INNOVATIVE TECHNOLOGIES IN EDUCATION AND USING THEM FOR INFORMATION TECHNOLOGY TEACHING

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ABSTRACT

The article studied the modern interpretation of the concepts of "Innovation", "Innovative educational technology" and their types. The reasons for their creation, and also offered practical examples of innovative technologies for the preparation of pedagogical universities students, educating in the field of information technology.

Keywords: Innovation, innovative educational technology, open innovation in the field of education, information technology, project-based learning.

INTRODUCTION

Currently, education is increasingly focused on the creation of such technologies and ways of influencing the personality, which provide a balance between social and individual needs, and which, by starting the mechanism of self-development (self-improvement, self-education), ensure the individual's readiness to realize his own personality and change society . Many educational institutions began to introduce some new elements into their activities, but the practice of transformations faced a serious contradiction between the existing need for rapid development and the inability of teachers to do this. To learn how to properly develop education, you need to be free to navigate in such concepts as "new", "innovation", "innovation", "innovation process", which are by no means as simple and unambiguous as it might seem at first glance, and also be able to they are effectively implemented in the educational process.

In 1912, the term "innovation" was first used by an American economist of Austrian descent, Joseph Schumpeter (1883-1950), in his book Theory of Economic Development. By "innovation" he understood "an innovation that is applied in the field of production technology or management of a certain economic unit" (Schumpeter J., 1982). The author was the first to suggest that innovation is one of the main engines, generators of profit. But what is innovation in this context? A formalized / formalized result of fundamental, applied research, development in any field of activity to increase its effectiveness. Innovations can be discoveries, patents, inventions, trademarks, technologies, production or management process, know-how.

Today, the word "innovation" means the result of creative activity aimed at the development, creation and distribution of new types of products, technologies, the introduction of new organizational forms. All these reforms do not bypass the social sphere of life, such as education, which creates favorable conditions for the training of young specialists. As pointed out by Slastenin V.A. "... in relation to the pedagogical process, innovation means the introduction of a new goal, content, methods and forms of training and education, the organization of joint activities of a teacher and student" (Slastenin, V.A. et al., 2008, 544).

They have been talking about innovations in the educational system since the 80s of the XX century. It was at this time in pedagogy that the problem of innovation and, accordingly, its conceptual support became the subject of special research. The terms "innovations in education" and "pedagogical innovations", used as synonyms, were scientifically substantiated and introduced into the categorical apparatus of pedagogy. Pedagogical innovation - an innovation in pedagogical activity, changes in the content and technology of training and education aimed at increasing their effectiveness (Selevko G.Ya., 2005, 87).

Today, often, "innovative educational technologies" is understood not as the application of new, newest teaching methods, but more active, if not aggressive, directive, use of information and communication technologies - the Internet, multimedia, webinars, and teleconferences. Such a narrow understanding of innovations does not make it possible to improve the quality of education. In addition, information technology is a subject of study for a number of specialties in universities. And here it is necessary to understand what are the possibilities of innovative technologies in teaching information technology.

THE MAIN PART

The conceptual foundations of all active learning were formulated by the remarkable philosopher, psychologist and educator John Dewey (1859-1952). According to this concept, training should be reduced mainly to play and work, where each action of the ward becomes an instrument of his knowledge, his own discovery, a way of understanding the truth. Such a way of cognition seemed more appropriate to the nature of the child than the usual message to him of the knowledge system. The final result of the training, according to D. Dewey, was to be the development of thinking skills, by which was understood the ability primarily for self-learning. And the goals of training were the ability to solve life problems, mastering creative skills, enriching experience, by which we understood knowledge as such and knowledge of the methods of action, fostering a taste for self-learning and self-improvement.

