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THE DYNAMICS OF THE DEVELOPMENT OF THINKING EDUCATION, EFFECTIVE APPROACHES AND MODELS IN THIS DIRECTION

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Abstrak

This article analyzes the dynamics of the development of thinking education, as well as effective approaches and models in this field, from a scientific and pedagogical perspective. It elucidates the essence and content of constructivist, cognitive, sociocultural, activity-based, reflective, critical, metacognitive, pragmatic, and speech-and-thought unity approaches related to the development of an individual's thinking activity. The article also examines the earliest ideas on thinking education advanced in the Avesta, as well as the conceptual views on thinking education put forward by Eastern thinkers such as Abu Nasr al-Farabi, Abu Ali ibn Sina, Abu Rayhan Beruni, Yusuf Khos Hojib, Alisher Navoi, and Zahiriddin Muhammad Babur. Furthermore, the pedagogical, psychological, and didactic significance of 4C competencies and the 5E model in organizing thinking education within the modern education system is substantiated. As a result of the research, the scientific conclusion is advanced that thinking education is an integrative pedagogical process that ensures the intellectual, moral, social, and communicative development of the individual.

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For many centuries, philosophers, psychologists, geneticists, and educators have repeatedly emphasized that human beings differ from all other creatures by virtue of their capacity for thinking. Around the world, there are a number of concepts and approaches related to the development of an individual's thinking activity. First of all, an individual's thinking activity is understood as a set of cognitive processes such as cognition, analysis, comparison, generalization, problem-solving, drawing conclusions, and monitoring one's own thinking. In psychology, these processes are associated with perception, memory, thinking, and metacognition; in pedagogy, however, they are developed through educational content, teaching methods, and the cognitive activity of pupils and students.

One of the distinctive and most important approaches characterizing an individual's thinking activity is

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the constructivist approach. According to constructivism, an individual does not receive knowledge in a ready-made form, but actively constructs it. A person acquires new knowledge on the basis of their existing experience, perceptions, and cognitive structures. Within this approach, the pupil or student is not merely a passive listener, but appears as an active subject of the pedagogical process. From a pedagogical point of view, constructivism implies creating problem situations in the educational process, encouraging pupils or students to engage in heuristic inquiry, guiding them toward independent and logical thinking, and involving them in the rediscovery of knowledge. From a psychological perspective, constructivism is based on the reprocessing of knowledge in the individual's mind and on its acquisition of new meaning.

This, in turn, makes it possible to substantiate the need to rely on Jean Piaget's theory of cognitive development in providing a scientific foundation for human thinking activity. According to Piaget, an individual's thinking develops in accordance with age-related stages. In his view, the child actively acquires knowledge through interaction with the environment. On the basis of new experiences, the child modifies existing schemas. According to Piaget's theory, the development of thinking takes place through the integration of the individual's biological maturation and active cognitive processes. From a pedagogical point of view, this approach means that educational material should be presented in accordance with the child's age and level of intellectual development. Only under such conditions can the learner's thinking activity develop intensively. It is appropriate to present theoretical concepts and information to the learner only when he or she is ready for abstract thinking.

One of the important approaches that substantiated the social nature of human thinking activity is the sociocultural approach of the well-known psychologist Lev Vygotsky. According to Vygotsky's theory, an individual's thinking activity is formed and continuously developed under the influence of social communication and the cultural environment. Vygotsky theoretically demonstrated that higher mental functions first appear in social activity and later become internal psychological processes. Of particular importance are Vygotsky's conceptual views on the "zone of proximal development," which is directly related to the tasks learners perform in cooperation with a teacher or more capable peers. According to Vygotsky, education can develop learners' thinking activity only when it is oriented toward their developmental prospects. Vygotsky regarded language as the principal tool of thinking. In this sense, he emphasized that the development of speech directly affects the development of thinking as well.

