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Features and types of heuristic questions in the organization of "philosophical dialogue" as an educational model

Cechy i typy pytań heurystycznych w organizacji "dialogu filozoficznego" jako modelu edukacyjnego

Słowa kluczowe: edukacja naukowa, myślenie krytyczne, model edukacyjny „Dialog filozoficzny", ćwiczenia filozoficzne.

Streszczenie: W artykule uzasadniono znaczenie i wagę wprowadzenia edukacji naukowej dzieci i młodzieży jako jednego z kierunków reformowania przestrzeni edukacyjnej Ukrainy i integracji europejskiej. Artykuł koncentruje się na krytycznym myśleniu jako ważnej umiejętności XXI wieku i potrzebie jego rozwoju w kontekście edukacji naukowej uczniów. Zwrócono uwagę na model edukacyjny „Dialog filozoficzny", który jest stosowany w wielu krajach europejskich w pracy z dziećmi w różnym wieku i studentami. Stwierdzono, że model edukacyjny „Dialog filozoficzny" jest testowany w ramach eksperymentu Instytutu Dziecka Uzdolnionego Narodowej Akademii Nauk Pedagogicznych Ukrainy (2024–2025). Ujawniono teoretyczne podstawy ćwiczeń filozoficznych i ich znaczenie dla rozwoju krytycznego myślenia dzieci w wieku gimnazjalnym w kontekście edukacji naukowej. Podkreślono kierunki prac eksperymentalnych mających na celu testowanie ćwiczeń filozoficznych przez nauczycieli szkół podstawowych i nauczycieli pozaszkolnych instytucji edukacyjnych. Nacisk kładziony jest na specyfikę dialogu filozoficznego w procesie edukacji szkolnej i pozaszkolnej. Przedstawiono cechy metodyczne prowadzenia ćwiczeń filozoficznych oraz sposoby zadawania pytań heurystycznych. Podano przykłady wykorzystania dialogu filozoficznego na lekcjach w szkole podstawowej.

Key words: science education, critical thinking, educational model «Philosophical dialogue», philosophical exercises.

Abstract: The article substantiates the relevance and importance of implementing scientific education of children and youth as one of the directions of reforming the educational space of Ukraine and European integration. Emphasis is placed on critical thinking as an important skill of the XXI century and the need for its development in the context of students' scientific education. Attention is paid to the educational model «Philosophical dialogue», which is used in a number of European countries in working with children of different ages and students. The emphasis is placed on critical thinking as an important skill of the twenty-first century and the need to develop it in the context of students' scientific education. It is stated that the educational model "Philosophical dialogue" is being tested within the experiment of the Institute

of Gifted Child of the National Academy of Educational Sciences of Ukraine (2024–2025). The theoretical foundations of philosophical exercises and their importance for the development of critical thinking of junior schoolchildren in the context of science education are revealed. The directions of experimental work aimed at testing philosophical exercises by primary school teachers and teachers of out-of-school education institutions are highlighted. Focused on the peculiarities of philosophical dialogue in the process of school and out-of-school education. The methodological features of conducting philosophical exercises and ways of asking heuristic questions are presented. Examples of the use of philosophical dialog in primary school lessons are given.

Relevance of the research problem

For successful life activity, competitiveness, and career growth, it is no longer enough for a person of the twenty-first century to be just an educated person, a carrier of extensive information, the amount of which is constantly changing and updated. Therefore, in a number of developed countries, including Europe, in recent decades, great importance has been attached to the scientific education of children and youth aimed at active knowledge of the world, development of cognitive interests, desire for research, and the ability to find solutions to complex challenges and problems of our time.

The objectives of science education include the development of curiosity, cognitive activity, and critical thinking. Such characteristics are assessed as important / key in the process of cognition of the world around and oneself in it, as well as for successful adaptation and achievement of life / professional success in a dynamic information society. Modern challenges, such as climate change, environmental issues, and exponential scientific and technological progress, require future professionals to analyze information and make informed decisions to overcome global problems. In addition, in the context of the Russian-Ukrainian war, the information space is filled with disinformation, which requires an analytical perception of events for their objective assessment.

Analysis of recent research and publications that have begun to address this issue

We appeal to the generalizations of scientists (Radchenko, Lisnychy, Honchar, Mynenko, 2022, p.68), who have found that the discourse space of science education has been widely studied in developed countries, where in recent decades not only a holistic paradigm of such education has emerged in its depths, but also such systemic areas of education as STEM education (science, technology, engineering and mathematics) have been distinguished, STEAM education (science, technology, engineering the arts and mathematics), Scientific Literacy / Science Literacy, PISA, SERC (science education for responsible citizenship), Nature of Science, Inquiry-Based Learning, etc.

