

FORMATION OF ELEMENTS OF A SCIENTIFIC WORLDVIEW AMONG PRIMARY SCHOOL CHILDREN

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Annotation: The formation of elements of a scientific worldview among primary school children is an important stage in the educational process. The article examines the main approaches and methods aimed at developing cognitive activity, critical thinking, and research skills in children of primary school age. Special attention is paid to the role of the teacher and the learning environment in shaping a holistic perception of the surrounding world based on scientific knowledge. The article describes methods for integrating subject-specific knowledge and developing children's ability to draw independent conclusions and approach the world with awareness.

Key words: scientific worldview, primary school students, cognitive activity, critical thinking, research methods, knowledge integration, teacher, learning environment.

Worldview can be defined as a system of philosophical, scientific, socio-political, moral, and aesthetic views that form an individual's overall picture of the world and guide their activities. There are various types of worldviews, such as philosophical, scientific, everyday, religious, and mythological. Concepts like the general picture of

the world, world-feeling, world-perception, world-contemplation, and world-understanding are closely related to worldview and are sometimes used as synonyms. However, distinctions exist among them. World-understanding represents the intellectual aspect of worldview, focusing on the conceptual perception of the world. In contrast, worldview encompasses not only knowledge but also an individual's emotional and value-based attitude toward the world. Worldview is a system of generalized representations about the world and humanity's role within it, as well as the relationships between people and the surrounding reality and themselves. Its main components are views and beliefs. Worldview significantly influences an individual's daily life, interests, and activities. Depending on its nature, it can be scientific or unscientific, materialistic or idealistic, atheistic or religious, revolutionary or reactionary. A key aspect of forming a scientific worldview is developing knowledge about the process of scientific cognition. This is because a scientific worldview includes not only understanding how the surrounding world is structured but also how humans come to know it. There are numerous methods and techniques of research activity applied in the study of nature and society. In philosophy, they are classified into three main groups:

1. Methods of universal character: These are used in all areas of activity to obtain both everyday and scientific knowledge. They include general logical methods such as analysis and synthesis, induction and deduction, abstraction and generalization, among others.

2. Methods exclusive to scientific cognition: These can be divided into two categories: Methods for creating empirical knowledge: Such as observation, measurement, and experimentation. Methods for constructing theoretical knowledge: Including idealization, formalization, analogy, modeling, thought experiments, hypotheses, and ascending from the abstract to the concrete.

3. Specialized methods and techniques: These are experimental and theoretical procedures related to specific phenomena and applied in particular narrow fields.

One of the key elements in the process of forming a scientific worldview in educational activities is the development of students' foundational scientific thinking. This is necessary to ensure that the scientific worldview is not only theoretical but also practically applicable, as human activity is built upon cognitive activity.

Thinking, as an active process, reflects objective reality through concepts, judgments, and theories. It arises within the framework of socially productive activity and provides mediated understanding of reality, revealing its regular connections. Thinking is primarily associated with social development rather than biological evolution. Cognitive activity is carried out through operations such as analysis, comparison, synthesis, abstraction, generalization, and reasoning. Reasoning is based on judgments, which are assertions or denials of something. Modern psychology distinguishes two types of thinking: empirical and theoretical. Empirical thinking is based on perceptions, sensory images, and representations, limited to identifying generalities at the level of representations. Theoretical thinking also begins with sensory perception but goes beyond it, aiming to identify deeper general patterns that are not always evident in immediate perception. The result of such thinking is the creation of theoretical concepts, mental models, hypotheses, and theories. It is capable of predicting new phenomena, identifying properties, and formulating laws. Thus, scientific thinking is primarily theoretical.

The development of scientific thinking involves cultivating qualities such as objectivity and a comprehensive approach, which include respect for facts, evidence-based reasoning, self-criticism, and the ability to identify contradictions. These qualities are essential for both understanding changes in objective reality and the process of its cognition. Additionally, it is important to recognize the limitations of any statement and to understand the inevitability of paradoxes in scientific development. A scientific worldview includes not only knowledge about the world but also conviction in that knowledge. One can possess knowledge without fully believing in it, which is why cultivating beliefs is a key aspect of forming a worldview. It is important for

students to develop a personal attitude toward the world and the role of humans within it.

The methods for forming beliefs can be divided into two main groups. The first group includes methods that involve proof from the teacher or independent proof by the students themselves. The second group includes methods based on the authority of the source of knowledge. The first group of methods influences the intellectual sphere of students' personalities, while the second affects the emotional sphere. The methods that influence students' intellectual development include:

1. the experimental method;
2. the mathematical method;
3. the logical method;
4. the historical method.

Particular attention should be given to methods that affect the emotional sphere and form beliefs through emotional responses. These methods are individual and depend on the teacher's personality. However, it is important for students to develop a sense of harmony in nature, an understanding of the beauty of its laws, confidence in the limitless possibilities of the human mind, and an appreciation for the aesthetic appeal of the process of understanding the world.

The formation of concepts about the picture of the world is based on a deep understanding of key notions and ideas, with an emphasis on their worldview significance. Concepts related to the world and its structural elements, as well as the dialectical-materialist approach to their interpretation, play an important role, leading to philosophical conclusions. The understanding of

scientific cognition is formed through grasping the basic principles, patterns, and methods of scientific research. Special attention is given to the study of knowledge, its functions, origins, structure, and the limits of its applicability. The development of

scientific dialectical thinking occurs through revealing the key features inherent in scientific thought. The formation of materialistic beliefs in students is based on the demonstration of the objective truth of the ideas upon which the world's picture is built, as well as on developing confidence in the reliability of scientific knowledge. This is achieved through influencing both the intellectual and emotional spheres of the individual. Research into the process of worldview formation allows for identifying several important didactic and educational conditions that help transform acquired knowledge into personal views and beliefs, thereby contributing to the formation of a scientific worldview.

The first didactic and educational condition is ensuring the deep scientific validity, logical consistency, and non-contradictory nature of all conclusions related to worldview. This condition is realized through the following methods. The teacher needs to carefully select and analyze factual material, leading students to specific worldview conclusions. For example, when studying how people for a long time believed the Earth to be flat and at the center of the universe, it is important to demonstrate how scientists gradually found evidence disproving these beliefs. A convincing example here could be Magellan's circumnavigation or Christopher Columbus's discovery of America, which eventually confirmed that the Earth is spherical and revolves around the Sun.

In the process of forming a worldview, it is crucial to provide scientific explanations for all studied phenomena and processes, revealing cause-and-effect relationships. For instance, for a long time, people did not understand why some species of plants and animals disappear while others survive. Charles Darwin's theory of natural selection provided a materialistic explanation for these phenomena, eliminating the mystical perception of their causes. Genetics also convincingly explained the material basis of heredity, disproving Lysenko's pseudoscientific doctrine that acquired characteristics could be passed down to offspring.

Students should be encouraged to ask questions, develop their curiosity, and seek to understand the phenomena occurring in nature and society. In times of transformation and renewal in society, students continue to reflect on and discuss the causes of the difficulties society faces and the possible solutions to these challenges.

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