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The Efficiency of Using New Information and Communication Technologies in Primary School Lessons: E-Learning Experience

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Abstract: The importance of the topic of the article lies in the fact that in the era of postmodernism, informatization of the elementary school allows you to improve the quality of the educational process, through the use of information and communication technologies (ICT) to simplify management of the educational process, to organize the exchange of teaching experience, to expand didactic capabilities of the lesson. The purpose of the article is the need to study and justify the importance of using new ICT in primary school lessons, to expand the experience of e-learning in primary school. The article expands the concept of information and communication technologies and their benefits in primary school; given the rationale for conducting a lesson using ICT; the experience of e-learning in the primary school of the postmodern era is characterized. Thus, one of the priorities of the development of education in postmodern society is the professional application in all areas of information technology and e-learning, which can increase the interest of present students and improve the ability to adapt to current electronic information society. The formation of knowledge and skills in the field of computer literacy of teachers and students will be an indicator of compliance of its level with current requirements.

Keywords: *Digitalization of education; present-day means in education; methods of informatization implementation; model of using new technologies; educational platforms.*

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Introduction

The relevance of the topic of research in the international context of similar research in this area is that information and communication technology (ICT) education has become a familiar phenomenon for teachers and students in the era of postmodernism. The computer allows the teacher to more deeply and diversely implement the teaching, educational and developmental function in the classroom. It can be used in all subjects in the classroom. Students can quickly learn to use a computer to the level required to perform computer tasks, Bykov (2012).

However, the use of ICT in the learning process requires compliance with certain requirements and special teacher training. For this reason, each teacher needs to acquire specific knowledge about the nature and possibilities of ICT, methodological knowledge and practical skills and abilities to use computer programs and devices in class and in extracurricular activities. The teacher must: purposefully design and correctly organize the educational process with the help of a computer, otherwise it can even go against the logic of the lesson, prevent the achievement of goals and learning objectives; not only thoroughly know the methods of teaching his subject, but also have access to electronic teaching tools, that is, be able to create and properly use these tools in the classroom; create all computer tasks in accordance with the subject and methodology of their teaching, (Demyanenko, 2012; Mitzlaff & Wiederhold, 1990).

Analysis of primary school experience shows that not all teachers have the necessary knowledge and skills, have difficulty developing ICT tasks in the classroom, and do not have sufficient skills to take full advantage of computer-based learning opportunities. These materials represent the experience of quite effective use of ICT in the education of primary school students, they can be useful in terms of sharing methodological experience, especially for teachers who are beginning to master the practical application of ICT.

In the works of domestic and foreign scholars there are studies that study the effectiveness of the introduction of information and communication technologies in the classroom in modern educational institutions (Zhurat, et al., 2020; Berbets, et al., 2021; Melnyk, et al., 2021). In the scientific works of V. Bykov, O. Spirin, & O. Pinchuk (2014) the essence of the concept of "information technology learning" is revealed and the problems of the modern process of informatization in comparison with other European countries are outlined. R. Gurevich (2006) proved that in the era of postmodern society teachers and students must learn the basic concepts needed to master ICT, drew attention to the need to borrow the

foreign experience in the perspective of informatization of primary education. In his works, V. Demyanenko (2015) motivated to expand the experience of e-learning in primary school. Foreign researchers E. Vlasova, E. Barakhsanova, S. Goncharova, P. Aksyutin, & Z. Kuzin (2015) stressed the need for e-learning to improve the educational process in postmodern society. According to T. Berbets et al. (2021), the implementation of ICT achieves common educational goals, contributes to the development of communicative skills: the ability to gather facts, compare it, organize, express their thoughts on paper and orally, reason logically, listen and understand oral and written language, discover something new, necessary in the primary level.

The purpose of the article - the need to study and justify the importance of using new ICT in the lessons in the elementary school, to expand the experience of e-learning in the elementary school.

