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THE USE OF EDUCATIONAL COMPUTER PROGRAMS IN CORRECTIONAL WORK WITH PRESCHOOL CHILDREN

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The article clarifies the role, content and requirements for the selection of computer programs for correctional work with preschool children. The approaches in the pedagogical literature concerning the application of computers in preschool and primary school age are analyzed, namely: the use of computers for learning; the use of computers as a means for child's cognitive development.

To achieve the goal, methods of analyzing scientific literature and studying the scientific papers in this area have been used. Methods of empirical research presupposed conducting a questionnaire and survey: collecting data from preschool teachers on the importance of creating organizational and pedagogical conditions for the use of computer programs in correctional work with preschool children.

The computer programs that are necessary for a speech therapist in preparing for classes are presented: PowerPoint, Paint, Adobe Photoshop, CorelDRAW, Word Text Editor.

It has been established that the use of computer programs in correctional work with preschool children will be effective under the following organizational and pedagogical conditions: taking into account the age and individual characteristics of children; the use of personally oriented learning and a competency-based approach; increasing the level of motivation of children, their interest and stimulation of solving problem-oriented life situations that require children's significant mental efforts; strengthening the developmental focus of the game; ensuring active interaction of all participants in the game activity.

The general advantages of using computer programs in correctional work with preschool children have been formulated: a flexible combination of various methods, techniques and means of effective learning; intellectual development of children and all cognitive processes; development of creative

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imagination and stimulation of cognitive interest in preschool children; increasing the level of motivation when children can learn from their own experience and the experience of others in a specific matter; friendliness towards the teacher and each other; cohesion of the children's collective; development of the ability to critically assess the situation and predict the consequences of one's own activities, etc.

Keywords: *information and communication technologies, computer program, preschool children, correctional work, organizational and pedagogical conditions.*

ВИКОРИСТАННЯ НАВЧАЛЬНИХ КОМП'ЮТЕРНИХ ПРОГРАМ У КОРЕКЦІЙНІЙ РОБОТІ З ДІТЬМИ ДОШКІЛЬНОГО ВІКУ

В. В. Павленко, Н. П. Бірук, М. В. Чупахіна

У статті з'ясовано роль, зміст та вимоги до відбору комп'ютерних програм для корекційної роботи з дітьми дошкільного віку. Проаналізовано підходи у педагогічній літературі до застосування комп'ютера у дошкільному та молодшому шкільному віці: застосування комп'ютера для навчання; використання комп'ютера як засобу для пізнавального розвитку дитини.

Для досягнення мети були використані методи аналізу наукової літератури та огляду наявних досліджень у цій галузі. Методи емпіричного дослідження: проведення анкетування та опитування: збір даних від вихователів ЗДО щодо важливості створення організаційно-педагогічних умов для використання комп'ютерних програм у корекційній роботі з дітьми дошкільного віку.

Представлено комп'ютерні програми, які необхідні під час підготовки учителя-логопеда до занять: PowerPoint, Paint, Adobe Photoshop, CorelDRAW, Word Text Editor.

Встановлено, що використання комп'ютерних програм у корекційній роботі з дітьми дошкільного віку буде ефективним за таких організаційно-педагогічних умов: врахування вікових та індивідуальних особливостей дітей; використання особистісно орієнтованого навчання та компетентнісного підходу; підвищення рівня мотивації дітей, їх зацікавлення та стимулювання до розв'язання проблемно-орієнтованих життєвих ситуацій, що потребують значних розумових зусиль дітей; посилення розвивальної спрямованості гри; забезпечення активної взаємодії всіх учасників ігрової діяльності.

Сформульовано загальні переваги використання комп'ютерних програм у корекційній роботі з дітьми дошкільного віку: гнучке поєднання різноманітних методів, прийомів та засобів ефективного навчання; інтелектуальний розвиток дітей та всіх пізнавальних процесів; розвиток творчої уяви та стимулювання пізнавального інтересу дітей дошкільного віку; підвищення рівня мотивації, діти можуть вчитися на власному досвіді та досвіді інших у конкретній справі; доброзичливість по відношенню до вихователя і один до одного; згуртування дитячого колективу; розвиток вміння критично оцінювати ситуацію та передбачати наслідки власної діяльності тощо.

