

observance of professional ethics); culture of professional dialogue (ability to communicate with patients and colleagues) [4].

Special attention in the formation of the professional speech culture of medical workers in higher education institutions should be paid to the study of medical terminology. It is necessary to familiarize students with the basic concepts, develop skills in distinguishing words and differentiating the meanings of words and term definitions, teach them to use medical terms correctly and appropriately in professional texts, and train them to work with medical dictionaries.

Conclusions. Therefore, the competency-based approach to the formation of language culture among students in the field of knowledge “Healthcare and Social Welfare” is a necessary condition for training a modern highly qualified specialist. It ensures the integration of theoretical knowledge with practical communicative skills and promotes the development of professional speech, ethical behavior, and a culture of communication.

The formation of language culture should be carried out systematically, in close connection with professional training and the real needs of future professional activity. Only under such conditions is it possible to prepare a specialist capable of effective interaction with people, adherence to professional ethics, and ensuring a high level of healthcare and social services

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DEVELOPING LOGICAL AND CRITICAL THINKING IN MIDDLE SCHOOL: THE INTEGRATION OF "VISIBLE THINKING" TECHNOLOGIES AND LOCAL METHODOLOGICAL SYSTEMS

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Introduction. The modern paradigm of global education requires a significant shift from reproductive knowledge acquisition to the development of higher-order cognitive functions—namely analytical, logical, and critical thinking. During basic secondary education, a radical restructuring of mental activity occurs. According to Jean Piaget's classical theory, this period marks the ontogenetic transition from

concrete operations to formal operations. Students begin to operate with abstract concepts, construct hypothetico-deductive inferences, and evaluate logical validity independently of concrete content.

However, pedagogical practice reveals a persistent cognitive gap: curricula are frequently overloaded with factual material, prompting students toward rote memorization rather than conscious cause-and-effect analyses. Our previous studies have highlighted that overcoming this gap requires a structured didactic approach; specifically, the purposeful application of problem combinations serves as an essential mechanism for developing students' logical thinking within the school methodical system. American pedagogical practices offer an excellent complement to this framework through "Thinking Routines" – applied cognitive tools that make internal mental processes external, visible, and manageable.

Theoretical Foundations: The Project Zero Initiative. The leading research center in the US studying cognitive development within the educational environment is the Project Zero institute at the Harvard Graduate School of Education. Within this project, researchers formulated the concept of "Visible Thinking." At its core lies the principle that logical thinking is not an innate, fixed talent but a network of stable "thinking dispositions" – habits of mind developed through the repeated, conscious practice of specific cognitive actions.

The main idea of this approach is that a student's thinking process must become material, visualized, and observable both for the student (metacognition) and for the educator. When logical operations are brought out of the hidden internal plan into the plane of external expression (using graphic organizers or physical displays), they become objects of analysis, correction, and deliberate management.

Practical Toolkits: Thinking Routines. The implementation of the Visible Thinking concept is carried out through "Thinking Routines" – short, structured micro-strategies integrated directly into the core of any subject (mathematics, sciences, or humanities). They serve as a tool for mastering subject content through active logical operations. In American middle schools, three basic cognitive routines have proven most effective for developing formal logic:

Claim, Support, Question: This routine forces the student to formalize their thinking using a strict three-component structure: $T \rightarrow O \rightarrow Z$, where T is the claim, O is the objective support, and Z is the boundary of the claim's application or a critical question. Students unfold a logical chain by providing verified facts to support a thesis.

See, Think, Wonder: Aimed at overcoming the defect of mixing perceptive and cognitive levels. During the "See" phase, students record only what can be empirically confirmed. Only during the "Think" stage are they allowed to construct logical inferences, building a culture of scientific thinking anchored to valid data.

Circle of Viewpoints: Facilitates multidimensional analysis of complex systems, cognitive decentration, and the identification of hidden assumptions or cognitive biases in the structure of argumentation.

Prospects for Implementation in Ukraine. The conceptual foundations of logical thinking development in the US display a deep synergy with the goals of the Ukrainian reform "New Ukrainian School" (NUS). The State Standard of Basic Secondary Education of Ukraine defines the formation of critical and logical thinking as a cross-cutting skill across all core competencies.

However, the successful adoption of these cognitive tools is heavily dependent on the professional readiness of the educator. Based on our past monitoring research, establishing clear indicators and tracking levels of teacher methodical competence is a primary prerequisite for successfully implementing such innovative didactic frameworks in natural science and mathematics education. For an effective transfer of these technologies, it is advisable to realize the following steps:

Methodical Integration: Including Visible Thinking technologies into professional development programs for teachers, aligned with verified indicators of methodical competence. These tools are universal and do not require changing the content of Ukrainian textbooks – they merely change the angle of material delivery.

Transformation of Didactic Dialogue: Shifting away from reproductive tasks in favor of inquiry-based methods and systemic problem combinations, where evaluation is based on the quality and validity of the logical chain the student used to reach an answer.

Visualization of Mental Processes: Implementing cognitive mapping and mind maps as mandatory elements for student project defenses and ongoing formative assessment.

Conclusions. The development of logical thinking in middle school students is a manageable process that reaches maximum efficiency when integrated across subject disciplines. The US experience proves that the application of clear, algorithmized thinking routines allows adolescents to successfully transition from concrete perception to formal-logical operations. Merging these international frameworks with Ukrainian didactic models – such as targeted problem combinations and structured teacher competence monitoring – provides a robust strategy for training future science and mathematics teachers according to modern educational requirements.

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