

THEORETICAL FOUNDATIONS OF THE PROBLEM OF FORMATION OF NATURAL AND ECOLOGICAL COMPETENCE IN SENIOR PRESCHOOL CHILDREN THROUGH THE USE OF TECHNICAL TEACHING AIDS

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Substantiation of the problem's relevance. In the modern world, the issue of interaction between humans and nature is becoming increasingly important. Humanity has come to realize that the negative impact on the environment can escalate uncontrollably and threaten the existence of civilization. Preschool education plays a crucial role in addressing the environmental crisis. One of the urgent tasks facing preschool educators is to instill in preschool children a holistic attitude towards the natural environment and themselves, helping them understand the importance of a responsible and caring approach to the world around them. The outcome of environmental education is the development of natural and ecological competence among preschool children.

Review of current research. The issue of fostering natural and ecological competence receives significant attention in scientific and pedagogical literature worldwide. Researchers from various disciplines have investigated and continue to explore diverse aspects of environmental education and ecological awareness. Renowned educators of the past, such as F. Diesterweg, J. Pestalozzi, J. Rousseau, K. Ushinsky, among others, devoted considerable effort to both the theoretical and practical dimensions of natural and ecological education. They believed that nature serves as a vital tool for education, as it positively influences children's cognitive development and fosters the formation of moral and aesthetic qualities.

Modern scholars such as N. Goropakha, L. Zagorodnya, O. Kolonkova, N. Kot, N. Lysenko, Z. Plokhii, N. Yarysheva, and others underscore in their research that the preschool years mark the onset of foundational experiences in perceiving the world, cultivating natural and ecological competence, and engaging in environmental activities among children. During this developmental stage, preschoolers embark on their initial interactions with nature. Furthermore, legislative, and regulatory documents in Ukraine highlight the importance of fostering environmental competence in individuals.

The updated version of the Basic component of preschool education (Basic component of early childhood education (new edition), 2021) in the Educational Direction "Child in the Natural Environment" provides a definition of the concept of "natural and environmental competence" for preschool children and outlines the content of its primary components: emotional and value-based attitudes, knowledge, and skills.

In their works, H. Belenka, L. Zahorodnya, N. Lysenko, Z. Plokhii, N. Pustovit and L. Shapoval have attempted to both generalize existing definitions of the concept of "natural and ecological competence" and provide specific concretizations.

The aim is to emphasize the importance of the research problem and elucidate the theoretical underpinnings of developing natural and ecological competence in senior preschool children through the utilization of technical teaching aids.

Materials and methods. Pedagogical research relies on various methods, including theoretical approaches such as analyzing scientific literature and normative documents in preschool education, synthesis, and comparison, as well as empirical methods like observation.

Research results.

1. Analysis of the conceptual field of research

Today, one of the most pressing issues of our time is the environment, which affects the entire planet on a vast scale. The future of generations to come, as well as the existence and progress of human civilization on Earth, are at stake (Belenka et al., 2014). In our country, there exists a document that outlines the directions and objectives

of environmental education – The Concept of Higher Environmental Education for Ukraine. This document emphasizes that "continuous environmental education involves the organization of upbringing and the educational process from childhood to old age..." (The Concept of Environmental Education of Ukraine, 2001).

The essence of environmental education lies in fostering a responsible attitude towards the environment, cultivating an appreciation for the beauty and diversity of nature, promoting environmentally conscious behavior, and encouraging individuals to adopt an active stance against irresponsible treatment of the natural world.

The primary aim of environmental education is to cultivate ecological literacy among individuals and society at large, fostering essential skills, fundamental environmental knowledge, ecological awareness, and consciousness rooted in the recognition of nature as a universal and invaluable asset. Environmental education functions both as an independent component within the broader educational framework and as an integrative force throughout the entire education system (The Concept of Environmental Education of Ukraine, 2001). To realize this objective, the Basic Component of Preschool Education in Ukraine directs preschool education institution educators to select tasks and curricular content that facilitate the development of well-rounded individuals capable of forming emotionally and morally grounded relationships with nature, protecting it, and comprehending its significance (Basic component of early childhood education (new edition), 2021).

The main tasks of environmental education of preschool children are:

1. Developing an aesthetic appreciation of the world.
2. Developing an understanding of relationships within nature.
3. Assimilation of elements of ecological culture.
4. Introducing traditional wisdom regarding respect for the natural environment.
5. Cultivating genuine love for nature, instilling a sense of responsibility for the care of plants and animals, and fostering a strong aversion to their destruction.
6. Encouraging curiosity and interest in learning about the natural world.

7. Instilling skills for respectful behavior in the environment.

8. Cultivating a consistent commitment to promoting and preserving one's own health and the health of others.

These tasks are solved in the process of environmental education.

In the explanatory dictionary of ecology, the term "environmental education" is defined as the process of fostering an individual's conscious awareness of the environment, cultivating a sense of personal responsibility for actions that impact the environment, instilling a recognition of the importance of respecting nature, and promoting the rational utilization of resources (Musiyenko, 2004).

