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Article

Development of Critical Thinking in Future Primary School Teachers Within the Framework of the Credit-Module System

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Abstract: This study explores the pedagogical and psycholinguistic mechanisms for fostering critical thinking skills in prospective primary school teachers under the conditions of the credit-module system. The transition from traditional, teacher-centered instruction to a student-centered, modular approach necessitates a fundamental re-evaluation of educational paradigms. The article analyzes the hierarchical stages of information processing, independent educational activities, and modern assessment tools such as portfolios and case studies. Findings suggest that the credit-module system serves as a catalyst for transforming students from passive recipients of information into active, reflexive subjects capable of analytical reasoning, evidence-based conclusion-making, and creative problem-solving.

Keywords: Credit-module system, student-centered learning, critical thinking, independent study, analytical reasoning, reflexive approach, problem-based learning, portfolio assessment, mother tongue teaching methodology.

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Introduction

The Global Context of Educational Transformation. In the era of the Fourth Industrial Revolution and the rapid digitalization of global society, the fundamental objectives of higher education are undergoing a paradigm shift. Traditional pedagogical models, which primarily focused on the passive transmission of factual knowledge, are being replaced by dynamic, student-centered frameworks. Within this global trend, the development of critical thinking—defined as the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, and synthesizing information—has emerged as a cornerstone of modern professional competence[1].

National Reforms and Legislative Framework in Uzbekistan. For the Republic of Uzbekistan, the modernization of the national education system is a strategic priority aimed at building the foundations of the Third Renaissance. The President of the Republic of Uzbekistan, Shavkat Mirziyoyev, has repeatedly emphasized that the quality of human capital is the primary driver of national development. Significant legislative milestones, such as the Decree No. PF-158 (September 11, 2023) on the "Uzbekistan – 2030" Strategy, have set ambitious goals for aligning the national curriculum with international standards like PISA and PIRLS. Furthermore, the systematic transition to the Credit-Module System (CMS) in higher education institutions, supported by the Resolution No. PQ-200 (July 3, 2023), serves as the structural catalyst for this transformation[2].

Theoretical Significance of Critical Thinking. From a psycholinguistic and pedagogical perspective, critical thinking is not a singular skill but a complex hierarchy of cognitive processes. It involves what scholars like Diane Halpern describe as "purposeful, reasoned, and goal-directed" thinking. In the context of primary education, the necessity

for critical thinking is even more acute. Prospective primary school teachers are not just educators; they are the architects of a child's cognitive foundation. If a teacher lacks the ability to deconstruct complex information, identify biases, and engage in reflexive self-correction, they cannot effectively foster these traits in their students[3].

The Credit-Module System as a Pedagogical Catalyst. The implementation of CMS represents more than just a shift in administrative credit-counting; it is a fundamental re-engineering of the learning environment. By significantly increasing the proportion of Independent Educational Activity (IEA), CMS creates a "cognitive friction" that necessitates critical engagement. In a modular framework, the student is no longer a passive recipient (the “Banking Model” of education criticized by Paulo Freire) but an active subject who must navigate diverse information streams, select credible sources, and synthesize them into coherent professional projects[4].

The Research Problem and Objective

Despite the robust legislative support, the practical transition to fostering “Deep Critical Thinking” within the CMS remains a challenge in many pedagogical universities. Traditional "rote learning" habits often persist as a barrier. This research seeks to bridge the gap between the administrative implementation of the credit-module system and the qualitative development of analytical reasoning in future primary school teachers. The objective of this study is to analyze the pedagogical mechanisms, such as Problem-Based Learning (PBL), Case-Study methodologies, and Reflexive Assessment strategies, that optimize critical thinking development within a modular curriculum.

Methodological Relevance

By focusing on the “Mother Tongue Teaching Methodology” and other core modules, this study explores how digital environments (HEMIS, virtual laboratories, and interactive multimedia) can be leveraged to create “problematic situations” that trigger higher-order thinking. The integration of these elements ensures that the future teacher is prepared not only to deliver a curriculum but to innovate within it, fulfilling the requirements of a competency-based educational paradigm[5].

The research methodology is designed to analyze the effectiveness of the credit-module system in fostering critical thinking skills among future primary school teachers. To ensure the reliability of the findings, a multi-dimensional approach was adopted, integrating qualitative analysis, pedagogical experiments, and modern digital assessment tools.

