



## CONCEPT, STRUCTURE, MAIN FEATURES AND APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES COMPETENCE

Abdisattorov Asror Amirovich

University of Public Security of the Republic of Uzbekistan  
independent researcher

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### ABSTRACT

*This article describes in detail the concept of information and communication technology competence, the essence, structure, main aspects and application in the field of education. Special attention is paid to the need to improve the skills of teachers of information and communication technologies. The importance of the competence of the participants in the educational process and the need and benefits of using the act in the lessons are highlighted.*

At the current stage of development of education in Uzbekistan, along with informing the public, the priorities for progressive development have been identified. This is where the concept of ICT competence of teachers as well as students is especially important. Therefore, the use of IT technologies is being actively studied and introduced into the field of education.

The life of a person of any age is closely connected with information technology. They are necessary for both students and teachers. In the modern world, it is very difficult to understand oneself without having simple computer skills, as this method is now actively used in any field of activity.

The use of information technology in education has great potential. The concept,

as well as the features of the development of ICT competence, are described in their work by many experts.

In general, today's ICT competence is the ability to apply communication information technology in practice, which provides access to this or that information or the organization of its search, processing, distribution. Its level should be sufficient to live and work in a modern information society.

The modern concept of ICT competence includes several different components, so it is one of the main indicators of a teacher's competence in accordance with the State Education Standard.

The main aspects of the concept of ICT competence are:



adequate functional literacy in ICT as a field of life;

reasonable introduction of ICT both in the process of solving professional problems and in the framework of educational work;

ICT as the basis of a new educational paradigm aimed at the active development of students.

Teacher objectives

By increasing the ICT competence of teachers, the following will be done step by step:

Teacher objectives

High level of use of information and communication technologies.

New forms of organization of the educational process.

Content in the context of modern educational activities.

Concepts of literacy and competence

It is important to distinguish concepts such as teacher ICT literacy and ICT competence.

So, ICT literacy means only knowing the basics of working with software products and computers, their basic functional capabilities, the general concept of working on the Internet.

However, knowledge alone is not enough within the scope of ICT competence. This includes the real use of certain media, their introduction into the educational process. At the current stage of development, they can be used in solving cognitive and communicative problems, conducting experiments.

## **Features**

One of the key elements of a modern teacher qualification is ICT competence. Every year the level of teaching any subject is increasing. With the introduction of ICT, the learning process itself is becoming more individual and effective. Thanks to

the teacher's ability to use information and communication technologies, it is possible to increase the level of interest of students, as well as the acquisition of information.

Based on the needs of the information society, teachers are constantly being improved. To improve your professionalism, you need to go through several successive steps.

If in the first stage the teacher acquires basic information and communication skills, in the second stage the teacher develops ICT competence. This will ensure continuous improvement of the current educational process against the background of the interaction of the pedagogical network.

In the organization of the educational process in modern educational schools, of course, societies are taken into account. The process of informatization is carried out along with the active development and improvement of teachers' ICT competencies.

## **The need to improve the skills of teachers**

At present, it is impossible to improve skills without taking into account modern information technologies, because the ICT competence of the teacher is its most important component. The modern world is characterized by dynamic development, the presence of a wide range of information flows. In particular, educators need to focus on improving research in other areas of public life, as well as educating. Without this, the ICT competence of students cannot be changed for the better.

It is important to note that the process of developing ICT competencies involves the active use of existing media, as well as their effective implementation in the educational process.

## **The real structure**



A detailed study of the structure of ICT competence of the modern teacher shows that it contains the following components:

understanding the need to introduce ICT in education;

introduction of ICT opportunities in the educational process;

Management and organization of the educational process using ICT;

continuous training in this field.

Components of teacher competence

To assess the level of ICT competence of a teacher, it is necessary to take into account the following components:

Knowledge of basic electronic manuals, including electronic atlases and textbooks, and educational resources available on the Internet, depending on the specifics of the subject.

Ability to install the necessary software on the computer used in the educational process, the practical use and creation of didactic electronic materials, the active use of projection technology in the work.

Ability to use and select the software needed to present materials to students in the most convenient and understandable form for them.

Active use of tools in organizing the learning process, including software testing, e-workbooks, and more.

The ability to determine the optimal form of delivery of the necessary information to students, as well as parents, teachers and even the administration of the educational institution - this is email, website and its sections, forums, blogs, school network. opportunities, social networks, mailings, and more.

Ability to find, process, evaluate, and accurately display information collected in digital educational resources based on the tasks set within the learning process.

Ability to professionally modify incoming information to solve learning problems during the preparation of learning material.

Ability to use information technology, including the Internet, in the preparation and conduct of lessons.

Creating a digital portfolio.

Organization of students' work on communication network projects, such as quizzes, remote monitoring and monitoring, evaluation of results.

