INNOVATIVE APPROACH TO ENSURING THE CONTINUITY OF TEACHING COMPUTER SCIENCE IN THE SYSTEM OF CONTINUOUS EDUCATION OF THE NEW UZBEKISTAN

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ABSTRACT

The education sector is one of the most innovative industries, which largely determines the creation of an innovative climate and the competitiveness of the economy as a whole. Modern realities of life make traditional methods and technologies of teaching subjects ineffective and uninteresting. Computer science has always been in an advantageous position relative to other subjects, as the use of ICT is an integral part of the subject itself. But how to correctly use this advantage is decided by the teacher himself. In this article highlights of innovative approach to ensuring the continuity of teaching computer science in the system of continuous education of the new Uzbekistan.

KEYWORDS: *Innovation, Innovative Approach, Computer Science, Education, Quality Of Education, New Uzbekistan.*

INTRODUCTION

In the modern conditions of reforming the educational system of Uzbekistan, various innovative processes are becoming increasingly widespread. The testing and introduction of new forms and methods of work is a constant need for education. At the same time, the development, testing and implementation of innovations in the education system should be considered as a continuous process, as a component of everyday educational activities.

At the beginning of the twentieth century, a new field of knowledge was formed - the science of the new, innovations, which studied the patterns of occurrence, development and introduction of innovations in material production. However, in a short time, innovations have moved into the

social sphere, and, consequently, into education, which lays the foundations for pedagogical innovation. In the literature, the concept of innovation is interpreted in different ways.

Today, innovations in education consist in the introduction of new goals, content, methods and forms of training and education, in the organization of joint activities of teachers and students; changes in the style of professional pedagogical thinking. The term we use in the educational environment: innovation activity-refers to the process carried out in order to ensure the modernization and development of the education system, taking into account the main directions of socio-economic development of the Uzbekistan, the implementation of priority areas of the state policy of Uzbekistan in the field of education. This term is used in the federal law on education. Innovative activity is focused on improving both scientific and pedagogical and educational-methodical, as well as organizational, legal, financial and economic, personnel, material and technical support of the education system. If we consider the typology of innovative approaches to learning, we can distinguish two main types of innovation: innovation-modernization, innovation-transformation, corresponding to the reproductive and problem orientation of the technological approach in the educational process. Innovations-modernizations that modify the educational process are aimed at achieving guaranteed results within the framework of its traditional reproductive orientation. The underlying technological approach to learning is primarily aimed at communicating knowledge to students and forming ways of acting on a model, and is focused on highly effective reproductive learning.

Innovations-transformations that transform the educational process are aimed at ensuring its research nature, organizing search-based educational and cognitive activities. The corresponding search approach to teaching is aimed, first of all, at forming students' experience of independent search for new knowledge, their application in new conditions, the formation of experience of creative activity in combination with the development of value orientations. According to many scientists, innovative educational technologies should be focused on the formation of systematic creative thinking of students, their ability to generate non-standard ideas when solving educational, practical or creative tasks, which in turn is a formative factor of professional competence of future specialists.

At the same time, the main requirement for the modernization of education is the transition from an informative learning model to a developing one, which involves the formation of students not only subject knowledge, but also the ability to independently acquire them. It is important that computer science and ICT, due to the universality of its system-forming concept of "information" and the information approach generated by it in scientific knowledge, contributes to the construction of interdisciplinary connections in the educational process, and can be adapted to the professional needs of the future specialist, and also implies an independent deepening of practical knowledge and skills.

In our innovation activities, we use the case technology method. The essence of the case technology is that the student is given a description of a certain situation that a real organization has encountered in its activities or that is modeled as real. The student should get acquainted with the problem on the eve of the lesson and think about ways to solve it. In the classroom, in small groups, there is a collective discussion of the above case from practice. Each case is a complete set of educational and methodological materials developed on the basis of production situations, forming students ' skills of independent design of algorithms for solving production

problems. The case activates the students and allows them to perform practical work, developing analytical and communication skills, leaving the trainees "one-on-one" with real situations. The use of cases in the study of information technologies allows you to learn how to organize object surveys, work with input and output data, be able to understand, create, analyze and process them, as well as work with unstructured information - its search, verification, formalization, processing and storage. The trainees quickly develop the necessary skills to enable them to carry out actions and procedures in the field of information technologies that they will have to face during their practical activities. The case-based learning method is a method of active learning based on real-world situations.

