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TEACHING CHILDREN TO ASK QUESTIONS AS A BASIS FOR DEVELOPING CRITICAL THINKING

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Summary. *The life of a modern person and society takes place in an extremely complex, unstable, and risky world. To be successful in it, a person must have adaptability and flexibility of thinking and action. Under these conditions, critical thinking becomes an attribute of a modern person. Accordingly, there is a social need to develop this style of thinking. Experts say that critical thinking originates from the child's tendency to formulate questions about the world, nature, and the existential aspects of human life. Therefore, the purpose of this study is to theoretically substantiate and experimentally verify the effectiveness of various methods and techniques for teaching preschoolers the ability to ask questions and lay the foundations for the development of critical thinking. For this, preschool teachers and parents (148 people in total) were offered a number of techniques that allowed them to outline the nature of their questions and determine the level of formation of the preschoolers' ability to ask questions.*

Keywords: *ability to ask questions, critical thinking, Zapytalyk program, reflective questions, heuristic search questions, creative questions*

As world experience shows, a successful person who will live and work in a society of innovation, uncertainty, and potential threats, must, first of all, have the ability to think critically. According to Patrick Griffin, a professor at the University of Melbourne and leader of an international research project on assessing and teaching skills and competencies in the 21st century, the emphasis in the modern world is shifting towards critical thinking, the ability to interact and communicate,

and creativity [6]. At the XXIII World Philosophical Congress, held in Athens in 2013, the discussion was about the need for philosophical dialogue at different stages of the educational process, the formation of critical, creative thinking through the development of reflective practice, using, for example, dialogical communication when working with children [18]. In Ukraine, this problem is also relevant due to the start of the implementation of the New Ukrainian School program [14]. The strategic goal of the new Ukrainian school is to form an integral holistic personality, comprehensively developed, and capable of critical thinking.

Accordingly, there is a social need to develop such a way of thinking. Therefore, in recent years, there has been a tendency to intensify pedagogical, psychological, philosophical and other research in this area and to introduce their results into the educational process.

The concept of critical thinking became widespread in the 50-70s of the twentieth century. However, already in antiquity, we find its intellectual roots. Thus, the Socratic Maieutics can be seen as a way of shaping critical thinking. Aristotle's criticism of the concept of being and thinking of Plato, and skepticism became the embryo of European critical mindset. In the Middle Ages, the writings of Thomas Aquinas embodied the tradition of systematic critical thinking. In the philosophy of modern times, F. Bacon noted that in research one must be patient to doubt; for R. Descartes, criticism becomes a systemic component of philosophical theory. And Kant's *The Critique of Pure Reason*, Hegel's *Encyclopedia of Philosophical Sciences*, and K. Popper's critical rationalism can hardly be overestimated in the formation of this tradition.

The American psychologist and philosopher J. Dewey [3] is considered the founder of the modern concept of critical thinking. Representatives of the American pragmatic philosophy and psychology of the twentieth century were among the first to feel and realize the new trends in world development and the need for a new way of thinking. Among these famous scientists, it is worth highlighting J. Anderson, J. Guilford, W. James, R. Ennis [4], D. Kluster [8], A. King [7], the founder of the Institute for Critical Thinking M. Lipman [12], R. Paul, M. Scriven, R. Solso, A. Fischer, D. Halpern [5] and others.

A fundamental work in this area was *Discovering Philosophy* by Matthew Lipman, professor of philosophy at Columbia University [13]. The author claims that children are capable of abstract thinking, which means they can and should engage in logic and develop their tendency to reason. Later, the international Philosophy for Children (abbreviation – P4C) learning strategy appeared. G. Matthews, R. Reed, M. Pritchard, E. Sharp and others joined its creation.

There are several directions in the study of critical thinking in the works of Ukrainian researchers. Philosophical aspects are in the center of attention of M. Galchenko and V. Kremen [11], M. Lipin, G. Ilyina, A. Sakun, O. Tiaglo, O. Fedorchuk and O. Naumkina [15]. These studies represent the complex nature of critical thinking and, accordingly, different approaches to defining its essence. Many works of Ukrainian specialists and teachers are devoted to the ways (technologies, methods, and means) of developing critical thinking of children, pupils and students [1; 2; 9; 10; 17; 19; 16; 20].