The concept of information and communication learning technologies and their advantages in primary education

In the era of postmodern society, teachers and students must learn the basic concepts needed to master ICT. It should be noted that (Schrackmann, Knüsel, Moser, Mitzlaff, & Petko, 2008):

- technology (technology from the greek techno - art + logos - doctrine) - the amount of knowledge that can be used in the learning process, as well as methods, techniques, mode of operation, sequence of operations and procedures;

- information technology - a set of methods, production and software tools, combined into a technological chain that provides collection, processing, output and dissemination of information; designed to reduce the complexity of the use of information resources.

Of course, these concepts should be disclosed in understandable language for younger students, but they must know the meaning of the concepts and correctly, appropriately use them in their speech, Boltuc (2017).

The use of ICT in the educational process will ensure that primary school students will have an idea, Boltuc (2017):

- about the possibilities of ICT and the prospects of their use in their further education at school;

will know:

- about new opportunities for computer-assisted learning;

- about methods and ways of solving educational and practical, including creative, tasks with the help of computer programs;

- assignment of various computer equipment, rules of work with it;

will be able to:

- use the computer as a means not only of entertainment, games, but also as an effective and affordable means of learning, realization of their needs for creative self-realization;

- use the simplest software;

- present the results of their educational and practical activities in a form that corresponds to the current level of ICT development (Melnyk, et al., 2021).

The tasks of using ICT in the process are determined by the listed goals. In the process of designing and implementing the educational process using ICT, the teacher has, Friedrich (2007):

- to reveal to students the potential of computers and computer programs as today's teaching aids and prospects for the use of ICT in teaching middle and high school, in future professional activities;

- visually demonstrate to students the possibilities of learning with the help of computer programs and equipment;

- to teach students the techniques and methods of finding and processing information, solving educational, practical, creative tasks with the help of computer programs;

- to form in children of age skills of safe use of various computer equipment, to teach rules of work with it;

- to teach students the techniques of presenting the results of their educational and practical activities in a form that corresponds to the current level of ICT development (Zhaldak & Franchuk, 2020).

The use of ICT in the learning process gives the teacher many advantages, as it helps to develop a unique personality in each student, gives the opportunity to teach everyone differently at the same time, does not limit the initiative of students; promotes the organization of independent work of students, the development of creative potential, because with the help of a computer the most effective organization of cognitive activity of students; allows you to use a variety of functions and graphics capabilities of current computer systems and databases, the availability of work on the Internet; helps to implement integrated courses in the educational process, to use, in addition to the education system, design and research forms of organization of educational activities (Kartashova, 2018; Kalas & Lehotska, 2007).

Active use of ICT achieves common educational goals, promotes the development of communication skills: the ability to collect facts, compare them, systematize, express their thoughts on paper and orally, think logically,

listen and understand oral and written language, discover something new, make decisions and make decisions (Berbets, et al., 2021).

The most effective are the models that allow the use of ICT to solve motivating learning tasks. The use of ICT in the learning process significantly expands the ability of the teacher, who gets the opportunity to create the necessary visual structures, logic diagrams, drawings and other images visually according to specific tasks and manuals, including the use of animation to show processes and phenomena on diagrams, models, that is, as it is impossible to see in the real process. Most present-day software is available to teachers, does not require special technical training, it is adapted to the capabilities of users (Petko, Mitzlaff, & Knüsel, 2007).

The teacher must be a confident user, that is, he should be able to use existing software, combine different software and adapt them to the conditions and needs of a particular class, a particular lesson. ICT allows the educational process to go beyond the school walls: in museums, laboratories to create and use interactive multimedia presentations. This allows students to learn more actively through the use of sound, color and animation, to form a systematic view of the world around them. When creating such teaching aids, the teacher takes into account the psychological characteristics of primary school children, especially first-graders, using bright colors and animation, introducing the participation of fairy-tale characters in the lesson, which positively motivates the child to learn. Computer classes should be conducted in addition to regular classes so that students can better understand the material, feel the subject of the lesson and express themselves creatively (Onishchuk, et al., 2020).

Logical justification of the lesson using ICT

Each computer lesson is mostly integrated, because in such a lesson, in addition to general tasks, computer skills development tasks are solved (Kepser, 2009; Spanhel & Kleber, 2020).

However, it is important to remember that you should use your computer only when necessary. And so the teacher must clearly answer the questions.

