

**Review Article**

**CREATIVE COMPETENCE AS A COMPONENT OF THE PROFESSIONAL COMPETENCE OF A FUTURE ENGINEER**

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**Received: 10.11.2019**

**Revised: 18.12.2019**

**Accepted: 16.01.2020**

**Abstract**

The article considers the structure of creative competence in the context of the formation of the creative potential of a future engineer. The analysis of the phenomenon provided an opportunity to propose a structure of creative competence for students of a technical university, which includes motivational-axiological, cognitive, activity and reflective components, and determine the content of its components. The result of a scientific search was to clarify the essence of the concept of "creative competence" of the future activity of a technical university student as a complex personality education, covering the sphere of intelligence, emotions, moral values and acting on a fundamentally new, integrative level of transferring acquired competencies from one industry to another in order to either achieve a fundamentally new result of activity, or the implementation of activities at a fundamentally new qualitative level.

**Keywords:** creativity, creative competence, components of creative competence.

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DOI: <http://dx.doi.org/10.31838/jcr.07.01.74>

**INTRODUCTION**

Improving the training of future engineers in order to bring it in line with international standards is today a very urgent issue in modern vocational education. New requirements for training students in institutions of higher technical education are that the presence of only special professional knowledge is no longer sufficient for a future competitive specialist. It is necessary to develop such abilities, to the greatest extent, that would reveal individuality and creative potential. Therefore, the main goal of higher education today is the preparation of a competent, qualified graduate who is able not only to put into practice knowledge, skills, but also to make original and innovative decisions in situations arising in professional activities.

Analysis of recent studies and publications, according to the opinion of leading Russian scientists, competency includes "not only professional knowledge, skills and experience in the specialty, but also attitude to the business, certain (positive) inclinations, interests and aspirations, the ability to effectively use knowledge and skills, as well as personal qualities to ensure the necessary result at a particular workplace in a specific work situation."

The concept of "creative competence" is widely discussed in the modern scientific literature. In particular, the experience of developing creativity among students of higher education (Yu. Bystrova, R. Gilmudtinov, V. Moroz, I. Osobov), the formation of creative competence in the educational system of an innovative society (N. Malakhova, A. Bessarabova) are presented. Most of these studies do not deal with the training of future engineers. Therefore, we further determined in detail the component-structural content of the phenomenon of "creative competence of an engineer", which is detailed in such tasks: clarification of the essence of the concept of "creative competence" in the context of the formation of the creative potential of a future engineer; highlighting the components of creative competence of an engineer and presenting the content of components of the structure of creative competence of students of technical universities.

**METHODOLOGY**

Creative competence is one of the key categories that determine the professional competence and is universal in nature and degree of application, because all professions in demand [9]. Scientists note that for the future of any industry professional creative competence is stable personality traits, expressed in terms of knowledge, skills, personal qualities and experience.

According to I.E. Bryakovoy, creative competence is defined as a multifactorial integral personal quality that makes on the basis of professional development and self-development of literary and artistic and creative abilities of their own personality. The author notes that creativity in professional pedagogy - is the ability to create, adopt and establish a new, unconventional thinking, the generation of a large number of original and useful ideas [1].

Defining the creative competence, A.G. Shumovskaya treats it as the ability to creative activity due to hold own creativity, teamwork and communicative competence on the generation of ideas, creation of a new, creatively solve problems of various kinds, etc. In its decision the author focuses on the ability (competence) to create a new identity (creativity) [11].

Taking into account the different approaches, we note that the majority of scientists (O.V. Solovieva, L.A. Khalilov, T.V. Bugaychuk, S.L. Yanbykh et al.) Noted that the creative competence in the first place, has universal in nature and is necessary in any professional activity; secondly, a personal education (quality, property, the ability of the person to be creative) Third, reflects the level of creative expressions of the individual in a particular sphere of activity [6].

In our opinion, the creative competence includes the motives, goals, values, knowledge, skills, skills. Each component creativity manifested at different levels of activity. From this perspective, the concept of "creative competence" can be represented as a complicated personal formation, covering the scope of intelligence, emotions, moral values, through the transfer of acquired competences from one area of life to another, either to achieve a fundamentally new result of activity or perform activities on a fundamentally new qualitative level.

