

Characteristics and Compositions of Teachers and Students in Higher Educational Institutions Competence in Teaching Information and Communication Technologies

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ABSTRACT

This article describes the specific aspects and characteristics of the competence of teachers and students in the teaching of information and communication technologies in higher education institutions. In addition, professional ICT competence, components of teacher ICT competence, ICT literacy and ICT competence concepts, competency approach, ICT - teacher qualification, the need to improve the skills of teachers, the importance of competence of participants in the educational process, the characteristics of competence, ICT technologies advantages, such as cognitive activity, increasing motivation for the topic, saving reading time, collecting calculations, convenience in the classroom, psychological factor, cognitive diagnostics, EOIP (single educational information space) of the educational institution, assessment of ICT competence illuminated out into small sections.

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Important but fragmented elements of a teacher's ICT competence were adopted in the late 2000s. qualification requirements. In the past, the Russian school has been rapidly developing and becoming more digital in the field of informatization of all processes. Many teachers use a computer to write texts and a mobile phone to send short messages. Teachers use a projector in their presentations, assign students to search for information on the Internet, send information to parents via e-mail, and so on.

In many regions of Uzbekistan, e-journals and diaries are permitted or introduced by directives, which partially cover education - the information process of the educational process (IS). More complete assimilation (including the placement of key information in the learning process in IT) provides additional pedagogical opportunities, which are a key element of pedagogical ICT competence, along with the ability to skillfully enter text from the keyboard. Create a query to search the Internet.

The state education standard for primary school (as well as for other levels of general education) includes a teacher's professional ICT competence, in particular work in IS, as a requirement for the conditions of the learning process.

Professional ICT competence

Professional ICT competence is the skillful use of ICT tools common in developed countries in the professional field to solve professional problems when and where they are needed.

Professional pedagogical ICT competencies include:

General user ICT competence.

General pedagogical ICT competence.

Scientific and pedagogical ICT competence (reflecting the professional ICT competence of the relevant field of human activity).

Each of the components includes ICT skills, including the appropriate ability to use ICT resources.

1. Professional pedagogical ICT competence
2. Must be present in all components of the professional standard.
3. It is determined in the learning process and is determined by experts, as a rule, in the process of monitoring the activities of

the teacher and analyzing his fixation in the information environment.

Reflect and evaluate the requirements of the Federal State Education Standard on the conditions of implementation of the educational program in the requirements for the professional competence of the teacher in ICT.

The description of professional-pedagogical ICT competence and its individual elements are given for the situation where the requirements of the Federal State Education Standard for the material and information conditions of the general educational process are met. If certain requirements of the Federal State Education Standard are not met, the elements of ICT - competence can be implemented and assessed (checked) in a modified form accordingly. As a temporary measure, the elements of ICT - competence can be assessed outside the learning process, in standard situations.

Components of a teacher's ICT competence

Common User Component

1. Observance of the rules of use of equipment and work with ICT tools, suspension, continuation and termination, troubleshooting, supply of consumables, ergonomics, safety and other issues included in the results of ICT in primary school.
2. Adherence to ethical and legal standards for the use of ICT (including the prohibition of unauthorized use and coercion of information).
3. Video-audio recording of the surrounding world and educational processes.
4. Enter from the keyboard.
5. Audio-visual communication (two-way communication, conference, instant and delayed messages, automated text correction and translation between languages).
6. Internet and database search skills.
7. Systematic use of existing skills in daily and professional situations.

General pedagogical component

1. Pedagogical activity in the information environment (IT) and its constant reflection in IT in accordance with the tasks:

Planning and objective analysis of the educational process.

Openness and transparency of the educational process to the outside world (and appropriate restrictions on access).