In the "Man and the World" (Didenko, 1998) dictionary environmental education is defined as a systematic approach to shaping the ecological culture of individuals within society, aiming to foster a scientifically informed perspective on nature based on both national and universal values.

The ecological and economic explanatory dictionary-reference book (Tolstoukhov et al., 2003) defines "ecological education" as the process of formation in individuals the necessity for a conscientious approach to nature and the rational utilization of its resources, both for present needs and those of future generations.

The issue of environmental education for preschool children has been investigated by contemporary educators such as H. Belenka (2014), L. Zagorodnya (2021), N. Kot (2011), N. Lysenko (2014), Z. Plokhii (2010), and others. They emphasize that the groundwork for environmental awareness is established during early childhood. Environmental consciousness serves as a key element of ecological culture, the cultivation of which researchers identify as the primary objective of environmental education for preschool children.

According to N. Kot, environmental education entails the deliberate cultivation of ecological thinking, moral and legal perspectives on nature, and understanding of humanity's place within it among individuals of varying ages (Kot, 2011).

According to N. Lysenko, "environmental education" entails the acquisition of scientifically grounded principles regarding the interaction between humans (society) and nature. It constitutes a deliberate process aimed at fostering a sense of responsibility towards the environment, while refining and enhancing all aspects of holistic individual development (Lysenko, 1991).

Modern pedagogy defines "environmental education" as the process of instilling in children a conscientious, caring, and mindful attitude towards nature. It involves cultivating a holistic understanding of nature and humanity's role within it, ultimately reflected in environmentally responsible behavior (Pashchenko & Krasnoshtan, 2019).

The result of environmental education is the development of natural and environmental competence. Given that the fundamental concept of "competence" underpins the framework of "natural and environmental competence", we will examine its essential characteristics within the context of our study.

The Great Explanatory Dictionary of the Modern Ukrainian Language defines "competence" as a quality denoting someone who possesses adequate knowledge in a particular field, is well-informed about something, and is qualified. It entails awareness, understanding, and authority (Busel, 2005).

It should be noted that in the "Dictionary of Vocational Education" competence is interpreted as a combination of knowledge and skills required for efficient professional performance. This includes the ability to analyze, forecast the outcomes of professional activities, and utilize information (Nichkalo, 2000).

In the amendments to the Law "On Higher Education", competence is defined as "the ability of a person to successfully socialize, study, and conduct professional activities, which arises from a dynamic combination of knowledge, skills, ways of thinking, attitudes, values and other personal qualities" (Law of Ukraine "On Higher Education", 2023).

The International Commission of the Council of Europe regards competences as general or key skills, basic skills, fundamental learning paths, key concepts, pillars, or basic knowledge.

Such a definition of the concept of "competence" somewhat aligns with the views expressed by Ukrainian pedagogues. However, representatives of European pedagogy primarily emphasize personal and social needs, the fulfillment of which should be facilitated by competence.

A slightly different explanation is provided by the "Encyclopedia of Education" edited by V. Kremen. Competence in learning is characterized as a range of issues in which a person is well-versed. Its acquisition by a young person occurs not only during the study of a subject or group of subjects but also through non-formal education, environmental influence, and other factors, etc (Kremen, 2008).

English-language sources present a different interpretation of this concept, considering it as "the ability to act and meet certain standards, to demonstrate an appropriate level of knowledge, and to exhibit individual skills" (Yarmachenko, 1986).

The essence and features of the phenomenon of "competence" were studied by the following scientists: I. Bekh, H. Belenka, N. Bibik, L. Biryuk, V. Bondar, I. Ziaziun, V. Luhovyi, O. Ovcharuk, O. Pometun, V. Yagupov and others. L. Biryuk notes that "competence is a person's possession of the relevant competence (competencies), which includes his personal attitude towards himself and the subject of activity" (Biryuk, 2009).

The competency-based approach, in accordance with the age capabilities of children, determines the content of the educational directions of the new edition of the Basic Component of Preschool Education.

The formation of natural and ecological competence in preschool children is envisaged in the content of the educational direction "Child in the natural environment" of the Basic Component of Preschool Education. One of the developers of this direction is L. Zagorodnya. She notes that "natural and ecological competence is the child's ability

to appropriate behavior in various life situations, which is based on an emotionally valuable attitude to nature, knowledge of its laws, and is formed in the space of cognitive, research, work and play activities" (Zagorodnya, 2021).

N. Lysenko defines the natural and ecological competence of preschool children as "an integrative formation that accumulates their life competence, which is characterized by specific knowledge about nature, as well as a valuable attitude to its components, awareness of the rules of nature management, and their observance" (Lysenko, 2014).

The team of scientists, including G. Belenka, T. Naumenko, and O. Polovina, asserts that "the ecological and natural competence of a preschooler is a component of their life competence. This competence comprises specific knowledge about nature, a positive emotional and valuable attitude towards its components, and awareness of the rules of nature management, including their observance. In other words, it encompasses three components: intellectual (cognitive), emotional-value and activity-practical" (Belenka et al., 2014).

We agree with the interpretations provided above regarding the essence of "natural and ecological competence", which emphasize knowledge, skills and experience.

