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THEORETICAL ASPECTS OF THE PROBLEM OF ORGANIZING PUPILS' EDUCATIONAL RESEARCH ACTIVITIES IN PRIMARY SCHOOL

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The aim of the article is to highlight the theoretical aspects of the problem of organizing pupils' educational research activities in primary school. The concepts of "research", "scientific research", "educational research", "pupil's research activity", "educational research activity" have been analyzed. Peculiarities of pupils' scientific research and educational research activities have been considered, their similarities and differences have been analyzed. Ways of further developing the problem of organizing pupils' educational research activities in primary school have been planned.

Keywords: junior schoolchildren; activity; pupils' research activity; educational research; scientific research; creative activity; pupils' educational research activity; research activities' organization.

ТЕОРЕТИЧНІ АСПЕКТИ ПРОБЛЕМИ ОРГАНІЗАЦІЇ НАВЧАЛЬНОЇ ДОСЛІДНИЦЬКОЇ ДІЯЛЬНОСТІ УЧНІВ У ПОЧАТКОВІЙ ШКОЛІ

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Метою статті є висвітлення теоретичних аспектів проблеми організації навчальної дослідницької діяльності учнів у початковій школі. Актуальність дослідження визначена: соціальним замовленням на творчу та самостійну особистість; потребою сучасної школи в розробці педагогічної технології розвитку вмінь дослідницької діяльності у молодших школярів; необхідністю збагачення практики організації дослідницької діяльності учнів у початковій школі. Проаналізовано різні аспекти організації навчальної дослідницької діяльності школярів у психолого-педагогічній літературі та виявлено суперечність між гуманістичною цінністю дослідницької діяльності згідно з віком молодших школярів та недостатньою розробленістю в педагогічній теорії і практиці умов та технологій для її практичного застосування в освітньому процесі початкової школи. Характеризовано поняття «дослідження», «наукове дослідження», «навчальне дослідження», «дослідницька діяльність учнів», «навчальна дослідницька діяльність». Розглянуто особливості наукової дослідницької та навчальної дослідницької діяльності, проаналізовано їхню схожість і відмінність. Під поняттям «навчальна дослідницька діяльність учнів» розуміємо діяльність дітей під керівництвом педагога, пов'язана з вирішенням творчої, дослідницької задачі із заздалегідь відомим рішенням і передбачає наявність основних етапів,

характерних для наукового дослідження: постановку проблеми, вивчення теорії, що присвячена цій проблематиці, опанування методики дослідження, збір матеріалу, його аналіз і узагальнення, власні висновки. Намічено шляхи подальшого розвитку проблеми формування організації навчальної дослідницької діяльності учнів у початковій школі.

***Ключові слова:** учні початкової школи; діяльність; дослідницька діяльність учнів; навчальне дослідження; наукове дослідження; творча діяльність; навчально-дослідна діяльність учнів; організація дослідної діяльності.*

In the conditions of socio-economic changes in modern society, there is a growing need for independent people who are able to quickly adapt to changing situations and creatively approach solving problems. A modern pupil will have to become an active participant in the country's social and spiritual development, which requires him to be independent in the process of acquiring new knowledge and skills at school, higher education institutions and throughout his life.

The Concept of Modernization of General Education states that nowadays it is necessary to pay attention to the formation of not only pupils' deep and solid knowledge, but also general educational cross-cutting skills, universal competences, functional literacy and socially significant qualities – a scientific worldview, a sense of responsibility, organization.

The new State Standard of Primary Education formulates the idea of implementing a personality-oriented, developmental model of primary school, the content of which will be focused on ensuring individual's self-determination and self-education, mastering cognitive activity methods, and children gaining experience in various types of activities. This requires the creation of certain conditions in educational practice for the pupils' inclusion in active cognitive activities, in particular, educational and research ones.

Pupils' research activity is a creative activity aimed at understanding the world around them, discovering new knowledge for them. It provides conditions for the productive development of their value, intellectual and creative potential, is a means of pupils' activation, formation of their interest in the studied material, subject and general skills. Research data (N. Bibik, O. Poddyakov, O. Savenkov, etc.) indicate the possibility of successful learning of some educational research elements already at the initial stage of school education.