Organizations that organize the learning process:

- giving assignments to students;
 - check assignments before the next lesson, review and determine the intermediate and final results, including in accordance with a system of certain criteria;
 - Collection and interpretation of student portfolios and your personal portfolios,
 - Remote consultation of students in the performance of the task, support of students' interaction with the tutor.
2. Organize the educational process in a way that systematically meets the educational goals of students:
 - work in an open management space and achieve results;

follow the rules of quotations and references (if the teacher can use anti-plagiarism systems),

- use the media provided to them.
3. Prepare and conduct computer-based speeches, discussions, consultations, including in the telecommunications environment.
 4. Organization and conduct of group (including inter-school) activities in the telecommunications environment.
 5. Use tools to design activities (including teamwork), visualize roles and events.
 6. Visual communication - the use of visual objects in the communication process, including conceptual, organizational and other schemes, video editing.
 7. Predicting, designing and comparing the individual development of a student based on the student's current status, personal characteristics, previous history, and previously collected statistics about different students.
 8. Evaluate the quality of digital educational resources (sources, tools) in relation to the stated educational objectives of their use.
 9. Taking into account the state information space, in particular, youth.
 10. Support the formation and application of a common user component in student work.

11. Organization of monitoring the health status of students.

Once the competency element is formed, the parentheses indicate the objects and groups of objects to which that element is applied.

1. Organization and experimentation of virtual laboratories of the subject (natural mathematics, economics, ecology, sociology).
2. Obtaining an array of digital data using automatic reading from digital measuring instruments (sensors) for marking video images, subsequent measurements and collection of experimental data (natural-mathematical, geography).
3. Digital data processing using computer statistics and visualization tools (natural mathematics, economics, ecology, sociology).
4. Geolocation. Entering information into geographic information systems. Recognize objects on maps and space images, combine maps and images (geography, ecology, economics, biology).
5. Use of digital identifiers, their addition (biology).
6. Know the high quality sources of information on your topic, including:
7. Presentation of data in genealogical trees and timelines (history, social sciences).
8. Use of digital technologies of musical composition and performance (music).
9. Use of digital technologies for visual creativity, including animation, animation, three-dimensional graphics and prototyping (art, technology, literature).
10. Design of virtual and real devices with digital control (technology, computer science).
11. Teacher's assistance in the implementation of all elements of the scientific and pedagogical component of science in student work.

Ways and means of achieving professional competence of teachers in ICT.

The optimal model of achieving professional competence of a teacher in ICT is provided by a combination of the following factors:

1. Introduce a state education standard (any level of education, for example, primary).
2. Availability of sufficient technological base (requirement of the federal state educational standard): broadband Internet channel, constant use of mobile computer, school-installed information environment (IS).
3. The need for a teacher, the establishment of the administration of the educational institution for the practical implementation of the State Education Standard, the adoption of local regulations on the work of the staff of the educational institution in IS.
4. Initial acquisition of basic ICT competencies in the system of professional development of the teacher by attestation of the educational institution in IT through expert assessment.

ICT competence. At this stage of its development, education in Uzbekistan requires teachers to make significant changes in their academic and extracurricular activities. The ICT competence of the teacher is:

One of the key indicators of professionalism;

Basic competence to solve modern educational problems;

Improving the learning process, new opportunities for students and teachers to gain new knowledge. The ICT competence of a modern teacher is the ability to learn and use new information technologies.

Information and Communication Technologies (ICT)

Using a computer to search, transmit, store, compile, and process information. The concept of "information processing" also includes the creation (use) of new data.

A science teacher uses ICT as an auxiliary tool in her teaching activities, but her ICT competence does not (yet) allow her to become a tutor for other teachers in the field.

The educator not only owns more IR technologies than the science teacher, but also uses them in a more flexible and versatile way.

Only a qualified teacher in the field of information and communication technologies - the opportunity to reorganize the learning environment, to combine new information and pedagogical technologies in order to conduct interesting lessons, to stimulate educational cooperation and collaboration of schoolchildren will have. Such a teacher will be able to develop new ways to use ICT to enrich the learning environment, ICT - to develop students' literacy, knowledge acquisition and the ability to generate new knowledge. Two concepts need to be distinguished:

ICT literacy and ICT competence

ICT literacy is knowledge about personal computers, software products, their functions and capabilities; it is the ability to “right-click” and learn about the availability of computer networks (including the Internet).

ICT competence is not only the use of various media (ICT literacy), but also their effective use in teaching.

