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TO THE QUESTION OF THE TECHNIQUE OF SCIENTIFIC RESEARCH

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Abstract

Aim. To designate the place of methodology in the system of scientific research, to substantiate the legitimacy of the Triad “theory-methodology-technique” in the process of analyzing phenomena.

Methodology. The work was carried out based on a systematic approach, taking into account the interdisciplinary significance of the subject under study.

Results. It is revealed that the technique specifies the methodology in the search for activity and praxeological thought. In the structure of the abilities of the subject of cognition conceptual blocks are formed: «methods – ways – technique», where methods are concretized in ways, and ways - in specific techniques. All this is the technological side of cognitive activity.

Research implications. The research results can be used to improve the competency-based approach at the stage of modernization of the education system.

Keywords: theory, methodology, technique, scientific research, methods, subject of cognition

К ВОПРОСУ О МЕТОДИКЕ НАУЧНЫХ ИССЛЕДОВАНИЙ

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Аннотация

Цель. Обозначить место методики в системе научного исследования, обосновать правомерность триады «теория – методология – методика» в процессе анализа явлений.

Процедура и методы. Работа выполнена на основе системного подхода с учётом междисциплинарной значимости изучаемого предмета.

Результаты. Выявлено, что методика конкретизирует методологию в поиске деятельностной и праксиологической мысли. В структуре способностей субъекта познания формируются концептуальные блоки: «методы – способы – методики», где методы конкретизируются в способах, а способы – в конкретных методиках. Всё это представляет собой технологическую сторону познавательной деятельности.

Теоретическая и/или практическая значимость. Результаты исследования могут быть использованы в совершенствовании компетентного подхода на этапе модернизации системы образования.

Ключевые слова: теория, методология, методика, научное исследование, методы, субъект познания

Introduction

It is obvious that a methodology becomes effective if it is organically combined with a scientific method (recall the well-known triad: from theory – through methodology – to technique). Even having at his disposal, a fairly rich set of methodological tools (methods, approaches and, in fact, methodologies), each researcher must be able to use them in the interests of analyzing phenomena. Life convinces us that, when solving each specific problem, a scientist must be able to choose from the whole mass of scientific methodological means exactly those that will ensure its solution [1]. This is on the one hand. On the other hand, having selected them, he must determine the sequence (sequences) of their use. It is our deep conviction that it is these two positions that give rise to the need for special attention to the content of the technique of scientific research.

The content and essence of the technique of scientific research

So, the authors proceed from the organic unity of methodology and technique, focusing on the fact that the methodology concretizes the methodology in the search for an active, praxeological thought. Technique cannot exist in isolation from methodology as a system of methods, approaches, and methodologies since it offers rules for operating these means in the process of cognition and transformation of phenomena [3]. Each scientific technique is simultaneously based both on its scientific and theoretical basis and on its methodological basis. The technique brings theory and methodology to practice, connecting them with the activities of people. The technique largely implements their prognostic capabilities. It has the opposite effect on both the theory and the methodology of scientific research, developing them. Theory, methodology and technique have a relative independence, manifested in the fact that they develop not only under the influence of each other, but also based on their own contradictions [2].

It is extremely difficult to divide the process of cognition into strictly scientific-theoretical,

methodological, and technique parts, since in real life they are organically merged. This can be done only in the interests of highlighting their content-essential features during scientific knowledge of them as specific phenomena [4; 5]. Real processes of cognition always integrate theory, methodology, technique. They are organically combined in the content of the general scientific algorithm of cognition, being the necessary links in the practical activity of people.

Note that it is the technique that is closest to practice, because it determines the choice of methodological tools that are then used to solve specific problems, as well as the sequence of their application. This makes it relevant to know and understand the technique rules for the practical use of the possibilities of the general scientific algorithm of cognition during scientific research.

Technique rules for conducting scientific research

The content of each proposed rule of scientific research, as well as the content of their system, is in a state of constant refinement of development. The system of technique rules of cognition is not closed, given once and for all. It develops, changes, refines. And this circumstance should not remain outside the attention of the subjects of knowledge [6].

What technique rules should guide the subjects of cognition using methodological means formed based on the content of scientific categories, laws, principles, concepts, and theories?

1. The choice of methodological means and the sequence of their use must be strictly subordinated to the goals and objectives of a specific scientific research. In a word, the goals and objectives of the study are the main determinants of the technique for its implementation.

2. It is necessary to focus on understanding the special role of analysis during scientific research. Analysis is the basic methodological procedure of scientific research. This role is assigned to analysis not by chance, since it is it that directs us to the division of cognizable phenomena into components and the study of them, regardless of the whole. Without

knowledge of the elements that make up the objects of study, other methodological procedures are impossible (synthesis, deduction, induction, comparison, modeling, idealization, formalization, etc.)

3. Analysis and synthesis are one; there is no analysis without synthesis, and vice versa. Abstracting from the unity of these procedures is possible only in the interests of knowing their specifics. In real scientific research, they are organically merged, complement each other.

