



Improving The Methodology of Using Open Information Educational Facilities for Biology Teachers in The System of Professional Development

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ABSTRACT: In this article a special attention is paid to the development of professional competencies of pedagogues on the basis of continuity, consistency and increasing natural science literacy in the field of teacher education and training, educating young people at the global level, in particular, expanding the pedagogical capabilities of teaching exact and natural sciences, enriching the practical and applied content of the education system, student learning as well. Research and analysis conducted within the framework of a project such as PISA, TIMSS to assess social literacy and student literacy, aimed at teaching natural sciences in educational institutions, introducing new approaches to traditional education, improving the pedagogical process, enriching the content of education based on didactic principles, increasing the level of organization and management of the educational process present information on the continuous monitoring and control of processes for improving indicators of levels of efficiency in the use of information and communication technologies while increasing the effectiveness of training and qualification of biology teachers.

Keywords: Multimedia, GIF animation, integration, school, information technology, information and communication technologies (ICT), biology, competence, psychological-pedagogical, didactic, technological and organizational-communicative.



Introduction

Special attention is paid to the development of professional competence of pedagogues in the course of educating young people, in particular, expanding the pedagogical possibilities of teaching concrete and natural sciences, enriching the practical content of the teaching system, and imparting knowledge to students.

The requirements of social and international programs of assessment of students' literacy, such as PISA, TIMSS, imposed on the teaching of natural sciences in educational institutions require the development of new approaches to the teaching methodology of science using information and communication. This allows to determine the importance of developing the competence of teachers in the use of information and communication technologies in the teaching of natural sciences.

The fact that the creative approach is given priority in order to ensure the logical thinking and all-round development of learners in accordance with the requirements of the social and international system of assessment of students' literacy set by the world community in teaching natural sciences in educational institutions, their scientific thinking requires conducting research on ensuring the consistency of development. In particular, the effective use of information and communication technologies in the development of the professional competence of biology teachers, the improvement of the requirements for the content and quality of their professional development based on modern integrations, and the development of technologies for the periodic and continuous methodical training of biology teachers during their professional activities are considered urgent today.

In order to ensure the sustainable development of the education system in our republic, "... quality renewal of the content of the continuing education system, as well as the training, retraining and upgrading of professional personnel, the introduction of modern information and communication technologies (open information technology) and innovative projects in the field of public education" [1], the adoption of "the law on education" [2] and the adoption of decision "On the introduction of the national test system for assessing the level of knowledge of general education subjects" [3] can be seen as positive reforms in the education system. Also, increasing the intellectual and spiritual potential of the citizens living in the society is defined as a priority task.



Literature Analysis And Methodology

In the countries of the world, research on the development of the professional competence of pedagogues is being carried out on a large scale. In particular, foreign scientist F. Amiriy [5] showed the effective use of modern pedagogical programs in improving the professional competence of teachers, and Z. Tatli and A. Ayas [4] substantiated the importance of applying electronic manuals created on the basis of the science module to the educational process. Research on theory and practice of media education, the use of interactive methods and intellectual game technologies in teaching science was implemented by S. Goodman [6], R. Kozma [7], M. K. Clemence [8], L. Masterman [9], L. Henderson, J. Clemes [10].

The introduction of ICT into the biology education process is important in the teacher's work and in the student's learning process. The teacher uses ICT (or open information education) in the following activities: explaining a new lesson; in showing demonstration experiences and visual conditions of practical training; in controlling students' acquired knowledge.

Effectiveness of biology education depends on factors such as, modern methods of teaching, consistency in providing educational material, high professional skills of the teacher, material condition of the educational institution, textbooks and methodical manuals, forms of organization of the educational process, the level of performance of academic activities and extracurricular activities [12].

The main features and advantages of computer-aided teaching technology are as follows:

- directs to independent thinking and development of creative abilities;
- the teacher participates in the educational process as a facilitator;
- active connection between information technology tools and resources is ensured;
- it is ensured that learning is convenient and effective during the educational process;
- independent work and research skills are formed.

The sharp increase in the information environment requires specialists working in various fields to acquire theoretical knowledge and practical skills for the formation of competence in the use of information and communication technologies. However, the process of professional development is limited to providing teachers with ready-made recommendations on the use of information and communication technology tools, leaving out the professional



growth of the teacher. In order to introduce ICT into the educational process, it is necessary for the pedagogue to have a high level of professional qualities. Therefore, in the process of professional training, it is necessary to pay attention to the development of personal and professional qualities of trainees. Also, it is necessary to develop methods of forming practical skills in educational processes in general education schools by providing theoretical knowledge on the use of various electronic programs [9,17].

Methodological competence is not only a component of scientific competence, but also combines social-psychological, professional-communicative and informational competences [11].

The composition of methodological competence consists of a number of interconnected categories, namely: *knowledgeable* (having good knowledge of the subject of his/her specialty, handling professional regulatory documents at a high level in his/her work, mastering knowledge of information and communication technologies), *active* (making the right decisions about his/her work, working with information and communication technologies and tools), *reflexive* (making conclusions based on one's pedagogical activities and the results achieved in the educational process, ability to assess one's own competence in information environment), *personal qualities* (interest, ability, personal views, self-management and development).

Competency requirements for teachers in the process of qualification improvement, the harmonization of teaching methods and pedagogical conditions based on modern information and communication technologies in the teaching of professional and specialized modules is a factor of educational efficiency.

Conclusion

In conclusion, we should emphasize that the formation of methodical, general scientific and educational basic competencies in pedagogues is the basis for the formation of information and communication competence in them. The development of competence in the use of information and communication technologies among pedagogues based on the modernity, informativeness, competence approach to the use of educational technologies and information and communication technologies in the process of qualification improvement and professional development is considered an important pedagogical and psychological aspect.



In the process of professional development and qualification improvement, the possibility of formation of qualities such as facilitator, tutor, media pedagogue in the pedagogue was studied based on the didactic principles (systematic, scientific, demonstrative, connection between theory and practice) of using information and communication technologies.

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