
DEVELOPMENT OF CREATIVE COMPETENCIES OF FUTURE BIOLOGY STUDENTS AS A PEDAGOGICAL PROBLEM

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ABSTRACT: some problems and solutions in improving the methodology of developing creative competencies of future biology teachers by solving problems and exercises from biology are described.

KEYWORDS: Innovative technology, STEAM education, 4K principle, creativity, creative competence, biological issue, exercises.

INTRODUCTION

In the developed countries of the world, the implementation of fundamental reforms in the education system and the formation of a healthy competitive environment in the labor market, along with the application of the competence approach to the training of competitive specialists, the practice of effective use of innovative technologies is widely used. In particular, it was emphasized that the formation of 4K (collaboration, communication, creativity, critical thinking) competencies in the educational process is a priority for improving the quality and efficiency of education. In particular, the experience of developed foreign countries such as the USA (Harvard University, University of California), Japan (University of Tokyo), Great Britain (Professional counseling organizations), France (National Information Bureau on Education and Profession) it is recognized that the improvement of pedagogical and methodical conditions for the development of creative competencies among teachers is an urgent issue.

Formation of future biology specialists in world educational and scientific research institutions based on a creative approach, improvement of creativity and digital education in theoretical and practical training, "STEAM education" approach and "ART pedagogy" Long-term scientific research is being carried out on the issues of large-scale application of innovative technologies such as ART-therapy directly to educational practice. Also, in the process of biological education, there is a need to implement a competent approach in the process of directing students to scientific and research activities, developing skills and qualifications for the rational use of natural resources, and developing a scientific-methodical system for improving biological competence.

Development of creative competence of future biology teachers in pedagogical higher education organizations of our country, introduction of completely new methods, relying on the best experiences of developed countries in the process of teaching biological sciences, implementation of modernization works attention is increasing day by day. In the concept of development of the public education system until 2030, "Application of innovative and

information and communication technologies in the field of public education, stimulation of research and innovation activities, creation of effective mechanisms for the implementation of scientific and innovation achievements, alternative approaches and scientific justification priority tasks such as development of scientific-research works with oriented practical content" have been defined. For example, in the Development Strategy of New Uzbekistan for 2022-2026 of the President of our country, it is stated that "improving the quality and efficiency of school education and raising the level of knowledge and skills of pedagogical personnel to the level of advanced international requirements are important tasks. As a result of improving the content of education, among the tasks defined in these normative documents is to bring future specialists to adulthood in a competitive and competent manner.

In the decree of the Republic of Uzbekistan dated October 8, 2019 "On approval of the concept of the development of the higher education system of the Republic of Uzbekistan until 2030" PF No. 5847, raising the content of higher education to a new level in terms of quality, to establish a system of training highly qualified personnel who will make a worthy contribution to the sustainable development of the social sphere and economic sectors, to find their place in the labor market, to increase the level of coverage with higher education, highly qualified based on international standards, training creative and systematic thinkers, capable of making independent decisions, creating the necessary conditions for the manifestation of their intellectual abilities and formation as a spiritually mature person, paying special attention to the development of STEAM directions, creative thinking in students, practical experience by developing training plans aimed at the formation of skills, forming educational programs in accordance with the interests of students and the needs of personnel customers, improving the system of targeted training, retraining and advanced training of highly qualified pedagogic personnel for higher education institutions based on advanced foreign experiences such high tasks are defined.

In the course of the implementation of these tasks, there was a need to radically reform the content of education. This need is based on today's requirements, the educational content of the country of Singapore, which has been achieving high ranking results in the world education system for many years, based on the current textbooks. In contrast, the creation of a new generation of textbooks, i.e., the localization work is being intensively carried out, and as a result, it requires knowledge, skills, qualifications and competence according to international standards from the future teachers who are entering the pedagogical activity at the threshold of the primary school. Also, regular and systematic improvement of the creative competence of personnel working in the continuous education system in accordance with the conditions of today's digital education transformation and the requirements of the labor market is considered one of the urgent pedagogical problems.

In the educational and scientific research institutions of our country, a number of scientific works are being carried out to improve the methodology of developing the creative competencies of the future biology teacher. However, the interest of scientists in various aspects of this problem and its aspects is increasing day by day. This situation is a sign of the special importance and relevance of education in the conditions of globalization.

Our research has shown that, according to the comparative analysis of pedagogical, psychological, methodical literature, direct familiarization with the content of theoretical sources, teaching normative documents of higher education and general secondary schools. On the basis of the evidence found as a result of the study, it was found that there are a number of contradictions in the process of improving the methodology of developing the creative competencies of future biology teachers, in particular:

- between the level of advanced specialist education of students and the normative requirements for the modernized content and volume of DTS, MT and their individual capabilities;
- between the activities of higher education institutions in the field of pedagogical training and the mechanisms and developed laws for the development of the processes of training a student as a future teacher;
- among the methods used in improving the methodology of developing the creative competencies of future biology teachers in HEIs;
- between the interaction of psychological and pedagogical sciences with mandatory and optional subjects during the development of creative competencies of the future biology teacher;
- The content of model educational programs in HEIs is between the educational programs of HEIs ranked among the Top-300 developed world and the curriculum and content of the MOE of its general secondary education schools;
- it is appropriate to emphasize the opposite, reflective aspects of the content of the textbooks intended for students and the lack of tasks that serve creative thinking within the framework of international research programs.

One of the ways to positively solve these contradictions is to train future biology teachers in "General psychology", "General pedagogy", "Biology teaching methodology", "Innovative technologies in teaching biology", "Biology solving problems and exercises" and other compulsory and elective subjects, providing interrelationship in the content, and introducing a module for solving problems and exercises based on international requirements that serve the development of creative competencies, from assignments with different levels of complexity to all forms of education application is appropriate. At the same time, to improve the methodology of developing students' creative competences, to create the psychological and pedagogical conditions necessary to ensure methodological and individual development of students in HEIs, to modernize the content and structure of the training of future biology teachers based on the requirements of the present time, It defines the main goal of forming the creativity of the future specialist by developing self-control and assessment mechanisms in accordance with international experiences.

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