In the field of information and communication technologies, a teacher should have the following competencies:

1. There is a general consensus on the possibilities of using ICT in teaching practice.
2. Purpose and operation of personal computers, devices: information about the input and output of information, local computer networks and their use in the educational process.
3. Be able to organize the personal data field and the graphical interface of the operating system.
4. Acquisition of training techniques. Have access to the basic services and methods of working on the Internet for use in educational activities:

* Methods of searching and navigating educational information on the Internet, obtaining and storing them for later use in the pedagogical process;

* methods of working with e-mail;

* methods of working with network communication tools (forums and chats).

The use of multimedia technology in the modern classroom expands the creativity of the teacher and his opportunities to participate in the process of updating education, forming different levels of competence in the teacher and the student.

In recent years, there has been a mass introduction of the Internet in school education in Uzbekistan. Due to the dominance of the Internet, national projects are becoming a popular medium, such as the press, radio or television. Almost all teachers and students in Uzbekistan have access to it.

I think it is a handy tool that, if used wisely, can bring an element of innovation to a school lesson, increase students' interest in learning, and make it easier for teachers and students to prepare for class. Using the Internet in the learning process is becoming a daily reality.

At this stage of its development, education in Uzbekistan requires teachers to make significant changes in their academic and extracurricular activities. Teacher ICT competence: one of the main indicators of professionalism.

The main task of solving modern educational problems is to improve the learning process, new opportunities for students and teachers to acquire new knowledge. The ICT competence of a modern teacher is the ability to learn and use new information technologies.

Teacher Requirements

The level of a modern teacher should not lag behind the level of a modern student. To do this, the teacher needs:

Ability to use computers and other digital tools;

Internet, software access;

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 the student 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 approach

The competency-based approach is one of the approaches that opposes the translation of ready-made knowledge, which seeks to add personal meaning to the learning process. A competency-based approach is a learning-oriented approach that takes into account an individual's ability to act in a variety of problem situations, rather than the sum of the information obtained.

What is “competence”

Competence, translated from Latin, refers to a range of issues that a person is familiar with, has knowledge and experience. A person qualified in a particular field has the appropriate 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 required for high-quality production activities. 'z includes. Competence is the ability of an individual to have the appropriate authority, including his or her personal relationship with him or her and with the entity.

ICT - competence

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

ICT is a teacher's skill

In order for a teacher to be qualified in the field of ICT, he needs to: change (transform) teaching activities; 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).

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 a teacher is its most important component. The modern world is characterized by dynamic development, the availability of wide information flows. In particular, teachers need to focus on improving research, as well as other areas of community life. Without this, students' ICT competencies cannot be changed for the better.

It is important to note that the process of developing ICT competencies involves not only the active use of existing media, but also their effective implementation in the educational process.

The real structure

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

understand 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.

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 at work.

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

Active use of tools in the organization of the educational process, including software testing, e-workbooks, etc.

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, the website and its departments, forums, blogs, school can be a 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

Organize students' work on communication network projects, such as quizzes, remote monitoring and monitoring, and 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 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. Possessing them is as necessary as reading, writing, and arithmetic. However, in everyday life, such as the introduction of ICT, there is a need to increase the information and communication awareness of the participants in the educational process.

A new standard has recently been introduced that is relevant to general and primary education. This requires the creation of one information-educational environment for each educational institution. But for 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 to develop a clear competence, awareness and understanding of the field. Computer literacy is no longer enough - more is needed.

It is important to be able to create such an environment for children to learn about 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 used when needed.

Due to the high level of ICT skills of teachers, the following opportunities have arisen: The presentation of information in the educational process in different ways - it can be in the form of audio, animation, text or video. Dividing large amounts of data into pieces over a period of time makes it significantly easier to master the material. Mobilize student attention. Listening and interpreting the flow of information. Develop cognitive interest while increasing learning motivation. Basic computer skills, global Internet capabilities. Activation of thinking, memory, perception and imagination in the learning process. Determining and enhancing the objectivity of the assessment of knowledge. Enhancing student motivation.

ICT competence is the skillful use of computer technology capabilities 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 become a set of specific technical skills and abilities called a standard.

