FORMATION OF METHODOLOGICAL CULTURE IN FUTURE TEACHERS THROUGH INNOVATIVE THINKING

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Annotation. In this article, the author emphasizes that the formation of a methodological culture in future teachers through innovative thinking serves to ensure the effectiveness of the development of professional competence.

Basic concepts: Innovation, innovative activity, innovative thinking.

Recently, in various sources, along with the concept of "innovation", "innovative activity", the term "innovative thinking" is often used. However, while the concept of innovative thinking is used in many scientific studies, its essence is not clearly revealed. It is usually interpreted as an individual's ability to innovate. However, the ability to innovate includes not only the process of thinking, but also personality traits such as initiative, critical thinking, reflexive ability, motivational orientation to innovation.

V.P. Delia tried to define the concept of innovative thinking as follows: innovations and innovations aimed at improving the world view on the basis of physiological sequences, socio-cultural laws, including spirituality, goodness and justice, related to the creation and development of mental model is thinking based on the random and dynamic objectivity of processes [1].

The reflexivity of the individual and the construction of various mental modules, in turn, consist of objective and subjective reality according to their content; V.P. Delia called the subjective reality, which occurs spontaneously in the form of new knowledge acquired as a result of the need to understand, predict and model the meaning of life, noumen (Greek word, objective, intelligible as it is) [2].

It is obvious that the above definition given to innovative thinking does not allow it to be fully applied in practice because it has a very complex interpretation. When we presented this definition of innovative thinking to students, they noted that it is very "difficult" to understand its essence. "Exactly which places do you understand?" To the question, the students highlighted the phrase "physiological sequences that determine the manifestation of mental models". There has also been a lot of controversy over the idea that innovative thinking among students is aimed at "improving the existing

worldview". On the contrary, he expressed the view that it is concerned with solving practical problems in the process of changing the environment.

While the definition given by V.P. Delia has the above-mentioned controversial aspects, it does allow us to highlight the main characteristics and characteristics of innovative thinking. Innovative thinking is:

- directly related to the activity;
- aimed at creating an objective new reality (noumen);
- allows you to solve practical problems based on the creation of a newcomer (new person);
- reflects social positivity.

We will discuss these rules in more detail below.

The main feature of innovative thinking is that it is directly related to activity. We cannot interpret such thinking as relying solely on mental models, apart from motivation and the end result, as the driving force of this process manifested in the material transformation of the environment. In other words, innovative thinking is characterized by the motives that lead to the creation of a mental model, personal thoughts, and external subject activity related to the implementation of that model.

Different types of thinking are distinguished: empirical, theoretical, visual-figurative, logical, spatial, and so on. At the same time, it is clear to all that thinking has a holistic view, and that each of its types listed above is determined only by prioritizing the superiority of some descriptive aspect. For example, theoretical thinking is based on high-level abstract concepts, while empirical thinking relies on emotionally perceived visual images. In reality, there is no one who thinks based only on abstract or, conversely, visual images. It would therefore be appropriate to speak of holistic thinking, which is easily adapted to the change of various special tasks.

The introduction of innovative thinking as a different type of thinking requires highlighting its specifics directly related to the implementation of innovative activities in the thought process. In our opinion, it is expedient to use the term "innovative way of thinking", described by Yu.V. Senko as a scientific method of thinking [3]. If the terms "scientific method of thinking" and "scientific thinking" were used by Yu.V. Senko as synonyms, in our opinion, they should be distinguished from each other. Because, firstly, while the scientific method of thinking reflects integrity, on the other hand, the difference between scientific thinking and self allows you to clearly record the original.

I.S. Yakimanskaya noted: "The structure of any ability is complex and multidimensional. Not all of its components develop the same way at the same time One may be less developed, but the gaps in their development may be better filled by the other [4]. He also emphasizes that "in any structure of ability, there is a leading,

basic feature that ensures the direction, the specificity of which no learning ability can develop."