Ключові слова: *ІКТ, комп'ютерна програма, діти дошкільного віку, корекційна робота, організаційно-педагогічні умови.*

Introduction of the issue. Reforming the modern preschool education system provides access to full-fledged education for all children, including the children with minor speech disorders. The organization of their education requires a special approach, which involves constant emotional support for preschool children learned in classes. The process of teaching a child with speech disorders requires a long time and takes a lot of strength from the child. Over time, the child loses interest in classes with a speech therapist, loses motivation to speak "correctly and beautifully".

Nowadays, the introduction of computer technologies is a new stage in the educational process. Speech therapists are not the passive onlookers, but are actively involved in the process of widespread use of information and communication technologies (ICT) in their practice. The use of computer programs in speech therapy work contributes to the

activation of involuntary attention, increasing the motivation for learning, expanding the possibilities of working with visual aids, which allows achieving the goal and solving tasks in speech therapy classes and, in general, optimizes the correctional and educational work of the teacher being a speech therapist.

Current state of the issue. The need to develop "e-learning and the formation of digital competence in participants in the educational process" has been stated in the order of the Ministry of Education and Science of Ukraine "On Approval of the Regulations on the National Educational Electronic Platform" (2018) [2].

Various aspects of the introduction of digitalization into the educational space have become the subject of research by foreign researchers (R. Bassett, C. Gere, G. Creeber, M. Deuze, G. Kreeber, R. Martin, L. Manovich, J. Stommel, M. Hand [8-13]) and domestic scientists (Ye. Antonov, O. Chekan, O. Kryvonos, O. Forosyan, and others).

O. Chekan emphasizes the importance of using computer programs in correctional and developmental work with children with special educational needs and analyzes the role of computer programs in conducting correctional work. The scientist believes that computer programs have a positive impact on learning and the development of skills in children with special educational needs. The use of computer programs stimulates their motivation and helps improve the perception of information [7: 89].

O. Forostyan notes that computer technologies are a modern reality as for their application in the educational process. The use of computer technology enables to optimize the pedagogical process, individualize the training of children with developmental disorders and significantly increase the effectiveness of any activity [5: 89]. Training with the help of modern computer technologies carries a motivational potential, enabling to make classes more information-rich [3: 361].

The purpose of the article is to clarify the essence and types of computer programs for correctional work with preschool children.

Research methods. To achieve the goal of the research, the methods of analyzing scientific literature and reviewing the research in this area have been used including the methods of empirical research, conducting a questionnaire and survey that presupposed collecting data from preschool teachers on the importance of creating organizational and pedagogical conditions for the use of computer programs in correctional work with preschool children.

Results and discussion. Pedagogical work with children with special educational needs presupposes taking into account their development potential, which can be fully realized through the creation of organizational and pedagogical conditions.

Scientists (I. Sukhina, S. Trykoz, O. Chebotaryova) define a correction-oriented educational process as a process in which special pedagogical techniques are used to correct the shortcomings characteristic of pupils, as well as to promote their intellectual, physical development and the formation of the personality in general [4; 6].

During preparation for classes, a speech therapist can use the following types of computer programs:

– *PowerPoint*, allowing to design classes activities with a series of various tasks;

– *Paint, Adobe Photoshop, CorelDRAW* allowing to create bright illustrations for classes;

– *Word Text Editor* helps the speech therapist in conducting diagnostics: the program enables to save in the computer's memory the task done by the child at the beginning of the academic year and after the correction process for a visual comparison of the results.

The computer's memory allows the teacher to transfer the handout materials concerning the correction and speech development to electronic file cabinets, replenish the materials when necessary, which is also very convenient and aesthetically significant.