In the 50-60s of the XX century, these ideas were actively developed. As a result, the concept of a learning pyramid took shape. The founder of the Learning Pyramid was Edgar Dale, a professor at Ohio State University. He taught students the same teaching material, but in different ways. And after the end of the course, he revealed and analyzed the ability of students to reproduce the information received. The results of his research were presented in the form of the "Dale's cone of experience" (known as the Dale cone). On the basis of the "Dale cone", by the end of the 1970s, a new graphical version of the "influence of teaching methods on the degree of assimilation of material" was developed at the US National Training Laboratory, called the Learning Pyramid. This pyramid demonstrates the relationship between teaching methods and the degree of assimilation of the material, and it becomes obvious that a classical lecture (a teacher's monologue that is not accompanied by slides and other illustrations) is the least effective teaching method: it provides an average of about 5% of the content. At the same time, "active learning" (involving participants in the educational process in various types of active activity) allows achieving significantly better results.

On the basis of research data, the so-called interactive teaching methods began to be introduced into the teaching practice: the situation analysis method (case method), the project method, brainstorming, business games, lessons using audio and video materials, information and communication technologies.

The case method is an interactive technology based on real or imaginary situations, aimed at the formation of new qualities and skills. Case technologies include the method of situational analysis, situational tasks and exercises analysis of specific situations (case studies), the case method, the incident method, the method of situational role-playing games, the method of parsing business correspondence, game design, the method of discussion. Consider one example of the use of the case method in teaching information technology, in particular students of pedagogical universities.

Case "Students DATA BASE": development of a database of students based on the use of local network capabilities and their use in cloud technology. The purpose of this case study is to develop the ability to analyze and evaluate various software for database development, to develop joint development skills in the local network of the database and its further application using Google resources (docs.google.com).

The task is given: to collect information about student performance, collect medical data about students and collect personal data about students for the curator. Students are divided into three subgroups, each group collects information in three areas and creates an information model using the capabilities of the educational institution's local network. The developed database must be placed on the Internet, using cloud technology, for the curator to work effectively with the parents of the students.

The solution of the proposed case will achieve the following training results:
- develop the ability to analyze and evaluate the capabilities of various programs - for example, Microsoft Excel or Microsoft Access, as well as explore ways of joint activities to collect data on a local network;
- to develop skills in the selection and development of the structure of the database of students;
- to master the skills of independent study of the capabilities of the Internet (cloud technology, creating web pages or other methods) for organizing a dialogue with participants in the educational process, in particular with the parents of students.

Another frequently used teaching method is the project method. The essence of the project approach is that the student somehow integrates into the system of collective work aimed at solving a real practical problem. Designing the development of the situation, analyzing the data, he gets the opportunity to master the ways of performing the corresponding work. The group form of functioning of the educational project forces the participants to organize joint activities and establish communications, that is, learn to act in a team.

The main purpose of the project method is to provide students with the opportunity to independently acquire knowledge in the process of solving practical problems or problems that require the integration of knowledge from various subject areas. If we talk about the project method as a pedagogical technology, then this technology involves a combination of research, search, problem methods, creative in nature. The teacher within the project is assigned the role of a developer, coordinator, expert, consultant.

Thus, the project method is based on the development of cognitive skills of students, the ability to independently construct their knowledge, navigate in the information space, the development of critical and creative thinking. Developed in the first half of the 20th century on the basis of D. Dewey's pragmatic pedagogy, the project method becomes especially relevant in the modern information society, in which the requirements of a good knowledge of information technology

are imposed on a specialist in almost any field. Therefore, the task of teaching informatics is to train future specialists on the basis of active methods using modern achievements in the field of information technology.

One of the varieties of the project method can be called the so-called educational web quests - a problematic task with elements of a role-playing game, which requires the use of Internet resources. Such web quests are being developed for the maximum integration of the Internet into various educational subjects at different levels of training in the educational process. They cover a single problem, a subject, a topic, and may be intersubject.

The term WebQuest was first proposed in the summer of 1995 by Bernie Dodge, a professor of educational technology at the University of San Diego (USA) (Bykhovsky Y.S., 1999). The scientist developed innovative Internet applications for integration into the educational process when teaching various educational subjects at different levels of education.

The application of this technology in teaching students the direction of information technology of pedagogical universities is especially relevant, because the peculiarity of educational web quests is that part or all of the information for independent or group work of students with it is on various websites. The result of working with a web quest, as a rule, is the publication of students' work in the form of web pages and websites (locally or on the Internet). Thus, in addition to developing websites, the future computer science teacher is learning how to develop learning tools based on information technology.