Thus, the analysis of the concepts forming the categorical framework of scientific research has provided a deeper conceptual understanding of the term "natural and ecological competence". Now that the concept of natural and ecological competence in children of senior preschool age has been established, it is appropriate to delve into the structure of this competence.

2. The Structure of Natural and Ecological Competence in Senior Preschool Children

The problem of forming the natural and ecological competence of children of senior preschool age is particularly relevant in the context of the formation and development of the Ukrainian state, along with the reforms in economic and socio-cultural sectors of life.

Through the analysis of psychological and pedagogical research on the formation of natural and environmental competence in children of senior preschool age, we have elucidated the content and characteristics of key concepts such as environmental education, environmental upbringing, environmental competence, and natural and environmental competence. This approach has enabled us to conduct a balanced structural analysis of natural and environmental competence.

According to O. Shestopal, scientists commonly analyze the components of competence by examining the professionally significant properties and qualities of a specialist, which enable effective task performance (Shestopal, 2011).

The analysis of scientific literature reveals a diversity of structures for the concept under study. For example, according to a team of scientists (G. Belenka, T. Naumenko, O. Polovina), the ecological and natural competence of a preschooler encompasses specific knowledge about nature, a positive emotional and valuable attitude toward its components, awareness of the rules of nature management, and their observance. In other words, it includes three components: intellectual (cognitive), emotional-value and activity-practical (Belenka et al., 2014).

S. Ivanchuk observes that "the content of environmental education is outlined in a generalized manner by combining various components, including cognitive, value, and activity aspects. Cognitive aspects involve acquiring knowledge about nature, life, natural phenomena, ecosystems, the role of humans in nature, the interaction between nature and society, and methods of studying nature. Value aspects encompass ecologically significant values such as harmony, compassion, common sense, moral values, beauty, and responsibility. Activity aspects relate to the individual's orientation and psychological readiness for ecological practices, including work, play, experimentation, environmental activities and nature-friendly practices" (Law of Ukraine "On Higher Education", 2023).

The components of children's ecological and natural competence include knowledge and understanding of nature, a positive emotional and ethical attitude

towards its elements, awareness of nature management principles, and their application in appropriate activities and behaviors in nature. The formation of ecological and natural competence cannot occur independently of the general development of the child; these two aspects of preschooler personality development are interconnected and mutually reinforcing (Belenka et al., 2014).

Z. Plokhii emphasizes the importance of clearly understanding the concepts of "environmental education" and "environmental competence" when assessing the level of environmental competence. Accordingly, the formation of environmental consciousness encompasses cognitive, affective, and psychomotor domains of the personality. Environmental competence is based on three groups of criteria: content, emotional-value and activity-behavioral aspects (Plokhii, 2010).

Analyzing the components of natural and ecological competence in children of senior preschool age reveals three fundamental components that underpin this competence: motivational and value, cognitive, and activity. Each of these components plays a crucial role in cultivating a child's capacity to perceive, comprehend, and engage with the natural and ecological environment.

The motivational-value component entails the cultivation of a system of values and motives that guide children in environmental activities and the sustainable use of natural resources, fostering a desire to protect the environment. It is essential for every individual, from childhood onward, to prioritize the goal of safeguarding nature not only for present generations but also for those to come. Ensuring that future generations can enjoy the Earth without deprivation is paramount, and ideally, natural resources should not only be preserved but also replenished continuously.

In their book "Methods of Familiarizing Children with the Environment in a Preschool Educational Institution", A. Bogush and N. Havrysh point out that "motives for understanding may include the desire for knowledge, truth, cognitive interests, curiosity, a sense of responsibility and spiritual motives" (Bogush & Havrysh, 2008).

The motivational-value component is manifested through the attitude to nature as an indisputable value, involves awareness of oneself as a part of nature and the need to apply socio-economic restrictions and correct one's own needs (Sukhar, 2009). The motivational and value-based component is very important. It is the first component that lays the foundation for the formation of natural and ecological competence and is a system of motives aimed at environmental activities, readiness to rationally use natural resources. To engage in this activity, one needs to comprehend the value of objects and phenomena in both animate and inanimate nature, understand the relationship between flora and fauna and recognize their significance in human life.

In the Basic component of preschool education, the motivational and value component emphasizes that "the child demonstrates interest in learning about the nature of his native land, close environment, and his state of Ukraine. Additionally, the child shows interest in objects and phenomena of planet Earth and visible objects of the Cosmos. Emotionally, the child reacts to the natural environment and demonstrates respect for different forms of life. Moreover, the child reacts positively to interactions with various objects of nature and shows interest and readiness for activities that provide knowledge of nature and the formation of skills of appropriate behavior. The child is motivated by the values of sustainable development, such as rational use of natural resources. Furthermore, the child shows indifference to the environmental activities of adults and a desire to participate in activities aimed at supporting the values of sustainable development" (Basic component of early childhood education (new edition), 2021).

Values represent a higher level of human needs. As personal needs acquire social significance and are perceived by individuals, they transform into values that regulate human social behavior. Through a stable system of values, the subjectivization of relations with the environment and the social environment occurs, facilitating effective interaction between the individual and the world.