Jerome Bruner's discovery learning approach is also regarded as an important pedagogical approach aimed at developing human thinking activity. According to Bruner, the educational process should not be limited to presenting ready-made knowledge to learners; rather, it should encourage them to independently search for knowledge, understand patterns, and draw well-founded conclusions. This approach serves to develop learners' analytical thinking, logical reasoning, the ability to perceive logical associations, understand cause-and-effect relationships, and make independent decisions. Bruner substantiated that a particular concept can be presented repeatedly to learners at different age stages, which creates an opportunity to give priority to the principle of concentricity. From a didactic point of view, this approach makes it possible to apply problem-based teaching, research-based assignments, and heuristic methods.

The activity-based approach is also of great importance in revealing the essence of human thinking. According to the activity-based approach, thinking is formed and continuously developed in the process of a person's everyday social activity, because thinking is a phenomenon closely connected with social life. It is the internal mechanism of purposeful practical and intellectual activity. A person thinks while carrying out specific tasks, finding solutions to everyday problems, planning, monitoring, and evaluating his or her own activity. Therefore, in the educational process, it is possible to intensify learners' thinking activity by encouraging them to engage actively, participate in practical exercises, work on projects, act independently, acquire knowledge, and find constructive solutions to problem situations. From a psychological perspective, this approach is based on the principle of the unity of consciousness and activity.

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Reflective and critical thinking approaches are also of particular importance in the development of an individual's thinking activity. Reflective thinking indicates a person's ability to become aware of, analyze, and evaluate his or her own thinking process. Critical thinking, in turn, means not simply accepting information as it is, but examining it through evidence. These approaches teach learners to address questions to the teacher, to view the interlocutor's opinion with a questioning attitude, and to substantiate their own ideas with evidence. From a pedagogical point of view, discussion, debate, problem-based questions, essays, and analytical assignments are effective means of developing critical thinking in learners. As the psychological basis of thinking, mechanisms such as conscious self-regulation, an analytical approach, and verification of the soundness of conclusions serve an important function.

The metacognitive approach also serves as a methodological basis for explaining the nature of human thinking activity. Through this approach, an individual thinks about his or her own thinking activity. It is a metacognitive activity connected with monitoring, evaluating, and regulating one's own cognitive processes. Through metacognition, learners come to understand what they know, the extent to which they know it, what they do not know, how tasks should be performed, and how their mistakes can be corrected. Such an approach contributes to the formation of planning, monitoring, and self-assessment skills in learners. In the educational process, this activity is implemented through the use of reflective questions, tasks that make self-control and self-checking possible, algorithms, and mechanisms of strategic planning. This approach has particular pedagogical significance, as it helps learners to appear not merely as recipients of knowledge, but as subjects

The cognitive approach based on Bloom's taxonomy is also important in developing learners' thinking activity. According to this approach, thinking develops step by step, beginning with remembering knowledge and progressing through the stages of understanding, applying, analyzing, synthesizing, and evaluating. This approach provides a foundation for the teacher to plan learning objectives and to select tasks according to their level of complexity. For teachers, this approach creates opportunities not only for memorizing educational material, but also for applying, analyzing, restructuring, and creating it anew. This approach also has its own psychological basis. That basis makes it possible to conceptualize the gradual complication of cognitive processes.

The pragmatic approach makes it possible to interpret human thinking activity as a means of solving problems in real-life situations. Within this approach, the value of knowledge is determined by its practical significance. Learners' thinking activity is improved through social experience, practical skills, subject-related knowledge, and the active testing of their own abilities. Therefore, the principle of "learning by doing" acquires special importance in the educational process. Learners gain the opportunity for effective thinking while carrying out specific learning tasks, analyzing life situations, conducting experiments, and making decisions. Reliance on this approach contributes to the development of learners' independent thinking, initiative, and flexible skills for adapting to real-life problems.

The approach concerning the unity of speech and thought also constitutes an important psychological foundation of thinking activity. According to this view, speech is not only a means of expressing thought, but also a means of shaping it. The richer, clearer, and more expressive a person's speech is, the deeper, more systematic, coherent, and logically grounded his or her thinking activity becomes. Processes such as inner speech, systems of concepts, categorization, interpretation, and argumentation play an important role in the development of thinking. From a pedagogical perspective, developing learners' oral and written speech, presenting scientific concepts in a systematic way, working with texts, and forming a culture of communication intensify their thinking activity and expand their opportunities for critical, creative, logical, and analytical thinking.

