Methodology of Using Virtual Education Technologies in Teaching Biological Sciences in Higher Educational Institutions

Baxodirova Umida Baxodirovna
Senior Lecturer, Navoi State Pedagogical Institute, PhD Tashkent, Uzbekistan

Annotation
This article presents a methodology for using virtual learning technologies to increase the effectiveness of teaching biology in higher education institutions.

Keywords: biology, virtual learning technologies, model, tool, didactic.

INTRODUCTION
Improving the methods (tools, methods, technologies and forms) of teaching biology in higher education, the development of teaching science with the help of modern teaching aids, the development of didactic materials and improving the effectiveness of teaching, the development of creative qualities in students. attention is being paid.

The development of modern science and technology, the growing flow of information requires faster implementation of the processes based on them [1]. From this point of view, the wider application of virtual learning technologies in the process of education and upbringing in the training of biology specialists in higher education institutions has become a serious need.

LITERATURE REVIEW
At present, many teaching aids have been developed for the use of computer technology in the teaching of biology. These include modern virtual laboratories, computer simulators, testing and control programs, game learning resources, e-learning manuals, interactive teaching aids, 3-D system interactive teaching aids, e-simulators, e-textbooks, text, graphics and multimedia applications, information learning environments, a set of multimedia resources, e-books and encyclopedias, information retrieval systems, educational database, intelligent tutoring systems [2]. These tools serve as an important tool to increase the effectiveness of teaching subjects belonging to the category of biology [3].

In this regard, the improvement of teaching methods of biology on the basis of pedagogical and innovative technologies and research on e-learning resources and virtual learning technologies in the teaching of biology MM Isabaeva, ZA Mardanov, AK Rakhimov, JO Tolipova, E.N.Arbuzova, S.B.Baxvalova, T.A.Bespamyatnaya, E.N.Belyaeva, N.B.Firsova, E.S.Gladkaya, Yu.A.Komarov, T.I.Krylova, M. N.Ibodova, Sh.B.Xasanova, G.S.Ergasheva, L.M.Qaraxonova, A.S.Lysenko, O.G.Petrova, V.A.Smirnova, E.A.Filippov, A.Dreyfus, Conducted by scientists such as N.Ofrat, D.C.Eichinger.

Although the above research puts forward some theoretical and practical approaches to the use of electronic tools in education, the possibility of using virtual learning technologies, improving teaching methods, the methodology of using virtual learning technologies in teaching biology in higher education has not been specifically monographed.

Therefore, at the same time, there is a need to overcome the problems associated with the use of virtual learning technologies in the training of future biology specialists in higher education institutions and to further improve the methodology of its teaching.

In this regard, according to GS Ergasheva, in order to overcome the problems associated with the use of interactive software in the practice of biology, it is necessary to pay attention to the following [4]: 1. Knowledge, skills and knowledge of students gradual formation of skills. 2.
First, use ready-made interactive pedagogical software tools, and then teach how to create them. 3. Development of skills and abilities to work with complex interactive software (electronic textbooks, e-learning materials, virtual laboratories). 4. Acquisition of skills in designing lesson plans based on interactive technologies. 5. Effective use of interactive software based on a creative approach.

According to E.S. Gladkaya, due to the wide range of data related to the teaching of biology today, science has caused a number of problems in teaching. One of the most important ways to overcome these problems is to develop modern computer technologies and appropriate teaching aids for the process of biology education and to improve the methods of their use [5].

According to the analysis of scientific and methodological sources and the state of teaching in higher education, the solution of the pedagogical problem of using virtual learning technologies in the training of future biology specialists depends on the following main tasks: selection of educational content that takes into account the goals and objectives of science; separation of the main ideas, theories, concepts, laws of science, taking into account the psychological and psychophysiological characteristics of students; adequate development of ICT skills in biology teachers; Development and implementation of a model for the use of virtual educational technologies in the disciplines of biology.

**RESEARCH METHODOLOGY**

New teaching methodologies are being introduced and effectively used in the practical activities of higher education institutions, providing ample opportunities for the introduction of various types of pedagogical technologies. Professors use computer-based education as a new teaching technology, a means of disseminating and demonstrating the information taught (lectures, books, teaching materials, videos, audio recordings). These training tools have the following features [6]: enhances and stimulates interest in scientific activity, activates the effective development of certain qualities of the individual through the interaction of thinking activities; creates opportunities for the formation of information culture and flexibility in the modern information space; helps you find answers to your questions.

In the textbook "Pedagogical Qualimetry" by JO Tolipova, at the same time in the process of introduction of continuing education of the republic, the content of education has been updated, curricula and state educational standards in educational disciplines have been modernized. Therefore, in order to increase the effectiveness of teaching science, it is considered that modernization of teaching methods, tools and forms is required through innovation [7]. One of these innovations is virtual learning technologies. At the same time, it is an important tool for the organization of independent learning and the effective use of interest in science and leisure time through the use of various hypertext, voice, lectures, virtual laboratories, electronic control systems [8].

Therefore, as part of the study, we developed a model for the use of virtual learning technologies in the teaching of biology (Figure 1).
The development of a functional system of virtual learning technologies in the field of biological education increases the interaction of participants in the learning process, the improvement of virtual learning, the effectiveness of their activities. Virtual learning technologies are a convenient tool for improving and analyzing its performance, analyzing innovative methodological ideas, a new source of information and knowledge of science. In order to determine the effectiveness of the methodology of the model of increasing the effectiveness of teaching subjects of biology in higher education institutions on the basis of virtual educational technologies, pedagogical experiments were conducted.
Experiments were conducted in 2021 in higher education institutions. A total of 56 students were selected for the experiment and control groups.

The results and numerical data were compared and summarized. In order to verify the reliability and accuracy of the results, a mathematical-statistical analysis was conducted based on the Student-Fisher criterion. Appropriate mean values for the selections when using this criterion

\[ \bar{X} = \frac{1}{n} \sum_{i=1}^{4} n_i X_i \],

scattering coefficients

\[ D_n = \frac{\sum_{i=1}^{4} n_i (x_i - \bar{X})^2}{n-1} \],

while determining the mastery indicators

\[ B\% = \frac{\bar{x}}{4} \cdot 100\% - \frac{\bar{y}}{4} \cdot 100\% \]

formulas were used. According to the numerical results obtained, the criterion for evaluating the effectiveness of teaching is a sudden magnitude and the criterion for assessing the level of knowledge is greater than zero. It is known that the performance of the experimental group is higher than that of the control group. According to the calculation, the average mastering rate of the experimental group was higher than that of the control group, i.e., it increased by 9%.

CONCLUSION

In short, in the training of modern biological specialists, the further improvement of visual forms and methods of teaching lectures, practical and laboratory classes on the basis of virtual learning technologies for independent learning activities is of particular importance. Therefore, in this research, we recommend the use of virtual video lectures, virtual dictionaries, virtual laboratories, virtual stands in the teaching of biology in higher education.

Through virtual learning technologies, the student has the opportunity to visualize the events and processes related to the sciences of biology, to have long-term memory, as well as to study the science independently. Using these opportunities, the student will have the opportunity to review and observe the events and processes related to science several times. At the same time, it helps students to spend their free time productively, broaden their horizons and develop their thinking.

REFERENCES:

5. Gladkaya E.S. Methodology for the use of modern computer teaching technologies in teaching general biology to 9th grade students of a comprehensive school // Dis. ... Cand. ped. Sciences: 13.00.02 Chelyabinsk, 2006 195 p.