

KONFERENSIYALAR COM

ANJUMANLAR PLATFORMASI

**XII RESPUBLIKA ILMIY-
AMALIY KONFERENSIYASI**

**YANGI DAVR ILM-
FANI: INSON UCHUN
INNOVATSION G'OYA
VA YECHIMLAR**

IYUN, 2026

ISSN 3093-8791

ELEKTRON NASHR:
<https://konferensiyalar.com>



Yangi davr ilm-fani: inson uchun innovatsion g'oya va yechimlar.
XII Respublika ilmiy-amaliy konferensiyasi materiallari to'plami.
2-jild, 12-son (26-iyun, 2026-yil).– 223 bet.

Mazkur nashr ommaviy axborot vositasi sifatida 2025-yil, 8-iyulda
C-5669862 son bilan rasman davlat ro'yaxatidan o'tkazilgan.

Elektron nashr: <https://konferensiyalar.com>

ISSN: 3093-8791 (onlayn)

Konferensiya tashkilotchisi: "Scienceproblems Team" MChJ

Konferensiya o'tkazilgan sana: 2026-yil, 24-iyun

Mas'ul muharrir:

Isanova Feruza Tulqinovna

Annotatsiya

Mazkur to'plamda "Yangi davr ilm-fani: inson uchun innovatsion g'oya va yechimlar" mavzusidagi XII Respublika ilmiy-amaliy konferensiyasi materiallari jamlangan. Nashrda respublikaning turli oliy ta'lim muassasalari, ilmiy markazlari va amaliyotchi mutaxassislari tomonidan tayyorlangan maqolalar o'rin olgan bo'lib, ular ijtimoiy-gumanitar, tabiiy, texnik va yuridik fanlarning dolzarb muammolari va ularning innovatsion yechimlariga bag'ishlangan.

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Kalit so'zlar: ilmiy-amaliy konferensiya, innovatsion yondashuv, zamonaviy fan, fanlararo integratsiya, ilmiy-tadqiqot, nazariya va amaliyot, ilmiy hamkorlik.

Barcha huquqlar himoyalangan.

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THEORETICAL AND METHODOLOGICAL BASIS FOR ENHANCING CRITICAL THINKING AMONG PRE-SERVICE FOREIGN LANGUAGE TEACHERS IN DIGITAL EDUCATIONAL SETTINGS

Ismoiljonov Shuxratjon Boymirza o'g'li

Associate Professor, NamSIFL,

Email: mcsbukhrat@gmail.com

ORCID: <https://orcid.org/0009-0003-7204-810X>

Annotation. Abstract. This article explores the conceptual, philosophical, psychological, and pedagogical underpinnings of critical thinking as an essential professional competence for pre-service foreign language teachers within digital educational settings. Integrating insights from Eastern intellectual heritage, Western philosophical thought, and contemporary theories of cognition, the study develops a comprehensive theoretical model for conceptualising critical thinking in teacher education. It argues that the rapid digitalisation of education requires an expanded understanding of critical thinking that extends beyond general cognitive abilities to include critical evaluation of digital and linguocultural information, pedagogical reflection, self-regulated professional decision-making, and responsible instructional practice. Through a comparative examination of fifteen prominent definitions of critical thinking, the study identifies four major conceptual perspectives: skills-oriented, disposition-oriented, competence-oriented, and integrative-digital. Based on this analysis, an original integrative definition is proposed to address the specific professional needs of future foreign language teachers within the context of Uzbekistan's evolving digital education system.

Keywords: critical thinking; digital education; pre-service foreign language teachers; teacher professional competence; higher education; cognitive development; integrative digital pedagogy; educational transformation; Uzbekistan..

