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Information and Communication Technologies as A Means of Developing Students' Creative Activity in Teaching Technology

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Abstract: The article examines the essence of developing creative activity of schoolchildren using information and communication technologies (ICT); provides a brief description of the information technologies used in school; identifies a number of personal qualities of students developed using ICT; The forms and methods of developing the creative activity of schoolchildren when working with a computer have been defined; the levels of development of creative activity of schoolchildren when using ICT have been developed.

Keywords: Creative activity; information and communication technologies; levels of development of creative activity of schoolchildren using ICT; qualities of a creative personality.

Introduction: Building a state with a great future largely depends on people with high thinking, worldview, and mature specialists. Therefore, the training of new-thinking, highly qualified specialists with deep knowledge has become a requirement of the times. Raising the future generation as well-rounded individuals, providing education and upbringing places great responsibility not only on parents but also on school teachers [1]. Modernization of the local education system creates the need to search for new approaches to the organization of the educational process. The level of development and preparedness of students in the process of technology lessons should not only correspond to the current state of social and production relations, but also ensure their ability to adapt in the process of renewal and transformation of the social, economic, and production spheres of the country, to find solutions in non-standard situations, and to think independently and creatively.

Today's global civilized community is largely based on information technology. Under the influence of the informatization process, a new structure is being formed - the information society. Information culture is becoming an integral part of everyday life. In general education schools, teaching and educating students in the subject of technology requires teachers to effectively use educational technologies and ICT in the process of organizing and conducting lessons. The more active the teacher's activity, the more creative, interesting, and promising the organization of students' behavior, the more effective the educational technologies used will be, the easier and more realistic the designed learning objectives will be, and the faster the expected results will be achieved [3].

In modern education, the use of computers in teaching the subjects of technology and design, service, has a significant impact on the development of theoretical and creative thinking in schoolchildren, as well as the formation of a new type of thinking, called operational thinking, aimed at choosing optimal solutions. The Development Society has always been in demand not only for the full assimilation of the system of knowledge, skills, and abilities of schools and universities, but also for young people with a broad worldview, the ability to think outside the box, to promote and implement creative ideas.

Creativity is a hierarchically structured unit of abilities inherent in a person, which determines the level and quality of thought processes aimed at adapting to changing and specific conditions in sensorimotor, visual, operational-activity, and logical-theoretical forms.

The study of children's creative abilities and talents in pedagogical sciences begins in early childhood and continues in general education schools and higher educational institutions. Thus, this area covers the

younger generation of all ages. The issue of creative development of personality is complex and multifaceted. This falls within the sphere of interests of psychologists, teachers, and sociologists of different countries. In any advanced state, people with high creative potential and creative activity are in demand. Independent of the principle of activity, our scientists believe that the activity of students can have a reproductive or creative character [5]. In the first case, it is aimed at memorizing the studied material and reproducing information, following the teacher's encouraging instructions, and completing learning tasks using examples and videos. If students are creative, even if they are subjective, they develop a desire to make some kind of discovery. Creative activity is at the highest level, since the task itself can be set by the student, and the methods of its solution are new, unconventional, and original [2].

At the same time, creativity, on the one hand, serves as a condition for the manifestation of creative activity, and on the other hand, creative activity manifests itself in the personal qualities of a person. The problem of developing students' creative activity is one of the most important issues in the system of technological science.

"Creative activity is a quality of a person that embodies the characteristics of creative activity. This characterizes a high level of personality development. This is a person's complex relationship with reality, a set of their characteristics, where intellectual, volitional, emotional, and physical processes act in unity. Creative activity is a person's striving for new methods in solving tasks and overcoming difficulties; the desire to introduce elements of innovation into product design and task completion methods.

"Creative activity is the student's ability to independently define new tasks in the process of practical work, ways to solve them, the ability to actively apply knowledge and skills in a new situation. Thus, creative activity is not a distinct characteristic, a personality trait, but a whole complex of personal qualities" [4]. In the subject "Technology," working with various text and graphic editors, tables and preparing presentations and performing work on programming systems, database management systems, and statistical data processing gives good results in increasing student creativity. ICT includes educational and methodological materials (visual, theoretical, practical, control) and computer programs that control the educational process. Thus, software products that help teach technology in school and are used in mastering other subjects are of particular interest. Software products for the educational process are electronic versions of educational and methodological materials: computer presentations, electronic textbooks, reference dictionaries, laboratory practical training programs, educational programs, test programs, the use of which leads to saving time for both the teacher and the student.

In interactive programs on a computer, the possibility of dialogue communication and the widespread use of graphics (pictures, diagrams, drawings, maps, photographs) has appeared. This made it possible to transfer information at a new level and improve its understanding.

Software products using graphics contribute to the development of such important qualities as intuition, figurative and spatial thinking. Increasing the productivity of personal computers allows for wider use of multimedia technologies and virtual reality systems.

Multimedia technologies allow the use of text, graphics, video, and animation in interactive mode, thereby expanding the areas of computer application in the educational process. Contactless data interaction technology - virtual reality implements the illusion of the user's immediate presence in real time in the "screen world," which is stereoscopically represented using a multimedia environment.