Thus, the relevance of research is determined by social order for a creative, independent personality; modern school's need in the development of pedagogical techniques for the improvement of pupils' research skills; the need to enrich the practice of organizing pupils' research activities in primary school.

In the psychological and pedagogical literature, various aspects of pupils' educational and research activity organization have been considered: the origins of approaches to solving the problem of research activity can be seen in the works of such scientists as V. Vakhterov, M. Pyrogov, K. Ushynsky, etc., as well as foreign classical teachers (A. Disterweg, J. Dewey, J. Komensky, J. Locke, I. Pestalozzi, S. Frenet, etc.). The problems of cognitive methods have been revealed in the works of V. Vorozhilov, L. Druyanov, A. Korolkov, and others. The methodical and didactic foundations of the use of problem-based, research methods in education have been substantiated by D. Bogoyavlenska, V. Pavlenko, I. Lerner, M. Skatkin, A. Khutorsky, etc.; the justification of developmental training, aimed at forming the skills to acquire and apply the acquired knowledge, has been presented by L. Vygotsky, P. Halperin, V. Davydov, L. Zankov, N. Menchynska, M. Skatkin, V. Slastyonin, N. Talyzina, S. Yakymanska, etc.; V. Andreev, I. Zimnya, A. Matyushkin and others have emphasized the

importance of creative research activities at school; the psychological foundations of educational and research activities organization have been described by O. Poddyakov, O. Savenkov; theoretical, methodical, didactic aspects of pupils' research activities have been presented in the works of L. Kazantseva, T. Kamyshnikova, V. Lozova, A. Leontovych, H. Pustovit, and others.

Based on the mentioned scientific works, creative teachers strive to organize pupils' research activity in the learning practice. However, this primarily concerns the organization of research activities of senior and middle school pupils, but in relation to primary school, theory and similar practice have not received sufficient coverage. It is believed that younger schoolchildren are not ready for it. At the same time, in psychology there is a rich experience in studying and forming children's cognitive and research activities (P. Halperin, A. Zaporozhets, O. Savenkov, N. Talyzina, etc.). However, in pedagogy, the problem of organizing pupils' research activities remains insufficiently studied.

Thus, the analysis of the theory and practice of the researched problem made it possible to reveal the contradiction between the humanistic value of research activity according to the pupils' age and the insufficient development of the conditions and technology in pedagogical theory and practice for its application in the educational process of primary school.

The aim of the article is to study the theoretical aspects of the problem of organizing pupils' educational research activities in primary school.

We consider it necessary to start the problem analysis of educational research activities in primary school by considering the concepts of "research", "scientific research", "educational research".

In the scientific literature, you can find several definitions of the terms "research" and "scientific research". In philosophy [7; 16; 21] research is understood as a cognitive activity aimed at achieving scientific knowledge, which has a number of characteristics: systematization; specific ways of substantiating the truth of scientific knowledge, i.e., experimental control over the knowledge obtained and the inference of some knowledge from others, the truth of which has already been proven; awareness of the method by which the object is studied, special training on the subject of cognition.

Scientific research T. Honcharuk considers as "...a process in which an object, subject or phenomenon is investigated with the help of certain scientific methods, while the research purpose is to establish the laws of its origin, development and transformation in the interests of rational use in people's practical activities. Scientific research should be systematic and purposeful" [13, p. 28].

A. Konversky interprets scientific research as "...a systematic and purposeful objects study, which uses the means and methods of science and which ends with the formation of knowledge about the studied objects". According to the scientist, scientific research is a very broad concept that covers all processes – from the birth of an idea to its implementation in the form of new theoretical propositions, new technologies creation, etc. [12, p. 22].

According to Y. Surmin's definition, scientific research is "the process of generating new scientific knowledge, one of the types of cognitive activity characterized by objectivity, reproducibility, evidence, creativity" [17, p. 290].