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

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

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

Within the activity level, it is assumed that functional literacy is used systematically in the organization of the learning process when it gives real positive results. As part of this level, there are two sub-levels - 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. This, in turn, involves the independent development of various types of electronic tools that can be used in the creative learning process.

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

Advantages of ICT technologies

Experience shows that the use of modern ICT technologies in the classroom:

activates students' cognitive activity; increases students' interest in the science being studied; saves time explaining material; allows to go beyond school textbooks, to supplement and deepen their content; allows students to differentiate and individualize their work; allows you to increase the collection of evaluations; creates convenience in the classroom.

Cognitive activity

Increasing the cognitive activity of students in the use of ICT is achieved through: high illustrative and informative richness of the lesson; differentiate questions for the same task; selection of interesting material; high rate of student work.

Increase motivation for the topic

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

Save time reading

Saving time to explain the material is achieved by:

increase the level of systematization of the lesson (from general to special); cause to effect; from simple to complex; from known to unknown; from fun to more interesting; increase work speed; increase the illustration of the study material (it is better to see it once than ...); to strengthen students' work in the classroom and increase their level of personal interest.

Accounts receivable

The increase in science scores is due to: - the work that all students can do in class; Students' use of ICT in homework; Students complete creative assignments; Independent initiative of students, preparation of reports, messages, pictures and more.

Convenience in the classroom

Convenience in the classroom is increased due to: Taking into account the age characteristics of students; Creating a creative environment; Creating successful situations; Use of collective mental activity in the lesson (problem tasks, mental attack, collective creative tasks, etc.). Use in the lesson to establish a link between the material being studied and the students' personal experiences; Involve students' emotional response to lesson content; Link the lesson with other subjects.

Psychological factor

A variety of visual aids 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 through textbooks, diagrams and tables, but also in this form.

Knowledge diagnostics

Information and communication technologies expand the possibilities of diagnosing the level of mastery of subject information in the implementation of the following tasks: Control and generalization lessons, Frontal queries, Lesson queries, Programmed queries. Information processes affect all components of the education system: the content of education and upbringing; activities of teachers and support staff; solving financial and economic problems; identify a system of signs and points of growth for the entire education system. This is because of the pedagogically organized learning process of its participants, as well as the information process involved in the production, storage, exchange, and consumption of a variety of 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. 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 purpose of the general information space is to: organize the delivery of information from external sources within the educational institution; integration of internal processes (educational, organizational) and information technology.

Educational Institution EOIP (Single Educational Information Area)

- this is the system:

includes material, technical, information and human resources; provides automation of management and pedagogical processes, coordinated processing and use of information, complete exchange of information; regulatory and organizational framework, technical and methodological support.

The information infrastructure combines different types of information resources of the enterprise and ensures their uniform use:

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 databases, multimedia educational developments, document storage, website).

ICT - competence includes elements that are formed and used in individual disciplines, integrated interdisciplinary projects, extracurricular activities. At the same time, the development of ICT competence within a particular discipline contributes to the formation of metasubject ICT competence, which plays a key role in shaping universal learning movements.

Assessment of ICT competence

Existing educational approaches require constant monitoring and evaluation of the teacher's level of ICT competence. The main goal is to assess the development dynamics of ICT skills and to identify "steady events" and gaps in a timely manner.

Monitoring is one of the main ways to assess a teacher's ICT competence. It focuses on the study and selection of appropriate ways to address gaps in ICT competence. The modern concept of monitoring the ICT competence of teachers is based on the work of the famous teacher LV Kochegarova. Monitoring serves as a method of assessing the quality of teacher training as a method of assessing ICT competence. Key features include:

information function - allows you to record learning outcomes and evaluate the success, achievements and challenges of each teacher;

control and correction function - provides objective information about the level of informatization of the educational institution in general, ICT - to make adjustments to the teaching methodology, which serves as a basis for the selection of individual educational trajectory the authority of the teacher. This, in turn, helps to create a positive motivation and a conducive environment for each teacher, taking into account the axiological aspects of adult education;

encourages the improvement and deepening of knowledge of motivational function, develops skills of self-control and self-esteem.

The basic level of ICT competence of the teacher should include the system of skills shown in the figure below.

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