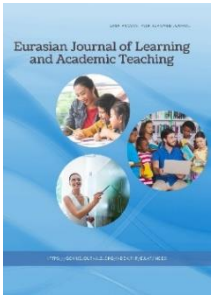

Co-education in the teaching of technical sciences in higher education

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ABSTRACT

The article provides experience in the implementation of innovative types of training, which is used in the process of teaching technical disciplines. The paper reflects innovative forms of education that will allow teachers to more activate the cognitive activity of students.

Keywords: interactive form of education, innovative form of education, technical disciplines, technical teaching aids, multimedia systems, interactive whiteboard, activation of cognitive activity, efficiency of the educational process

This article provides information on the use of innovative technologies in universities in the process of teaching technical disciplines. At present, at the present stage of development of a modern student, it is very important that the student correctly perceives information in order to form skills, provide motivation for learning and mastering technical disciplines.

The law of the Republic of Uzbekistan on education, article 14 on higher education says: higher education provides training of highly qualified specialists.

The training of specialists with higher education is carried out in higher educational institutions (universities, academies, institutes and other educational institutions of higher education) on the basis of secondary specialized, vocational education. [1]

Scientific and technological progress and the external environment are forcing modern enterprises to turn into more and more complex systems that require professional specialists.

The solution of these problems largely depends on the content and technology of training future specialists in the system of higher education, and in particular the teaching of technical disciplines. The use of innovative technologies in technical disciplines makes it possible to select the necessary content and teaching aids in accordance with the program, modern production requirements and the chosen specialty.

A modern teacher must be competent, know the latest achievements in education and technology, and also be able to motivate students. To form the necessary direction of activity for students, to take into account the psychological and pedagogical characteristics of the individual. Recent advances in technology and science bring significant changes to the understanding of the role and ways of using information and communication technologies, which must be applied to successfully involve young people in the educational process and for an effective, really useful expansion of interest in the studied technical discipline. The use of technical teaching aids (TUT) and interactive forms of teaching in technical disciplines intensifies the transfer of information, expands the illustrative material, creates problem

situations, organizes the search activity of the student, enhances the emotional background of learning, forms learning motivation, individualizes and differentiates the learning process.

– The lecture acts as the leading link of the entire course of study and is a way of presenting voluminous theoretical material, ensuring the integrity and completeness of its perception by the audience. When giving lectures, it is advisable to conduct binary or web-based binary lectures with the participation of a lecturer and a highly qualified specialist from production. Very effective lectures with planned mistakes. This form of organizing a lecture attracts the attention of students throughout the lesson, as they have to look for mistakes by the teacher. It is also very important to use animation and video materials in lectures; when viewing the material visually, it is easier to digest. However, the lecture accustoms to passive perception of the studied material. In order to avoid this, direct dialogue between students and lecturers is effectively used, for example, in the format of a press conference. When conducting lectures in technical disciplines, to increase interest and assimilate new material, an innovative teaching method is used using a multimedia system - an interactive whiteboard (ID).

– In practical exercises, the most common form is work in small groups consisting of 5–7 people. The groups are given cases to solve. Tasks are designed for 5-10 minutes, each student must thoroughly understand the solution of this problem. The students who were the first to complete the work help the rest of the lagging associates using the method of mutual learning. You can also use NI Multisim, LAB VIEW, Logic, or Crocodile virtual environments to create virtual mockups of the completed task. [2]

– When designing, it is effective to use Internet resources, brainstorming technologies and the theory of inventive problem solving. When completing a task, students learn to look for material for work, correctly express their thoughts, listen to an interlocutor, find several types of task solutions using technical teaching aids, allow them to go beyond the classroom; make visible what is impossible to see with the naked eye, simulate any situation, discuss solutions and choose the most optimal solution. [3]

- When conducting laboratory work on "Electronics and Circuitry", students are given the following task: TTL and CMOS circuits are set on LE 2I-NOT students in small groups must study methodological material, a colleague of the circuit on physical layouts, take the measurement results, build a graph of the CVC and transfer characteristics of elements, perform virtual laboratory work, compare the parameters of circuits and graphics. To complete the work, students form, small groups work as a team:

Student No. 1 - assembles a TTL circuit

Student No. 2 - assembles a CMOS circuit

Student #3 - shoots the results of both circuits

Student number 4 - builds a graph of I-V characteristics for a TTL circuit

Student #5 - Plots IV curve for CMOS circuit

Student No. 6 - works with virtual laboratory work Student No. 7 - searches for materials on these schemes in Internet resources

The team works cohesively, because if it doesn't work, at least one link of the result of the work will not be.

- The essence of the educational discussion is the exchange of views on the solution of a specific problem. An important function of the discussion is the constant stimulation and support of the student's educational and cognitive activity, it contributes to the acquisition of new skills, as students are encouraged to come up with several ways to achieve the result. [4]

Advantages of TCO in technical disciplines:

1) have a strong emotional impact;

2) allow to show the process or phenomenon in its development, dynamics;

3) cause diverse sensations (the world of sounds and colors);

4) provide a high emotional tone, and, as a rule, increased performance;

5) reduce the cost of the required time of the teacher.

The use of innovative teaching methods gives an effective result in the educational process. Innovative technologies in science and technology can be combined with each other. Each university teacher has more than 20-25 interactive teaching methods in the piggy bank when working with students. It is not necessary to know all available interactive teaching methods. It is important to use the methods that the teacher most often uses using TCO.

The use of TSS in technical disciplines intensifies the transfer of information, expands the illustrative material, creates problem situations, organizes the search activity of the student, enhances the emotional background of learning, forms learning motivation, individualizes and differentiates the learning process. [5]

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Didactic requirements for preparing a lesson using modern technical teaching aids:

1) analyze the objectives of the lesson, its content and the logic of studying the material;

2) highlight the main elements that must be learned by the trainee;

3) establish at what stage and for what purpose it is necessary to use technical teaching aids;

4) select the best technical training aids;

5) determine the methods and techniques by which the cognitive activity of students will be ensured, formulate tasks. Modern computers make it possible to achieve a wide variety of didactic goals - they can be used to organize a demonstration of the subject, phenomenon or process being studied, test students' knowledge with the help of a test, simulate the operation of a device in different states (including emergency ones), etc. [6]

Analysis of the results of the classes conducted using innovative technologies shows that the following increases significantly:

– Student's interest in the discipline;

– Activation of students;

- Skill to work in team;

The use of innovative technologies in the educational process is a necessary component of modern student learning. Working with interactive and innovative technologies, the teacher achieves the efficiency of mastering the educational material. It must be remembered that ultra-modern TSS will not provide the desired effect if they are used ineptly, without the necessary methodological preparation and development of didactic materials, in violation of ergonomic and psychological and pedagogical requirements, with an unreasonable expansion of their areas of application.

Innovative teaching methods contribute to the high-quality training of specialists who are able to widely apply the acquired knowledge in enterprises. [7]

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