In short, although the concepts and models aimed at developing an individual's thinking activity are diverse, they possess distinctive pedagogical significance because they are all directed toward a common goal. First, human thinking is not a passive process; rather, it is an active, goal-oriented, and continuously developing cognitive process. Second, thinking is shaped not only by biological factors, but also by the complex influence of the social environment, language, speech, culture, and education. Third, in order to develop an individual's thinking activity, it is necessary to create specially organized pedagogical conditions and didactic support, including the organization of a pedagogical process based on problem situations, active communication, productive dialogue, collaborative work, reflective activity, practical activity, and heuristic inquiry. It is evident that developing an individual's thinking activity is one of the important tasks of the modern educational process, and that this process requires the integration of psychological regularities and pedagogical technologies. For this reason, special attention has been given to the development of 4C competencies in learners in the National Program for the Development of School Education up to 2030.

All models of education that have so far been regarded as optimal are noteworthy for being aimed at developing the thinking activity of pupils and students. Our intellectual ancestors, in the Avesta, the sacred book of Zoroastrianism, advanced the philosophical and pedagogical view that a healthy and mature person should possess good thoughts, and that such a person's words and deeds should also be good.

In the Avesta, theoretical and empirical ideas were advanced concerning the intellectual and moral perfection of the individual, conscious choice, the formation of good intentions, the comprehension of truth, and the unification of one's thoughts with words and actions. It put forward spiritual, moral, and pedagogical views related to the development of human thinking activity. The texts of the Avesta also set forth views on cosmogony, that is, on the origin, creation, and structure of the world and the universe.

The formula Humata, Hukhta, Huvarshata in the Avesta literally means "well thought, well said, well done." It expresses the main goals of Zoroastrianism. It is evident that, in the Avesta, human thinking activity was interpreted not as an independent psychological process, but as the product of conscious activity

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connected with a person's speech and behavior. According to this conception, the height and maturity of human thinking are embodied in one's intentions, speech, and practical actions.

It is evident that the first approach to thinking activity presented in the Avesta is the moral-intellectual approach. According to this approach, the quality of thought occupies a decisive place in human life. Human intellectual activity is characterized by the ability to distinguish between good and evil, to consciously choose the path of goodness, and to reinforce this choice through word and deed. Accordingly, Zoroastrianism interprets the human being as a conscious entity capable of making significant and free choices.

The second approach is the truth-oriented approach to thinking. Zoroastrianism advances the idea that one of the important duties of the human being is to support truth. In this context, the function of thinking is much broader than merely providing information; it is based on the idea that thinking serves to comprehend the moral principles inherent in existence.

The third approach in the Avesta concerning the development of human thinking is aimed at promoting the unity of speech and thought. In this context, speech is not merely a means of expressing thought, but also its moral form. This approach retains great educational significance even today. From this point of view, the ideas put forward in the Avesta concerning human thinking activity approximate later pedagogical and psychological approaches and serve as a conceptual foundation for them.

The fourth approach advanced in the Avesta is the approach of conscious choice and responsibility, which emphasizes that since human beings live between good and evil, they must make conscious choices in this process. This is a central component of the main moral model proposed in the Avesta, showing that human thought itself is also an object of moral responsibility. The model of thinking education in the Avesta does not consist in "forcing a person to think correctly," but rather in elevating the individual to the level of a person who feels responsible and accountable for his or her own thoughts. In turn, this comes to a certain extent close to metacognitive concepts such as internal control, self-examination, and self-regulation.

The fifth approach to thinking education in the Avesta is the spiritual-disciplinary approach. In the concept of thinking education advanced in the Avesta, this approach is associated with spiritual purity, orderliness, self-restraint from evil, and devotion to noble goals. According to the concept of developing human thinking activity put forward in the Avesta, a person's thinking reaches maturity only when he or she purifies intention and strengthens it through word and deed.