1. What lessons, topics do you need to do on the computer?
2. How to organize computer courses?
3. What should students be able to do while working on a computer?
4. If you work with a computer, why would you teach them in this lesson?

The logic of the development of computer-based learning support is as follows.

1. Choice of field of study and curriculum.

2. Analysis of the content of the selected fragment of educational activities and methods of its teaching in order to justify the need for computer classes.

3. Design a set of tasks for computer classes.

4. Choice of software for task development.

5. Development of computer tasks using the software used.

6. Consideration, testing and processing of developed computer tasks.

7. Development of guidelines for teachers and students.

To minimize computer use during the lesson, students should learn the following:

- use alphanumeric keyboards;
- Use the "mouse" manipulator;
- Work with the main commands "Open" and "Close", "Menu", "File";
- Create and edit simple graphics and text images using the tool menu (Tkachuk, et al., 2021).

With the help of ICT you can organize different types of classes: combined classes, classes on control and correction of knowledge and skills, classes to improve knowledge and skills. Different types of training are used - individual, group, individual. Classes with the use of ICT can improve and intensify the learning process, create a positive motivation for intellectual and practical actions, which promotes the development of fine motor skills of the hand, the development of sensory perception (all analyzers); The development of attention and tactile memory, the symmetry of the left and right hemispheres stimulates cognitive activity (Spanhel & Kleber, 1996).

When implementing projects of varying complexity using ICT tools, students perform tasks that are meaningful, interesting and important to them personally, and at the same time get acquainted with models of educational activities and acquire specific technical skills of ICT, as well as a set of technical solutions - equipment and information resources. It is important to note that while completing project tasks, students develop communication skills by working in a group, Judrups (2015).

Teachers can use project-based teaching methods when students use computers to create their own projects. The development of projects uses creative group or individual work of students, the result of which can be used in school life or educational activities (albums, books, textbooks and visual aids, etc.). On the basis of simple projects it is possible to create more

complex projects on the basis of individual - complex groups. That is, work on one project can naturally "flow" into the next project, which he covers.

As part of pedagogical activities, the work should be aimed at ensuring that each student, but also the class as a whole, create their own personal information space. This space includes the multimedia work of the class and each student, as well as other information objects, including the results of project work. The organization of project work includes the following stages (Sorochinsky, Barakhsanova, Vlasova, Prokopyev, & Burnashev, 2020).

1. Familiarity with the project, task definition, awareness and formulation of the project goal

2. Start designing, discuss the results of the project and the process ("What do we want and how can we achieve it?"), Identify the necessary technical skills to implement the project (What do we need, where and how do we get it?

3. A short practical lesson for the first acquaintance with the necessary skills.

4. Planning and organization (formation) of work, formation of groups and distribution of tasks.

5. Realization of the project in models and objects of the real world. Improving technical skills. Clarification of the result and action plan.

6. Presentation of the results of joint work as multimedia works.

7. Discussion of results, project progress and acquired skills that may be useful.

A project-style lesson can be described as a lesson in creative research that involves a combination of individual and group work. You can divide the class into groups and ask them to complete different tasks and then organize general discussions, Struck (1998).

All projects involve both computer and preliminary or fragmentary non-computer implementation technology. For example, hyperstructures should first be modeled manually using paper, glue, rope, and so on. Work on a project with images can be combined, continued or partially duplicated in real space - create an application from photos printed on a printer, texts typed on a computer, and drawings made with paints and markers (Sukhikh, 2020; Gerick, Eickelmann, & Bos, 2017).

Project methods are especially effective in organizing students' research work. The student's research activity should rightly be called educational and research, because it is primarily aimed at mastering the knowledge necessary to find new information, techniques and methods of self-knowledge, mastering research methods. Such work, which involves

independent creative research on the topic, will be most interesting and effective if students master the techniques of working with the Internet to obtain information, process it and submit in the form of creative projects created using ICT. When organizing students' independent project activities with creative research projects, this is the most effective way to teach students to work with computers. Such work is aimed at deepening and consolidating students' knowledge, skills and abilities, in particular - the use of ICT in solving creative tasks, and mastering various ways of presenting information develops aesthetic and even artistic taste of students (Gerasymova, et al., 2019).