Research Design and Participants

The study involved a pedagogical experiment conducted at Bukhara Innovation University. The participant pool consisted of first-year students (n=120) specializing in Primary Education. The participants were divided into two groups:

Experimental Group (EG): Taught using modular-based, student-centered methodologies with an emphasis on independent research[6].

Control Group (CG): Taught using traditional lecture-based methods with centralized instruction[7].

Modular Pedagogical Framework

The core of the methodology lies in the restructuring of the “Mother Tongue Teaching Methodology” module. The following pedagogical strategies were implemented within the credit-module framework:

Problem-Based Learning (PBL): Instead of receiving ready-made phonetic or grammatical rules, students were presented with "pedagogical dilemmas." For instance, they were tasked with developing the most effective strategy to enhance literacy among primary students with diverse learning speeds. This required Analysis, Synthesis, and Evaluation—the core pillars of critical thinking.

The “Case-Study” Method: Students analyzed real-world classroom scenarios. This involved identifying a problem, searching for evidence-based solutions in the HEMIS digital library, and defending their choice in a debate format.

Independent Educational Activity (IEA) Mechanisms

Under the credit-module system, a significant portion of academic hours is allocated to independent study. The methodology tracked how students engaged with information through:

Information Literacy Tasks: Students were required to differentiate between “verified academic data” and “subjective pedagogical opinions” from open-source web platforms[8].

Reflexive Journaling: Students maintained digital logs of their learning process, encouraging Meta-cognition (thinking about one's own thinking).

Assessment and Data Collection Tools

To measure the development of critical thinking, the research utilized the following instruments:

Cloze Tests and Logical Inference Tests: To evaluate the students' ability to draw conclusions from incomplete pedagogical data.

Portfolio Assessment: A systematic collection of student projects, presentations, and creative tasks that demonstrate a shift from rote memorization to analytical reasoning[9].

Comparative Statistical Analysis: The results from the experimental and control groups were compared using pre-test and post-test assessments to measure the “Coefficient of Cognitive Growth.”

Technological Integration

The methodology leveraged the HEMIS platform and interactive multimedia tools (3D animations and virtual simulations). These tools were used to create “Virtual Classroom” environments where students could test their critical decisions without the risk of real-world consequences, fostering a safe space for trial-and-error-based learning[10].

Result and Discussion

Analysis of Cognitive Transformation The results of the pedagogical experiment indicate a significant qualitative shift in the cognitive activity of students in the experimental group. By shifting the focus from centralized instruction to modular independent study, students demonstrated a higher capacity for Information Processing. While the control group primarily relied on reproductive thinking—simply repeating the information provided during lectures—the experimental group transitioned toward Productive Thinking. This was evidenced by their ability to not only memorize pedagogical facts but to question their validity and applicability in diverse primary classroom settings.

Impact of Independent Educational Activity on Analytical Reasoning A core finding of the research is that the increase in the proportion of independent educational hours under the credit-module system directly correlates with the development of Inference and Evaluation skills. Students who utilized the HEMIS digital library and virtual laboratory simulations were forced to engage in "Selective Perception." They had to filter through vast amounts of digital resources, which naturally developed their ability to distinguish between essential theoretical foundations and secondary pedagogical opinions. This process is identified as a primary trigger for critical thinking, as it requires constant mental effort to justify why a certain piece of information is prioritized over another[11].

Discussion of Problem-Based Learning Outcomes The discussion of the research outcomes suggests that the “Problem-Based Learning” (PBL) strategy within the modules acted as a functional bridge between theoretical knowledge and professional competence.

In the “Mother Tongue Teaching Methodology” module, when students encountered complex pedagogical dilemmas, they moved through three distinct stages of critical engagement:

1. Dissonance Stage: Recognizing the inadequacy of existing knowledge to solve a new problem.
2. Investigation Stage: Actively searching for pedagogical "scaffolding" through independent research.
3. Resolution Stage: Formulating a creative, evidence-based solution.

This cycle, facilitated by the modular structure, ensures that critical thinking becomes a habit rather than an isolated task. Furthermore, the use of Reflexive Assessment (portfolios and peer reviews) allowed students to externalize their thought processes. The discussion reveals that when students are required to defend their pedagogical choices in front of peers, their logical consistency and argumentative clarity improve significantly[12].

