DESIGNING A MECHANISM FOR DEVELOPING STUDENTS' CONCEPTUAL THINKING COMPETENCE IN THE HIGHER EDUCATION PROCESS

Gofurova barnoxon
Independent researcher at fergana state university, uzbekistan

ABSTRACT
This article analyzes the issue of developing students' conceptual thinking in the higher education environment on the basis of pedagogical theoretical approaches. It explains the essence of conceptual thinking, its structural components, and the scientific foundations of approaches that contribute to its effective formation in higher education, including constructivism, the cognitive approach, sociocultural theory, activity theory, the metacognitive approach, reflective learning, and the competency-based approach.

KEYWORDS: Conceptual thinking, higher education, constructivism, metacognition, reflection, sociocultural approach, competence, learning strategies, concept map.

INTRODUCTION
Today, in the higher education system, the training of competitive specialists equipped with modern professional competencies requires students not only to master theoretical knowledge, but also to understand it on a conceptual basis, conduct logical analysis, and develop optimal solutions in various problem situations. Modernizing the educational process in line with these requirements first of all creates the need to scientifically justify mechanisms that foster higher-level thinking activity in students. In this sense, developing conceptual thinking competence is recognized as one of the key factors for improving the quality of higher education, strengthening learning outcomes, and enhancing students' intellectual potential.

Conceptual thinking competence is characterized by a student's ability to perceive knowledge not as a collection of isolated facts, but within a system of concepts and categories; to identify logical and cause-and-effect relationships among them; and to form scientific views through generalization and drawing conclusions. This competence also requires activating thinking mechanisms that go beyond reproducing knowledge: it involves structuring knowledge, analyzing it functionally, and applying it in new situations. Therefore, to organize the development of conceptual thinking effectively, there is a need for a methodologically grounded and systematically designed mechanism. This article presents the scientific and methodological foundations for designing such a mechanism in higher education, and analyzes its structural design, pedagogical conditions, and principles of practical application.

The formation and development of students' conceptual thinking competence has been studied in many pedagogical and psychological works as a relevant scientific problem. Various conceptual approaches play an important role in explaining the theoretical foundations of this competence. In particular, theories oriented toward cognitive and constructivist learning, meaningful learning, concept mapping, and the development of higher-order thinking serve as methodological support for understanding the essence of conceptual thinking.

First, within the constructivist approach, the educational process is interpreted not as transmitting knowledge in a ready-made form, but as the student independently "constructing" meaning through active cognition. For example, J. Bruner emphasizes that mastering educational content at a conceptual level is closely connected with solving problem situations, completing inquiry-based tasks, and rediscovering concepts. These ideas indicate that developing conceptual thinking requires the student to take an active position in the learning process.

Second, in L. S. Vygotsky's views, the formation of conceptual thinking is explained through intellectual development that takes place within a social environment, pedagogical cooperation, and communication. His concept of the "zone of proximal development" substantiates the effectiveness of a teacher's guiding support and collaborative activity in mastering complex concepts. Thus, in developing conceptual thinking, collaboration, a supportive pedagogical environment, and step-by-step instructional strategies are of great importance.

Third, in the theory of "meaningful learning" developed by D. Ausubel, it is noted that effective mastery of knowledge occurs through the logical integration of new information with an existing system of knowledge. This idea defines the scientific foundations for one of the key indicators of conceptual thinking—understanding interconceptual connections and forming them purposefully. Ausubel's views also show that meaningful comprehension and generalization lead to higher learning outcomes than mechanical memorization.

Fourth, J. Novak substantiated the didactic potential of the concept mapping method in developing conceptual thinking, proving that representing learning content as a network of concepts activates students' skills of systematizing knowledge, establishing logical links, and engaging in structural thinking. This method enables students to see hierarchical and functional relationships among concepts, understand learning material as an integrated system, and integrate new knowledge into their existing knowledge base.

Fifth, Bloom's taxonomy classifies the development of conceptual thinking competence as a process of moving from the lower levels of cognition (remembering and understanding) to higher stages such as analysis, synthesis, and evaluation. This approach serves as a methodological basis for defining outcomes step by step, clarifying indicators and descriptors, and developing assessment criteria within the competence development process.

In addition, research by J. Hattie on educational effectiveness highlights students' self-assessment, reflective analysis, and conscious management of thinking strategies as factors that directly influence learning outcomes. This supports the need to organize the monitoring and assessment system, strengthen reflective approaches, and develop metacognitive skills when fostering conceptual thinking competence.

During the research, methods of analyzing, comparing, and generalizing scientific sources were widely used. In addition, when identifying the content and technological components of developing conceptual thinking competence, the structural design of the mechanism was substantiated based on pedagogical modeling and the principles of a systems approach. The competency-based approach expands the possibility of evaluating the effectiveness of the learning process through students' practical thinking skills. At the same time, by means of reflective analysis, the process of a student evaluating their own activity and monitoring the dynamics of development was scientifically explained.

It is scientifically substantiated that developing conceptual thinking competence on the basis of the designed mechanism strengthens students' ability to perceive knowledge systematically and organize it logically. As a result of this approach, interdisciplinary integrated thinking is formed, and skills of making independent and scientifically grounded decisions in complex situations are improved. Moreover, through the development of metacognitive skills, students' levels of self-control, self-analysis, and conscious management of thinking strategies increase. In particular, within academic activity (scientific essays, project work, research assignments), students' analytical and conceptual approaches become stronger, contributing to the development of their scientific reasoning. The practical significance of this mechanism lies in the fact that it reinforces the competency-based approach in teaching higher education subjects and ensures the integration of "theory–practice–reflection."

Overall, designing a mechanism for developing students' conceptual thinking competence in higher education requires harmonizing educational goals and objectives, content, methods, pedagogical conditions, and the assessment system into a single methodological mechanism. In the theoretical justification of this process, the scholarly views of J. Bruner, L. S. Vygotsky, D. Ausubel, J. Novak, and B. Bloom serve as important methodological foundations. Implementing the mechanism in higher education practice, in turn, contributes to increasing educational effectiveness, raising the level of students' scientific thinking, and improving the quality of professional training.

References

1. Bruner J.S. The Process of Education. Cambridge, MA: Harvard University Press, 1960. 97 p.
2. Ausubel D.P. Educational Psychology: A Cognitive View. New York: Holt, Rinehart and Winston, 1968. 685 p.
3. Dewey J. How We Think. Boston: D.C. Heath and Company, 1910. 224 p.
4. Hattie J. Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement. London–New York: Routledge, 2009. 378 p.
5. Marzano R.J. The Art and Science of Teaching: A Comprehensive Framework for Effective Instruction. Alexandria, VA: ASCD, 2007. 221 p.