With the help of hypertext learning systems, the student himself can use various schemes when working with the material, adhering to graphical and textual links. This creates conditions for implementing a differentiated approach to education. The use of various information technologies, multimedia, hypertext in electronic publications gives good didactic advantages over traditional books:

- multimedia technology creates an educational environment with a vivid visual presentation of information;

Hypertext technology simplifies navigation thanks to the use of hyperlinks and allows you to choose an individual scheme for studying the material;

- ITT technology, based on the modeling of the educational process, allows filling the textbook with texts, tracking and directing the trajectory of studying the material, and expressing feedback;

- a significant amount of data is combined on one medium. In recent years, distance learning technology has been actively developing, which allows solving the problems of vocational training and advanced training of students with disabilities who are far from school. Passive perception of information by students can occur during the teacher's explanation of a new topic, even if they use visual aids and various didactic tools. The reader may

think about something specific, personal, and perceive the information or not receive it at all. Communication with the computer activates the student's thinking, conducts a dialogue, answers questions, and perceives information. Moreover, the very implementation of computer technologies increases motivation for learning. Thus, the student is active when working with the computer. If, for example, in sewing, computer programs are used in the lesson process, the student transitions to the form of an active user. The student's setting of any important life goals includes elements of creativity. From this point of view, our scientists conditionally divide them into three categories. The first are those who are inclined to passively wait for important goals to be invented and imposed on them by someone from outside. The opposite side of this group is those who preferred to find and choose important goals for themselves. Between these poles, there is an intermediate group, which has both the first and second qualities, but mainly selects goals from a standard list given from the outside. It is legitimate to call students who are inclined to passively expect the imposition of invented goals stimulating-reproductive, and those who show creativity in setting goals creative. More conscious and proactive people choose a profession that corresponds to their inclinations and talents. They benefit society by providing themselves with physical and spiritual comfort. Gifted students have a great potential of abilities that allow them to easily adapt to the environment, take advantage of its advantages, and organize a comfortable life for themselves. Some of them limit themselves to this, while others are not content with simply adapting to the environment, but strive to improve this environment, to make it better in accordance with their needs and beliefs. These are active creators.

The creative activity of a schoolchild using ICT in the subject of technology is an integral quality of the individual, manifested in a value-based attitude towards creativity, the ability to independently create products of creative activity, develops in the activity of independent search and problem-solving, and finds its expression in the results of work.

Using ICT in the lesson process, the student combines human innovation and qualities inherent in a creative and active personality in their activities.

The main ones are:

1) stable interest in the use of ICT in creative activity;

2) information literacy, information culture;

3) flexibility, ingenuity of thinking;

4) non-standard thinking;

5) intellect;

6) resourcefulness;

7) desire to find the problem;

8) ease of generating ideas.

A student's deep knowledge of ICT and its active use develops a number of personal qualities:

- algorithmic, constructive thinking, based on its specific features

Computer communication;

- the ability to make optimal decisions in a difficult situation;

- creative thinking due to a decrease in the share of reproductive activity;

- communication skills projects based on joint implementation;

- skills in working with product modeling and design programs and ITS;

- information literacy and information culture, the ability to process information;

- creative activity.

In the process of a technology lesson, the student's ability to perceive and process information, develop solutions to problems in non-standard situations, and generate ideas is manifested. In the development of creative activity of schoolchildren using ICT, firstly, the student does not show interest in creative activity, is passive, active only when following the teacher's instructions, has low knowledge of working with computers, and mainly acts in accordance with the direction. In the second situation, the student shows situational interest in creative activity, is active only during work, solves simple creative problems on a computer with the help of the teacher in situations that interest him, in which the teacher, classmates, or he himself can be an initiator, has average knowledge of working with a computer. In the third situation, the student shows constant activity in working with the computer, solves both the tasks set by the teacher and those created independently; is proactive, has the ability to observe, spatial imagination, creative abilities, possesses knowledge above average for activities using ICT, and is able to independently reproduce them completely. The student in the fourth situation has technical thinking, high creative activity, high creative abilities, a wide range of knowledge that can be selectively updated and adapted to new conditions; possesses computer literacy, can adapt acquired knowledge and methods of activity to new conditions, quickly understands the operating principles of technical devices, can create subjectively and objectively new creative products, has high knowledge

of working with ICT. The issue of creative development of personality is complex and multifaceted. The use of information technologies allows for maximum individualization of the educational process, its construction taking into account the specific characteristics of a particular student, ensuring their active, proactive activity in self-development.

CONCLUSION

In conclusion, the development of students' creative activity in the field of technology with the help of ICT will be even more successful. In this case, technology teachers should use various forms and methods that contribute to the development of students' creative activity when working with ICT in the classroom. As such forms and methods, we distinguish: the use of the project method, multimedia technologies, non-traditional lessons using a computer, interactive whiteboard, various game technologies, problem-solving, the use of Internet resources, etc.

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