RAQAMLI TA'LIM MUHITIDA BO'LAJAK CHET TILI O'QITUVCHILARINING TANQIDIY FIKRLASH KO'NIKMALARINI RIVOJLANTIRISHNING NAZARIY VA METODOLOGIK ASOSLARI

Ismoiljonov Shuxratjon Boymirza o'g'li

Dotsent,

Is'hoqxon Ibrat nomidagi Namangan davlat chet tillari instituti

Annotatsiya. Ushbu maqolada raqamli ta'lim muhitida bo'lajak chet tili o'qituvchilari uchun muhim kasbiy kompetensiya sifatida tanqidiy fikrlashning konseptual, falsafiy, psixologik va pedagogik asoslari tadqiq etiladi. Sharq mutafakkirlari merosi, G'arb falsafiy tafakkuri hamda zamonaviy kognitiv nazariyalarga tayangan holda tadqiqotda pedagog kadrlar tayyorlash jarayonida tanqidiy fikrlashni konseptuallashtirishning kompleks nazariy modeli ishlab chiqilgan. Maqolada ta'limning jadal raqamlashtirilishi tanqidiy fikrlash tushunchasini kengroq talqin etishni talab qilishi asoslab beriladi. Bunda tanqidiy fikrlash nafaqat umumiy kognitiv qobiliyatlarni, balki raqamli va lingvomadaniy axborotni tanqidiy baholash, pedagogik refleksiya, kasbiy faoliyatga oid qarorlarni mustaqil va ongli ravishda qabul qilish hamda mas'uliyatli o'qituvchilik amaliyotini ham qamrab oladi. Tanqidiy fikrlashga oid o'n beshta nufuzli ta'rifning qiyosiy tahlili asosida uning to'rtta asosiy konseptual yondashuvi aniqlangan: ko'nikmaga yo'naltirilgan, moyillikka yo'naltirilgan, kompetensiyaga yo'naltirilgan hamda integrativ-raqamli yondashuvlar. Mazkur tahlil natijalariga tayangan holda O'zbekistonning rivojlanib borayotgan raqamli ta'lim tizimi sharoitida bo'lajak chet tili o'qituvchilarining kasbiy ehtiyojlarini hisobga oluvchi mualliflikdagi integrativ ta'rif taklif etiladi.

Kalit so'zlar: tanqidiy fikrlash, raqamli ta'lim, bo'lajak chet tili o'qituvchilari, o'qituvchining kasbiy kompetensiyasi, oliy ta'lim, kognitiv rivojlanish, integrativ raqamli pedagogika, ta'lim transformatsiyasi, O'zbekiston.

DOI: <https://doi.org/10.47390/ydif-y2026v2i12/n44>

INTRODUCTION

The ongoing digital transformation of education has substantially reshaped the competencies expected of contemporary teachers. As educational technologies become increasingly integrated into teaching and learning processes, critical thinking has emerged as one of the most essential competencies for both professional practice and lifelong learning. For pre-service foreign language teachers, this competence is particularly significant because they are expected to function in two interconnected roles: as critical consumers of digital information during their own professional preparation and as future educators responsible for fostering critical thinking among language learners. Consequently, the development of critical thinking represents not only a cognitive objective but also a fundamental component of professional teacher identity.

Although critical thinking has been extensively investigated within educational research, its theoretical and methodological foundations remain insufficiently integrated within the fields of digital pedagogy and foreign language teacher education. Most previous studies have examined critical thinking either as a general educational outcome, as an element of digital literacy, or as a component of language learning. Comparatively little attention has been devoted to establishing a comprehensive framework that explains how critical thinking should be conceptualised and developed among future foreign language teachers operating in digitally enriched educational environments. This gap is particularly evident in the context of Uzbekistan, where higher education is undergoing rapid digital transformation and competency-based reforms.

Against this background, the present study seeks to develop an integrated theoretical perspective on critical thinking by synthesising philosophical, psychological, and pedagogical approaches. Specifically, the article addresses three research questions: (1) What philosophical, psychological, and pedagogical principles provide the conceptual foundation for understanding critical thinking? (2) How do contemporary academic definitions of critical thinking differ in their theoretical orientation and conceptual emphasis? (3) Which theoretical model most effectively supports the development of critical thinking among future foreign language teachers within Uzbekistan's digital educational environment?

RESEARCH METHODOLOGY

The research adopts a qualitative theoretical methodology based on historical inquiry, comparative conceptual analysis, and integrative synthesis. This methodological design enables a comprehensive examination of the evolution, interpretation, and pedagogical application of critical thinking in contemporary teacher education.

The first stage involves a historical-philosophical investigation of the development of critical thinking from classical antiquity to the present. Particular attention is given to the contributions of Greek philosophers, including Socrates, Plato, and Aristotle; prominent scholars of the Islamic intellectual tradition such as Al-Farabi, Ibn Sina, Al-Khorezmi, Ibn Rushd, and Ibn Khaldun; Enlightenment thinkers including Francis Bacon, René Descartes, and Immanuel Kant; and influential educational theorists of the twentieth century, notably John Dewey, Benjamin Bloom, and Jean Piaget.