In the context of Ukraine's European integration in general and the reform of the national educational system in particular, the scientific education of children and youth is identified as one of the most significant areas. Accordingly, there is an active development of the concept of scientific education of children and youth, its theoretical and practical foundations, search for ways and mechanisms for its implementation in the practice of general secondary and out-of-school education institutions.

Science education can be implemented by two main teaching strategies: transferring knowledge that has already been discovered and defined by programs; organizing research by students themselves, conducting experiments aimed at reaching conclusions that correspond to this predefined knowledge. According to the second approach, the development of critical thinking, curiosity and independence of students is of essential value.

At the same time, we observe a contradiction: on the one hand, our state needs a new generation of creative and critical thinkers, ready to embody democratic values and seek answers to the complex challenges of the war and post-war period. On the other hand, explanatory, illustrative and reproductive approaches to education still prevail in Ukraine, focused on the acquisition of predefined knowledge, and there is an urgent need to apply more progressive educational practices.

We also appeal to the position of M. Galchenko (Galchenko, 2021), who argues that «the need for the concept of science education is due to the exhaustion of the resources of traditional education and the fact that the modern education system has become fully functional. Despite the growing intensity of educational strategies, educatedness in its semantic definition has been largely lost. A person becomes a pragmatic consumer of educational services, realises themselves not through educatedness, but in the space of other forms and ways of life».

In this regard, the key approach of science education («Inquiry-Based Learning»), which is emphasised by O. Kovaleva (Kovaleva, 2020), is of interest. It is based on the idea that people can learn effectively by exploring real-life situations and scripts, as well as through social experience, solving problems, creating solutions and answering real questions. The researcher notes that such learning «is grounded in the constructivist paradigm of education, the main idea of which is that the teacher does not impart knowledge and skills to the student in a ready-made form, but only creates conditions for the formation of their own knowledge and skills».

Outlining the unresolved issues to which the article is devoted

At the same time, we believe that in the context of the development of the chosen topic, the problem of clarifying the methodological features of using heuristic questions and determining the possibilities of conducting philosophical exercises for the formation of a critically thinking personality remains unresolved and requires special attention.

Formulation of the purpose and goals of the article that the author seeks to achieve

The purpose of the article is to reveal the theoretical and methodological features and practical aspects of heuristic questioning as a means of developing critical thinking of junior schoolchildren in the organization of the educational model "Philosophical Dialogue".

Outline of the theoretical provisions of the study

Accordingly, we attach great importance to the development of critical thinking, which is currently assessed as: a priority of science education; one of the tasks of Inquiry-Based Learning (IBL) and heuristic learning (G. Armstrong); an important skill: one of the top 10 skills that people will need in the future (Global Education Futures); one of the 4K skills – critical thinking, creativity, communication and teamwork; one of the soft skills, etc.

To date, there are many approaches to the interpretation of the term "critical thinking". Thus, from a pedagogical viewpoint, critical thinking is understood as "a type of thinking characterised by a person's ability to: see problems, ask questions; analyse, compare, synthesise, evaluate information from any source; put forward hypotheses and evaluate alternatives; make a conscious choice, make a decision and justify it" (Pometun, Hupan, 2018, p.329).

One of the directions to achieve the goals of science education in general, and the development of critical thinking in particular, may be to turn to foreign experience in using innovative pedagogical forms and methods and adapt it to the specifics of the Ukrainian education system. For example, progressive European educational models, which are an alternative to traditional teaching approaches and have already been tested in a number of European countries, can serve as an example for us.

We believe that one of the most effective educational models is "Dialogos" / "Philosophical dialogue", which has been used in many European countries for several decades in working with preschool children, pupils and students. "Philosophical dialogue" has been developed over several years to ensure the healthy growth and development of wisdom and critical thinking of children and youth in multicultural and multireligious contexts. One of the authors and popularizers of philosophical dialogue is G. Helskog, whose works present the theoretical foundations and methods of conducting philosophical exercises (Helskog, 2017, 2019, 2021).

In Ukraine, the educational model "Philosophical dialogue" was presented during trainings for scientists within the framework of the international project "Development of a culture of democracy in teacher education in Norway, Ukraine and Palestine" (CPEA-LT 2017/10037) (direction "Implementation of democracy in communication in the educational process") (Demchenko, Lymar, Turchyna, 2019). Later, philosophical exercises were used by teachers in the training of future teachers at the universities of Vinnytsia, Kyiv, Chernihiv and others (Demchenko, Koval, Vatso, Limar, Turchina, 2020).