The formation of natural and ecological competence is undoubtedly influenced by dominant values, including socio-natural, ecological, moral, ecological-aesthetic, and ecological-humanistic values. Value orientations of the individual refer to the child's choice of certain material and spiritual values that shape their way of life and purposeful activity for the preservation of the environment (Fedorova, 2018).

The concept of "value" is interpreted as a socio-philosophical category. It determines the positive or negative significance of various elements such as natural phenomena, products of social production, forms of social organization, historical events, moral deeds, and spiritual needs (which serve as carriers of values) for humanity. These values apply to individuals, society, people, classes, or social groups at specific stages of historical development (Kazmiryk, (2012).

Values play a leading role in the formation of natural and ecological competence, holding a prominent place in its structure. Based on the objectives of educational psychology, I. Bekh defines personal values as "conscious, generalized, self-valuable semantic formations of the individual". Considering their function in regulating behavior, they serve as "patterns inherent in the personality for evaluation, consciously or unconsciously 'measuring' models of social actions permissible in specific circumstances" (Bekh, 1998). This definition of personal values explains their significance in the structure of environmental competence.

The valuable attitude towards nature develops through environmental education and is evident in various signs: awareness of nature's functions in human life and its intrinsic value; a sense of personal responsibility for conserving natural resources; the ability to harmoniously coexist with nature; critical evaluation of consumerist attitudes towards nature, which disrupt natural balance and lead to ecological crises; resistance to such attitudes through accessible means; active participation in practical environmental activities, including initiating environmental initiatives and engaging in feasible environmental education.

The motivational and value component encompasses the awareness of senior preschool children regarding the significance of the natural environment and the imperative to conserve it. This awareness is cultivated through the development of an emotional connection with nature, fostering a desire to care for it and undertake actions to safeguard it. Additionally, the motivational and value component serves to stimulate interest in natural science and ecology, establishing the groundwork for the development of responsible behavior within the natural environment.

The development of the component of natural and ecological competence in senior preschool children is closely intertwined with the acquisition of knowledge, which constitutes the cognitive component. Knowledge, defined as the comprehension and understanding of reality by consciousness, encompasses a diverse set of information across various fields (Ivchenko, 2006).

The cognitive component encompasses the child's understanding of the natural world, including its elements, patterns, and relationships. It involves knowledge of ecological processes, the characteristics of various plant and animal species, and the influence of human activities on nature. This component develops through learning, observation, and research, enabling the child to gain systematic knowledge and comprehension of natural and ecological phenomena.

According to the cognitive component outlined in the Basic Component of Preschool Education, "children are expected to comprehend various aspects of the natural world. They should be able to identify both inanimate and living objects on Earth, understand the interconnections between plants and animals, recognize the dependence of natural objects on environmental factors, and grasp the developmental stages of plants and animals, along with their reactions to habitat and seasonal changes. Furthermore, children should understand the classification of plants and animals, distinguishing between wild and cultivated species, as well as wild and domestic animals, and be familiar with appropriate behavior around them. Additionally, they should possess knowledge about the basic properties of inanimate objects in nature, such

as air, water, sand, clay, and stones, including their physical characteristics and phenomena like hardness, softness, flowability, viscosity, buoyancy, solubility, speed, direction, etc. Children should also be able to identify artificial materials derived from natural resources, such as metal, rubber, fabric, plastic, and paper, and recognize the signs of different seasons and natural phenomena" (Basic component of early childhood education (new edition), 2021).

We believe that the cognitive component of natural and ecological competence in children of senior preschool age exhibits a distinct developmental character. It fosters ecologically oriented thinking, encourages a responsible human attitude towards nature and all living beings, promotes the development of nature conservation skills, and enhances awareness of citizens' roles in preserving, nurturing, and protecting the environment.

An essential element in developing natural and ecological competence in senior preschool-aged children is activity. In the Ukrainian language explanatory dictionary, activity is described as the work and actions performed by individuals in various fields (Ivchenko, 2006).

The well-established structure of activity encompasses the goal, the means, the result, and the process itself.

The activity component pertains to the child's practical ability to apply acquired knowledge and motivations in everyday life. It comprises the skills and abilities necessary to respect nature, such as planting plants, recognizing and protecting animals, and correctly collecting and disposing of waste. This component plays a crucial role in cultivating environmental awareness and fostering responsible behavior among preschool children.

In the Basic Component of Preschool Education, regarding the activity component, it states that the child "consciously uses knowledge about nature in various activities and life situations. They orient themselves in human activities aimed at conserving, reproducing, and protecting nature. They are capable of independently or with minimal

adult assistance conducting simple experiments to learn about the properties of natural objects, observe natural phenomena, and notice changes in the state of nature and weather. Additionally, they can grow plants, take care of pets with adult supervision, and demonstrate compliance with rules of nature-appropriate behavior. They also respond to adult suggestions to preserve and improve the natural environment or help living objects of nature" (Basic component of early childhood education (new edition), 2021).