This list of the main components of the ICT competence of the modern teacher is gradually supplemented by the development and improvement of the information society with the emergence of new achievements in the development of science and technology.

### **The importance of the competence of the participants in the educational process**

At the current stage of development of society, special attention is paid to the ICT competence of students and teachers. The fact is that now information technology has become one of the main components of modern human life. Possession of them becomes as necessary as the ability to read, write, and calculate. However, daily life, such as the introduction of ICT, requires a corresponding increase in information and communication awareness for participants in the educational process.

Recently, a new standard was introduced that is relevant to general and primary education. This requires the creation of one information and learning environment for each educational institution. But to do this, students need to understand the intricacies of the practical use of ICT in both academic and professional problem-solving.

Therefore, the main task of a modern teacher is to acquaint students with IC



technology, as well as to teach them the rational and correct use of information systems in practice. This is necessary for the full formation of clear competence, awareness and understanding of the field. Now computer literacy alone is not enough - more is needed.

It is important to be able to create such conditions for the educational process in which children become acquainted with high-tech processes and equipment from the earliest stages of learning about the world around them. Therefore, one of the priorities in improving the educational process is to informatize it.

As mentioned above, ICT competence is the ability to model, collect, evaluate, transmit, search, and analyze information, processes, and objects using the full range of tools available in the field of communication and information technology.

It is important to choose the right techniques and methods for the learning process so that each lesson is of real interest to the students. They should be as diverse as possible and applied when needed.

Due to the high qualification of teachers in ICT, the following opportunities have emerged:

Presenting information in different ways in the learning process - it can be in the form of audio, animation, text or video.

The fragmentation of large volumes of data over the same period of time makes this material significantly easier to master.

Mobilize students' attention.

Listening and interpreting the flow of information.

Formation of cognitive interest while increasing learning motivation.

To have basic computer skills, to get acquainted with the possibilities of the global Internet.

Activation of thinking, memory, perception and imagination in the learning process.

Determining and enhancing the objectivity of the assessment of the acquired knowledge.

Enhancing student motivation.

ICT competence is the skillful use of the capabilities of computer technology that work with both the local network and the Internet.

### **Characteristics of competence**

In the early stages of the introduction of information technology into the life of modern society, ICT competence was nothing more than an integral part of human computer literacy. It has evolved into a specific set of technical skills and abilities called a standard.

Today, information technology is widespread in modern life. Therefore, they are actively used in various fields, including in the process of effective education. This is how the concept of teacher, student ICT competence emerged.

It is important to understand that behind a teacher's ICT competence lies a complex concept - the ability to put communication and information technology into practice in the learning process. This figure cannot stand still. Given the constant development, they should also be regular.

The ICT competence of the teacher includes not only theoretical knowledge, but also their real application. A modern teacher should be able to confidently master all basic computer programs, have free access to the Internet, and at the same time use modern equipment such as printers, scanners, and more.

It is assumed that functional literacy within the activity level is applied systematically when it gives real positive results in the organization of the learning



process. There are two sub-levels as part of this level - innovative and creative. Implementation involves the inclusion in the educational process of modern media resources, created taking into account the specifics of a particular subject. In turn, it involves the independent development of various types of electronic tools that can be used in the creative learning process.

Experts point out that the active use of IR technologies in the modern learning process can significantly change the usual approach to learning. By creating an open environment for the field of education, the teacher has access to a variety of resources and forms of learning.

### **Use of the act in lessons**

ICT competence Russian education at the current stage of its development requires the teacher to make significant changes in teaching and extracurricular activities. ICT competence of the teacher: - One of the main indicators of professionalism. - The main competence in solving modern educational problems - improving the learning process, new opportunities for students and teachers to acquire new knowledge. The ICT competence of a modern teacher is the ability to know and use new information technologies.

Requirements for the teacher The level of the modern teacher should not lag behind the level of the modern student. To do this, the teacher needs: - the ability to use a computer and other digital tools; - Ability to use the Internet, software; - practical application of modern educational technologies. A teacher who owns a computer should be able to keep up with the times, and a modern teacher should be able to communicate with students in a language he or she understands. ICT is the ability to know and use information technology. This is one of the main competencies of modern man.

Competence-based approach The competency-based approach is one of the approaches that opposes the translation of ready-made knowledge and is one of the attempts to add personal meaning to the learning process. A competency-based approach is a learning-focused approach that takes into account an individual's ability to act in a variety of problem situations, rather than the sum of the data obtained as a result. (Ivanov DA, Mitrofanov KG, Sokolova OV Competence approach in education. Problems, concepts, tools. Textbook. - M.: APK and PRO, 2003.)