Scientific knowledge goes through certain stages in its development. The initial form of scientific knowledge genesis is the problem identification and its formulation, which gives

scientific research a certain purpose and meaning. The connecting link between the stage of problem identification and the stage of theory building is a hypothesis – a scientific assumption. A tested and proven hypothesis becomes a scientific theory, that is, reliable knowledge [17, p. 82].

In modern science, one of the theory functions is its practical function: the ultimate purpose of any theory is to be implemented in practice [21]. It was this function that led to the emergence of research as an activity related to solving a situation that required knowledge of the phenomena's essence.

Throughout the history of humankind, research activity has served as a means of adapting people to the conditions of existence, performing cognitive and transformative functions. A person constantly carries out information exchange with the surrounding world according to the scheme: the influence of the external world on a person – perception – information processing – orientation – decision making – action directed from the outside. If the scheme does not allow making habitual decisions, a problem arises in a person's relationship with the world. When solving a problem, a person asks himself questions and seeks to find answers – new knowledge. This situation is called cognitive. It can arise in everyday life, in scientific practice and in educational activities [22].

In the educational process, children often find themselves in a similar situation. The child is constantly faced with the fact that either he does not know the action methods that allow him to achieve the desired result, or he does not have the information he needs for one reason or another, therefore, research activity is one of the most important types of pupils' activities [2, p. 12].

The success of a person's actions within the cognitive situation largely depends on the cognitive abilities given to a person by nature (sensation, perception, mind, will, intelligence, talent, intuition, memory, imagination) and material and technical means created by the person himself (various sources of information). The research skills development is also necessary for a successful solution to the cognitive situation. In our opinion, it is necessary to form such skills already in primary school, when the child often gets into cognitive situations that require not just life, everyday decisions, but research, cognitive actions.

The problem of research methodology is the most important issue in research theory. At the current stage, methodology is understood as a set of approaches, ways, methods, techniques and procedures used in the process of scientific knowledge and practical activity to achieve a predetermined goal. Such a goal in scientific knowledge is obtaining objective true scientific knowledge or building a scientific theory and its logical justification, achieving a certain effect in an experiment or observation, etc. [20, c. 374].

Many modern scientists [4; 12; 13; 19], considering the general methods of scientific knowledge, distinguish three groups: empirical research methods, theoretical research methods, and logical methods used both at the empirical and theoretical levels. Scientific methods of empirical research are observation, experiment, measurement, etc. These research methods can be mastered by pupils at the level corresponding to their age characteristics under the guidance of an adult. Children of primary school age are dominated by object-action, visual-figurative thinking, so empirical research, based on experience and feelings, is closer and more accessible to them.

Among the scientific methods of theoretical research, the following can be distinguished: formalization, axiomatic method, hypothetical-deductive method, historical

method, logical method, transition method from abstract to concrete, idealization, etc. So-called logical research methods and techniques are widely used in scientific research. This is analysis, synthesis, analogy, modeling, etc. [4; 13; 17]. We see the organization of educational research activities as one of the ways to develop pupils' logical thinking.

So, under *research activity* we will understand a special cognitive activity aimed at achieving new knowledge through the use of scientific knowledge methods.

Scientists have distinguished the following types of research activities: cognitive, cognitive-research, educational-research, scientific-research, professional-scientific-research. Currently, there is an increased interest in the organization of pupils' research activities (I. Zimnya, A. Leontovych, O. Savenkov, H. Shchukina, etc.).

Educational research must be considered from the standpoint of the psychological theory of activity, since skills formation is related to the mastery of certain types of activities in the educational process. A number of approaches to the activity study, its content and structure have been developed in psychology. This is reflected in the works of B. Ananiev, V. Davydov, I. Zimnya, O. Leontiev, S. Rubinstein, N. Talyzina and others.

When defining the concept of "activity", scientists, first of all, considered human activity regulated by consciousness. Thus, O. Leontiev noted that activity is a form of active, purposeful interaction of a person with the surrounding world, which responds to the needs that caused this interaction. The needs are a prerequisite for activity. The need for active cognitive activity, based on the stimulation of the research reflex, is natural for a person and necessary for a full-fledged existence and survival in the world, for its development [19, p. 138]. This need is especially pronounced in childhood.