The activity component in the formation of natural and ecological competence reflects the child's interaction with the natural environment and serves as the culmination of environmental education. It indicates the extent to which the child has absorbed the knowledge and how they will apply it in practice. This component encompasses various activities: play activities (involve imitating the actions of adults in the environment or events in nature); practical actions include organizing and maintaining green spaces in the preschool's backyard; artistic and productive activities entail drawing, crafting objects from materials like plasticine, and creating collages inspired by nature or human activity; communication with nature involves observing, admiring, caring for, and interacting with animals; experiments, albeit conducted in a manner that doesn't harm natural objects, foster curiosity and learning; watching TV programs, illustrations, books, paintings, and presentations on natural science topics enhances understanding; verbal activity encompasses exchanging impressions, engaging in dialogue, asking questions, and seeking clarification about natural phenomena; observation aids in comprehending environmental objects and human activities in nature.

The development of these components of natural and ecological competence in children of senior preschool age is crucial for fostering a responsible attitude towards the environment and establishing the foundations of environmental education and upbringing. The educational process in preschool institutions should be directed towards the holistic development of all three components.

There exists a close interconnection among all components constituting the structure of natural and ecological competence in children of senior preschool age, with each component relying on the others for its effectiveness. Primarily, it is essential for a child to comprehend that humans are an integral part of the natural world and must coexist harmoniously with it, ensuring its protection and preservation. Through proper upbringing, the emotional component empowers children to make environmentally-conscious decisions, fostering a disposition towards environmentally-friendly actions. Consequently, this instills a continuous commitment to environmental conservation activities, driven by the positive emotions derived from such endeavors. Ultimately, the pivotal realization of nature's significance in human life underscores the importance of these efforts.

Through a scientific analysis of the formation of natural and ecological competence in children of senior preschool age, we have identified and substantiated the structure of such competence, comprising three key components: motivational and value, cognitive, and activity. We believe that these components comprehensively encapsulate the essence of natural and ecological competence, underscoring its complexity as a multifaceted system. Furthermore, this understanding highlights the necessity for continuous exploration and study of each component to facilitate its holistic development.

3. Technical Teaching Aids as an Effective Means of Forming Natural and Ecological Competence in Senior Preschool Children in the Conditions of Distance Learning

Currently, the study of the educational direction "Child in the Natural Environment" in a preschool education institution is not limited to the formation of children's ideas about nature and its components. There is now a need to impart environmentally appropriate behavior skills to preschoolers. To enhance children's perception, understanding, and retention of information, educators employ various teaching aids in their work.

Among the various modern methods of environmental education for preschoolers, visual methods hold a special place. The following scientists have focused on the problem of using visual methods: H. Belenka, A. Bogush, N. Havrysh, T. Naumenko, O. Polovina, V. Sukhomlynsky and others.

Visual teaching methods are those that facilitate the assimilation of material using visual aids and technical tools. These methods are combined with verbal and practical teaching approaches (Pashchenko & Krasnoshtan, 2019).

G. Belenka, T. Naumenko, and O. Polovina noted that "taking into account the visual-action perception of reality and the concreteness of thinking, it is necessary, when imparting essential knowledge to the child, to provide clarity and direct it effectively. This enables its application in various types of activities" (Belenka et al., 2014).

One of the types of visual methods of familiarizing children of senior preschool age with nature, which are used in a preschool education institution, is the use of technical teaching aids.

The demonstration of technical teaching aids becomes particularly relevant and significant in the context of forming natural and environmental competence in children of senior preschool age, especially during distance learning. The use of digital technologies and interactive tools can significantly enhance the efficiency of the educational process by providing access to a wide range of information and tools for interactive learning.

Technical teaching aids comprise a range of devices, including lighting, sound aids, and equipment utilized within the educational process to transmit and store educational information, monitor the progress of its assimilation, and foster the formation and consolidation of skills and abilities. Their utilization assists educators in addressing various cognitive and educational objectives. However, they should not substitute for direct observation of natural phenomena.

Technical teaching aids are divided into three groups: screen (computer presentations), screen-sound (video films, TV programs, cartoons), and sound (recordings of the sounds of nature and music) (Zagorodnya, 2023).

Multimedia presentations are employed as screen teaching aids when introducing senior preschool children to nature in preschool education institutions. A presentation is a logically connected sequence of slides, unified by a common theme and design principle. To make it engaging for preschoolers, the teacher can incorporate photos, videos, graphics, animations, and sound. It can be utilized at any stage of the lesson.

Multimedia presentations are subject to the following requirements:

- 1) the image must be clear, colorful, bright, realistic;
- 2) objects should be presented in their natural environment;
- 3) relevance to the topic is essential;
- 4) the number of slides should correspond to the age of the children;
- 5) text should be kept to a minimum;
- 6) verbal support from the educator is crucial;
- 7) limit the use of 12-15 slides per lesson in the senior group.

Multimedia presentations are invaluable in our modern era. They enable preschoolers to embark on virtual journeys to various places and explore information about nature and the world around them.