"Competence" in what is translated from Latin means competence is a set of issues that a person is familiar with, has knowledge and experience. A person qualified in a particular field has the relevant knowledge and skills, which allows him / her to evaluate this field rationally and act effectively in it. Competence is a set of interrelated personality traits (knowledge, skills, abilities, methods of activity) that are set for a certain range of objects and processes and are necessary for high-quality production activities. 'includes. Competence is the fact that a person has the appropriate authority, including his personal attitude to him and the subject of activity. (A.V. Khutorsky) Competence

ICT - competence ICT competence is the ability of a teacher to solve educational, daily, professional tasks using information and communication technologies.

ICT - teacher's competence In order for a teacher to be qualified in the field of ICT, he needs: transformation (transformation) educational activity; reconsideration of traditional teaching relationships, search and selection of pedagogical technologies, adequate ICT, systematic self-education; exchange of pedagogical experience; Creating and summarizing developments for lessons



using ICT; Ensuring the continuity of the ICT training process, including the involvement of distance learning technologies and network services; formation of a new type of thinking (self-organization, social, type of thinking).

Advantages of ICT technologies Experience shows that the use of modern ICT technologies in the classroom: activates the cognitive activity of students; increases students' interest in the subject being studied; saves time to explain the material; allows you to go beyond school textbooks, supplement and deepen their content; allows students to differentiate and individualize their work; allows you to increase the collection of reviews; creates convenience in the classroom

Cognitive activity The increase of students' cognitive activity in the use of ICT is achieved due to: high illustrative and information richness of the lesson; differentiate questions for the same task; selection of interesting material; high rate of student work.

Increased interest in the topic The increase in students' interest in the subject under study depends on: the appropriateness of the assignments for each student; opportunity to discuss assignments and express opinions; introduction of a dialogue form of work in the performance of the task; simultaneous hearing and visual perception of the material; engaging students 'personal experiences in working on assignments.

Save study time. Saving time for explaining the material is achieved by: increasing the level of structuring the lesson (from general to specific; from cause to effect; from simple to complex; from known to unknown; from interesting to more interesting); increase the illustration of the study material (it is better to see it once than ...); enhancing students 'work in

the classroom and increasing their level of personal interest.

Accumulation of grades The reason for the increase in the accumulation of grades in science is: - the work that can be done by all students in the class; - use of ICT by students in homework; - performance of creative tasks by students; - Preparation of reports, messages, pictures, etc. at the independent initiative of students.

Convenience in the classroom Convenience in the classroom increases due to: - taking into account the age characteristics of students; - creating a creative environment; - creating conditions for success; - use in the lesson of group mental activity (problem tasks, brainstorming, group creative tasks, etc.) - use to establish a link between the material studied in the lesson and the personal experience of students; - Involve students' emotional response to the content of the lesson; - to establish a link between the course and other disciplines.

Psychological factor Various visual materials take the learning process to a qualitatively new level, arousing interest in children. The psychological factor cannot be ignored: for the modern child it is much more interesting to perceive information not only with the help of textbooks, diagrams and tables, but also in this form.

Knowledge diagnostics Information and communication technologies: - control-generalization lessons, - frontal queries, - lesson-based queries, - programmed queries expand the possibilities of diagnosing the level of mastery of scientific data.

Information and communication technology (ICT) - the use of computers to search, transmit, store, systematize and process information. The concept of "information processing" also includes the



creation of new information based on existing (use)

Science teacher-tutor uses ICT as an auxiliary tool in his / her teaching activities, but his / her competence in the field of ICT does not allow him (for now) to become a tutor for other teachers in this field. Not only does he have more mastery of IR technologies than a science teacher, but he uses them in a more flexible and versatile way.

ICT literacy is the simple acquisition of basic skills in the field of information and communication technologies (ICT) ICT competence is the ability to creatively apply skills in the field of information and communication technologies (ICT). science teacher encourages the development of his pedagogical competence and allows practical activities to form a subject-oriented level of ICT competence, which is very necessary in the learning process.

Information processes affect all components of the education system: the content of education and training, the activities of pedagogical and support staff, the solution of financial and economic issues, determine the directions and points of growth of the education system as a whole. This is because the educational process, which is a pedagogically organized interaction of its participants, is also an information process related to the production, storage, exchange and consumption of various information. Given this situation, it is necessary to create a single information space of the educational institution, that is, the environment in which it flows.

Information space of the educational institution, general principles of its construction

A single information space of an educational institution is a system in which all participants in the educational process

participate and are connected at the information level.

The goals of creating a single information space are: to organize the delivery of information from external sources within the educational institution; integration of internal processes (educational, organizational) and information technology.