The advantage of case studies is the ability to optimally combine theory and practice, which is quite important in the preparation of students. In the process of teaching computer science and information technology, the case acts as an object of study (students themselves develop their multimedia varieties) and as an effective means of teaching. The introduction of the case method in teaching computer science and information technology allows us to implement a competence-based approach in practice, which develops the methodological system of computer science, enriches the content of the educational discipline. Within the framework of the subject of computer science, case technologies can be applied to such topics as: "Forms of information representation", "Types of graphics", "Text aesthetics. Fonts", "Tabular information models", "Object information model", "Viruses and antivirus programs", etc. The greatest effect can be achieved with a systematic approach to the choice of traditional and innovative learning technologies, with their reasonable combination, complement each other and with effective leadership of group and inter-group discussion.

Summing up the use of case technology in teaching, it should be noted that this method contributes to the activation and development of cognitive abilities and creative abilities of students in computer science lessons. Also, the creation of an educational and methodological complex, the main part of which is implemented in the form of an electronic manual, can be attributed to innovative activities. We implement this technology to work with students during the course of the following topics: "Information Theory", "Information coding". The peculiarity of Information theory as a scientific and educational discipline is that its applied component is in demand by many people, including those who are very far from the scientific sphere. Information theory is a science that studies the general properties of information, methods and means of its processing (collection, storage, transformation, movement).

The role and place of the discipline is determined mainly by the following factors:

- informatics as a science of natural, technical and social significance is rapidly developing today, based on the practical needs of increasing the level of scientific, technical, organizational and methodological support for the sustainable development of the world community in the conditions of the emerging and predicted "information explosion";

- Continuous scientific support of the increasing volume of practical developments related to the creation, implementation and operation of information systems is required;

- Theoretical foundations of computer science a worldview science because the subject of its study is information. Therefore, the study of the main sections of the discipline should not only provide the necessary theoretical training of the future computer science teacher directly to

practice, but also form the basis for further education and education of information culture, which determines its integration, ideological and methodological functions.

Information theory deals with the study of information as such, its appearance, development and destruction. This section is closely related to the theory of coding, whose task is to study the forms of representation of information when it is transmitted through various communication channels, as well as during storage and processing. The topic "Information encoding" is the basis for the formation of concepts about the content of the processes that occur inside the computer when the user works on it. It is not related to the formation of computer skills, so it is most interesting for the organization of independent and individual work of students to study the ways of encoding information.

The formation and development of competence in the field of working with information in computer science lessons occurs mainly through the content, since the discipline itself involves working with information in different directions. For conducting computer science lessons, the following technologies are used:

- activity-based learning-expressed through the method of practical work;

- problem-based learning-expressed through a partially searchable method, a method of solving problem situations;

- project training-the project method is used;

- game training-the business game method is used;

- discussion training – the methods of discussion and "brainstorming" are used.

- In the training sessions such techniques are used to form and develop information competence:

- counter-arguments of the teacher to the alleged opponent in the process of presentation;

- presenting students with a deliberately broken logic of presentation, proof and analysis of the results obtained by the teacher;

- disclosure by the teacher of the causes and nature of failures encountered on the way to solving problems;

- teacher's discussion of possible consequences made from incorrect assumptions;

- dividing the material presented by the teacher into developing semantic moments;

- fixing students' attention on the sequence of contradictions that arise in the course of solving problems;

- an intriguing description by the teacher of the object being presented, followed by a question statement;

- the teacher's attitude to the students ' mental solution of the logical task put forward in the course of the presentation;

- rhetorical questions of the teacher during the presentation;

- presenting students with a conflict example.

- inclusion of students in the argumentation of the hypothesis put forward by the teacher;

- task for students to find the hidden nodal links of the reasoning proposed by the teacher;

- assign students to solve several subtasks selected from the difficult original one, after which the students return to the original problem;

- leading questions to students, helping them choose the right ways to solve the problem, while simultaneously pointing out different approaches to it;

- task for students to find errors in reasoning, which requires an original thought;

- organization of specific observations of the student, prompting the formulation of the problem;

- task for students to summarize the facts presented by the teacher in a special sequence;

- showing a method of action with a partial disclosure of its internal connections with the student;

- task for students to advance the next step of reasoning in the logic set by the teacher;

- demonstration of an object, a phenomenon, prompting the separation of the essence;

- color selection of a part of the drawing, diagram, record, orienting students to advance the problem, etc.