When creating a presentation, a preschool teacher should consider the following factors:

- 1) the age and psychological characteristics of the children;
- 2) the purpose and expected outcomes of the presentation;
- 3) the arrangement of children in the group room;
- 4) the selection of the most effective elements of computer technologies to address specific lesson objectives;
- 5) the choice of slide colors for designing the presentation.

Using the presentation, teachers can conduct didactic games. For instance, in the game "Guess the Flower", the teacher displays slides and invites children to guess the names of various plants, including ornamental, flowering and wild species (Zagorodnya, 2023).

Among the audiovisual aids for learning, videos, TV shows and cartoons play a crucial role. These tools not only facilitate the comprehension of complex concepts and ideas through visual and auditory representation but also enhance the motivation of senior preschool children to learn, thereby making the educational process more engaging.

A video film is a recording created using the video recording method (Busel, 2005).

A telecast refers to the transmission of images through television, typically from a television center (Busel, 2005).

Both mediums hold significant didactic value as they enable children to develop a comprehensive understanding of natural phenomena. Videos covering topics such as nature, ecology, and environmental protection can be presented either in real-time or made available for viewing at a later, more convenient time.

A cartoon is an animated film (Busel, 2005).

Multimedia refers to modern information technology that integrates graphic and video images, sound, and other special effects using computer tools (Pushkar, (2002).

The utilization of multimedia technologies enables educators to innovate in the delivery of educational content. M. Yarmachenko (1986) categorizes multimedia tools into three main types: visual (or visual-only), auditory (or audio-only) and audiovisual (combining both visual and auditory elements).

A cartoon is a form of cinematography characterized by the creation of works through the method of time-lapse shooting, capturing successive phases of movement in hand-drawn (graphic or hand-drawn animation) or three-dimensional (three-dimensional or puppet animation) pictures.

Of course, cartoons attract a lot of attention from children and have a significant psychological impact on their development. Children of senior preschool age are characterized by their keen observation skills. They carefully study their environment, noting its nuances, and subsequently formulating their own picture of the world.

Unfortunately, not all modern cartoons promote the development of natural and ecological consciousness in preschoolers or instill moral and ethical norms for behavior in the natural environment; some even depict cruelty towards wildlife and encourage destruction. In the process of environmental education for children of senior preschool age, it is advisable to use nature-based cartoons with a scientific cognitive basis. The scientific foundation of cartoons refers to real facts and information presented in a figurative manner to children. As noted by O. Vasilyeva, the scientific basis of cartoons includes:

- information about natural objects;
- information about habitats and the fulfillment of the needs of living organisms;
- demonstration of the interconnections among living organisms and their environment;
- information about the integrity of nature and the potential consequences of its disruption;
- the impact of human activity on nature (Vasilyeva, 2013).

Cartoons are highly popular among children, but educators must be selective in their choices. For children of senior preschool age, it is recommended to show and encourage watching cartoons with natural content. These cartoons portray real features and relationships of objects and phenomena in nature, emphasizing the role of humans in the "man-nature" system. Such cartoons help foster environmental consciousness and moral qualities in children (Zagorodnya, 2023).

Sound teaching aids play a crucial role in shaping the natural and ecological competence of children in senior preschool age, particularly through listening to recordings of nature sounds and music. These methods not only enhance auditory

perception but also foster a deeper understanding and connection with the natural world. Additionally, they cultivate aesthetic sensibilities and instill a values-based attitude towards the environment.

Music can be classified into the following categories: 1) classical music inspired by nature themes (P. Tchaikovsky's "The Four Seasons", A. Vivaldi's "The Four Seasons" and E. Grieg's "Morning"); 2) songs with nature themes designed for listening and learning; 3) music utilized during dances, featuring nature-inspired themes (Zagorodnya, 2023).

The sounds of nature, including the forest's murmur, birdsong and rustling leaves, evoke emotional responses in children, allowing them to experience the beauty and harmony of the natural world. These experiences help instill a positive attitude towards nature conservation. Following exposure to nature sounds or music simulating them, it's beneficial to organize creative activities. Children in senior preschool age can express their impressions and ideas through drawing, movement, sculpture or by composing their own music.

Listening to recordings of nature sounds and music can serve as a potent tool in nurturing the natural and environmental competence of senior preschool children. This method fosters the development of an emotional bond with nature, enhances the capacity to perceive and comprehend the surrounding world, and stimulates imagination and creative thinking.

The demonstration of technical teaching aids can significantly contribute to the development of natural and environmental competence in senior preschool children, especially in the era of distance learning. This includes the utilization of interactive online platforms, mobile applications, videos, and other digital resources. Virtual excursions to zoos, botanical gardens, and national parks offer opportunities for senior preschoolers to explore nature, while online sessions with ecologists, biologists, and other experts enrich their knowledge.

The integration of technical teaching aids into the educational process of preschool institutions not only enhances interactivity and excitement but also plays a crucial role in cultivating the natural and environmental competence of senior preschool children, especially during times when traditional education is challenging. Embracing a modern educational approach, the use of technical teaching aids encompasses interactive platforms, virtual excursions, and environmental projects tailored for children, encouraging them to explore nature and ecology in an engaging and distance manner.