During 2024-2025, the educational model «Philosophical dialogue» is being tested at the Development Design Department at the Institute of the Gifted Child of the NAES of Ukraine in the context of the development of the research topic «Methodological principles of implementation of educational models of specialised education in science in general secondary and out-of-school education». Our goal is to promote this educational model among teachers of general secondary and out-of-school education institutions, to test its effectiveness in developing critical thinking of junior schoolchildren in the context of solving the tasks of science education. Among the directions of experimental work with primary school teachers and educators of out-of-school education institutions, we have identified:

- to stimulate teachers' interest in philosophical dialogue, to form a positive motivation for its use in practical activities;
- to show the possibilities of philosophical dialogue for the development of critical thinking of junior schoolchildren in the context of science education;
- to raise awareness of teachers about philosophical dialogue, to promote the formation of competences necessary for the practical use of various types of philosophical rights for the development of critical thinking of junior schoolchildren;
- to organise the testing of the educational model by educators in general secondary and out-of-school education institutions in order to develop critical thinking of junior schoolchildren and to conduct a diagnostic assessment of its effectiveness;
- to develop methodological recommendations for practitioners on the use of philosophical exercises for the development of critical thinking of junior schoolchildren in the context of science.

A generalisation of the works of G. Helskog (Helskog, 2017, 2019, 2021) shows that today the «Philosophical dialogue» is a modern educational model that involves:

- consideration of controversial issues and situations, analysis of discussion opinions, discussion of scientific and philosophical concepts presented in scientific and publicistic texts, literary works, examples from real life and everyday experience;
- asking philosophical / heuristic questions based on what you have heard / read, making assumptions / hypotheses;
- finding answers to them in the course of discussion and exchange of views;
- moving from a philosophical / heuristic question to problems and causes, searching for solutions;
- interactive interaction of all participants in the process of organising different types of work: individual, pair, group, frontal.

The basis of the educational model is to receive and discuss philosophical / controversial / heuristic questions. At the same time, teachers, organisers of philosophical exercises, should consider the following:

- almost all questions, even about nature, historical and other facts, have a philosophical background and can be problematic / heuristic;

- asking heuristic questions by students to each other and to the teacher should prevail, and not vice versa;
- questions should be interesting and relevant to the majority of students;
- each question should stimulate cognitive interest and critical thinking, and should be answered with argumentation and justification;

In the works of G. Helscog (Helskog, 2017), we find a difference between asking different types of questions about something, in particular «X», where «X» is a phenomenon, event, fact, concept, etc. Thus, non-philosophical / reproductive questions require a specific answer. They are asked according to this sample: *What is X?; What are the components / elements of X?; When did X take place?; How long did X last? etc.* For example: *What is nature?; What is ecology?; When did the first flight of a human being into space take place?; How many days are there in a leap year?*

There is no single answer to philosophical / heuristic questions that will be assessed as right or wrong. Students should express their opinions and assumptions, which may be less or more well-founded and convincing. Such questions are formulated in different ways: *What does X mean to me?; What is my attitude to X?; Is X a positive or negative phenomenon?; Can I change X in any way?; How does X affect people's lives in general and my life in particular? etc*. For example: *Is nature our «friend»?; Is a human being a «friend of nature»?; Could environmental problems have been avoided?; How did Yuri Gagarin's flight change the perception of the Universe? etc.*

In the opinion of G. Helskog (Helskog, 2021), students can be asked the following philosophical / heuristic questions: *What is needed to ensure that the results of science are used ethically?*; *What are the connections between humans and water on the planet? etc.* Thus, the researcher notes that in the process of a philosophical conversation on the question *"How is man related to trees?"*, students can offer the following answers: *"Every morning I look at the tree outside my window and admire it"; "Every autumn I eat apples from a tree in my garden" etc.*

Besides the fact that an important task of philosophical exercises is to develop students' critical thinking, it is necessary to teach students a culture of conducting dialogue during discussions and searching for answers to philosophical questions. In particular:

- to put forward hypotheses, defend one's position, relate it to one's own experience and attitude, look for examples from life;
- to select arguments;
- to identify the specifics and obstacles that may arise in the process of using controversial questions and strategies for overcoming them;
- to speak in turn;
- to listen carefully to the position of other participants, seek to understand each other;
- to accept the arguments of another, to change one's original opinion, or to abandon a hypothesis;

- to avoid conflict situations in the process of discussing linguistic, communication skills;
- formulate conclusions, make generalizations, reflect.

G. Helskog (Helskog, 2017) presents the educational model «Philosophical Dialogue» as a system of 9 exercises, each of which has a name:
- A. Survey. B. Reflecting experience. C. Statements, arguments and reasons.
- D. Criteria and views.
- E. Interpretation and understanding.
- F. Emotions and attitudes.
- G. Ethics and moral actions.
- H. A person in the context of the proposed question.
- I. Existence and enlightenment.

