

THE IMPORTANCE OF CHOOSING AND EVALUATING SCIENTIFIC RESEARCH METHODS.

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Abstract: scientific research methods are the field of science-human activity, its task is to develop and theoretically systematize objective knowledge about existence. This field is directed to the creation and development of a continuously developing system of knowledge in the form of scientific concepts, principles and axioms, scientific laws, theories and hypotheses, empirical scientific facts, methods, methods and research methods.

Key words: scientific research, axioms, object, assessment methods, systematization.

It includes institutions that provide human scientific creativity, human creativity with scientific work objects, tools and conditions of scientific activity. Its development begins with the collection of facts, they are studied and systematized, generalized, and consists in uncovering certain laws to create logically structured systems of scientific knowledge that allow explaining the known and predicting new ones [1]. Principles and axioms are the initial state of scientific knowledge, they are the initial form of systematization and are based on doctrine and theory. Definition is the highest form of generalization and systematization of scientific knowledge [2]. It represents the scientific principles, laws and methods of research that allow to generalize the perception of existing objects, processes and events, as well as to predict new ones. In the system of scientific knowledge, scientific laws are considered to be an important component,

which reflect the most important, stable and repetitive objective interrelationships in nature, society and thinking. Usually scientific laws include general concepts, categories. Scientists use hypothesis when they do not have enough factual material as a means of reaching a scientific result. A hypothesis is a scientific assumption that requires experimental verification and must be theoretically substantiated to be a valid scientific theory. These are general and special methods of scientific knowledge. General methods are divided into three groups: empirical research methods, comparison, measurement, experiment, and theoretical research methods [3].

Observational method. In this case, the study of the object is carried out without interfering with it. In this case, only the property of the object, the description of its change is recorded and measured. The results of the research provide us with information about the natural characteristics and relationships of real existing objects. These results do not depend on the subject's will, intuition and desires [4].

The widespread method of comparative knowledge is based on the principle "all things are known by comparison". As a result of the comparison, common and specific aspects for several objects are determined. This, as you know, is the first step towards knowing the rules and laws. In order for the comparison to be effective, it is necessary to follow two main requirements: firstly, only objects that may have a certain objective commonality should be compared, and secondly, the comparison of objects should be carried out according to significant properties, signs should be increased. Unlike comparison, measurement is a more precise means of knowing. The value of this method lies in the fact that high accuracy is achieved about objects in the environment. In the empirical process of scientific knowledge, measurement is similar to observation and comparison. An experiment, unlike the above-mentioned methods of empirical research, is a more general scientific experiment. In this case, it is not only observed and measured, but the conditions in which the object or the object of research itself exists are

changed in a certain way. As a result of the experiment, it is possible to determine the influence of one or more factors on others [5]. In contrast to observation, the experiment ensures the repetition of the experience, allows to study the properties of the object under different conditions and to study the object "purely". Empirical research methods are important in scientific knowledge. They are not only the basis for hypothesis proof, but also often the source of new scientific discoveries, laws, etc. Universal methods such as analysis and synthesis, deduction and induction, and abstraction are widely used in empirical and theoretical research. The essence of the analytical method is to mentally or physically divide the research object into its components. In this case, the essence of some elements of the object, their connection and interaction are studied. In contrast to analysis, synthesis consists in knowing the object of research as a whole in the unity and interdependence of its parts. The synthesis method is used to study complex systems after analyzing their components. Methods of analysis and synthesis are related to each other and complement each other during scientific research. They can be used in different forms depending on the nature of the object being studied and the purpose of the research. There is an empirical, elemental-theoretical, structural-genetic analysis and synthesis. Empirical analysis and synthesis are used in superficial acquaintance with the object. In this case, some parts of the object are separated, its characteristics are determined, simple measurements and recording of things on the general surface are carried out [6]. Such a form of analysis and synthesis allows to study the object of research, but it is insufficient to reveal its essence. Humanistic-theoretical analysis and synthesis to study the nature of the object under study an is used. Structural genetic analysis and synthesis allow to penetrate deeper into the essence of the object under study. In this form of analysis and synthesis, the most important elements that have a major impact on all aspects of the essence of the research object are distinguished. Deduction and induction are a kind of "analysis and synthesis" in the logical conclusion in the study of the object of research. Deduction is based on logical conclusions from the

general to the particular. This method is widely used in mathematics and mechanics when general laws or axioms are derived from special relations. The opposite of deduction is induction. This logical deduction proceeds from the particular to the general. These two methods, like the methods of analysis and synthesis, are related and complement each other in scientific research. In addition to the methods discussed above, the abstraction method is also widely used in empirical and theoretical research. The essence of this method is that the researched object is separated from its insignificant aspects and parts, which is done in order to separate its properties that reveal its essence. With the help of abstraction, generalized results of thinking separated from the context of another phenomenon are formed, which allows to observe their interdependence [7]. Abstract thinking is one of the necessary conditions for a creative approach. Theoretical research is often based on the method of going from the abstract to the concrete. In this case, the cognitive process is divided into two relatively independent stages. In the first stage, it is transferred from the concrete to its abstractly expressed reality. The object of research is divided into parts and described using many concepts and considerations, that is, it becomes a set of mentally recorded abstracts. This is the analysis of the research object at the level of abstraction. Then, in the second stage of knowing, going from the abstract to the concrete is done. In this case, the integrity of the research object is restored, but in thinking. It should be noted that the above-mentioned methods of scientific knowledge are usually used together, complementing each other. The logic of knowledge is conceived as a process of defining a significant, stable, repetitive and individuality, which distinguishes the object of study from others. In the process of learning, it is important to follow the general technology of transition from live observation to abstract thinking and from it to practice [8].

The constantly developing knowledge in the field of science includes the scientific creations of people and institutions that provide this creativity. Theory is the highest form of generalization and systematization of scientific knowledge. It

expresses scientific principles and laws, research methods. Research methods include empirical research, theoretical research methods, empirical and theoretical research methods. Scientists use a hypothesis as a means of reaching a scientific result when they do not have enough factual material, which in turn requires experimental testing and theoretical justification.

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