Means, Methods and Use of ICT for the Formation of Technological Competencies of Students in Schools

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Abstract: The active introduction of information and communication technologies in the field of education is, therefore, a distinctive feature of modernity. Important pedagogical tasks that are solved as a result of the use of such technologies are: the development of up-to-date information, the expansion of the information sphere of education, the creation of an information and educational space in an educational institution, the introduction of distance learning technology into pedagogical practice, the rationalization of the educational process, the activation of educational activities, the development of a culture of independent, research activities of students and, in general, improving its effectiveness and quality.

Keywords: modern schoolchildren, education, pedagogical measurement

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In the conditions of the information society, students of a modern school should have the experience of free, responsible and at the same time successful exercise of freedom, which is given to them by the information resources of modern society.

These trends actualize the problem of the development of information and communication competence of modern schoolchildren as the basis for the formation of their competence in the field of the use of info communication tools as in .in the educational process, as well as in everyday activities.

At the same time, an important difference in the pedagogical content of such a culture is the use of info communication tools in the interests and for the development of the student's personality, the formation of its general culture, the totality of competencies necessary for successful life.

The complex use of various pedagogical means, including information and communication, for the formation of information and communication competence of the individual implies, in general, the informatization of the school and its educational space. Informatization of education as a process of creating a unified information and educational environment, which includes a set of technical, technological, software, functional, multimedia, telecommunication, methodological tools, should be accompanied by the provision of a set of pedagogical conditions.

Thus, the relevance of considering the problem of the formation of information and communication competence of schoolchildren is due to the contradictions between:

➢ the social order of society to improve the information culture of students and the need to solve the problems of informatization of education and insufficient, despite a number of serious studies, theoretical justification of modern approaches to the construction and implementation of

models for the formation of information and communication competence of schoolchildren as the basis of their information culture;

➢ the need to determine the role and place of information and communication competence in the formation of a system of key competencies in the system of general education and the lack of development of specific technologies for the formation of ICT;

➢ the need to develop the content and methods of using new information technologies (NIT) and insufficient practical development of conditions for their effective use for the formation of information and communication competence of students.

Research hypothesis: the effectiveness of the formation of information and communication competence of secondary school students will be provided if:

1. The school educational process is focused on the formation of information and communication competence as one of the most important (key) competencies of the individual, which in their organic totality constitutes its competence;

2. The basis of the organization and content of the educational process are the most effective conditions for the formation of the ICT:

➢ Competence interpretation of the content of education and its results;

➢ Application of information and communication technologies (ICT) in the educational process of the school, designing lessons based on ICT;

➢ Use of active learning methods;

➢ informatization of education quality management at school.

Research methods: The solution of the tasks set and the verification of the initial assumptions were provided by a set of complementary methods adequate to the nature of the phenomenon under study. The complex of methods included: theoretical: theoretical analysis and synthesis, generalization of experience, abstraction, modeling; empirical: observation, survey, praximetric method (study of educational documentation and results of activities), experiment; statistical: quantitative and qualitative processing of materials by methods of mathematical statistics, pedagogical measurement, multiple comparison.

3) the criteria for assessing the formation of the IQ are conditioned by taking into In addition, modern approaches to the definition of the concepts of "competence", "competence", "information and communication competence" were analyzed. In parallel, the analysis of the practical state of solving the problem of research in general education institutions was carried out, a conceptual and categorical apparatus was formed, a working hypothesis of the study was formulated, a theoretical model of the formation of information and communication competence of students in a general education school was developed process the necessary information, and the second - communicative and organizational abilities, the ability to self-control, the culture of verbal and non-verbal interaction.

The reliability and validity of the results obtained is ensured by the methodological validity of the initial theoretical positions, the use of interrelated and complementary research methods adequate to its object, subject and purpose, and the representativeness of the study sample.

The scientific novelty of the study is that the process of forming the information culture of a modern schoolboy is considered in the context of competence interpretation; the main organizational and content conditions for the effectiveness of the formation of information and communication competence of students at school are determined: competent interpretation of the content and results of education, the use of information and communication technologies in the

educational process of the school, the design of lessons based on ICT, the use of active teaching methods, informatization of education quality management at school.

The theoretical significance of the study is expressed in the fact that a detailed analysis of the relationship between the concepts of "competence" and "competence", "information culture" and "information and communication competence" has been carried out; the concept of "information and communication competence", having received scientific and pedagogical justification as a set of interrelated personality qualities (knowledge, skills, skills, methods of activity), which is set (mandatory, necessary) for high-quality productive activity in the field of using modern information and communication technologies and in general for working with information, was filled with new content, concretized with respect to secondary school students, structured in accordance with the didactic stages of its formation; a theoretical model of the formation of information and communication competence of students in a secondary school has been developed on the basis of the identified organizational and content conditions for the effectiveness of this process.

The practical significance of the research lies in the development of a set of criteria and levels of formation of information and communication competence of students in a secondary school, as well as practical recommendations on the organization and content of the process of formation of information and communication competence of schoolchildren.

The results of the study are of practical interest in the system of training, professional retraining and advanced training of computer science teachers, as well as deputy directors of secondary schools for educational work.

The most effective organizational and content conditions for the formation of information and communication competence of students in a secondary school are:

1. competence-based interpretation of the content and results of education;

2. The use of information and communication technologies in the educational process of the school, designing lessons based on ICT;

3. Using active learning methods;

4. informatization of education quality management at school.

The developed curriculum and its software made it possible to calculate the overall planned complexity of the formation of IR competence. In the process of experimental work, the relative contribution (relative weight coefficient) of each discipline is determined as the ratio of its labor intensity to the total labor intensity of competence, the relative contribution of all academic disciplines for each period of study. Planned schedules for the formation of IR competence are constructed.

Based on the results of experimental work, it was concluded that the level of formation of IR competence in the experimental group is significantly higher than in the control group.

Thus, diagnostics of the level of formation of information competence at different levels of education showed:

➢ Orientation of education to the organization of the educational process in the logic of the competence approach;

➢ the values of the level of formation on the scale "this quality is not necessary - this quality should always manifest itself" are higher the more an educational institution uses activity forms, active teaching methods or a practice-oriented approach in the organization of the educational process;

- ➢ a high positive correlation between the ability to analyze and interpret different points of view and the ability to work with different sources of information at the school level;
- ➢ The importance of mastering the basics of computer literacy for school education.

The complex use of various pedagogical means, including information and communication, for the formation of information and communication competence of the individual implies, in general, the informatization of the school and its educational space. Informatization of education as a process of creating a unified information and educational environment, which includes a set of technical, technological, software, functional, multimedia, telecommunication, methodological tools, should be accompanied by the provision of a set of pedagogical conditions.

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