What does it mean to think critically? According to D. Kluster, critical thinking should meet the following characteristics: critical thinking is independent thinking;

information is the starting point, not the end point of critical thinking; *critical thinking begins with asking questions* and clarifying the problems that need to be solved; critical thinking seeks convincing reasoning; and critical thinking is social thinking [8]. Thus, the development of critical thinking begins with the ability of children to ask questions.

The purpose of the study is to theoretically substantiate and experimentally test the effectiveness of various methods and techniques of teaching preschoolers the ability to ask questions and lay the foundations of critical thinking.

The methodological foundations of the study were as follows:

- general philosophical method and principles (dialectical method, the principle of systematicity, continuity, and reflexivity);
- empirical methods: pedagogical experiment, survey, interview, analysis of the experimental work results;
- theoretical methods: ascent from the abstract to the concrete, the unity of historical and logical;
- formal logical procedures (analysis, synthesis, generalization, systematization).

To teach children the ability to ask different questions, adults need to master this art themselves. As part of the study, teachers of preschool institutions and pupils' parents (148 people in total) were initially offered a number of methods that would outline the nature of their questions in order to determine the level of their ability to ask questions. At the next stage, a pedagogical experiment was conducted to identify tools for effective teaching children the ability to ask questions.

At the first stage of the study, the following methods were used:

- "Circle of questions", a graphic exercise for teachers and parents (respondents draw seven circles in which they write down three traditional questions they ask different people in their environment: parents, wife/husband, their children, girlfriend/friend, colleague, leader, pupils);
- Author's questionnaire for teachers and parents "Me and my questions" 1) How often do you ask questions during the day?; 2) What questions do you usually ask yourself and others (rhetorical, reproductive, clarifying, creative, reflective)?; 3) What role, in your opinion, is given to questions in speech?; 4) How do you react to questions of others?; 5) What feelings do you experience when communicating with others?; 6) In what communication situations do you feel uncomfortable and why?; 7) Do you play questions games with children?;
- Interview for children "Are you a "Why" Guy?" 1) Do you often ask adults questions?; 2) What questions do you have?; 3) What is an inexpedient (tactless) question?; 4) Are you satisfied with the answers you receive from adults?; 5) What would you like to tell the adults about your questions and their answers?.

The following criteria and indicators were identified that determine high, sufficient and low levels of the ability to ask questions:

1. Cognitive (knowledge of the role of questions in speech; awareness of different types of questions; the presence of the concept of the question structure).
2. Emotional-empathic (the presence of an emotional component in questions; a feeling of comfort in dialogues; understanding the concepts of "expediency" and "tact" in relation to questions to others).

3. Behavioral (willingness to engage in dialogue; desire to independently formulate various types of questions; support for question-related games).

The diagnostic results provided the basis for the following conclusions:

- Adults do not often ask questions to others (even less often – to themselves);
- The questions concern mainly the household sphere (Have you eaten?, Are you cold?, What to cook?, Where are we going?, What are we going to do?) and almost do not affect the emotional and sensory sphere and the sphere of culture and art, nature, inner world;
- teachers and parents use mainly reproductive and closed-ended questions (requiring only a Yes/No answer);
- according to children, they ask about what they see around and want to talk to their parents, but often adults “shout so we don’t bother”.

Thus, the ascertaining stage demonstrated the need for systematic work with teachers and parents of pupils to master the art of questions and teach children the ability to ask questions, which will contribute to the formation of critical thinking.

At the formation stage, the step-by-step program Zapytailyk was created and tested using various methods and techniques. Taking into account the psychological characteristics of preschoolers (curiosity, interest in the environment, the ability to admire, a tendency to stereotypical answers and copying, etc.) and the classification of questions (Bloom's Daisy model; Olena Pometun), the means of effectively teaching children the ability to ask questions were identified (Table).

