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IMPROVING THE PEDAGOGICAL POTENTIAL OF BIOLOGY TEACHERS USING COMPUTER PROGRAMS

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ANNOTATION

The article discusses one of the urgent problems of pedagogy - improving the pedagogical skills of biology teachers in the process of using interactive software tools that improve the quality of education, which generally contributes to the improvement of the continuous education system.

Key words: education, biology, interactive methods, software, informatization, information and communication technologies, competence, professional readiness.

INTRODUCTION

The widespread spread of globalization and the active use of modern communications contributes to the effective implementation of informatization processes in education, the study of ways to introduce modern information and communication technologies, justification of new forms, methods and means of educational activities, in particular, in the field of biological education.

In the conditions of the state sovereignty of the Republic of Uzbekistan, priority is given to a radical improvement in the structure and content of personnel training, which led to the approval of the National Program for Personnel Training, which complies with the provisions of the Law of the Republic of Uzbekistan "On Education", focused on "professionally trained, modern-minded personnel who know pedagogical and informational communication technologies taking into account the increasing modern requirements "[1].

MAIN PART

In the context of the above, the training of teaching staff in the system of higher pedagogical education largely depends on the potential for using new information technologies, expanding their capabilities, intensive informatization of the entire education system, and, consequently, the need to build a system for training future teachers, which is primarily related to the formation of their ICT. competence.

Consequently, the issue of improving the system of higher education with interactive software means of teaching, including the development of educational electronic publications and resources, training programs, means of automated control of students' knowledge, computer textbooks and simulators, arises with particular urgency.

In the conditions of modernization of education, the transition from theory to practice requires from future teachers competence in the subject area, in particular biology, which is not only the theoretical basis of health care and agriculture, but also opens up wide opportunities for the development of new industries in industry, new prospects in technology, dictating the need improving biological education.

At the same time, the use of interactive software tools that make it possible to activate the educational and cognitive activity of students, which, when working with an electronic educational resource in the course of an interactive educational dialogue, provide an opportunity to receive various types of feedback (the response of the program to user actions in the form of comments, tips, elements systematization of objects, etc; monitor and

adjust the program of students'actions; ensure the issuance of recommendations for further work; provide constant access to reference and explanatory information, etc.), engage in various types of educational activities (modeling, research, etc.), independently determine the time, pace, amount of work, complexity and sequence of using educational information on the screen, etc.

When teaching on the basis of interactive software tools, it is of paramount importance for a biology teacher to master the role of a "facilitator", organizing, directing and correcting the cognitive activity of students based on the pedagogically expedient use of interactive software tools [2, 3].

Thus, one of the most important tasks in the preparation of a future biology teacher is the formation of his readiness to use interactive software as one of the key competencies of his information competence, which makes it necessary to correct the existing methods of teaching biology, both subject and professional cycle in the system of training a future teacher. biology at a higher educational institution.

The foregoing became an objective prerequisite and factor for conducting this study, in which an attempt was made to solve the above problems of modern pedagogy.

As you know, research in the field of teacher education and the development of technologies to improve the training of future biology teachers for the use of interactive teaching software is carried out in recognized research centers and higher educational institutions: University of Oxford (England), Harvard University (USA), Norgenta North German Life Science Agency (Germany), University of Tokyo (Japan), Scientific Center for Biological Research (Russia).

In particular, the results of research on the development and implementation of a multidisciplinary approach that allows to train not only scientists, but also employees in the fields of bioinformatics (Harvard University), mastery of biotechnology, allowing the study of DNA, protein engineering and bioinformatics (University of Tokyo), implement biotechnologicalspecializing in such important areas as cell regulation, molecular cloning (Norgenta North German Life Science Agency),experimental biotechnology, which is based on computer microscopy, which allows retrospective monitoring of ecosystems and ecological parasitology, genetic monitoring of natural populations of plants and animals, molecular mechanisms of stability and variability of genomes under conditions of contrasting environmental loads (University of Oxford), scientific research in the field of nanotechnology, contributing to successful study of the biological diversity of plants and animals in terrestrial and aquatic ecosystems (Scientific Center for Biological Research).

The study and analysis of scientific research in our Republic showed that the preparation of the future teacher for the effective use of educational biological material using interactive software training tools was developed in many aspects:

- conducted scientific research, revealing the issues of intensification of training and the implementation of pedagogical and information technologies in higher educational institutions, the creation andimplementation of management models for educational institutions in the Republic in the field of theory and methods of informatization of education; pedagogy of interactions, in which the conceptual foundations of pedagogical interactions in the modern educational process are considered (A. Abdukadirov [4], N. Azizkhodzhaeva [5], U.Sh. Begimkulov [6], U. Tolipov [7], Sh.E. Kurbonov , E. A. Seytkhalilov, U. I. Inoyatov, Sh.S. Sharipov, E.R. Yuzlikaeva [8]).

Acquaintance with the literature data and the state of the issue in practice allows us to note that there are contradictions in assessing the professional readiness of a biologist.

All this allowed us to form the purpose of the study: to develop and scientifically substantiate the need to improve the teaching methods of the future biology teacher and the implementation of interactive software tools.

In accordance with this goal, the following research tasks were solved:

- the content of interactive software for teaching has been determined as a tool for the professional activity of a future biology teacher to enhance the educational and cognitive activity of students;

- revealed the didactic potential of the web-quest technology for preparing a future biology teacher to use interactive software tools for teaching;

- the pedagogical conditions for achieving the readiness of the future biology teacher to use interactive software through the web quest technology have been identified;

- design principles have been developed for the use of interactive biology teaching aids in higher educational institutions;

- developed and tested a methodology for determining the readiness of a future biology teacher to use interactive software tools for teaching through the web quest technology.

At the same time, the object of the study was the professional and pedagogical training of future biology teachers in higher educational institutions.

As a result of the research carried out, we have developed the content of interactive software tools for teaching future biology teachers, which provide an opportunity to increase their professional competence, ensuring the improvement of the quality of education; the didactic capabilities of the web-quest technology are determined to improve the effectiveness of the teaching methods of the future biology teacher with the systematic use of interactive software tools.

At the same time, the content, forms, methods, means and ways of realizing an increase in the readiness of students - future biology teachers for the implementation of interactive software through the web-quest technology were determined; the possibility of applying design principles to the implementation of interactive biology teaching aids in universities has been scientifically substantiated.

The data obtained made it possible to develop educational and methodological support for teaching the subject "Biology" (curricula of courses with modernized content within the framework of an interdisciplinary approach).

Along with this, the electronic program and methodological complex “Biology”, a system of courses, workshops and seminars that form and develop in future biology teachers the skills and abilities of using new information technologies in the process of teaching biology have been developed and introduced into the educational process of a higher educational pedagogical institution;

- an electronic textbook “Information and communication technologies in biology” was created, which can be used in biology classes through the web quest technology and the research results can be implemented in the course of biology teaching methods.

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