- I constantly use the Internet resources in my teaching activities as for myself:
- when selecting material when creating a website or presentation and when preparing for a lesson;

- for personal professional development;

- to increase the motivation of students to learn.

- I organize the work of students in the classroom using Internet resources as follows:
- front-end (virtual trips, excursions, network projects);

- individually (search, selection and analysis of information);

- in groups (implementation of a common training project).

When using information resources on the Internet in the organization of cognitive activity of students in the classroom and in the course of independent work, it is necessary to take into account their level of preparedness and the conditions available for this.

The most popular and effective technologies are currently the following:

1) Interactive technologies that allow you to: first, to establish contact between children and their peers in the group and with adults; secondly, it allows you to be involved in the learning process;

third, it helps to create different learning situations in the group (taking into account the individual characteristics of each child), for which various options can be used.

These technologies allow teachers to independently create educational material for the child, taking into account its features and needs, as well as to make the necessary changes as quickly and flexibly as possible. When selecting topics for individual projects, I take into account the interests of students and their inclinations and hobbies.

The project method allows students to master the ability to build a chain: from an idea through goals, tasks, brainstorming to the implementation and protection of their project. When completing a project, students use a plan that defines the project criteria. Computer modeling also provides great opportunities for using the project method. Here we are already talking about the fact that the development of a computer model of a particular process or phenomenon is in itself a kind of projective activity. If the student knows the techniques of programming, then in this case he has the opportunity to deeply penetrate not only into the very essence of the phenomenon, but also into its mathematical model, which then needs to be embodied in a visual image. Working on the project encourages the student not only to study in depth any topic of the course, but also to master new programs and software products, use the latest information and communication technologies.

2) Remote technologies

Modern computer technologies completely change the concept of distance education. After all, now, despite the fact that the student is outside the classroom, he can gain knowledge and actively participate in the educational process. It is also extremely important to constantly and effectively support and support specialists and teachers, because it is on them that the successful education of children depends. During the pandemic, these technologies have shown their effectiveness and the possibility of using them as additional to the main technologies.

I will focus on some of the teaching methods that I use in the lesson and which are innovative in nature: the method of research or "problem solving" is at the heart of educational collaboration, because it is a reproduction of the natural process of discovery or cognition of reality. In order to create such conditions in the organization of the educational process that allow students to develop the skills of search and research activities and develop their independent activity and interest in the subject, I include tasks in which children try to independently explore and analyze a combined text with elements of description and narration. Group communication in educational activities is of particular importance for the development of the child. It promotes the creation of business, collective, and interpersonal relationships. In the process of communication, it is possible to supplement the general activity with individual interests and inclinations. Working in groups, students are responsible for the success of each, learn to help each other. The inclusion of students in the computer science lesson in business communication provides high cognitive activity, which undoubtedly has a positive effect on the effectiveness of the learning process.

Group activity in a computer science lesson consists of the following elements:

1. Preliminary preparation of students for the implementation of the grouptasks, setting training tasks and a brief briefing.

2. Discussion and preparation of a plan for the implementation of the training task in the group, distribution of responsibilities.

3. Work on the implementation of the training task.

4. Monitoring the work and adjusting the work of the group and individual employees students.

5. Mutual verification and control over the performance of the task in the group.

6. Students' report on the teacher's call about the results obtained, general discussion in the classroom under the guidance of the teacher, addition and correction, additional information from the teacher and the formation of final conclusions.

7. Individual assessment of the work of groups and the class as a whole.

The technology of learning in collaboration can be largely implemented in group work using a computer and other technical means. Training programs and computer models, virtual laboratory work, and the creation of multimedia presentations are the best suited for working together in pairs or groups of students. At the same time, the participants of the work can perform both the same type of tasks, mutually controlling or replacing each other, and individual stages of the overall work. When performing tasks in pairs or groups, the same level of technical skills is not required, and in the process of working together, the practical skills of students who are more "weak" in this regard are also improved.

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