The second stage examines the psychological foundations of critical thinking through the analysis of leading cognitive and socio-cultural theories. The works of Piaget, Vygotsky,

Bandura, Kahneman, and Flavell are explored to identify the cognitive mechanisms, metacognitive processes, and self-regulatory principles that underpin critical thinking, particularly within technology-enhanced learning environments.

The third stage consists of a comparative analysis of fifteen widely recognised scholarly definitions of critical thinking. These definitions are systematically classified according to four conceptual orientations—skills-based, disposition-based, competency-based, and integrative-digital—in order to identify their common characteristics, theoretical distinctions, and implications for teacher education.

Finally, the findings from the historical, psychological, and conceptual analyses are synthesised into an original theoretical framework. Based on this synthesis, the study proposes a context-specific definition of critical thinking that reflects the professional responsibilities of future foreign language teachers and the ongoing digital transformation of higher education in Uzbekistan.

The analysis is grounded in authoritative literature from philosophy of education, cognitive psychology, educational technology, teacher education, and applied linguistics. In addition, relevant national policy documents and educational reform strategies of the Republic of Uzbekistan are incorporated to ensure that the proposed framework aligns with contemporary priorities in teacher preparation and digital education.

LITERATURE REVIEW

Philosophical roots of critical thinking. The intellectual genealogy of critical thinking extends across civilisations and millennia. In ancient Greece, Socrates established that the path to truth requires systematic questioning, doubt, and logical examination — what he demonstrated through dialectical method rather than mere assertion [Plato, 1994:112–118]. Aristotle formalised this insight by systematising the laws of logical reasoning in *Organon*, offering syllogism as a scientific method for scrutinising claims [Aristotle, 1978:33–41].

The tradition flourished in medieval Islamic scholarship, particularly in Central Asia. Al-Farabi, in *The City of Virtuous Inhabitants*, argued that authentic knowledge requires independent reasoning, careful examination of evidence, and comparative analysis of competing views, rejecting dogmatic learning as intellectually insufficient [Al-Farabi, 1993:432–440]. Ibn Sina's *Book of Healing* and *Book of Knowledge* similarly insisted that learning must be built on logical reflection and comparison rather than mechanical memorisation [Ibn Sina, 1980:88–95]. Al-Khorezmi's algorithmic contributions embodied a cognate principle: the decomposition of problems into sequential logical steps, each subject to critical verification [Khorezmi, 1983:12–18].

In the early modern period, Descartes elevated systematic doubt to a foundational epistemological principle, refusing to accept any proposition unverified by reason [Descartes, 1989:22–30], while Bacon advanced inductive methodology as a revolution in knowledge-building from evidence [Bacon, 1977:55–70]. Kant's *Critique of Pure Reason* introduced the concept of reason subjecting itself to critical self-examination — an early formulation of what would later be called metacognition [Kant, 1994:180–195]. Dewey synthesised these strands for educational practice in *How We Think* (1910), placing "reflective thinking" at the centre of pedagogical purpose [Dewey, 1910:15–28].

Psychological foundations. Contemporary cognitive science provides essential psychological grounding for critical thinking pedagogy. Piaget's theory of cognitive

development demonstrates that intellectual growth proceeds through assimilation and accommodation — processes that structurally parallel critical thinking: rather than passively receiving new information, the learner compares it against existing knowledge structures and revises them when contradictions arise [Piaget, 1969:78–90].

Vygotsky's Zone of Proximal Development highlights the indispensable role of social mediation and expert scaffolding in the formation of higher cognitive functions, including critical analysis [Vygotsky, 1982:102–118]. In digital learning environments, this principle acquires new dimensions: adaptive intelligent systems and AI-powered tutors can assume scaffolding functions, supporting the development of critical thinking within each learner's developmental zone. Bandura's self-efficacy construct adds a motivational dimension: learners who believe in their intellectual capacities engage more readily in critical analysis, tolerate uncertainty, and take intellectual risks [Bandura, 1997:45–60].

