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Adaptation of Innovative Educational Technologies in the Teaching of Pedagogy in Higher Education

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Abstract: The work is devoted to the analysis of the innovative methods of education used in the process of training in universities. The author draws attention to the need to introduce information computer technologies into the modern educational process in the system of higher education. The detailed classification of existing computer technologies with a description of each species is given in the work. In addition to using ICT in the course of studies at the university, the author draws attention to the use of non-computer technologies, such as: critical thinking and the method of portfolio. Both methods are described in detail and analyzed with identification of their features and implementation problems in modern education. Special attention is paid to inclusive education as one of the new approaches to learning.

INTRODUCTION

The work is devoted to the analysis and description of the issues of adaptation of innovative methods of teaching in higher education. The aim of the study is to study and adapt innovative technologies to the higher school educational process. The main attention is paid to the introduction of information and computer technologies. Other innovative technologies and approaches to education are also being considered. For example, portfolio and critical thinking.

METHODS AND METHODOLOGY

The methodological base of the work was the research of Foreign, Russian and Kazakhstan researchers.

Foreign scholars Kevin[1], Guillermo Orozco-Gomez consider the differences of modern education from the education of the last century. They also studied the functioning of the new meaning of the term "technology". Russian researchers, Andreev[2] and others described the types and characteristics of computer technology used in the classroom.

The methodological basis of the research is the scientific research of domestic authors actively using the technology of critical thinking: N.T. Smagulova, A.A. Bodeeva "Development of critical thinking through educational technologies at Russian language and literature classes",[3] "On some features of critical thinking in teaching a Foreign language". Also, the works of Russian authors were used, which achieved the most significant results of the technology application. For example, Zairbek and Mushtavinskaya[4]. "The development of critical thinking in the lesson: A Handbook for the Teacher", Polat[5] "New pedagogical and information technologies in the educational system: Textbook", Galaktionova[6] "Technology of development of critical thinking. Methods of working with text sources of information".

In the works the main distinctive features of the pedagogical technology of critical thinking, techniques of using the technology, the results of application in educational activity are described.

The modern educational process differs significantly from the training of the past. The changes that have taken place are noticeable at the level of the content of the educational process, at the level of its delivery, the way in which the higher school is organized and the course of the lesson.

This can be explained by a number of factors: the life of a person changes, his worldview changes, his attitude towards the surrounding world, his values. In this regard, pedagogy can't rely on outdated norms and values. Science should not lag behind real life or be far ahead, they must go "foot in step".

Technologies are developing that are actively introduced into the educational process, making it more effective, cognitive and interesting. Ignoring the technology testifies to the backwardness of the teaching process and the methods of teaching the teacher.

Students also change, their attitudes toward learning and ways of assessment change. If earlier assessments were considered an indicator of the quality of knowledge, now most students and students do not chase assessments, unless the rating or other indicators depend on it. Modern students can't be frightened by a low estimate, since, evaluation is not a priority component of training[7].

Methods and methods of teaching are changing. In modern education, the emphasis is on the development of mental and cognitive abilities, critical thinking. The higher school prepares not just a specialist with professional skills but a specialist with a broad outlook and a high level of intelligence, who is able to make independent decisions[8].

The issue of studying innovative educational technologies in the system of higher education deserves special attention. Educational innovations can be conditionally divided into 2 types: computer technologies and not related to technology. The latter include active and interactive teaching methods, a person-oriented approach, critical thinking technology, etc.[1].

Let's analyze the role in the modernization of the educational process in the higher school of computer technology. It is their use that makes the learning process in the university modern, meeting world standards and trends. If the university does not use computer technologies in the process of education, then we can talk about the poor material and technical base, the backwardness of the university. Consequently, computer technology and the level of their implementation in the educational process of a particular university is a litmus test of the equipment and the present of the university[9]. The term "technology" has several meanings:

- The science
- A set of methods and techniques for processing or processing raw materials, materials, semi-finished products, products and converting them into commodities
- A tool for solving a professional problem

In today's world, this term has another meaning: the application of scientific and engineering knowledge to solve practical problems[10].

With this approach, the term "technology" in the modern educational process means technologies aimed at processing and transforming information[11]. In general, information and computer technologies or computer technologies are used. Computer technologies are:

- Processes, methods of searching, collecting, storing, processing, providing, disseminating information and ways to implement such processes and methods
- Techniques, methods and methods of application of computer facilities in the performance of functions for the collection, storage, processing, transmission and use of data
- Resources necessary for the collection, processing, storage and dissemination of information[12]

When implementing information and computer technologies in the educational process, it is necessary to clearly understand what they are what is the principle of their functioning, what opportunities they give in using in the educational process[13]. There is another approach to the definition of information technology, when they are

considered from the point of view of the influence of computer technologies on the communicative process. With this position they are called information and communication technologies. Information and communication technologies is a general concept that describes various devices, mechanisms, methods, algorithms for processing information. The most important modern ICT devices are a computer equipped with appropriate software and telecommunications facilities along with the information placed on them.