In the full sense, this aspect can also be applied to innovative thinking: one of its qualities can be filled by the other. For example, if there is no system in solving the problem, this can be supplemented by increasing the speed and amount of mental models being created. Such an internal "mental attack" can lead to similar success if a promising direction is quickly identified and the desired outcome is clearly thought out. Our task is to identify the main features of innovative thinking, each of which is very important and its absence does not allow to achieve high results in other areas. In our opinion, innovative thinking should look like this:

- creative;
- scientific and theoretical;
- socially positive;
- constructive;
- transformational;
- pragmatic.

We focus on the analysis of each feature of innovative thinking and try to show that integrity does not exist without one of them.

1. Innovative thinking reflects the creative process related to the range of algorithms, patterns, models. Creative thinking always leads to new subjective results. In this sense, the creative component of innovative thinking is different from that in the field of art. Even when acknowledging the uniqueness of each person's inner world, any medium that reflects the artist's inner world always has an objective novelty. For the creator, the main goal is to solve objective practical problems through options of a certain appearance. A similar result can be achieved independently by different people, it would not be appropriate to say that the activity of someone who has previously sought a solution is creative. In a country where a particular technology has been successfully applied and can now become traditional, it will have an innovative character that requires less creativity from an innovator for another state. In the process of creative thinking is the emergence of innovation that does not take place within the application of insider algorithms. If there is no creative component of innovative thinking, which is especially evident when inspiration comes, it immediately loses its innovative character, there is no innovation in the product of activity. An expert who implements new innovative technologies on an algorithm that does not require independent solutions can be an innovator in terms of external activity, but is not considered an innovator in terms of thinking style.

2. Innovative thinking embodies scientific and theoretical thinking. Scientific thinking is "carried out in accordance with methodological principles, approaches and

their results" [3]. According to Yu.V. Senko, scientific thinking "serves to reveal the significance and specificity of theories of the past in the present in relation to theoretical thinking" [3]. Concepts based on theoretical thinking occupy an abstract level for the current stage of science. Without generalizations, theoretical models, based on repeated examination of the studied phenomena and processes, which express an objective basis, it is impossible to create a large innovative product that is in demand for the current stage of science and technology. For example, a new source of energy can be invented based on modern physical knowledge and technology.

3. Innovative thinking has a socio-positive character, it is always creative, focused on humanistic ideas, the problems to be solved have social significance: innovation increases productivity, improves working conditions, provides well-being, and so on. Therefore, even on an intuitive level, phrases such as “innovative poison gas”, “innovative weapon” are perceived negatively. In the process of introducing students to this or that invention, it is necessary to emphasize its positive impact on human life.

4. Innovative thinking implies constructiveness, ie the ability to set tasks in a realistic and diagnostic way, choose appropriate methods and tools, plan their actions in sequence, determine the level of achievement of the goal, make adjustments if necessary, make timely changes to the plan. The concept of technological culture can be used as a synonym for constructivism. Constructive thinking requires not giving in to emotions, achieving a logical, sequential end result, not being distracted by secondary factors. Run him figuratively and lock the disobedient horse in the black can be imagined in the form of work.

5. The constructive component of innovative thinking is directly related to pragmatism. Unlike an inventor and a scientist, an innovator deals not only with the discovery of a novelty and its theoretical substantiation, but also with the achievement of practical results on the basis of an invention created or discovered, the implementation of an invention. Therefore, it combines the qualities of not only a scientist, but also an organizer, manager, entrepreneur. To do this, the innovator must take into account the current situation and use them correctly in the work process.

6. Innovative thinking is always about making changes to the environment. It is not limited to the development of models (diagrams, tables, algorithms, etc.). These models must become real emblems, have a material life and a social appearance. In this process, all the features of innovative thinking are clearly demonstrated. The practical inability to change activities leads to misconceptions - a lack of intuition in anticipating real processes, an inability to correct mistakes made in the description of cause and effect.