Kahneman's dual-process theory offers perhaps the most directly applicable framework for digital contexts. His distinction between fast, intuitive System 1 thinking and slow, deliberate System 2 thinking [Kahneman, 2011:20–35] maps directly onto the challenge of digital information overload: rapid-fire social media content activates System 1 responses — pattern-matching, heuristic shortcuts, confirmation bias — while genuine critical evaluation demands System 2 engagement. Developing future teachers' capacity for System 2 processing in linguocultural digital environments is thus a core pedagogical task.

Bloom's revised taxonomy [Anderson & Krathwohl, 2001:30–48] and Flavell's metacognition theory [Flavell, 1979:232–245] complete the psychological foundation, providing cognitive and self-regulatory frameworks within which critical thinking skills can be systematically cultivated and assessed.

Pedagogical models and frameworks. Within educational theory, Ennis [1962, 1996] established critical thinking as an acquirable intellectual skill, characterised by "reasonable, reflective thinking focused on deciding what to believe or do." Paul and Elder [2006] shifted emphasis to intellectual virtues — humility, perseverance, fairness, open-mindedness — arguing that technical skills alone cannot produce genuine critical thinkers. Halpern [2014] contributed a four-domain skills taxonomy (evidence analysis; language and communication; logical error identification; problem-solving and decision-making) alongside a transfer theory emphasising cross-contextual practice. Lipman's Philosophy for Children programme [2003] demonstrated that philosophical dialogue naturally integrates linguistic and critical competencies, with direct implications for language education.

In Russian-language scholarship, Klarin [1995] proposed an integrative model harmonising intuitive and analytical thinking, while Zagashev and Zairsek [2003] developed the three-stage "Call — Comprehension — Reflection" (INSERT) model specifically for text-based learning — a format directly applicable to foreign language instruction. Uzbek researchers have produced foundational local contributions: G'ulomov [2019] defined critical thinking as a process of retaining evidence and substantiating ideas; Dadabolayeva [2020] conceptualised it as intellectual growth through guided independent learning; Nazarov [2021] framed it as a positive skill enabling 21st-century competency realisation. Rakhmonova [2022] investigated classroom strategies for its development, while Yo'ldosheva demonstrated the effectiveness of problem-based instruction in foreign language contexts. Quyida ikkala yangi qism va ularni maqolaning qaysi joyiga qo'shish kerakligi ko'rsatilgan:

Methods used in lexicological research. Lexicological research methods constitute an important methodological bridge between linguistic theory and foreign language pedagogy. Within the context of critical thinking development, lexicology — the systematic study of vocabulary, word meaning, and lexical structure — provides both a subject-matter domain and a set of analytical tools that directly exercise higher-order cognitive skills.

The principal methods employed in lexicological research include: (1) definitional analysis, which involves decomposing dictionary and contextual definitions to identify semantic components and conceptual boundaries; (2) componential analysis, which breaks lexical meaning into discrete semantic features (semes) to enable systematic comparison across lexical units; (3) distributional analysis, which examines the syntactic and collocational environments in which lexical items appear, revealing meaning through contextual patterning; (4) etymological analysis, which traces the historical and cross-linguistic origins of vocabulary, cultivating awareness of linguistic change and cultural borrowing; and (5) corpus-based analysis, which employs large digital text collections to investigate lexical frequency, collocation, and register variation with empirical precision [Galperin & Mednikova, 1986:44–67; Jackson & Zé Amvela, 2007:12–29].

In the training of future foreign language teachers, these methods serve a dual pedagogical function. As analytical tools applied to the target language, they deepen metalinguistic awareness. As models of evidence-based reasoning — forming and testing hypotheses about meaning on the basis of textual evidence — they exemplify the very critical thinking dispositions that teacher preparation programmes seek to cultivate. The parallel between rigorous lexicological inquiry and critical thinking is not incidental: both require the systematic interrogation of sources, the comparative evaluation of competing interpretations, and the disciplined suspension of premature conclusions [Leech, 1981:10–18]. Digital environments have substantially expanded the scope of lexicological methods, enabling future teachers to conduct corpus queries, analyse authentic digital discourse, and evaluate lexical choices in real-time linguocultural contexts — skills that integrate professional linguistic competence with critical digital literacy.