Table

Methods and techniques for teaching children to ask questions

№	Methods and techniques	Method (technique) content	What good it is to children
Stage 1			
	Cognitive method	Helps to create a system of concepts and awareness, hierarchies and interconnections of phenomena, objects and subjects of the environment	Discovers the richness of the environment and allows you to learn the essence of the near and far surroundings
	A comparator technique: “How are ... similar?” “What’s the difference between...?”	Comparison of natural objects, man-made objects, generalizing concepts	Develops the ability to structure and group objects in their own picture of the world
	Heuristic observation	Invite the child to explore the subject using the questions: “Who?”, “What?”, “Where?”, “How?”, “Why?”	Develops the ability to observe and explore objects in different ways
	Forecasting technique	Other situations and other decisions are modeled: “What will happen if?”, “If...?”	Develops imagination and associative thinking of a child

Continuation of Table

№	Methods and techniques	Method (technique) content	What good it is to children
Stage 2			
	Visual (illustration-graphic) method	Combines verbal skills to ask questions using visual perception	Visualizes the process of developing the ability to ask questions
	Sleuth technique	Who will "find" more questions in the picture	Develops the ability to ask questions
	Mirror technique	Drawing analogies between the reflection of the appearance and actions of the characters pictured and the child's experience	Promotes self-knowledge, the formation of the foundations of reflection
	Conversation with the character	The wording of questions for the characters in the picture	Develops imagination, allows them to bring reality – virtual and real – closer together
Stage 3			
	Simulation-role methods	Game situations in which different types of questions are worked out	Forming the ability to ask appropriate questions in appropriate life situations
	Staging technique	Reciting poems-dialogues	Increases readiness for dialogues and communication
	Empathy technique	An offer to imagine yourself in the place of another: "What would you if you were...?"	Develops the child's empathic culture
	Role theater technique	Acting out scenes with questions: "Where are you going...?", "What are you going to do...?", "What do you think about...?"	Develops the ability to ask questions in role-playing games
Stage 4			
	Interactive method	Helps to improve the ability to ask questions in the game	Promotes systematic exercise
	Pyramid of questions	The imaginary character is asked questions while building a pyramid of cubes	Develops the ability to ask different types of "targeted" questions
	The "upside down" technique	The child needs to guess the answer to a question (which an adult whisps in his/her ear)	Stimulates the attention span of children
	Venn diagram	Detecting similarities and differences in certain objects	Develops analysis and synthesis skills

Continuation of Table

№	Methods and techniques	Method (technique) content	What good it is to children
	The "Mr Know-Nothing" technique	Inviting the child to find the answer together	Teaches to look for answers and sources of information
	Echo	An adult's question in response to a child's question ("Why is the uncle screaming?" – "Who or what, in your opinion, could upset him?")	Teaches to appreciate not only and not so much the answers, but interesting and original questions
Stage 5			
	Cooperative interaction method	Includes work in mini-groups to solve a common problem	Forms the ability to cooperate, interact, conduct a dialogue
	The "5X5" ("10X10") technique	For a certain period of time (5 or 10 minutes) you need to come up with a certain number of questions (5 or 10) on a specific topic	Teaching fast thinking, purposeful action, and working of the collective mind
	The "effective approach" technique	The question "How can I use this in my life?" is asked in the process of dialogic communication between groups	Helps to understand how the experience or information can be applied
	Battles	Invite the groups to "talk down" each other with questions	
Stage 6			
	Personality-oriented method	Concerns the inner world	Helps the child to reveal his/her identity
	Biography	The wording of questions regarding the personality of another person	Develops observation skills, attention, delicacy
	Deed history	The wording of questions regarding the actions of the character of the work (picture)	Develops observation and attention
	Journalists	Formulating questions in the form of an interviews	Develops the ability to ask unusual questions
	Pause	After the question, a pause of 5-10 seconds is made so that the listeners can understand the content of the question and form an answer to it	Contributes to the formation of a sense of slowness, moderation, tact

[according to the author's program Zapytalyk]

In addition to these techniques, the following games and exercises have become popular among children:

- "Continue the sentence" (oral form: visual form is proposed: it is proposed to formulate questions to the plot of a didactic picture or an artist's canvas, having the beginning of a sentence: How did the artist...? Why did the artist...? How is the ...depicted in the picture? Was there a similar experience...?).

- "Yes/No" game (guessing the object or social role of a person by functional purpose or characteristics. Children take turns asking questions to the one who "thought of", and should receive "yes" or "no").

- Games on the theory of inventive problem solving (TIPS) technology: "Will you prove your case?" (the ability to argue one's own opinion and find connections between phenomena and objects); "What's missing?" (the ability to see the whole object and in "puzzles"); "Who will be who?" (the ability to see an object in terms of change and growth), etc.