Creative competence as a component of professional competence of the engineer determined by the need of development of creative abilities of students of a technical college for the purpose of taking the initiative, independence, creativity, research skills in his future engineering activities [7].

The essence of the creative competence in the context of formation of creative potential of the future engineer, is the creative nature of its activity, is manifested at all levels: the invention of an engineering solution, technical issues, etc.

In modern science, there are different approaches to determining the structure of the creative competence. For example, I.A. Winter, each competence includes within its structure of five components: a) ready for display of competence (personal property) in activity and behavior (motivational aspect); b) knowledge of the means, methods, programs perform actions that address social and professional

problems, the implementation of the rules and norms of behavior, that is, possession of the contents of competence (cognitive aspect); c) the experience of manifestation of competence (the implementation of knowledge, skills) in a variety of standard and non-standard situations (behavioral aspect); g) relevant to the process, the contents and the result of object competence and its applications, personal significance (value-semantic aspect).

It seems to us enough reasoned position I.E. Bryakovoy that the components of the creative competence refers axiological (creative approach to the human person as a value), motivational (the need for creative interaction), cognitive (the ability to creative interaction through dialogue, the ability to use knowledge to solve professional creative tasks), operating (the ability to make creative use of the experience and create new methods), reflective (reflection on the proper oh creative activity; reflection on its role in the educational process) [2].

O.V. Solovyov and L.A. Halilova design expertise in the structure are the following characteristics: the ability to create, to the solution of problems of concern; ingenuity; flexibility and critical mind, intuition, identity and self-confidence; ability to set and standard tasks, the ability to analysis, synthesis and combining the ability to transfer experiences foresight, etc.; emotional and imaginative qualities: spirituality, emotional lift in creative situations; associativity, imagination, feeling of novelty, sensitivity to inconsistencies, the ability to empathy (empathy); insight, the ability to see the familiar in the unfamiliar; overcoming stereotypes; risk appetite, desire for freedom [10].

Unconditional interest is the theoretical model design expertise structure proposed by R. A. Gilmutdinova, E.V. Dubinin and Z.R. Zakirova. The model consists of the following components: emotional, providing emotional regulation and optimization of activities in the conscious and unconscious levels (the power of intuition, emotional awareness, control your emotions, empathy, impulsivity, emotional sensitivity), cognitive (the imagination, flexible cognitive control, cognitive needs, intelligence, conceptualization, tolerance unrealistic experience, understanding of human nature, synergy) reflective, reflecting est NKU their capabilities and abilities, faith in their own strength; the will - to overcome internal and external obstacles to reach the goal; behavioral, realized through the combination of knowledge, skills, creativity, experience and personal qualities in the work; motivational component which activates. Closest to the object of our study is the structure of the creative competence, provided Yu Bystrov, which defines six components of the creative competence of students of high school: the cognitive component, which provides an opportunity to acquire new theoretical knowledge in the process of active search and cognitive activity; volitional component aimed at the ability to successfully overcome internal and external obstacles to achieving educational objectives (independence, persistence, openness to new experience, and the ability to take risks) emotional component, helps to regulate and optimize the student's performance on a conscious and subconscious level (moderate sensitivity, expressiveness; emotional stability, sense of novelty; sensitivity and tolerance for contradictions) motivational component as a kind of personality settings to mobilize for future activities (self-actualization, motivation to achieve success, value orientations, intrinsic motivation, self-improvement) the activity component is the unification of a certain set of personality knowledge for the realization of educational tasks, using skills, skills, creative experience, personal qualities, the ability to find creative solutions to unusual situations (flexibility behavior and way of thinking Niya, activity, tolerance, adaptability, originality is non-trivial, unusual ideas expressed by) a reflective component that allows you to objectively evaluate yourself and your work; critically evaluate the achieved (self-esteem, insight, self-awareness, internal locus of control,

Having taken into account all the above, we note that the most common in the structure of the creative competence release characteristics such as the activity of the person (willingness to learn new forms and types of activity, including creative, initiative, hard work), openness to new experience;

development of creative thinking, perception, imagination; intellectual qualities; ability to solve problem tasks; the ability to use knowledge and experience to solve creative problems; the ability to give more correct answers to one question; the ability to set goals, adequate conditions of activity, presence of motives and needs of creative activity, self-realization; value orientations; personal characteristics, to ensure the effectiveness of decision-creative solutions; reflection about his own creative activity; specific age and professional characteristics that determine the success of the creative personality in specific activities [12].