The conceptual views of our intellectual ancestors on thinking education embody important conceptual approaches related to the spiritual and moral upbringing of Eastern peoples. In these views, thinking education is interpreted as inseparably connected with the intellectual development of the individual, moral maturity, truthfulness, aspiration for knowledge, and responsibility before society. In general, in the ethnographic values that emerged as the product of medieval Eastern philosophy, ethics, pedagogy, and folk thought, the pursuit of knowledge, the cultivation of reason, and the attainment of wisdom appear as important conditions of intellectual maturity.

Abu Nasr al-Farabi regarded the cultivation of thought as the foundation for forming the perfect human being and a virtuous society. In his conceptual views, reason, virtue, logical thinking, and correct judgment are interpreted as interrelated phenomena. Al-Farabi considered knowledge and philosophical education to be means leading a person to happiness. Accordingly, he believed that cultivating thought does not consist merely in imparting knowledge, but in forming theoretical and practical virtues and the ability to reason correctly. From a pedagogical point of view, this idea encourages the development of a mode of thinking that enables the learner to express his or her ideas on the basis of evidence, perceive cause-and-effect relationships, draw logical conclusions, and pursue noble aims.

In the conceptual views of another great Eastern thinker, Abu Ali ibn Sina, the cultivation of thought is closely connected with the human psyche, intellectual faculties, and the process of acquiring knowledge. Ibn Sina regarded reason as the leading factor in personal perfection. In his scholarly activity, he gave particular attention to issues of logic, the soul, perception, and intellect. In this sense, the concept of thinking education advanced by Ibn Sina is a process of reflection, analysis, conceptualization, and transforming theoretical knowledge into practical wisdom. Its pedagogical significance lies in the fact that these views substantiated the necessity of taking into account the learner's individual abilities, intellectual exercise, systematic

It is also possible to observe that special attention was given to the cultivation of thought in the legacy of Abu Rayhan Beruni. In his works, cognitive processes such as observation, experiment, and comparison are associated with an objective scientific approach. Because Abu Rayhan Beruni knew several languages, he was able to substantiate a rational, inquiry-based approach to the cultivation of thinking. Sources indicate that Abu Rayhan Beruni was described as a scholar who deeply understood the difference between scientific logic and the logic of magic or superstition. The concept of thinking education advanced by Beruni has been evaluated as a conceptual approach that promotes the idea of teaching learners to reason on the basis of evidence, conduct comparative analyses of different cultures and languages, and seek scientific truth.

In Yusuf Khos Hojib's work *Qutadg'u Bilig*, the cultivation of thought is interpreted as inseparably connected with state governance, justice, reason, and ethics. As a major example of Eastern didactic thought, this work is a didactic text that presents human intellectual maturity and moral responsibility in an integrated manner. In it, sound thinking, moderation, truthfulness, and wise decision-making are described as the main factors ensuring social stability and personal development. From a pedagogical point of view, these views serve to interpret the cultivation of thought not only as the development of individual intellect, but also as a means of forming social responsibility, a culture of governance, and practical wisdom in life.

In Alisher Navoi's legacy, the cultivation of thought appears as an important condition for personal spirituality, the acquisition of knowledge, the striving for moral maturity, and the formation of the image of the perfect human being. According to Alisher Navoi, a person's greatness is manifested not in material wealth, but in intellect, morality, aspiration for knowledge, noble intention, and the capacity for sound thinking. Navoi regarded knowledge and enlightenment as a force that purifies the human heart and mind. Accordingly, he advised that the cultivation of thought should be carried out in harmony with a careful attitude toward language, a culture of speech, moral education, the cultivation of the heart, and humanism. For example: "Keep your tongue under your control, and speak your words with caution." The cultivation of thought has particular pedagogical significance, because through thinking a person develops logically, aesthetically, and morally. His or her intellect and understanding are sharpened. A person performs deeply considered and conscious actions and makes responsible decisions.