The convenience and efficiency of working with *Word Text Editor* is manifested in the need to correct an error, delete or move a word, sentence, as well as to replace part of the task.

It is important for each child to see the final result of the work performed by the child independently or with the help of a speech therapist. Given this, the typed text can be printed using a printer or its correct version written in a notebook.

PowerPoint, Paint, Adobe Photoshop, CorelDRAW, Word Text Editor are the programs that are most often used by teachers in preparation for classes, but there are many others, no less interesting programs that are suitable for use in speech therapy practice. And each speech therapist can choose the most acceptable ones from this variety.

For preschool children, there are many computer programs for teaching mathematics, reading, counting and for the general development of children (imagination, attention, thinking, logic). Correctional work requires a systematic, comprehensive approach. The most effective computer programs are: specialized computer speech therapy programs "Ten Monkeys", "Learning to Count", "Flat Figures", "Volumetric Figures". Such games are designed to correct general speech problems in children of senior preschool and primary school age. They allow the teachers to effectively organize individual and group work with children.

To develop children's skills in mathematics, logical reading and writing, as well as to develop thinking, attention, and imagination, one can use games taken from children's development sites such as: the children's portal "Sonechko", online development games, "Logic Like", "Pepi", "Cartoon Family" and many others [1].

The process of solving educational and correctional tasks with the help of computer programs is integrated into the system of joint correctional work in accordance with children's individual capabilities and needs. Each lesson is comprehensive, that is, it is an optimal combination of traditional and computer-based means of correctional training, which meets the individual educational needs of a child with speech disorders.

The work with using a computer program is carried out with a focus on visual perception and controlling the results of the user's activity. In some exercises that cause difficulties for children, the possibility of additional support for their hearing is provided. Thus, compensatory mechanisms are activated, allowing the formation of stable visual-kinesthetic conditioned-reflex connections in the central nervous system. In the process of speech therapy work, correct speech skills are formed on their basis, and subsequently self-control over one's own speech. This creates favorable conditions for effective and short-term correction of speech disorders. Computer technologies make it possible to develop a series of exercises, the use of which allows working at the formation, development and correction of the following *characteristics*: sound pronunciation, prosodic components of speech, phonemic hearing and perception, phonemic analysis and synthesis, communication skills, articulatory motor skills, fine motor skills (working with a mouse, keyboard), auditory and visual perception, attention, verbal and logical thinking.

The computer program should include a series of tasks for the correction and development of *speech components*: prolonged exhalation, fusion of speech breathing, voice volume, duration of sound, pronunciation of vowels and consonants, pace and rhythm of speech.

The use of computer programs in speech therapy allows working with several groups of children simultaneously, helps activating involuntary attention, increasing motivation for learning, expanding the possibilities of working with visual material, which contributes to achieving the set goal and solving tasks in speech therapy classes and, in general, optimizes the work of the speech therapist.

A *number of advantages* should be highlighted in the use of a computer

compared to traditional forms of teaching preschoolers and younger schoolchildren:

– the computer reveals a figurative type of information, understandable to children who do not yet perfectly master the technique of reading and writing; motions, sound, animation attract the child's attention for a long time;

– it is an effective means of improving learning; problem tasks encourage the child to solve them correctly with the computer and are a stimulus for children's cognitive activity;

– the computer makes it possible to individualize learning; in the process of the activity at the computer, the child gains self-confidence;

– presenting information on the computer screen in a playful way arouses children's interest in working with the computer;

– the computer is very "patient", never scolds children for mistakes, but waits for them so that they could correct themselves.

It is necessary to take into account the negative aspects of working with a computer. The issue of performing computer tasks should be solved with caution if the child has neurotic disorders, convulsive reactions, visual impairment, since the computer can aggravate all these health abnormalities.

Table 1

Approaches to the use of a computer in preschool and primary school age

Directions	***Purpose***	***Goal***
First	Using computers for learning	Using computer programs when teaching writing and reading.
Second	Using computers as a tool for a child's cognitive development.	Using computers in preschool and primary school age as a means of learning.