Visual methods play a crucial role in children's understanding of nature, but their effectiveness is enhanced when combined with verbal communication. Words serve to generalize concepts, yet they can only fulfill their function when accompanied by corresponding sensory images. The utilization of technical teaching aids in the formation of natural and ecological competence in senior preschool children demonstrates their capacity to provide a wealth of cognitive information while nurturing a love for nature and instilling a sense of responsibility towards its care.

4. The system for developing natural and ecological competence in senior preschool children

In order to foster a comprehensive understanding of natural objects and phenomena among children of senior preschool age, it is essential to follow a systematic approach in developing their natural and environmental competence. This approach entails implementing the following conditions:

- 1) establishing a structured curriculum to systematically educate senior preschoolers about natural objects and phenomena, utilizing technical educational tools;
- 2) engaging senior preschoolers in environmental activities;
- 3) facilitating collaboration between preschool educational institutions and families to jointly promote the development of natural and environmental competence in children of senior preschool age.

To fulfill the first condition, it is crucial to uphold the primary principles of environmental education and upbringing during the preschool years.

The principle of regionalism emphasizes the exploration of the natural environment of one's native region. Applying this principle enables children to develop their natural and ecological competence through direct observation and study of local objects and phenomena. It also fosters conducive environments for interactive communication, allowing each child to express their individuality.

The principle of scientific rigor and accessibility of concepts underscores the need to deepen and expand initial ideas with new content at every stage of interaction with children. This gradual progression facilitates the formation of ecological knowledge according to the sequence: representation – concept – knowledge. Such a structured approach enables the effective utilization of each developmental stage.

The principle of continuity enables revisiting previously studied objects and natural phenomena, progressively advancing each year by deepening and broadening concepts, and introducing more sophisticated research techniques. It's important to note that preschoolers typically exhibit short-term interests, fluctuating attention spans, and susceptibility to fatigue. Hence, revisiting topics multiple times aids in developing children's attention span and sustaining long-term interest.

The principle of integration. Given the limited time allocated in the curriculum for studying the natural environment, achieving the desired results solely through cognitive classes can be challenging. Therefore, adopting an integrated approach that combines all educational activities into one is advisable.

The principle of environmental integrity enables children to develop an understanding of the interconnectedness within the system: "man – environment".

The system for cultivating natural and ecological competence in preschoolers employs various forms and methods of engagement, including ecological minutes, excursions, hands-on activities in nature, conservation efforts, didactic games, lessons in kindness, environmental competitions, and ecological games such as imitation and ecosystem modeling. Additionally, environmental fairy tales are staged to enhance learning experiences.

The nature classes aim to instill in children a desire to engage with nature, fostering admiration and creativity following their interactions. They seek to spark interest among senior preschool children in natural objects and phenomena, utilizing technical teaching aids for deeper exploration and understanding. These classes focus on developing value judgments regarding personal and collective actions, applying acquired skills and knowledge through games and practical activities, and nurturing a sense of responsibility and respect for nature.

It's essential to highlight that the second pedagogical condition – involving senior preschool children in environmental activities – is closely intertwined with the first. This condition is grounded in the principles of environmental education and interacts with others, particularly the integration of environmental issues into the educational process. Engaging children in activities aimed at protecting and preserving nature helps them grasp the significance of environmental principles and fosters a responsible attitude toward the environment. These activities can range from simple tasks like waste sorting to participating in tree planting and plant care initiatives in preschools or local parks. Through such engagement, children not only acquire practical skills for environmental care but also develop the ability to observe, analyze, and draw conclusions about environmental conditions.

It is crucial that activities involving direct interaction with nature not only stimulate environmental awareness in children but also foster an emotional connection with the natural environment, which is indispensable for the formation of long-term environmental values. Thus, integrating environmental activities into the daily routines of senior preschool children not only deepens their knowledge and understanding of nature but also lays a solid foundation for the development of responsible behavior towards the environment in the future. Engaging senior preschoolers in activities such as caring for plants and animals, as well as participating in environmental initiatives, is vital for fostering their involvement in environmental stewardship. Through these experiences, children feel joy and enthusiasm, while also developing essential skills

such as diligence, environmental awareness and responsibility. They enhance their observation skills, cultivate an interest in nature, and refine their thinking, imagination, attention and memory. Moreover, these activities enable children to establish cause-and-effect relationships and learn the names of various plants and animals.

The final pedagogical condition underscores the significance of collaboration between preschool institutions and families in cultivating the natural and environmental competence of senior preschool children. This collaboration aims to unite the efforts of educators and parents in the educational and developmental journey of children, particularly in shaping their understanding of the importance of environmental preservation. Such collaboration entails engaging parents in their children's environmental education through various initiatives, including joint environmental projects, virtual nature tours, family competitions centered on environmental themes, and practical activities such as waste sorting at home or planting activities with their children. It is crucial for educators to offer parents methodological guidance and informational resources to help them understand their role in fostering their children's natural and environmental competence, encouraging active participation in this process. Additionally, organizing meetings and seminars for parents with experts in ecology can provide them with additional knowledge and opportunities to exchange experiences.

