientific journals (2013; 2015; 2015; 2016).

In the research process, new questions and problems arise that require their decision. As for the psychological tangent-integrative mechanism and overall structural-functional competency model of competences' formation the material in this holistic view by the authors is proposed for the first time. We understand that most difficulties await us in the process of implementing the theoretical principles and the proposed model. We would be very grateful for the suggestions and comments that will be expressed in any form of discussion aimed at further refining of the presented research.

Disclosure statement

No potential conflict of interest was reported by the authors.

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