The fact that internal thinking processes and external subject activity have a direct holistic description is shown in the researches of V.P. Deliya [1]. He distinguished two dialectically interrelated stages of the innovator's thinking activity: cognitive - intellectual activity aimed at developing and presenting the content of new knowledge on the basis of internal reflection; tool - to ensure and implement the relevance of new knowledge to practical activities.

From the above considerations, it is clear that innovative thinking plays an important role in shaping the methodological culture. In SV Kulnevich's "new concept of pedagogical thinking" [5] methodological culture is reflected as the basis for the formation of the general preparation of future teachers for person-centered pedagogical activity. It defines not only methodological skills-processes (establishing cause-and-effect relationships between methodological-philosophical, normative and other functions and real pedagogical technology, theory, program, textbook, etc.), but also the humane basis of pedagogical consciousness. Its essence is reflected in the content of a specially selected methodological-theoretical block, which allows the development of conscious activity at the level of personal reflection, motivation, critique, creativity, self-expression.

In his research, SV Kulnevich noted the importance of redirecting the mind of the future teacher by working "with a prescription" in the development of a personal pedagogical point of view. The priority of personality formation in the future teacher, in the author's view, determines the specificity of pedagogical disciplines based on unique examples of author's experience, in contrast to the traditional approach, where there is no duplication of evidence. Their generalization does not give the appearance of "laws", but as a source of creativity is the basis of creative thinking of a new generation of teachers. The formation of pedagogical skills, writes SV Kulnevich, begins with working with real evidence, reasons, ideas, sources that reflect the basis of this or that pedagogical approach [5, p. 6].

E.V. Berezhnova studied the problem of forming the methodological culture of the future teacher in the process of teaching pedagogy, noting that thinking based on the application of methodological culture in the process of solving methodological norms and problematic pedagogical situations is special thinking [7]. Among the main features of methodological culture EV Berezhnova included: skills of designing the educational process; ability to understand, formulate, and creatively solve tasks: ability to perform methodical reflection [8].

In the research of EV Berezhnova managed to identify the following as a necessary and important condition for the formation of methodological culture in students: the orientation of professional activity to the creative character; introduction of methodological knowledge to the pedagogical course offered to students; formation of

motivation to use the opportunities of pedagogical disciplines to improve practical activities; organization of problem-based learning [9].

The work of EV Berezhnova is reflected in the idea of VV Kraevsky [10] about the differences in the methodological culture of the practitioner-teacher and the pedagogue-researcher, as well as the points of connection.

In his research, PG Kabanov philosophically interpreted the phenomenon of methodological culture of the teacher, highlighted the methodological role of philosophy in pedagogical knowledge [11, p. 12]. According to the author, the methodological culture of the teacher requires the acquisition of methodological knowledge, the ability to use them in scientific and practical pedagogical activities.

The level of methodological culture in accordance with the levels of methodology has the following appearance: pedagogical, general, philosophical. According to PG Kabanov, the following elements of it are yes m can be distinguished: knowledge, skills and qualifications [11]. In our opinion, methodological competence (literacy) should be added to these elements.

The pedagogical level of the methodological culture of the teacher requires knowledge of the history of pedagogy and mastery of modern pedagogical theories, basic principles used as methodological installations in pedagogy. The teacher must be able to use different methods in the organization of lessons and educational work. At this level, the educator will have the ability to create advanced practical experience, put forward hypotheses and test them in pedagogy using general scientific methods such as observation, experiment, analysis, generalization, modeling.

The second level requires the ability to use general principles in pedagogy, to apply the methods of idealization, universalization and conceptualization, to implement different approaches (systematic, credible, systemic-functional) in their practice. At this level, hypotheses are put forward, pedagogical theory is developed and tested in practice.

Third - at the philosophical level of methodological culture, according to PG Kabanov, it is necessary to have knowledge of alternative methodological theories, based on conflicting methodological principles, institutions of different worldviews [11]. The educator needs to be able to identify the boundaries and areas of effective application of each alternative theory. At this level, the ability to look at events from a metaphysical and dialectical point of view, to move from abstraction to clarity, to apply historical and logical research methods is demonstrated.

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