Enhancing the partnership between preschools and families is crucial for maintaining consistency and coherence in children's environmental education, while also fostering a profound respect for nature and understanding of the importance of its conservation.

The aim of this condition is to foster natural and ecological competence in children, recognizing that it must also be cultivated in parents. In today's dynamic world, there is a growing need for diverse and innovative approaches to collaboration with parents. We firmly believe that utilizing a range of methods and forms, engaging parents in cooperative efforts, and employing teacher creativity and diplomacy are essential for fostering successful interaction between educators and families. During the

implementation of this pedagogical condition, we propose to conduct consultations with parents on the topics "Natural and Ecological Education of Children in the Family" and "Fostering Love for Nature Begins with the Family." The objective of the first consultation is to familiarize parents with the significance of natural and ecological education within the family, emphasizing the cultivation of children's responsibility and respect for nature, as well as instilling moral principles of environmental stewardship. The aim of the second consultation is to acquaint parents with the role of nature in their child's life, highlighting the importance of fostering the child's connection with the natural world. This includes nurturing the child's ability to appreciate the beauty of nature, understand the value of each natural element, and instill a desire to protect and preserve it, demonstrated through parental example.

The formation of natural and ecological competence among children of senior preschool age stands as a pivotal element in their upbringing and development within a preschool education institution. This organization should follow a specific sequence: firstly, children ought to be introduced to the various objects and phenomena of nature; subsequently, they should establish connections between them; following that, they should comprehend the importance of protecting nature; and finally, they should apply their acquired knowledge and skills in practical situations. All of this becomes feasible through the collaborative efforts of preschool teachers, parents, and children. The utilization of visual methods, particularly the demonstration of technical teaching aids, in structuring the educational process not only facilitates the comprehensive assimilation of knowledge but also enhances the understanding of relationships and dependencies in nature, as well as human behavior within natural settings.

5. Recommendations to teachers of preschool education institutions on the formation of natural and environmental competence in children of senior preschool age

The formation of natural and ecological competence in children of senior preschool age stands as a paramount objective of contemporary preschool education. It is

imperative for educators to employ a diverse range of methods and approaches to captivate children in learning about nature and cultivating a responsible attitude towards the environment. To effectively foster natural and ecological competence in children of senior preschool age, we propose the following recommendations:

1. Comply with the following conditions:

- establish a structured system of classes aimed at instilling systematic knowledge about objects and phenomena of nature in senior preschoolers;

- engage children of senior preschool age in environmental activities;

- foster collaboration between the preschool education institution and families in nurturing the natural and environmental competence of children of senior preschool age.

2. For optimal impact, educational efforts should simultaneously target three main directions: preschool education institution – children of senior preschool age – parents.

3. Utilize fairy tales, stories, and narratives about nature to cultivate a love for the natural world when working with children of senior preschool age.

4. Involve children of senior preschool age in activities such as planting and tending to plants, creating mini-gardens, and participating in garbage collection and sorting.

5. Introduce senior preschool children to virtual tours of nature museums, zoos, and national parks to enhance their understanding and appreciation of the natural world.

6. Encourage parental participation in environmental events, workshops, and collaborative projects.

7. Create a portfolio for each child containing their works, projects, and photographs showcasing their contributions to the exploration of nature and ecology.

8. Expand the knowledge of children of senior preschool age regarding the most common representatives of the plant and animal kingdoms, as well as inanimate objects of nature.

9. Systematically conduct environmental activities throughout the school year, flexibly adjusting the content according to the age and abilities of children of senior preschool age.

10. Cultivate environmental behavior in children of senior preschool age by showcasing positive examples set by adults.

11. Place special emphasis on engaging with the parents of pupils, piquing their interest in the future development of their children, and fostering a sense of camaraderie.

We firmly believe that implementing these recommendations will enable preschool educators to enhance the effectiveness, interest and informativeness of the process of forming natural and environmental competence in children of senior preschool age.

Conclusions. At the current stage of educational development in Ukraine, the issue of environmental education for preschool children remains pressing. Scholars such as H. Belenka, N. Kot, N. Lysenko, Z. Plokhii, and N. Yarysheva have extensively explored the essence and content of environmental education for preschoolers. Through an analysis of their works, it becomes evident that environmental education encompasses the process of instilling in children a conscientious, caring, and thrifty attitude towards nature, along with fostering a comprehensive understanding of nature and humanity's place within it. This is manifested through behavior that respects and aligns with the principles of nature.

The result of environmental education is natural and ecological competence, whose essence and methods of formation have been examined by scholars like H. Belenka, L. Zahorodnya, N. Kot, N. Lysenko, Z. Plokhii, and N. Yarysheva. The components of natural and ecological competence in senior preschool children include motivational and value, cognitive and activity aspects. It has been established that these components are closely interconnected and dependent on each other for effective development.

An effective approach to cultivating natural and ecological competence in senior preschool children involves the demonstration of technical teaching aids.

To ensure comprehensive development of natural and ecological competence in senior preschool children, it is imperative to utilize a diverse range of forms and methods. This approach will facilitate a deep understanding of the significance of environmental preservation among children.

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