Zahiriddin Muhammad Babur's views on the cultivation of thought deserve special attention. First of all, he emphasized clear thinking, the correct expression of ideas, drawing well-founded conclusions based on life experience, and intellectual discipline. Through his work *Baburnama* and the letters he wrote to Humayun, Babur advanced important conceptual ideas concerning the cultivation of thought. Indeed, the *Baburnama* is also a didactic work that offers lessons on the cultivation of thought for future generations.

In his famous letter to Humayun, he criticized his son's style of writing and advised him not to overcomplicate ideas, to avoid vague and obscure expression, and to write simply and clearly. According to Babur, the cultivation of thought is not limited solely to inner reflection, but is closely connected with the culture of expressing one's thought correctly, precisely, and understandably. For Babur, a good thought is one that is orderly, clear, and understandable to others.

From Babur's point of view, mature thinking should be manifested in harmony with an active life position, diligence, and a sense of responsibility. Babur approached the cultivation of thought not merely as contemplation, but as an active intellectual force that serves decision-making, self-management, the accurate perception of reality, and the expression of an objective attitude toward it.

Another feature of thinking in Babur's interpretation is observation and reflection based on experience. Babur himself possessed such reflective ability. His observation of events and phenomena in nature and society, and his ability to reason accurately, found expression in the presentation of ideas in the *Baburnama*. It can be seen that cognitive processes such as comparison, observation, and drawing conclusions occupied a special place in Babur's way of thinking.

Self-analysis and learning from mistakes also occupied an important place in Babur's views. For this reason, the text of the *Baburnama* is regarded as a work embodying clear and objective expression of thought and transforming personal experiences into lessons for future generations. It is evident that Babur paid particular attention to the development of the reflective aspects of thought cultivation.

The cultivation of thought advanced by Babur is directly connected with moral responsibility. While describing thinking as a criterion of knowledge and intelligence, Babur also evaluates it as a capacity that determines a person's manners, responsibility, culture of governance, and duty before society. In this sense, Babur's ideas on the cultivation of thought characterize it as a source of social responsibility and personal perfection.

Accordingly, his ideas on the cultivation of thought are embodied in the following: clear thinking and the ability to express one's ideas correctly and understandably; possession of intellectual discipline and diligence; reflective reasoning based on observation and experience; self-analysis and learning from one's mistakes; and the interpretation of thought in harmony with responsibility. The approaches and historical experiences analyzed above clearly demonstrate that the cultivation of thought has been an important social and educational task in all periods. Today, the 4C and 5E models are being implemented in developed countries around the world. These models, based on the competency-based approach, are fundamentally grounded in the cultivation of thought. In particular, the 4C model is one of the most widely applied sets of universal skills in modern education, encompassing critical thinking, creative thinking, communication, and collaboration skills. This model, which embodies 21st-century skills, includes critical thinking, creativity, communication, and collaboration as essential factors for success in complex life and work environments. Critical thinking and problem-solving, creativity and innovation, effective communication, and collaboration have been recognized as necessary skills for members of society to function as socially active individuals in the 21st century.

The 4C competencies consist of interrelated components in terms of content. Critical thinking is expressed in analyzing evidence, approaching problems from different perspectives, understanding cause-and-effect relationships, and drawing well-grounded conclusions. Creativity, in turn, is an activity directed toward generating new ideas, unusual solutions, and innovative approaches. Communication consists in expressing ideas clearly, purposefully, and understandably in verbal, written, and digital forms. Collaboration is the skill of cooperating with others, sharing responsibility equally, reaching mutual agreement, and achieving collective results. In P21 documents, these skills are described not as separate abilities, but as a complementary system that reinforces one another.

The role of the 4C competencies in human thinking activity is extremely important. Critical thinking is regarded as the product of analytical and reflective thinking. Creativity, in turn, develops the divergent dimension of thinking, that is, the orientation toward multiple possibilities and novelty. Communication serves to shape and clarify thought and to support the socialization of the individual. Collaboration, meanwhile, elevates thinking from the individual sphere to the level of social thinking. In short, the 4C model develops not only learners' cognitive activity, but also their social thinking, independent decision-making, and practical problem-solving skills. These are essential competencies for success in a complex and rapidly changing world.