- The children really liked the lines from Rudyard Kipling's work: "I keep six honest serving-men / (They taught me all I knew); / Their names are What and Why and When / And How and Where and Who."

It is worth noting the effectiveness of teaching children the ability to formulate questions in the course of project activities, in particular, drawing up a Goal Tree. For example, at the motivational stage of the Book is My Friend project, children were asked to voice their questions on the topic: "What would you like to know?". Interesting and very original answers were received: "How are books made?", "How do the sheets in a book not fall apart?", "Is it difficult for a writer to write a book? Who helps him?", "Are there large big books?", "Are there any books that are not made of paper?", "How do those who cannot see or have no hands read books?", "What books do doctors or drivers like to read?", "How do adults know which fairy tale to write for children?," "How does the book get old?", etc.

The psychological and cognitive features of preschoolers do not yet allow us to speak of the presence of critical thinking. It is only about building the foundations of critical thinking, which begins with the ability to ask questions. During this period, it is extremely important and necessary to create favorable conditions for the maintenance and development of children's natural ability to ask questions. At the age of 3-5, they ask questions: "How comes it?", "What for?", "How does it happen?". Children are interested in the problems of nature, life and death, friendship and love, good and evil, the origin of different things. It is no surprise that this age, characterized by a great thirst for knowledge of the world, psychologists call "the age of whyers", and philosophers – "the age of spontaneous philosophers."

Reflection, so essential for the ability to formulate problems and reason, begins with a child's natural curiosity about the world and how it works. The great surprise that gives rise to these questions is the fall of particulars, when the prospect of an infinite whole opens up to a little person, the ability to understand it. It is important not to miss this opportunity for the development of full-fledged critical thinking in the future, which begins with the ability to ask questions and formulate a problem.

During the experiment, it was important to enrich children's understanding of certain categories of questions and to diversify the usual repertoire of cognitive questions with reflective, heuristic and creative ones. Research search and

observation made it possible to identify groups of cognitive children's questions aimed at obtaining information about the subject and social reality:

- "What / what is this?" (information about the object, subject: What is this? What do you have in your bag? What have you cooked? What are you giving me?).
- "Who?" (information on how to name a person: Who is this? (about a new child in the group); Who will come to visit us today? Who took my toy?).
- "What/which one?" (information about the characteristics of certain objects and subjects, a person's characteristic features: What toy do you want? Which boy do you want to be friends with?).
- "Can?" (the need for information about the object's ability to perform certain actions: Can a horse fly? Can a cat swim? Can a dog live without meat?).
- "May/Can I?" (permission for a specific activity or getting permission to take something: May I go for a walk? Can I take cookies?).
- "Can you? Will you? Do you want to? " (information about another person's ability or desire to do something: Will you give me shoes? Can you help me assemble a jigsaw puzzle? Will dad pick me up from kindergarten? Will she get me a toy?).
- "Where?" (information about the location of an object, person, occupation: Where is my mom? Where are my pants? Where are we going?).
- "When?" (information about a certain period of time: When will we eat? When will you come? When will we go to the sea? When can I see you?).
- "Why?" (information about why something happened or is happening: Why doesn't the chicken fly? Why is it raining? Why is the girl crying? Why is the car going fast? Why doesn't Peter want to be friends with me? Why is the driver screaming?).
- "How?" (information about the procedure or process: How to do it? How to draw? How to tie? How to get it off the shelf?).
- "Did you do it? / Have you done it? / Will you do it?" (information on how to give preference to certain people in certain situations or events: Have you brought sweets? Do you like this cartoon? Does mom love roses? Will dad play with me?).

The content of the Zapytailyk program provided for the acquaintance of children with other types of questions. In particular, with the participants in the experimental group, exercises were systematically performed to formulate the following types of questions:

1. Reflective questions.

- Adults are asked questions:

How can I accomplish this task? What can I use to get my job done successfully? What is your mood today? What are we going to do today? What do you need to know and what qualifications are needed to become a teacher? How to learn to play a children's musical instrument?