Let us consider the most important characteristics of educational research activity: motivation, objectivity, purposefulness, activity, consciousness.

One of the activity characteristics is motivation. Thus, V. Davydov emphasizes that without motives, activity simply cannot exist [6]. In the activity theory, a distinction is made between the concepts of internal and external motive. In order to be included in the educational process, it is necessary to create a unity of internal and external motives. Activity motivation is especially important for research activities, as motivation regulates, controls activities implementation, and determines the research direction. That is, we can point to the importance of the formation of research activity motivation, which is an indispensable condition for research skills formation.

The activity determines what it is aimed at, that is, the subject. The subject of the activity is one of its main characteristics. According to the subject, types of activity are distinguished and called, for example, pedagogical, educational, research.

Other activity characteristics are purposefulness and awareness. Purposefulness implies awareness of activity [10]. Thus, we emphasize the need to consider the purposefulness of research activity as its characteristic.

The next significant activity characteristic is action, since action plays an important role in the implementation of cognitive activity, contributes to the subject development. Activity can be considered in a number of concepts: mental – intellectual – cognitive – creative activity. That is, we can talk about activity in the range from reproductive to productive, emphasizing its creative aspect (A. Matyushkin), which is especially manifested in research activity [11]. Therefore, in our opinion, it is possible to assert the need to create such conditions that allow awakening pupils' creative activity in the process of finding and

assimilating knowledge.

In order for pupils to comprehend the research activities essence, the teacher must create situations where knowledge is achieved by identifying and solving problems, show pupils ways to overcome difficulties, teach them the appropriate and conscious use of logical techniques (comparison, analysis, generalization, classification, etc.), empirical observations, information gathering, conducting experiments. This approach contributes to the education of an original thinking personality, the development of creative abilities, and forms research skills [1; 15; 23].

So, research activity, like any other, has a certain structure: goal, motive, subject, actions, product, result. But these components have a specific subject content that differs from any other activity types. Therefore, it is necessary to create special pedagogical conditions for the development of pupils' research activity.

With regard to children, especially younger ones, the concepts of "research activity" and "research behavior" have many similarities. The differences lie in the accent's arrangement: in the concept of "research activity" the need-motivational aspect is more emphasized, in "research behavior" – the aspect of interaction with the outside world [24, p. 234].

Pupils' research activity is children's activity under the teacher's guidance, related to the solution of a creative, research problem with a known solution in advance and involves the presence of the main stage's characteristic of scientific research: setting a problem, studying the theory devoted to this problem, mastering the research methodology, material collection, its analysis and generalization, own conclusions. Research activity, carrying out a search in solving tasks is the highest manifestation form of pupils' independent activity [8; 15].

Thus, educational research activity is a special type of children's activity, aimed at their development and based on search activity. The activity is carried out under the teacher's guidance, is aimed at solving a research task, implies the presence of certain stages and research actions, and involves children's creative independence.

Scientists distinguish the components of research activities: research objects (objects, phenomena of the surrounding reality); research subjects (a pupil, group of pupils, team), their needs and motives, goals; research supervisor (teacher); research methods, tools, the process of research initiative deployment and its results [4; 15; 24].

In our opinion, the components of junior schoolchildren's educational research activity are research subjects (pupils) and their goals and motives, research objects, research methods and tools, the process of educational self-research, products obtained at the end of the research, and the result.

The result of educational research activity is a broad concept that includes a material product, a person's mental changes, and enrichment of his experience. According to most researchers, the main result of educational research activity is the acquisition of new knowledge. In addition, scientists call the psychological neoplasms of the pupil's personality the results of their research activities.

Direct and indirect results of educational research activities have been pointed out by A. Poddyakov [14, p. 27], in particular:

- a) new information about the objects to which the research was directed (direct product);

- b) new information about other objects and about other properties of the considered object, which were not the research subject (research by-product);
- c) acquiring knowledge about the research activity itself and its practical experience (direct product);
- d) cognitive and personal development (research by-product).