To create game templates, one should understand the structural components of any game that determine its functioning. Kevin Werbach, an associate professor at the Wharton School of Business at the University of Pennsylvania and the leader of an open course on gamification as part of the online education project Coursera, suggests considering all the elements that make up a game according to a conventional pyramid of three layers. The synopsis of his lecture, presented on the website www.hubpages.com, clearly illustrates this pyramid: *Dynamics* is at the top level, *Mechanics* is at the middle, and *Components* are at the bottom (Fig. 1).

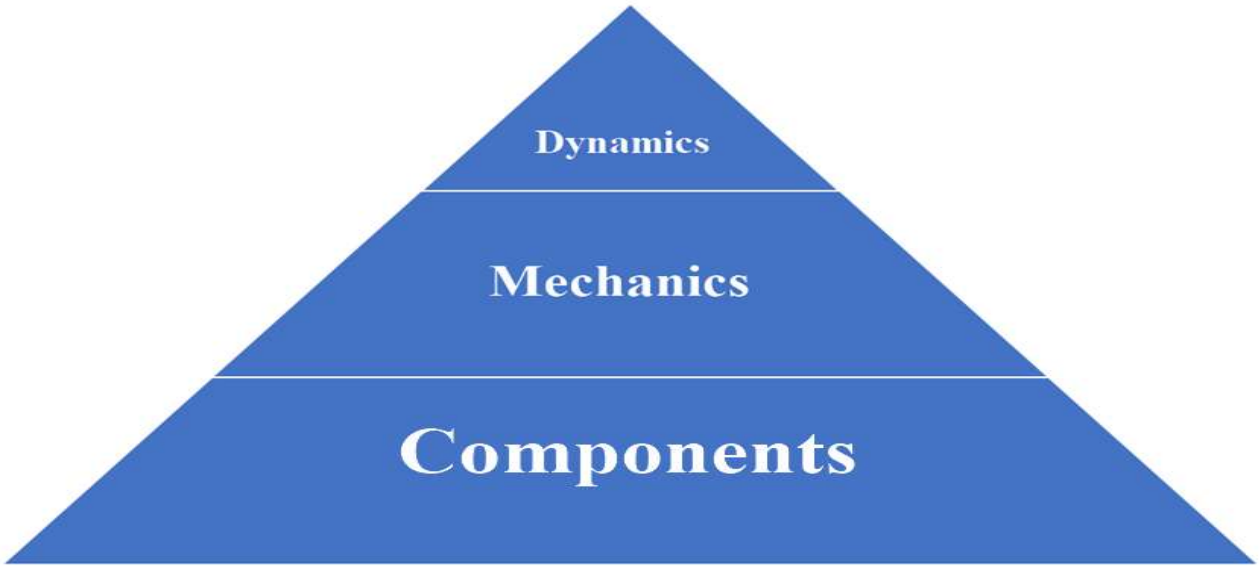

Fig. 1. Pyramid of game elements, presented by K. Werbach

It should be noted that a game does not come down to the elements, and around this pyramid are the experiences/impressions of the game.

"**Dynamics**" are the top-level, containing the conceptual elements of the game that represent the "grammar" of the game, its hidden structure that makes the impressions and experiences coherent, consistent, and harmonious. This layer includes:

Limitations. Every game has constraints because the game must generate significant choices and problems, limiting the freedom of the players.

Emotions. The game has a limited range of emotions. However, there are still many emotional levers with which the experience and/or impressions can be made richer.

Chronology (narrative) – the structure that integrates the parts of a game into a coherent whole.

Progression. A crucial element in gamification is the players' sense that they have the opportunity to grow to the level they started at.

Relationships – the shared ties between people.

"**Mechanics**" being the actions that drive the game activity forward and include: challenge – goals in the game that players strive for; chance – elements of luck and the generation of random values and parameters; competition; cooperation; feedback – the ability to see in real time how the player is doing; resource gaining – the process by which players are given or collect resources that drive the game; reward; transactions – buying, selling, exchanging something; turns (queuing); winning state.