The most effective way to create hypermedia works and multimedia presentations in elementary school lessons is to use simple and convenient tools - editors of presentations, texts, sound, photos and hypertext pages. Simple editors can be used for primary school, as creating electronic and multimedia presentations should not be difficult. The most effective in primary school is the use of creative environments that use the language of the Logo, Vovk (2021).

The widespread use of multimedia projectors allows you to significantly increase visibility through the use of multimedia presentations during the lesson, using both ready-made multimedia materials, and often developed by the teacher. For more effective use of multimedia presentations, it is necessary to purchase professionally executed and pre-prepared lesson sets of visual materials, methodically related to the options of thematic planning. But the teacher must be able to create a presentation in accordance with the specific tasks of the creative task created by him for students, a specific project or its defense (Zhurat, et al., 2020).

When developing multimedia presentations should take into account the rules of design - do not clutter a single slide with a lot of information, each slide to place a little more than two pictures; font size on slides should be at least 24-28 points, use animations once in 5 minutes; maintain a single style of presentation: the same design of all slides: background; name, size, color, font image; color and thickness of different lines, etc. In addition to the above possibilities of using ICT, this technology allows you to create and use computerized textbooks, Demyanenko (2012).

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primary school is the use of a creative environment in which the language of the logo is used (Sheremet, Leniv, Loboda, & Maksymchuk, 2019).

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When developing multimedia presentations should take into account the rules of design - do not overload one slide with a lot of information, place on each slide a little more than two pictures; The font size on the slides should be at least 24-28 points, use the animation every 5 minutes; Support for consistent presentation style: the same design of all slides: background; name, size, color, font; Color and thickness of various lines, etc. In addition to the above methods of using ICT, this technology allows you to create and use computer textbooks.

The experience of e-learning in primary school in the postmodern era

Involving students in learning depended only on the teacher's ability to present interesting material. In the postmodern era, the quality of the educational process can be improved with the help of e-learning tools - create interactive and diverse materials (Nerubasska, Maksymchuk, 2020; Nerubasska, Palshkov, & Maksymchuk, 2020; Khatsaiuk, et al., 2021; Sheremet, et al., 2019; Gerasymova, et al., 2019; Onishchuk, et al., 2020).

E-learning is the transfer of knowledge using the Internet and digital technologies, for example, in the form of audio messages, video tutorials and online tests. All kinds of gadgets play a key role in the learning process (Khatsaiuk, et al., 2021).

Today, e-learning is used in various fields: in schools and universities, teachers can diversify the presentation of material or conduct a lesson remotely. Online schools and training centers conduct webinars and create online courses that expand the student base (Sorochinsky, Barakhsanova, Vlasova, Prokopyev, & Burnashev, 2020).

In some sources, electronic is called synonymous with distance learning. Distance learning takes place using information technology at a distance without personal contact. And e-learning can be both part-time and full-time, but always with the use of materials in digital form.

Advantages of e-learning (Nerubasska, Palshkov & Maksymchuk, 2020):

- high involvement in the educational process

- different formats of material and forms of control arouse interest and desire to learn. For example, a child read a short interactive text, watched a video tutorial, and tested it. Formats are constantly changing, motivation to learn increases and the speed of the course increases.

- convenient access: all you need for the lesson is a phone with Internet access. A person can be in the classroom or at home - digital materials are available anywhere and at any time.

- opportunity to practice practical skills.

Various simulators, simulators and online testing allow you to apply the theoretical knowledge in practice. For example, a dialog simulator for sales managers immerses you in a real dialogue with the customer.

- adaptation of educational material;

The course can be adapted to different needs: depending on the age of students, initial training, the results of the intermediate test. For example, if a child does not pass the test on the topic, he returns to him for re-study or simpler topics are selected, Demyanenko (2012).

- wide coverage and speed;

Principles of quality e-learning that a primary school teacher should take into account (Nerubasska & Maksymchuk, 2020):

- multiformat: to make the study material as interactive as possible. Combine and alternate different tools, such as video lecture, dialogue simulator, presentation, audio and text.