The product of educational research can be a written work, a layout, or a model. In particular, V. Ushachov refers to the educational research products:

- a research product obtained as a result of a wide knowledge transfer based on the establishment of connections between various phenomena;
- an educational research product, which has an applied value, which is basic knowledge generalization, serving as a developmental beginning for obtaining new educational and operational knowledge;
- an educational research product that reflects the most essential aspects of the object under study [18, p. 54].

Following the views of the above-mentioned scientists, we see the formation of cognitive motives, new activity methods, research skills, as well as new knowledge and pupils' personal development as a result of their educational research activity.

According to many authors, research activity is a type of creative activity, therefore it is appropriate to analyze the concepts and features of creative activity and the creativity concept.

The concept of "creativity" has been given many definitions in psychological and pedagogical literature. In the pedagogical dictionary, creative activity is interpreted as a form of human or collective activity – the creation of something qualitatively new, something that has never existed before; the stimulus for which is a problem situation that cannot be solved by traditional methods; the original product of activity results from the formulation of a non-standard hypothesis, consideration of non-traditional relationships between elements in a problem situation, etc. [5, p. 180]. This definition allows us to point out the features common to research and creative activity: the problem presence, a hypothesis, a result – a new product.

The concept of "creativity" is interpreted ambiguously. It is used by scientists [5; 9] as the internal potential and ability for creation. In our work, we consider manifestations of pupils' creativity as the ability for creative activity.

It is well known that the experience of creative activity cannot be transferred to pupils by imparting "ready-made" knowledge, but only to stimulate pupils' search activity, during which they independently perform tasks with research elements, put forward hypotheses, ideas, conduct research, choose research paths – that is, creatively think.

Thus, there is a close positive relationship between research behavior and creativity, and in a real cognitive activity they form a unity. We will consider research activity as a type of creative activity, and creativity is an important condition for its organization.

Having considered the features of scientific research and educational research activities, it is possible to point out their similarities and differences. Similarities are reflected in the following aspects.

First, scientific and educational research use the same forms of thinking. Specialists in thinking psychology [3; 6; 10] emphasize that the mental activity of a person who solves the task of achieving an understanding certain phenomenon is the same as the activity of a scientist.

Secondly, S. Honcharenko, Yu. Surmin and others emphasize the similarity, saying that the result of both scientific creativity and educational research is new knowledge (subjectively new for pupils) [4; 17].

Thirdly, V. Ushachov [18] and other researchers reasonably conclude that the commonality of scientific and educational research is that they use the same cognitive methods: observation, measurement, experiment, data analysis, classification and systematization, etc.

Speaking of differences, some authors of pupils' research activities concepts development note that the main goal of educational research is fundamentally different from the same in the science sphere. If in science the main goal is to create new knowledge in a general cultural sense, then in education the goal is for pupils to acquire research skills as a universal way of mastering reality through increasing motivation for educational activities and activating pupils' personal position in the educational process, the basis of which is the acquisition of subjective new knowledge (that is, self-acquired knowledge that is new and personally significant for a particular pupil).

Thus, by educational research we will understand the process of active search and discovery of subjective knowledge by pupils, which occurs with varying degrees of independence and involves the use of stages and methods of scientific research at a level accessible to schoolchildren of a certain age. Despite the development of educational research activities organization issues in general education practice, many problems remain unsolved. These are stereotypes in approaches to solving problems, low significance of research activities, low level of research skills formation, pupils' inclusion in research without proper preparation, etc. In order to overcome these problems, it is necessary to include pupils early in educational research activities, but at a level corresponding to their age characteristics.

Prospects for further research in the chosen direction are the determination of pedagogical conditions for the formation of research skills in junior schoolchildren; study of the problem of junior schoolchildren's research skills formation in certain disciplines of primary school and in extracurricular activities; technology development for the formation of junior schoolchildren's research skills in the lessons of the integrated course "I explore the world".

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