Challenges and Pedagogical Implications Despite the positive results, the discussion also highlights several challenges. The transition to critical thinking in a credit-module system requires a high degree of Cognitive Patience and academic self-discipline. Some students initially faced “Cognitive Overload” due to the volume of independent tasks. However, the integration of digital tools and interactive multimedia helped mitigate this by providing a more engaging and structured learning path. These results suggest that the credit-module system is not just an administrative framework but a powerful psychological tool that reconfigures the student's relationship with knowledge, turning them from a consumer into a creator[13].

The research into the development of critical thinking among prospective primary school teachers within the credit-module system leads to several significant conclusions.

Firstly, the transition to a Credit-Module System (CMS) is more than a structural or administrative reform; it is a fundamental shift toward a student-centered pedagogical philosophy. The modular structure provides the necessary "academic freedom" and “cognitive space” for students to evolve from passive recipients of information into active seekers of knowledge[14].

Secondly, the study confirms that Independent Educational Activity (IEA) is the primary engine of critical thinking. When students are required to navigate digital libraries like HEMIS, filter through vast amounts of information, and synthesize data independently, they naturally develop essential analytical skills—evaluation, inference, and self-regulation. These skills are critical for future primary school teachers, who must be capable of deconstructing complex concepts for young learners.

Thirdly, the integration of Problem-Based Learning (PBL) and modern assessment tools like Portfolios ensures that critical thinking becomes an ingrained professional habit. The experiment demonstrated that facing pedagogical dilemmas and engaging in reflexive defense of their solutions allowed students to bridge the gap between theoretical knowledge and practical competence[15].

Conclusion

The credit-module system serves as a powerful pedagogical mechanism that aligns Uzbekistan's higher education with international standards. By fostering a culture of inquiry, logical reasoning, and creative problem-solving, this system prepares a new generation of primary school teachers who are not only educators but innovative thinkers capable of shaping the intellectual future of the nation.

REFERENCES

[1] Republic of Uzbekistan, *Law on Education*. Tashkent, Uzbekistan: Government of Uzbekistan, 2023.

[2] President of the Republic of Uzbekistan, *On Measures to Improve the Quality of Education and Introduce the Credit-Module System*, Resolution No. PQ-2909. Tashkent, Uzbekistan, 2020.

[3] N. A. Muslimov, M. H. Usmonboyeva, and D. M. Sayfurov, *Innovative Educational Technologies*. Tashkent, Uzbekistan: Fan va texnologiya, 2019.

[4] O. Tolipov and M. Usmonboyeva, *Pedagogical Technologies: Theory and Practice*. Tashkent, Uzbekistan: O‘qituvchi, 2018.

[5] D. Halpern, *Thought and Knowledge: An Introduction to Critical Thinking*, 5th ed. New York, NY, USA: Psychology Press, 2014.

[6] R. H. Ennis, “Critical thinking: A streamlined conception,” *Teaching Philosophy*, vol. 14, no. 1, pp. 5–24, 1991.

[7] P. Freire, *Pedagogy of the Oppressed*. New York, NY, USA: Continuum, 1970.

[8] J. Biggs and C. Tang, *Teaching for Quality Learning at University*, 4th ed. Maidenhead, U.K.: Open University Press, 2011.

[9] L. Darling-Hammond et al., *Empowered Educators: How High-Performing Systems Shape Teaching Quality Around the World*. San Francisco, CA, USA: Jossey-Bass, 2017.

[10] J. Dewey, *How We Think*. Mineola, NY, USA: Dover Publications, 1997 (original work published 1910).

[11] A. Kolb, *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs, NJ, USA: Prentice Hall, 1984.

[12] J. Hattie, *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*. London, U.K.: Routledge, 2009.

[13] OECD, *Education at a Glance 2023: OECD Indicators*. Paris, France: OECD Publishing, 2023.

[14] World Bank, *World Development Report 2018: Learning to Realize Education’s Promise*. Washington, DC, USA: World Bank, 2018.

[15] S. G‘ulomov and A. Xoliqov, *Methodology for Implementing the Credit-Module System in Higher Education*. Tashkent, Uzbekistan: TDPU Publishing, 2021.