- elements of micro-learning: divide the study material into small blocks for better learning. After each block, perform consolidation exercises. The student will quickly complete the lessons and move on the course, supporting his motivation with small achievements.

Principles of microlearning → presentation of material: to present theoretical information in simple and clear language. That the educational process passed easily and without internal resistance to the study of complex material (Bani Hani, et al., 2021).

- Personalization: each person has their own level and speed of learning, so it is not necessary to standardize the curriculum. Make the material adaptable to different needs. It is important that the child has the opportunity to choose an individual trajectory of development - to go through the topics in a certain sequence or to skip something, if you already know the material.

- Gamification: add elements of the game to the learning process, score points and assign stars for tasks or create a plot in which you want to lead the character to victory. This helps to increase involvement, to introduce an element of competition into the learning process.

- Socialization: add the opportunity to compare their achievements with other students. For example, create a rating system based on the results of the course or a group discussion of achievements in chat. You can also open voting for individual course topics so that future students can choose from the most interesting and popular.

It is important to design the e-course in such a way that each lesson brings the student to a specific goal - he received a certain unit of knowledge and consolidated a mini-skill, Kartashova (2018).

To create e-learning, you need to follow 5 steps (Zhurat, et al., 2020):

1. Define the purpose of training and make a curriculum. If you have already taught people, you just need to adapt the finished program to a distance format. If you want to develop a program from scratch, you need to gather and structure expertise.

2. Create multimedia elements to make learning interesting and diverse. For example, record short videos, prepare presentations, develop dialogue simulators to practice communication skills. Choose methods of knowledge control. For example, this could be tested or open-ended questions.

3. Choose a tool to implement e-learning. For the online format, it is convenient to use distance learning platforms (EMS). For example, the Unicraft platform allows you to create lessons in 11 different formats. It is worth creating materials, assigning students to them and monitoring the results of development. In addition to the desktop version, you can use a mobile application so that students can study anywhere (Demyanenko, 2012).

E-learning is learning through digital technologies and multimedia tools. It helps to make the distance and full-time learning more interesting, better to master theoretical material and consolidate practical knowledge. Allows you to create any curriculum for elementary and online students, as well as for teachers.

Conclusions

The result of the study is that the article expands the concept of information and communication technology training and its benefits in the elementary school. Information technology is a set of methods, production and software and technological means, combined in a process chain that

provides the collection, processing, output and distribution of information designed to reduce the labor intensity of the processes of using information resources.

The article gives a logical justification of the lesson with the use of ICT, because the inclusion of ICT in the learning process allows the teacher to organize various forms of educational and cognitive activities in the lessons, to make active and focused self-session work of students. ICT can be considered as a means of access to learning information, providing the ability to search, collect and work with the source, including the Internet, take delivery media and chronological information. The use of ICT in the learning process will be made through the materials used and the actual effects.

Also the result of the study is that the article characterizes the experience of e-learning in postmodern era elementary schools. E-learning enables the transfer of knowledge using the Internet and digital technologies, such as audio messages, video lessons, and online tests. Gadgets of all kinds play a key role in the learning process.

One of the results of education and upbringing in primary school should be the readiness of children to master current computer technology and the ability to update the information obtained with their help for further self-education. In these implementations, there is a need for primary school teachers to use information and communication technologies in the educational process.

The main goal of ICT implementation is the emergence of new types of educational activities. The use of personal computers, multimedia programs and users can be understood in school subjects, optimizing the processes of understanding, memorizing and mastering students, increased the topic of motivation and learning efficiency, as well as provided developmental learning, improving forms and methods of organizing and educational process.

The results of the study lead to the creation of an appropriate project and its further implementation. Thus, we see that the introduction of e-learning in the practice of teaching primary level subjects has good prospects.

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The Author 3 analyzed the characterized experience of e-learning in the postmodern era elementary school.

The Author 4 examined the functions of e-learning in the elementary school.

The Author 5 worked on the linguistic design of the article material;

The Author 6 formed and arranged the list of references.

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