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Information and Communication Technologies in the Educational Process

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Abstract: *this article deals with the consideration the importance of information and communication technologies in the educational process. In addition, author provides several points of the prominent experts who contributed in the sphere of pedagogy and gives some suggestions how to conduct lessons innovatively with the help of ICT.*

Keywords: *ICT, competence, communicative competence, cognitive component, didactic capabilities, tools.*

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Technological progress and the process of globalization today are far from the newest processes, but their development does not stand still. Information and communication technologies, including television, radio, as well as new digital technologies such as the Internet and computers, are powerful tools for changing the nature of education. ICTs not only help to expand access to education, but also strengthen the importance of education and improve its quality [1].

Information and communication technologies are actively used in modern systems of open and distance education to transmit information and ensure interaction between the teacher and the student.

But, of course, the process of informatization has affected not only higher educational institutions and various courses providing educational services at a distance, but also schools. The new generation educational standard obliges a modern primary school teacher not only to have knowledge in the field of ICT, but also to be a specialist in their application in their professional activities, in other words, to have ICT competence.

One of the main goals of teaching a foreign language is the formation of a foreign language communicative competence in all the diversity of its components (linguistic, speech, socio-cultural, compensatory, educational and cognitive), necessary for communication in social and professional spheres. Therefore, the use of ICT in teaching a foreign language will be aimed at the development of speech skills (listening, reading, speaking, writing), language skills (grammatical, lexical, phonetic,) and the formation of socio-cultural and intercultural competencies, and the ICT competence of a foreign language teacher will consist in the ability to use the entire arsenal of ICT in the process of teaching aspects of a foreign language and types of speech activity [2].

To study the problem we are considering, we need to distinguish between two important terms: “competence”. In this paper, following A.V. Khutorsky, we understand competence as “a set of interrelated personality qualities (motivation, knowledge, skills, methods of activity) set in relation to a certain range of subjects and processes necessary for high-quality and productive activities in

relation to them." Competence, on the other hand, is "possession, possession by a person of an appropriate competence, including his personal attitude to it and to the subject of activity" [3]. In other words, competence is the level of competence formation as a theoretical construct.

Based on the above, under the ICT competence of a foreign language teacher, we consider "a construct consisting of theoretical knowledge about modern information and communication technologies and practical skills to create and use educational Internet resources, Web 2.0 social services and other ICTs in the process of forming language skills and developing students' speech skills when teaching a foreign language and culture countries of the studied language" [4].

According to M.N. Evstigneev, the ICT competence of a foreign language teacher structurally includes the following five interrelated components: value-motivational, cognitive, operational, communicative and reflexive. The value-motivational component implies awareness of the need for the use of ICT in teaching, the manifestation of initiative in the use of ICT and the desire for self-improvement of the use of new ICT. The cognitive component is characterized by the presence of certain knowledge about the range of modern ICT that can be applied in teaching a foreign language and the culture of the country of the language being studied. The operational component is determined by the implementation of knowledge in practice. The communicative component includes the teacher's ability to share accumulated knowledge and skills, as well as discuss with colleagues the experience of using ICT in teaching a foreign language. The reflexive component consists in the teacher's ability to carry out self-assessment and self-analysis of his activities on the use of ICT in the educational process in order to continuously improve innovative methods [2].

The formation of ICT competence of foreign language teachers allows the following:

- to apply well-known and widely used Internet technologies by students in practice, which helps to increase the motivation of students to learn a foreign language;
- to bring a significant amount of the studied material into the extracurricular form of work, which seems relevant when hours are reduced to a foreign language;
- to put into practice the pedagogical technology "learning in cooperation";
- to develop students' skills of independent learning activities through ICT, necessary for self-education throughout life;
- to teach students a foreign language according to individual trajectories based on ICT, depending on their interests, needs and abilities [2].

According to Pavlova S.A. and Trofimova R.Y. the introduction of information and communication technologies is based on taking into account the age characteristics of students. The use of computer gaming capabilities and didactic capabilities allows you to make the learning process smoother. Most of the knowledge, skills and abilities acquired in the classroom are not used by schoolchildren in extracurricular activities, respectively, their practical value is lost, and their strength is reduced. The application of knowledge, skills and abilities in a gaming computer environment leads to their actualization and motivation for their acquisition. The use of computer technology also allows you to partially defuse high emotional tension, diversify and revitalize the learning process. The main task of the multimedia textbook is to automate all the main stages of learning - from the presentation of educational material to knowledge control and evaluation. At the same time, the obligatory boring educational material is transformed into an exciting, bright, with a reasonable amount of game approach, multimedia form with extensive use of animation, graphics, sound effects and video fragments [5].