An important feature of these exercises is that they are not carried out arbitrarily, but according to algorithms developed by G. Helskog (Helskog, 2017). For example, Exercise B 1 «Interpretation and presentation» involves the following sequence:
- according to the topic of the lesson / class, a small text is selected, which the teacher offers to students for discussion;
- students work on the text in small groups: read several times in a chain;
- next, each student must choose one thesis/sentence that is the most important in the text, in their opinion; underline it;
- farther the participants rework the chosen thesis into a philosophical / heuristic question;
- then each group discusses and explores it;
- after the discussion, representatives of each group read the question out loud and write it on the board;
- frontal work takes place with all participants in the philosophical dialogue: questions are compared, similar, most interesting and relevant ones are selected, which can be considered and discussed together;
- after discussion, the most complete and extended answer is chosen;
- a reflection is carried out, the results are summarized.

Teachers of general secondary and out-of-school educational institutions can use these and other philosophical exercises, based on the recommendations of the researcher, adapting them to the specificities of the subject / discipline / circle work plan / class or to the content of a specific topic.

For example, in the lesson „I explore the world" (4th grade) during the study of the topic „Man and nature", you can conduct philosophical exercise B 1 „Interpretation and presentation". The teacher offers for discussion the text „How man changes nature" (Hilberh, Tarnavska, Pavych, 2022, pp. 106-107). In the course of the exercise, students can highlight the following thesis as a key one: *"Man, like plants and animals, is part of living nature"*. Further, they formulate philosophical questions and discuss them, for example: *Why is man considered a part of living nature?; Is man the most perfect part of living nature? etc.*

This exercise can be concluded with a reflective conversation and visualization: creating drawings, collages, etc.

As we can see, on the one hand, the use of philosophical dialogue can be appropriate and effective in general secondary education institutions. In particular, philosophical exercises can be effective in lessons: at the beginning – as a means of motivating educational and cognitive activity, updating students' knowledge; at the end – for summing up the conclusions, reflection. In addition, it is advisable to conduct separate lessons, introductory, final, colloquium lessons, etc. in order to study new material, consolidate a new topic.

On the other hand, there are certain features / difficulties in conducting philosophical exercises that complicate the systematic implementation of this educational model in schools, namely:

- to achieve the goals of philosophical dialogue, its long-term use is necessary; G. Helskog (Helskog, 2021) recommends conducting at least eight to ten dialogues with a break of one to two weeks between them;
- following the algorithm for conducting a philosophical exercise requires spending a certain amount of time (an hour and a half; some dialogues were longer – up to six hours or more), which cannot always be allocated within the scope of school classes in the context of implementing educational programs during the study of subjects; accordingly, teachers cannot use philosophical exercises often enough, in every lesson;
- it is impossible to clearly plan in advance the content, form and course of a philosophical dialogue, which are determined in advance only approximately; therefore, the teacher / facilitator must have professional skills to make basic decisions during the dialogue, taking into account the specific situation and the development of the group.

In view of this, we consider the use of the educational model "Philosophical Dialogue" in the system of extracurricular and out-of-school education in the context of scientific education of children and youth to be a promising direction. In particular, conducting philosophical exercises during classes in scientific circles, debates, subject weeks, summer scientific schools, presentations of the results of scientific research by circle members, etc. This is due to the fact that:

- the principles and tasks of philosophical dialogue are correlated with the tasks of extracurricular work and out-of-school education;
- each philosophical exercise can be creatively adapted during various forms of extracurricular and out-of-school work;
- teachers of out-of-school educational institutions have fewer regulatory constraints in planning and adapting the content of the work of the circle/studio;
- they are more free and flexible in choosing technologies and methods of teaching and upbringing; they have more time resources for organizing philosophical dialogue.

Conclusions

So, philosophical dialogue is a modern educational model that is used in a number of European countries. Due to asking and considering controversial questions, searching for answers to them, favorable conditions are created for the development of students' ability to analyze, argue, and seek the best ways of solving the situation. The result of which is the development of critical thinking of children and youth, the formation of their own position and the ability to actively learn about the world around them. The educational model «Philosophical dialogue» does not claim to be universal, but is one among others, which is being tested within the framework of the IOD NAES of Ukraine experiment (2024-2025). The task of scientists is to popularize philosophical dialogue among teachers of general secondary education (ZZSO) and out-of-school education institutions (ZPSHO). We strive to involve practitioners in its use in working with students, and to involve them in assessing its effectiveness in the context of implementing the tasks of science education. We consider a promising direction to be conducting a survey of practicing teachers regarding their awareness of the educational model «Philosophical Dialogue» and their readiness to use it in practical activities.

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