4. Each scientific research involves the use, in addition to analysis and synthesis, of the entire arsenal of methodological procedures: induction, deduction, comparison, observation, modeling, absolutization, formalization, idealization, abstraction, objectification, experiments [7]. These procedures should be used targeted, in certain circumstances, systematically.

5. During scientific research, all methodological means should work: techniques, methods, approaches, methods and methodologies. The sequence of their use is strictly determined by the goals and objectives of the study.

6. The experience of research work shows that each scientific research offers the use of methodological tools of private, sectoral and general scientific disciplines. Their systematic, targeted application, as a rule, guarantees high efficiency of scientific research.

7. It is necessary to understand the special role of techniques as methodological means in the system of methodology. This role of techniques lies in the fact that they are the main, basic means of analysis, and this means the methodological initial means of the entire process of scientific research.

8. Conducting each scientific research involves the definition, choice of a “starting”, initial method of cognition or a block of such methods. The problem of choosing, defining such a method or methods is one of the most important in scientific research. The choice of other methodological means by which the research tasks will be solved, as well as their coordination, subordination and correlation in the process of conducting it, largely depends on its solution.

9. This is the rule of systematic use of methodological tools during scientific research. In

other words, without exception, all scientific research should be carried out using methodological tools that are not just their totality, but a system that is a kind of integrity, the elements of which are in a state of all-connectedness, providing an effective solution to the problems of scientific knowledge.

10. The experience of conducting scientific research shows that the systematic use of means of knowledge enhances the methodological capabilities of each of them. And vice versa: their unsystematic application weakens their scientific productivity.

11. The methodological possibilities of means of cognition in the course of their systematic application not only increase, but in some cases, change their functional role. Thus, the methodological possibilities of cognition techniques can reach the methodological potentialities of methods, and even approaches and even methods. At the same time, research experience suggests the reverse process. Its essence: methodological possibilities, for example, methods, can be reduced under certain conditions for conducting scientific research, to the role of approaches, methods, and even techniques. This rule can be qualified as a rule of variable use of methodological means during scientific research.

12. Each scientific research is unique, singular; hence the conclusion follows: the technique for its conduct, despite the existence of general methodological rules of scientific knowledge, is also always unique. This should be kept in mind by every researcher.

13. The subject of knowledge should be focused on constant attention to the organic dialectical unity. Theoretical, methodological and technique foundations of scientific research. This unity can be expressed in the following positions: a) theory, methodology and technique do not exist without each other; b) their differentiation is permissible only in the interests of knowing the features of each of them; c) changes occurring in the content of each of these phenomena lead to changes in other phenomena that form the Triad: theory – methodology – technique; d) in every established science – they form a system with all the ensuing consequences; e) despite the or-

ganic connection of scientific theories, methodologies and techniques, they have relative independence, which is expressed in the fact that they develop not only under the influence of each other, but also on the basis of their own contradictions, and this suggests that they can develop pace, advance or lag behind each other in development.

14. In the context of the ongoing conversation, it should be noted that all new scientific research must necessarily use the previously accumulated methodological experience of cognition. This is on the one hand. On the other hand, they should consider the fact of constant development of techniques of scientific knowledge.

15. This is the rule of the «dialectical circles» of the study of phenomena. What is it about? The point is that the study of virtually all phenomena of reality involves the repeated repetition of cognition procedures. Experience suggests that, perhaps, there are no objects of scientific knowledge that would reveal their essence of subjective research on the first try. There are several such attempts as a law. Hence the need to formulate this rule arose.

16. The experience of scientific research suggests that the information studied in their course must be constantly refined, developed, and corrected [8]. The essence of this rule can be understood without much difficulty if we agree with the facts of the stages of scientific research, their duration, and the constant development of both the objects of research themselves and the subjects of their conduct, as well as the facts of the development of the means used by them during research work.

17. Scientific technique cannot be effective if it ignores the laws of both formal and

dialectical logic. In a word, in scientific technique there is a rule of strict observance of the requirements of the laws of formal logic (contradiction, identity, sufficient reason and the excluded middle) and the laws of dialectical logic (connection of content and essence, quantity and quality, organization and structure, system and function, unity and struggle of opposites, necessity and chance, negation of negation, possibility and reality, connection between the one and the general, etc.).

Conclusion

The subjects of scientific research are aimed at mandatory verification of the objectivity of their results. For these purposes, researchers must know and own the system of indicators for verifying the truth obtained during scientific research of information (results). Such a system exists. It includes ontological, historical, cognitive, epistemological, epistemological, nomonological, methodological, technique, logical, intuitive, worldview, ideological, cultural, teleological, and practical indicators. Only after making sure that the requirements of these indicators were observed during scientific research, it is legitimate to assume that the results of scientific research are true and objective.

Summarizing the above, we note that this article does not present all the methodological rules of scientific research. There are definitely more of them. At the same time, these rules, according to the authors, reflect the main links in the technique for conducting scientific research.

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