"**Components**", showing the implementation of the dynamics and mechanics of the game and including such sections: achievements; avatars; collections; discovering new content; gifts and donations; leaderboards; levels; points; quests; social connections; teams; virtual goods and benefits, etc.

The pyramid of game components is organized in such a way that the concepts of the upper level be supported and revealed by one or more elements of the lower levels.

To clarify the features of the use of game technologies for the purpose of using educational computer programs in correctional work with preschool children, 7 educators of the pre-school educational establishments of Zhytomyr were interviewed, who were asked to answer the questions:

1. Do you use game technologies in correctional work with children? (periodically; often; constantly).
2. What types of games the children of your group like the most?
3. How do game technologies affect the correctional work of preschool children?
4. What, in your opinion, are the advantages of using game technologies in preschool education?
5. What, in your opinion, are the organizational and pedagogical conditions that ensure the effectiveness of using game technologies to preschool children?
6. Do you set the goal of correcting speech disorders in children in your classes?
7. Are you interested in the pedagogical experience of colleagues concerning the outlined issue? Are you able to generalize it and creatively use in your own pedagogical activities?

The survey has revealed that game technologies are used constantly by 56% of educators, often by 24%, and periodically by 20%. Children like the following types of games the most: "Who is faster? ", "Mixing", "What is odd?", "Settle in the house", "What has changed?", "Decipherer", "Puzzle", "On the contrary", "Yes or no?", "Find a pair", etc. Preschool children also prefer "free" games, the rules of which are created during the game; and creative and intellectual games are also very popular. The results of a survey of preschool teachers on the importance of creating organizational and pedagogical conditions for the use of computer programs in correctional work with preschool children are shown in Table 2.

Table 2

Results of a survey of preschool teachers

№	***Organizational and pedagogical conditions***	***Teachers' choosing***
1.	Taking into account the needs, interests, age and individual characteristics of preschool children.	73%
2.	Using personality-oriented and competency-based approaches in upbringing and teaching children.	58%
3.	Increasing children's motivation, interest, and encouragement to solve problem situations.	56%
4.	Strengthening the developmental focus of the game.	52%
5.	Ensuring active cooperation of all game participants.	48%
6.	Ensuring a favorable microclimate in the group.	45%
7.	Thorough methodological training of the educator.	43%
8.	Availability of various sources of information.	39%

Thus, it has been established that the use of computer programs in correctional work with preschool children will be effective under the following organizational and pedagogical conditions: taking into account the age and individual characteristics of children; using personally oriented learning and a competency-based approach; increasing the level of children's motivation, their interest and stimulation to solve problem-oriented life situations that require significant mental efforts of children; strengthening the developmental focus of the game; ensuring active interaction of all participants in the game activity.

At large, we can formulate the general ***advantages*** of using computer programs in correctional work with preschool children:

1) flexible combination of various methods, techniques and means of effective learning;

2) intellectual development of children and all cognitive processes;

3) development of creative imagination and stimulation of cognitive interest in preschool children;

4) increase in the level of motivation, children can learn from their own experience and the experience of others in a specific matter;

5) friendliness towards the teacher and towards each other; cohesion of the children's collective;

6) development of the ability to critically assess the situation and predict the consequences of children's own activities, etc.

Thus, game technologies are a promising pedagogical technology, the use of which contributes to the comprehensive development of the child's personality.

Conclusions and research perspectives. Thus, it can be concluded that a computer is a way to intellectualize a child, as well as an aid for diagnosing child's development, improving the entire pedagogical process, developing children's initiative and curiosity, creating elements of a developmental environment due to individually differentiated approach to a child and positive emotional background. The use of a computer is possible and necessary. It helps to increase interest in learning, its effectiveness, and comprehensively develops a preschool child.

The prospects for further research are the development and selection of computer tasks, exercises and methods for corrective work with preschool children.

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