EOIP (single educational information space) system of an educational institution: includes logistical, information and human resources; provides management automation and pedagogical processes, coordinated processing and use of information, complete information exchange; normative-legal and organizational base, technical and methodological support

The information infrastructure that integrates the various information resources of the structural units of the enterprise and ensures their uniform use includes: general-purpose software (text and graphics editors, spreadsheets, etc.); software for automation of various services (student and parent registration, staff accounting, scheduling, success analysis, library automation, etc.); software and methodological support for the organization of the educational process (educational and developmental computer programs, electronic reference books, multimedia encyclopedias, etc.); information resources of the educational institution (single database, educational methodological data banks, multimedia educational developments, document storage, website).

General principles of the formation of the information space Before starting the attempt to form the information space, the following tasks should be solved: Determine the range of participants in the information space, their level among the participants of the educational process.



forms of interest and interaction within and outside the information space of the educational institution. Highlight the most common streams of basic or basic information that are most easily formalized and consequently already formalized in any (or almost any) educational institution. Clearly describe the structure of the information space and all its information levels and sub-levels.

The school should create a unique model of informatization in the information space of the region and a community that knows the information culture and information design technologies, creating a school information and educational space.

The model of building an information space can consist of several levels: The first level is the presence of a single computer (or several unrelated ones) in an educational institution. The common database and applications are installed on this computer. The second level is the presence of an Intranet (internal network) or multiple computers connected to a single network. The third level is the Internet, which provides the creation and opening of access for all direct participants of the educational process and external visitors to the website of the educational institution.

The following features should be provided on the website of the educational institution: interactive communication of the participants of the educational process; posting data for general viewing; post service information that can be accessed only after entering the appropriate code or password; placement of participants' personal data fields containing personalized information.

Means of creating a single information space of the educational institution: means of organization and management; means of communication; educational tools

The main groups of information flows, the characteristics of their formation The analysis of the main directions of the educational institution and the tasks it solves allows to divide the main production processes of the institution into three major groups: planning, organization and operational management. the educational process as the main production process of the educational institution. Administrative management of the educational institution and ensuring the learning process in accordance with all necessary external and internal reporting forms. Organizing and providing the content of the educational process. Educational process planning and management Educational institution administration Content organization.

Stages of formation of the information space of the educational institution Formation of the basic data of the educational institution Processing and concretization of the basic data in the system of planning and management of the educational process Transition from the information planning system to the education management system. the system of ensuring the content of the institution and the educational process. Processing, archiving, storage Data transfer and processing in additional software modules. Formation of reporting documents.

School Teacher's Internal Information Field Creating a teacher's information space on an inter-school server or on a personal computer. But in addition to a computer, a science teacher's workplace should also have a printer, scanner, and multimedia projector.

Creating a teacher's personal data area One of the main competencies of a science teacher in the field of ICT is to be able to create their own computerized workplace. To do this, you need to have an idea of the basic elements of the computer,



the system and peripherals (printer, scanner, etc.).

Proper organization of the workplace is a file system that is convenient for you and applications used in professional activities. In order to be able to work with software, you need to learn how to work with a special environment - the operating system - for them to work.

### **Conclusion**

In conclusion, in today's globalized world, the study and application of information and communication technologies is a requirement of the times. Given the great potential for the use of information

technology in education, the Concept, as well as the specifics of the development of ICT competencies, have been described by many experts in their work. The modern concept of ICT competence seems to include several different components. We looked at differences in concepts such as teacher goals, teacher goals, teacher ICT literacy, and ICT competence. We have briefly concluded that it is currently not possible to improve skills without taking into account modern information technologies.

### **REFERENCES:**

1. Burmakina V.F., Falina, I.N. ICT competence of students. - URL: <http://www.sitos.mesi.ru/>
2. Galanov A.B. Model of formation of ICT competencies in teachers //. - URL: [http://www.iorb.ru/files/magazineIRO/2011\\_2/7.pdf](http://www.iorb.ru/files/magazineIRO/2011_2/7.pdf)
3. Gorbunova L.M., Semibratov, A.M. Building on the principle of distribution of the system of professional development of teachers in the field of information and communication technologies. ITO-2004 conference //. - URL: <http://ito.edu.ru/2004/Moscow/Late/Late-0-4937.html>.
4. Elizarov A.A. The main competence in ICT as the basis of Internet education of teachers: abstracts of lectures // International scientific-practical conference RELARN-2004.
5. LV Kochegarova Scientific and methodological support in the information environment as a complex solution to the problem of training // Sakhalin education - XXI. 2008. No. 1. P. 3-5
6. Lebedeva M.B., Shilova O.N. What is the ICT competence of students of the Pedagogical University and how to form it? // Informatics and education. - 2004. - No 3. - P. 95-100.
7. <https://www.wikipediya.ru>
8. <https://www.ziyonet.uz>
9. <https://www.edu.uz>
10. <https://www.it.uz>
11. <https://www.tatu.uz>