



PROSPECTS OF ASTRONOMY TEACHING BY USING INFORMATION TECHNOLOGY

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Abstract

Taking today's astronomy, the study of the structure and evolution of the Universe as his task, he considers it one of his main goals, in addition to recording the Universe as a natural-mathematical object, as well as recording it on the basis of humanistic feelings. The principle of humanization of education in astronomy includes, in addition to the content of theoretical knowledge presented in the classroom, the content of practical training, as well as information related to astronomy and cosmonautics, which is studied outside the classroom.

Keywords: program methods, computer technology, integration, telecommunication technologies, Stellarium , Celestia , virtual planetarium, GLEA.

In the process of studying astronomy, students should have a good understanding of the content of the subject of astronomy, have a clear idea of its relationship with other educational subjects, be aware of the main directions of its practical application, and, finally, modern astronomy , they should be aware that they are related to the solution of universal human problems. The goal of humanizing the astronomy course is to transform the content of this educational subject from an abstract form into a concrete content that arouses students' interest in knowledge, a course that makes them feel their direct participation in meeting the vital needs of a person.

One of the important directions of the reform of the educational system is the systematic integration of the educational process with information and telecommunication technologies and its management. In the process of reforms, the main task is to organize the educational process, to fundamentally update its content, to organize the pedagogical activity of teachers and the learning process of students in a computerized environment.

The possibilities of intensification and optimization of education with modern information technologies are of great importance in the organization of distance



training. Therefore, the main goal of improving the qualifications of teaching staff of general secondary schools and vocational education institutions is to form the knowledge, skills and abilities of teachers, as well as pedagogical skills, using the possibilities of modern information technologies.

Today, there are a number of problems that have not yet been solved, which are directly related to increasing the effectiveness of pedagogical education. These issues are related to the informatization of the education sector, the training of teachers in the field of modern information technologies, and insufficient qualifications of teachers in the use of modern information and communication technologies.

As one of the important aspects of this problem, it is possible to show the attitude of teachers towards equipping education with modern information technologies. It is worth noting that, in the conditions of information, the teacher's pedagogic skill increases to the level of modern requirements.

Currently, all educational institutions are equipped on the basis of modern computer and telecommunication technologies. This, in turn, requires teachers to approach their teaching activities in a new way. Introduction of new technology in the educational process, technical tools for the teacher not to be squeezed out, but to change its tasks and role, to turn teaching activity into a more lively profession.

Stellarium- is a software project that allows people to use their PCs as a virtual planetarium. It calculates the positions of the Sun, Moon, planets, and stars and shows what the sky looks like to observers based on their location and time. In addition, astronomical phenomena such as meteors or comets, solar or lunar eclipses can also be observed.

Stellarium can be used as an educational tool to teach about the night sky. Because of Stellarium's high quality graphics, it is used as a real planetarium projector and museum projector. Some amateur astronomers use it to illuminate and study sky maps. It is invited to be used in the field of "Cultural Astronomy Research and Promotion", where information about the appearance of celestial bodies is exchanged.

Celestia is a simulator that provides an amazing three-dimensional (3D) view of the Universe. This program was designed and implemented in 2001 by Chris Laurel, a programmer living in Seattle, Washington. He decided to write a free program for space travel and managed to make it available to the majority of users around the world. His determination and dedication brought to life a program that was unlike any of its predecessors. Celestia allows you to travel anywhere in the



Solar System and space, leaving Earth. You are not limited by time, speed, direction. If you want, you can go beyond the boundaries of our solar system to the stars of the spiral Milky Way galaxy, or beyond the boundaries of our entire galaxy to see the entire universe from deep space. Chris Laurel provided the scientific accuracy of the program with reliable graphical sources of dynamic astronomy.

The development of multimedia and modern computer technologies, programming from astrophysics made it possible to carry out laboratory work. GLEA (Contemporary Laboratory of Experimental Astrophysics) project can be cited as an example.

During GLEA laboratory work, modern automatic optical and radio telescopes, photometers, spectrographs and radiometers, as well as measurement of animated real astrophysical objects, work in modern astronomical mechanics form students' skills to process and analyze the obtained results. They will have the opportunity to consolidate their knowledge of astronomy and astrophysics during lectures and independent work.

If the software tools presented in the article are programs related to the astronomy course of recent years, there are many such software tools. Today, the use of ICT in the educational process significantly increases the interest of students in science and the percentage of mastering the lesson. And the teacher himself keeps up with the times in the technological process, enriches the lessons with several resources and the latest news, and in the eyes of the student, he becomes a perfect person. At the same time, the teacher works tirelessly on his subject and the experience of using ICT increases.

Astronomical education is an information technology-intensive field, which has several objective and subjective aspects, such as:

- processes and events that students do not observe in ordinary, everyday life, or even if they observe, they occur so slowly and regularly that it is difficult for the student to pay attention to them and keep his thoughts;
- the possibility of measuring the light of skylights using photoelectric photometers (electronic optical multipliers);
- the rapid development of space research and the use of digital technology in such investigations;
- it incorporates the best qualities of a digital camera (informativeness and high accuracy) and increases efficiency and accuracy (quality) by ten or even a hundred times;



- modern astronomical observation and verification works are carried out in the full information technology environment;

- the data collected by today's space telescopes are stored in Internet information banks;

and finally, it is impossible to perform all such astronomical observation-checking works in the conditions of an ordinary educational institution. Therefore, it is better to teach astronomy in the environment of information technology than to teach it in a traditional way.

The active use of modern information and telecommunication technologies in the process of teaching astronomy leads to a certain change in the place, role and pedagogical activity of the teacher in the educational process. The activities of teachers in the preparation of educational courses are becoming more complicated, requiring special skills and methods, as well as increased attention to the quality of the preparation of educational materials.

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