Thus, taking into account the positions of researchers, our own ideas and based on the determination of the structure as a "set of stable ties between the parts (components) of the object to ensure their integrity," consider it appropriate in the structure of the creative competence of students of technical colleges are the following components: motivational axiological, cognitive, activity and person-reflective.

Motivational component of axiological component design expertise attribute orientation on creativity, sense of novelty, criticality; interest in non-standard tasks; the ability to quickly turn on in the creative process; focus on the process of achieving goals, getting creative results of operations and the like.

Axiological component associated with the recognition of the value of creativity as important and personal and professional qualities and presented significant values, directs the creative activity of the future engineer, combining research and technical guidance, directed search, research, professional activity, acting on its axiological position and professional researchers [8].

Cognitive component design expertise technical university students presented knowledge system to facilitate the efficient identification of said future professional competence in the activity of the expert knowledge and includes the totality of the features of the creative process, creative activity and its characteristics and implementation technology of self-knowledge and reflection; understanding of the requirements for the individual technical specialists; acquired skills in solving problems requiring creative approach, the level of subject knowledge, which allows them to operate at the creative level.

The activity component of the creative competence determines the readiness to implement creative activities, the level of development of students of technical colleges, ability to creatively solving professional tasks, skills effectively to exercise creativity in a variety of standard and non-standard situations, professional, hands-on experience of using them [13-16]. By the activity component of the components include a set of such qualities and skills as the ability to formulate the problem, a creative approach to the development of its solutions plan and its implementation; ability to establish logical links between the facts and phenomena; Search is intuitive; possession of techniques of their own creative abilities and experience of their implementation; ability to make creative use of the accumulated knowledge and practical skills; the ability to self-organization activities; ability to structuring, the manifestations of the imagination, develop hypotheses; ability to carry out the transfer of knowledge and skills in other subject areas; the ability to generate new creative ideas, originality, the ability to refrain from taking a typical conventional solution to the problem, propose solutions and different ways to choose the best; ability to identify creative competence in professional non-standard situations.

The specifics of this component is its two-way: it is a permanent and available in each component (motivational, cognitive, reflective activities - conscious work on the solution of the problem, monitoring or settlement emotions, motivation itself to action, working on self-motivation) and simultaneously provides the link between various components during the process of identifying design expertise, particularly important in the transition from the thought of the creative process to practical the embodiment of the spirit and is a key factor for the realization of creative ideas to life.

Personal-reflective component includes a set of important qualities of the subject that affect the efficiency of detection of the creative competence in professional work: responsibility,

sociability, optimism, emotional involvement in creative activities, reflexive skills, abilities and skills of self-analysis and self-activity of collective creative activity of the group; the ability of self-organization and self and the like [5].

**CONCLUSIONS**

The results of our scientific research was the clarification of the essence of the concept of "creative competence" of the future activities of a technical college student as a complex personal education, covering the scope of intelligence, emotions, moral values and acting on a fundamentally new, integrative level of the transfer of acquired competences from one of life branch to another for the purpose of any achieve a fundamentally new result of activity or performance of activity to a fundamentally new level.

To form a creative competence as a component of professional competence of the engineer is the need for the development of creative abilities of students of a technical college by taking the initiative, independence, creativity, research skills in his future engineering.

Conducted analysis of the phenomenon made it possible to propose the structure of the creative competence of students of a technical college, which includes motivational axiological, cognitive, activity and reflective components, and determine the content of its components. In our opinion, the dynamic interaction of these components in fully covers personal characteristics, knowledge and skills necessary for the preparation of students of technical colleges to identify the creative competence in professional activities.

We believe that the formation of the creative competencies as a set of personal and professional resources to ensure the future possibility of an effective solution of professional tasks, should be an integral part of the training of the future engineer.

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