Next, we analyze the types of information and computer technology. ICT can be divided into several groups, depending on their methodological purpose. The classification is shown in Fig. 1.

Classification of ICT facilities in the field of methodical purpose: As can be seen from the above diagram, the diversity of ICT is quite large. Each group is aimed at solving certain tasks in a particular sphere, hence. The characteristics of each group are suitable for use in a particular class to achieve a specific goal. You can`t introduce any kind of ICT into the learning process without presenting a clear goal and adapting its functions and properties to the lessons.

In connection with the restructuring of the education system and the transition to informatization, the problem of introducing ICT into the educational process is topical. But they need not just be introduced, but adapted to the features of the educational process in the system of higher education.

The main types of computer technology used in higher education are electronic textbooks, computer task books and reference books, computer simulators and games, computer knowledge control system, etc.

A computer textbook is a carrier of educational information for training in a certain discipline, the content of which should be sufficient to study it in full. Also, the content of the computer textbook includes questions and tasks for self-examination.

A computer textbook as a computer technology used in the educational process must have the following properties:

- Provide the most logical and convenient sequence of training material
- Ensure student's ability to conduct self-monitoring of the quality of mastering new knowledge and skills, and to consolidate the material that has been passed
- Promote the development of student's research skills

Thus, computer textbooks are designed for self-study courses, independent preparation of students for classes, control and final work. The use of a computer textbook in primary school is used to develop student's computer literacy, forming skills in working with computer equipment.

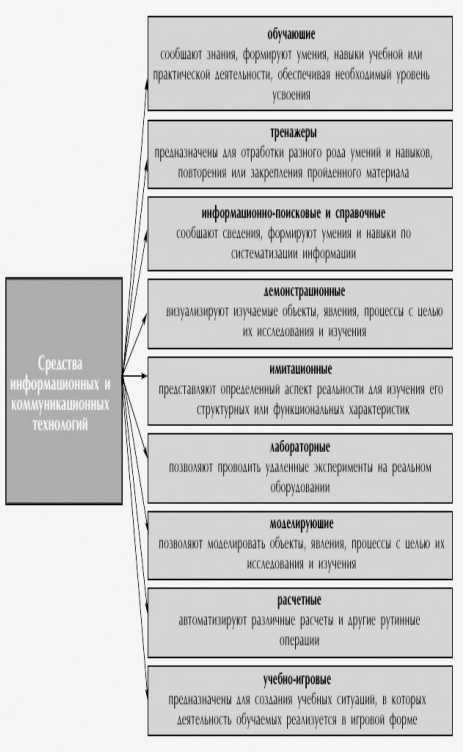

Fig. 1: Classification of ICT facilities in the field of methodical purpose

A computer task book is a collection of exercises and exercises in electronic form, designed to consolidate the skills and skills of solving typical practical problems in a specific subject area[2].

In high school such computer facilities are rarely used. Computer games are a form of didactic benefits. Computer games are special computer developments that are used to form practical skills and pragmatic knowledge as a result of collective solution of the task. The use of computer games allows you to organize team work at a lesson, combine traditional and innovative ways of teaching. The advantages of this computer technology are as follows:

- Their use requires less preparation in comparison with the traditional forms of the lesson
- The use of computer games facilitates the intensive learning and memorization of the necessary educational information
- Computer games allow the teacher to control the knowledge of participants in game groups during the game which reduces the time for special testing of student's knowledge

- With the competent organization and conduct of computer games, self-esteem of students increases, which has a positive effect on the quality of academic performance
- Computer games allow you to reflect the lesson which improves the feedback between pupils and the teacher
- Similar games are much more interesting for students than for typical tasks[5]

The computer system of knowledge control is a software for educational purposes which is used to determine the level of knowledge of the trainee in the given subject area and its evaluation, taking into account the established qualification requirements. Control can be made according to the passed topic, section, course, etc.[15].

Computer simulator is a computer program developed for the formation of professional skills in a certain activity. For example, a computer simulator for developing the ability to print on a computer or a medical simulator for students and interns where you can practice the skills necessary for the operation.

Computer manuals are handbooks of reference and encyclopedic nature. Their main difference is the electronic form, i.e., they exist on an electronic medium, not in hard copy. Such manuals contain the information necessary for studying the course, additional information.

Multimedia lesson is a lesson using video lectures, video seminars, presentations. Multimedia is a kind of modern computer information technology, which allows to combine text, sound, video, graphic representation and animation in a computer system.

It is this technology that is most prevalent in higher education. First, it simplifies preparation for classes. Secondly, it helps to increase student's interest in the material they receive. Thirdly, the forms of conducting lessons are diversified, the involvement of students in classes increases[16].

In practice, computer training complexes are often encountered which solve a wide range of pedagogical tasks and include various types of PSON as components. Depending on the design, the PDSC are subdivided into local computers running on a specific computer and network ones operating in local or global networks.