However, the 4C competencies mainly represent outcome-based competencies. That is, they answer the question, "What should be developed in the learner?" but they do not provide a complete methodological mechanism for answering the question, "How should it be developed?" It is precisely at this point that the need arises to move to the 5E model. As indicated in scientific sources, the 5E model is described not merely as a list of competencies, but as a constructivist instructional model. The 5E model incorporates five stages: motivational-activating competence (Engage), inquiry competence (Explore), explanatory and conceptualization competence (Explain), transfer and application competence (Elaborate), and reflective-evaluative competence (Evaluate).

In this sense, the need to move from the 4C competencies to the 5E model can be explained by several reasons. First, 4C skills do not develop naturally in the classroom; rather, they develop within a carefully designed learning process. Second, the 5E model transforms the learner from a passive recipient of ready-made knowledge into an active subject who discovers knowledge independently, which in turn strengthens the 4C dimensions, especially critical thinking, creativity, and collaboration. Third, the 5E model serves to organize learning activity step by step. These stages consist of engagement, exploration, explanation, elaboration, and evaluation. This, in turn, helps transform the 4C competencies into practical learning outcomes.

From the point of view of thinking education, the 5E model has particular pedagogical significance. Its important pedagogical aspect lies in bringing learners into the process of active learning. The stage of motivational-activating competence helps develop the learner's interest, prior knowledge, and intrinsic motivation. The stage of inquiry competence leads the learner into independent observation, experimentation, inquiry, and collaboration. At the stage of explanation and conceptualization competence, the learner organizes concepts through speech, expresses his or her own ideas, and connects them with scientific concepts. At the stage of transfer and application competence, learners transfer their knowledge to new situations; in other words, a process of transformation takes place. At the stage of reflective-evaluative competence, both the learner and the teacher determine their levels of development, engage in reflection, and define further developmental trajectories. This cycle integrates the aims, content, methods, and assessment components of education into a unified system.

The 5E model possesses its own psychological potential. Psychologically, this model corresponds to learners' cognitive processes. The stage of motivational-activating competence serves to activate learners' attention and motivation. Inquiry competence, in turn, strengthens curiosity, cognitive conflict, and independent search. The stage of explanation and conceptualization competence enhances the manifestation of thinking in verbal form as concepts. Transfer and application competence develops learners' abilities in generalization, transfer, and higher-order thinking. Reflective-evaluative competence, meanwhile, expands the possibilities for metacognitive activity, self-monitoring, and self-assessment. It is evident that the 5E model functions as the psychological mechanism for the formation of the 4C competencies.

From a didactic point of view, the advantage of the 5E model lies in the fact that it moves the lesson beyond the simple "explanation–reinforcement–control" scheme and transforms it into a constructivist learning cycle. In this model, learners first gain experience, then explain, afterwards elaborate, and finally evaluate. Accordingly, the 5E model can serve as an appropriate didactic tool not only for STEM, but also for language, social sciences, and all competency-oriented subjects.

Our analysis shows that the 4C model answers the question "What is developed?", whereas the 5E model answers the question "How is it developed?"

In conclusion, the 4C competencies represent the foundational skills of modern human thinking: they determine the degree of criticality, creativity, sociality, and expressiveness of thought. However, in order to form these skills in the real educational process, a strong need emerged for the 5E model, because this model transforms the 4C competencies into didactic practice. From a pedagogical perspective, the 5E model appears as a mechanism that ensures active, content-based, and meaningful instruction. From a psychological perspective, it serves to develop learners' motivation, cognitive activity, transfer, and reflection. From a didactic perspective, it helps organize each lesson as a gradual and consistent system based on the competency-based approach. Accordingly, in modern educational systems, the 4C and 5E models do not negate one another; rather, they enrich one another, because both of them are modern educational models aimed at implementing thinking education.

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