- Peers are asked questions:

Did you understand the task? Was it difficult for you? How quickly can you deal with it? What will help you with this? How would you rate your results? What kind of insect (bird, mode of transport, etc.) can you imagine yourself to be? Why? What is similar between you? With whom of your friends would you live in the same hive, anthill, flower garden? Why? How did it work for you? What do you think about your work? And what about my work? Can you feel someone else's pain? What it is? What color is the pain? What does pain taste like? How to draw pain? How will you feel

when you restore the pattern on the wings of the butterflies? How do you rate your efforts? Did it work out as you planned? Or differently? Why? How do you rate the efforts of your friends? What would you recommend doing differently?

- Questions are asked to oneself:

Do I feel like a winner? What helped me to cope with the task? What was stopping me? What have I done wrong? How did I feel when painting, sculpting, designing? How do I resemble the character in a work (art canvas, plot-didactic picture)? If the Wizard asked me how to help, what would I answer him?

2. Heuristic search questions.

This method was actively used by the ancient Greek philosopher Quintilian. The method is based on seven key questions, such as Who? What? Why? How? Where? Which? and When?, the answers to which help to form a holistic view of the object under study.

Observation of natural objects:

- Who (what) is it? Why is it needed on Earth? Where did the object come from? How and where does it live? What does it eat? How is it useful to man? When does certain change happen to it? What parts does it consist of? What each part can do and how does it help the object as a whole? How will the object change when it grows? What new "work" will it have? What does it take to make this happen? What happened? What's happening? What will happen?

Observation of man-made objects:

- Who (what) is it? Why is it needed? Why did people come up with this object and how did they do without it before? What was the "predecessor"? How was it in a person's life? Where and how could the object be used? What does not suit us now, how can the specified object be improved? How does it differ from others? When can we give him a new lease of life?

3. Creative questions.

The type of questions that most contribute to the development of children's imagination and associative thinking.

- "Talk to the image" (a proposal to put as many questions as possible to the crow (dolphin, turtle, fox, lantern, house, tractor, smartphone, etc.) depicted on a sheet; think about what question you would receive in response).

- "Put three questions to the Time Machine" (one from the past, the second from the present, and the third from the future).

- "What would be...?" (invite the child to imagine an object or subject in a time dimension (after 20, 100 years); in another volume (increase/decrease)).

- "What would you do if you were...?" (invite the child to imagine him/herself in a different role and simulate the situation in a different plane).

- "How could this fairy tale have ended?" (situation in a fairy tale).

- "If I met the Fairy, would I....?" (invite the child to imagine a meeting with the Fairy and voice his/her own wishes).

Thus, a developmental and playful space was created, in which children practiced with interest in formulating various questions: simple, ordinary, evaluative, clarifying, interpretive, practical; "thin" (with an unambiguous answer) and "thick" (with a detailed answer); reflective, creative and heuristic search. An indisputable proof of the effective implementation of the Zapytailyk program was the children's

mastery of the ability to pose various types of questions to adults, peers and themselves.

Conclusion. This study was aimed at theoretical substantiation and experimental verification of the effectiveness of various methods and techniques for teaching preschoolers to ask questions, which contributes to the formation of the foundations of critical thinking.

The approbation of the Zapytalyk program made it possible to outline certain life hacks for adults who teach children the ability to ask questions:

1. Create a friendly environment for the child to ask questions.
2. Encourage children to ask questions in different situations: at home and in kindergarten, alone and with people, in uncertain situations and various emotional states, etc.
3. Encourage children to ask questions with your own sincere reaction ("Ah, what an interesting question from a wise child!") and a comprehensive answer.
4. Be tolerant of many children's "Why?", after all, they need to learn to establish causal relationships and know that there are no "bad" questions.
5. Appreciate children's questions, show the child the importance of his/her questions.
6. Be a model for your children in how and what you can ask other people.
7. Know how to negotiate with your child: if you can not give an answer in the "here and now" situation, promise to return to it later, and keep your word.
8. Give your child the freedom to formulate questions, try to do without your own templates ("Listen to how I do it", "Take me as an example").
9. Remember that the ability to ask questions is a sign of a child's creativity and cognition, as well as his/her ability to think critically.

The control section of the experiment showed a significant increase in children's awareness of different types of questions, their structure and role in speech. As a result of the introduction of appropriate methods and techniques, most pupils felt a readiness for dialogue with peers and adults, a desire to independently formulate different types of questions, and their interest in question-related games increased.

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