The contribution of a foreign language as a school subject to the formation of ICT competence of students includes: preparation of a plan and theses of a message (including hypermedia);

presentation of a message; creation of a small text on a computer; fixation of one's own oral speech in a foreign language in digital form for self-correction; oral presentation accompanied by audio and video support; perception and understanding of basic information in small oral and written messages, including those received by computer communication methods; the use of a computer dictionary, screen translation of individual words".

The formation of ICT competence should take place not only in classes on individual academic subjects, where subject ICT competence is formed, but also within the framework of a supra–subject program for the formation of universal educational actions.

Thus, when mastering personal actions, the formation of:

- ✓ a critical attitude to information and the selectivity of its perception is carried out;
- ✓ respect for information about the private life and information results of other people's activities;
- ✓ Fundamentals of legal culture in the field of information use.
- ✓ when mastering regulatory universal educational actions, it is provided:
- ✓ evaluation of conditions, algorithms and results of actions performed in the information environment;
- ✓ using the results of the action posted in the information environment to evaluate and correct the action performed;
- ✓ Creating a digital portfolio of student's academic achievements.

In the development of cognitive universal educational actions, ICTs play a key role in such general educational universal actions as:

- ➢ information search;
- ➢ fixing (recording) information with the help of various technical means;
- ➢ structuring of information, its organization and presentation in the form of diagrams, cartographies, time lines, etc.;
- ➢ creation of simple hypertransmissions;
- ➢ Construction of the simplest models of objects and processes.

ICT is an important tool for the formation of communicative universal learning activities. For this purpose, the following are used:

- ✓ exchange of hypertransmissions;
- ✓ speech with audio-visual support;
- ✓ fixing the course of collective/personal communication;
- ✓ Communication in a digital environment (e–mail, chat, video conference, forum, blog).

"The formation of ICT competence of students takes place within the framework of a system – activity approach. Mastering the skills to work with information and use ICT tools can also be included in the content of elective courses, clubs, extracurricular activities of schoolchildren".

A.V. Dvoretskaya identifies several types of educational tools using ICT based on their functional purpose: presentations, electronic encyclopedias, simulator programs, virtual experiment systems, knowledge control software systems, electronic textbooks and training courses, educational games and educational programs [6].

We will look at each of them in more detail.

A presentation is an electronic filmstrip that can include animation, audio and video clips, and elements of interactivity. Software tools such as PowerPoint or Open Impress are used to create it. Easy to use and accessible to everyone who has a personal computer, the presentation expands the range of conditions for creative activity of students, psychological growth of personality, developing independence. Presentations at school are actively used to present student projects.

An electronic encyclopedia is an analogue of a conventional reference and information publication. Hypertext systems and hypertext markup languages, such as HTML, are used to create such encyclopedias. Unlike its paper counterparts, the electronic encyclopedia has additional properties, such as a convenient keyword search and navigation system based on hyperlinks, as well as the ability to include audio and video clips.

Didactic materials are collections of exercises, tasks, dictation, examples of essays presented in electronic form, usually in the form of a simple set of text files in doc, txt formats and combined into a logical structure by means of hypertext.

The simulator program performs the functions of didactic materials and can track the progress of the solution and report errors. These programs are used mainly at the training stage.

The virtual experiment system is a software package that allows you to conduct experiments in a virtual laboratory. Their main advantage of these systems is the possibility of conducting such experiments, which in reality would be impossible for security reasons or temporary characteristics.

Knowledge control software systems include questionnaires and tests. Their main advantage is the fast, impartial and automated processing of the results obtained. The main drawback can be considered an inflexible response system that does not allow the subject to show his creative abilities.

Electronic textbooks and training courses combine all or several of the above types into a single complex. For example, the trainee is first asked to view the training course in the form of a presentation, and then put a virtual experiment based on the knowledge gained while viewing the training course. Often at this stage, an electronic reference book on the course being studied is available to the student. And at the final stage, the student must answer a set of questions or solve several tasks.