Consider an example of a training session in the section "web-design". The task is set for students: development by means of the program Adobe Dreamweaver of a web-quest on the topic "Information Search on the Internet". The organization and conduct of this lesson must be carried out in several stages.

At the initial stage, students need to familiarize themselves with the concept of an educational web quest and the requirements for them.

The next stage is the direct development of a web quest using Html, CSS, javascript or using specialized programs (for example, Adobe Dreamweaver).

Usually the quest is divided into the following main sections: introduction, central task, task statement, assessment, conclusion, comments for the teacher.

The introduction indicates the name of the web quest, which may contain an interesting question or main line of business. It is also necessary to indicate the problem of the web quest, which should be relevant and relevant. The following is a description of the problem situation, which is devoted to the web quest, and the roles of specialists involved in solving this problem situation are indicated. For each role, a brief comment should be given, explaining what the specialist does, what powers he has. It is necessary to think over the roles so that the students, when completing assignments, are evenly occupied by labor costs and at the end of the research work can demonstrate their results both individually and as part of a working group.

The central task should be clearly formulated, understandable, interesting and doable. The final result of independent and / or group work is clearly defined (for example, a series of questions is asked to find answers, a problem is written that needs to be solved, a position is determined

that needs to be protected, or other activities that are aimed at processing and presenting the results are indicated based on the information collected).

On the page with the wording of tasks by roles for each of them, a task, parameters for execution and links to resources are prescribed, a work plan is provided with a step-by-step description of actions and recommendations that contain information about the work procedure, optimization, difficulties and solutions. Links to Internet resources should be logically included in the task. The most important thing in the quest is the journey of children on the World Wide Web in search of answers to quest questions. The teacher needs some links to help students find answers, but groups can use their resources. Finding the right sites by the teacher is a very painstaking task. Links must be copied and annotated to the site.

On the Grading page, the criteria for evaluating the web quest, a scale for self-assessment, and the results of completed tasks can also be published. The section contains criteria for evaluating the completed assignment in accordance with certain standards. On the same page, students conduct a self-assessment of the finished product, comparing it with products of other groups. Students not only present their work, but also draw conclusions about what they learned, what they achieved. In group work, they also evaluate their participation in the project and their personal progress. The teacher also evaluates the work, analyzes errors, gives advice for future work.

The Conclusion page summarizes the experience that participants will receive when they perform independent work on a web quest.

The Teacher Comments page provides information on who the web quest is for, the name, class, and information to help other teachers who will use the web quest.

The goal of the web quest should contain the skills that will be formed in the process of working on the web quest. The statement of tasks indicates the specific conditions that must be met to achieve the goal. The results should reflect the real product that will be obtained upon completion of the web quest. It is also worth describing what students will learn in the process of completing assignments and where the acquired skills can be applied in the future.

Thus, organized training activities for the development of a web quest allows students to assess students' understanding as future teachers of their tasks, help students learn how to find and select reliable information on the Internet, conduct critical analysis, consistency, structured information, certainty of positions, approaches to solving problems, individuality, professionalism of presentation.

CONCLUTIONS

In the light of the new standards and the loud-sounding concepts of *competence*, introduction of innovative educational technologies is a prerequisite for the future professionals training, as well as for information technology teaching. Using the case-technology and web-quests as one of the varieties of the method on the basis of modern information and communication technology projects allows the trainees to form research skills; working in cooperation skills; management, organizational skills; communication skills; presentation skills. This will allow the teacher to make changes to:

- contemporary content that is transmitted to students and involves not only the development of subject knowledge, but also the development of competences, the

relevant current practices of life, professional activities. And this content is well structured and presented in a variety of teaching materials, including multimedia, which are transmitted by modern means of communication - the Internet;

- Modern teaching methods - methods of competence formation, based on the interaction between students and their involvement in the educational process;
- modern infrastructure (hardware) training, which includes informational, technological, organizational and communication components, allowing to use the advantages of the Internet effectively for educational purposes.

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