The use of the above-described computer technologies in classes at universities significantly improves the educational process, makes it more visible and understandable for students, brings theoretical knowledge closer to the realities of modern life[17].

Modern students spend a lot of time at the computer and gadgets. The use of computer technologies in education brings science and students closer together, helps them to acquire the necessary knowledge not only about general subjects, but also to master computer skills which is an important task of modern society[18]. The use of the technologies described above in the classes at the university makes it possible to individualize and differentiate the learning process, to control the activity of everyone, to activate the creative and cognitive abilities of students, to optimize the educational process and to significantly increase the pace of work[19].

But computer technologies must be carefully adapted to the specifics of the learning process. First, it is necessary to computerize the country's higher educational institutions, install interactive whiteboards, computers, provide chairs with a projector, etc. in the classrooms. Secondly, university teachers should be able to use computer technology. Thirdly, it is necessary to change the structure of the training session, building it in such a way that the use of computer technologies is organically integrated into it. For example, the theoretical material can be explained using presentations, which will increase the visibility of the material and make it easier to remember. Effective use of training video films as they clearly confirm the theoretical material.

If we analyze non-computer innovative technologies in the process of teaching in higher education, then we can distinguish the technology of the portfolio. Portfolio is an example of personal-oriented learning, as the portfolio is made by each student individually. The teacher evaluates the portfolio, based on the personal characteristics of each student[20].

The essence of the portfolio is the collection of works by students on a specific topic. For example, the best/ worst works, reports on their activities, portfolios of achievements or plans, etc.

Portfolio as an innovative technology in the educational process in higher education performs a number of functions:

- Diagnostic, i.e., portfolio captures the dynamics of indicators for a specific period of time
- Goal-setting, i.e., clarifies and supports the goals set by the general education standard, teacher or student
- Motivational, i.e., encourages students to interact with the teacher or other students to achieve better results
- Meaningful, i.e., reveals the essence of the work
- Developing, i.e., promotes the continuous development, training and education of students
- Rating, i.e., demonstrates the level of achievement of each student, his achievements
- Teaching, i.e., promotes the creation of conditions for mastering professional competences[21]
- Corrective, i.e., corrects and stimulates student development in a given direction[22]

For the student, the portfolio is the organizer of his educational activity, for the teacher a means of feedback and a tool for evaluation activity[23].

A distinctive feature of the portfolio is its reflexivity. In other words, the portfolio is aimed at comprehension by the student of himself, his opportunities and achievements, to conduct self-analysis.

When using the portfolio technology in higher education, students acquire the following skills and abilities:

- Work with information: select, analyze, filter, process and evaluate information
- Set goals that need to be achieved, describe step by step steps necessary for this
- Plan their activities
- Objectively evaluate their activities and their successes
- Track your own mistakes and correct them[24]

Thus, the portfolio technology is aimed at the independent development of the student. The next innovative technology, actively introduced and adapted in the system of higher education is the technology of critical thinking.

Critical thinking is a pedagogical technology that promotes better mastery of the material, improves the quality of the material absorbed, promotes faster and easier memorization. The benefits of using critical thinking technology are:

- The effectiveness of student's perception of information increases significantly
- Students are becoming more interested in the learning process, the teaching material, the tasks performed[4]
- Students learn to think critically, draw their own conclusions
- Independence and awareness of learning develops[5]
- There are skills of teamwork and interaction with other people
- The quality of education of pupils is increased[6]

There are also problems with adapting the use of critical thinking technologies in teaching. These include:

- Lack of special assignments in textbooks, textbooks, exercises
- Lack of textbooks on the Russian language as a professional for a number of specialties with the Kazakh language of instruction
- Intensive preparation of the teacher for classes. It takes more time and effort to plan the lesson, to select the theoretical material of the assignments[25]

All these problems are temporary difficulties as critical thinking technologies take an increasing place in teaching. Soon the training materials will be adapted for a new teaching method. Inclusive education or distance education should be considered separately. Its essence lies in the fact that the learning process is organized not in the classroom, but in the Internet space. The student independently learns the educational material, not being in high school. Communication with teaching is provided through the use of Skype technology. The technology is oriented to independent learning of the student, the teacher performs the functions of direction and testing of knowledge[3].

Despite the fact that this technology was originally developed for use in higher education institutions. There are a number of difficulties with its implementation. For example, it is necessary to provide the university with the appropriate equipment (computer, Internet). Secondly, it is necessary to include distance students in the load of teachers, which will increase their workload. The leadership of the institution that introduces this type of training should pay special attention to this problem. Thirdly, many students who study remotely can formally and irresponsibly approach learning, it is necessary to strictly control the quality of knowledge of students in an inclusive way[26].

Innovative technologies introduced into the learning process are many. But it is important not just to introduce them but to adapt them to the peculiarities of teaching in higher education. Only then they will be most effective.

CONCLUSION

Also, the author of the work draws the reader's attention to the need to adapt innovative technologies to the educational process of the university in order to achieve the greatest efficiency.

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