Educational games and educational programs are interactive programs with a game scenario. Performing various tasks during the game, children develop memory, spatial imagination, as well as additional meta–subject skills such as, for example, quick keyboard work [6].

T.V. Yatsenko identifies the following types of lessons on the way information technology is used:

- A traditional lesson on a topic in which ICT is used to present new information, to consolidate what has been passed, to practice learning skills, to repeat, practical application of acquired knowledge, skills, to generalize and systematize knowledge, or even to control knowledge.
- Integrated lesson. For example, this type of lesson can include the integration of computer science, Russian language and chemistry. The task will sound like this: “Within two weeks you have to find 5 chemistry sites on the Internet and make a review for each one”. Thus, students performing a chemistry task directly, use information and communication technologies and develop writing skills.
- Preparation of reports and messages. Working with Internet resources. Students should be trained to use the search engine correctly without wasting time.

- Project activity. The use of ICT in this activity is one of the forms of presentation of the material, which activates listeners and reflects the structure of the speech.
- E-mail correspondence is a way to establish cross-cultural ties and break stereotypes.

A multimedia school lecture includes a demonstration displayed on the screen using a projector. The presentation contains: the name of the sections and the main theses, various illustrations (including photographs, video series, dynamic computer models, animation). The teacher's speech should contain links to the electronic resources used, which can then be used by students in independent work. The speech can be presented in the form of audio or video recordings or in text form.

- ✓ Virtual laboratory.
- ✓ Virtual tour.
- ✓ Participation in international projects.

The use of ICT in the educational process allows: to activate the cognitive activity of students in the classroom and outside of school hours and maintain a steady interest in the subject. It can provide support in modeling and visualization of complex processes and phenomena. The introduction of ICT enables students to engage in research activities or search for the necessary information on the Internet to fill knowledge gaps. ICT contributes to the development of creative abilities and the formation of a general and information culture among students [9].

The main advantages of using ICT, according to T.V. Yatsenko, are:

- The ability to carry out a differentiated approach to students of different levels of readiness for learning;
- Use of visual, audiovisual and video accompaniment in the lesson;
- Maintaining a high pace of the lesson, classes;
- Ensuring effective feedback between the teacher and students;
- Implementation of operational and objective control of students' UUD;
- Achieving a high quality of material assimilation by students [7].

Podlesnaya O.V. also refers to the advantages of the introduction of ICT tools in the educational process:

- ✓ Visual and pictorial;
- ✓ Variety of forms of presentation of educational material;
- ✓ Interactivity;
- ✓ Rational use of lesson time;
- ✓ Modeling of processes that cannot be demonstrated in a school laboratory;
- ✓ Organization of self-control at a convenient time;
- ✓ Objectivity and speed of evaluation in computer testing;
- ✓ Mathematical processing of results;
- ✓ Organization of independent search and research activities;
- ✓ Using a large database of facilities for preparing speeches;
- ✓ The possibility of a virtual tour;

- ✓ Prompt receipt of encyclopedic information [8].

The disadvantages of using ICT in the classroom include:

- Long-term preparation of educational material, its selection and creation of resources;
- Insufficient methodological readiness of the teacher regarding the use of ICT;
- Lack of electronic versions and interactivity of some educational and methodical complex
- Suppression of interpersonal communication during lesson overload;
- The rejection of a "live" experiment in favor of an electronic one, and as a result, the absence of a direct study of reality;
- Poor provision of educational institutions with modern equipment;
- Aggravation of social inequality in the organization of homework with the use of ICT (if there is no possibility of preparing a student for a lesson in the classroom at school);
- The risk of obtaining false information from the Internet [8].

So, information and communication technologies are quite obvious manifestations of the information revolution. An increasing number of teachers, methodologists, parents and students are coming to believe that as a result of the acquired knowledge about information technologies and the acquired skills of working with them, students will be better prepared for the modern conditions of the world. By receiving education not for life, but throughout life, improving through self-education, people will be able to become successful and achieve material well-being in a changing world. To form this ICT competence in students is the task of modern education.

The inclusion of ICT technologies in the educational process makes it possible to optimize and diversify it, to involve students in it as subjects of the educational process, as well as to develop creativity, independence and critical thinking among students.

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