Evaluating the Impact of Innovative Instructional Strategies and Educational Technologies on Enhancing Language Proficiency. The integration of innovative instructional strategies and educational technologies into foreign language teaching has generated a substantial body of empirical and theoretical scholarship over the past two decades. A consistent finding across this literature is that technology-enhanced and strategy-driven instruction produces measurable improvements in language proficiency when it is purposefully designed, rather than adopted for its novelty alone [Warschauer & Healey, 1998:57–71; Chapelle, 2001:30–45].

Among the instructional strategies demonstrating the strongest evidence base are task-based language teaching (TBLT), project-based learning (PBL), and collaborative learning frameworks. TBLT engages learners in authentic communicative tasks that require the integration of linguistic and critical resources, with research consistently linking task complexity to gains in both fluency and analytical depth [Ellis, 2003:88–104]. PBL situates language development within extended investigative cycles that mirror professional practice, cultivating both linguistic competence and the self-regulatory habits central to critical thinking [Thomas, 2000:22–39]. Collaborative learning environments — whether face-to-face or

digitally mediated — leverage Vygotsky's social scaffolding principle, enabling learners to co-construct knowledge and negotiate meaning in ways that accelerate both linguistic and critical development [Donato, 1994:40–58].

On the technological dimension, Computer-Assisted Language Learning (CALL), mobile-assisted language learning (MALL), and AI-powered adaptive platforms have demonstrated particular impact. Adaptive intelligent tutoring systems can individualise instruction according to learner proficiency profiles, provide immediate corrective feedback, and maintain engagement over extended periods [Godwin-Jones, 2017:9–23]. Multimedia-rich digital environments simultaneously develop linguistic and multimodal literacy, preparing learners to critically interpret the complex semiotic landscapes they will encounter as both language users and future teachers [Kern, 2006:183–199]. Importantly, however, research also identifies significant risks: passive consumption of digital content, algorithmic reinforcement of existing beliefs, and the displacement of deep reading by surface-level information scanning can undermine language proficiency gains if left unaddressed pedagogically [Carr, 2010:115–130].

For future foreign language teachers in Uzbekistan, the evaluation of innovative strategies must account for contextual factors including variable digital infrastructure, the coexistence of multiple languages of instruction, and the need to align technological integration with national education standards. Effective technology-enhanced language instruction in this context requires not only technical access but critically-mediated pedagogical design — the very intersection of digital competency, linguistic expertise, and reflective professional practice that the present study seeks to theorise.

ANALYSIS AND RESULTS

Comparative analysis of definitions. Fifteen scholarly definitions were examined and categorised according to their primary theoretical orientation. The analysis reveals four distinct approaches:

Skill-based orientation (Ennis, Facione, Halpern, G'ulomov, Rakhmonova): treats critical thinking as a set of learnable, measurable cognitive skills applicable across domains.

Dispositional orientation (Paul & Elder, Ruggiero, Dadabolayeva): emphasises intellectual character traits and attitudinal dispositions as constitutive of genuine critical thinking.

Competency-based orientation (Miraç & Nuriye, Nazarov): frames critical thinking as a professional and life competency essential for contemporary success.

Integrative-digital orientation (Garrison, Ar-Rashid, Ismoiljonov): synthesises the preceding approaches while foregrounding the specific challenges and opportunities of digital learning environments.

The following infographic summarises this comparative analysis:### 4.2 Identified research gaps



Figure 1. Comparative analysis of critical thinking definitions: four scholarly orientations and their evolution

Identified research gaps. The comparative analysis identifies three significant gaps in the existing literature. First, most studies treat critical thinking in general educational settings, without accounting for the dual professional role of future foreign language teachers — simultaneously developing their own critical competency as learners and preparing to cultivate it in future students. Second, the majority of existing frameworks were designed for analogue or generic digital contexts and do not engage with the specific challenges of linguocultural digital content evaluation. Third, there is a pronounced absence of context-specific theoretical and methodological frameworks addressing Uzbekistan's educational conditions, regional digital inequality, and the intersection of national and international language education standards.

PROPOSED DEFINITION

These gaps motivate the following original definition, which constitutes the theoretical foundation of the broader dissertation research:

Critical thinking of future foreign language teachers in a digital learning environment is a professional-cognitive competency comprising: the multi-criteria analysis and evaluation of digital and linguocultural information; the pedagogically-purposeful selection and application of that information; the self-regulatory monitoring of one's own reasoning; and the conscious assumption of responsibility for cultivating equivalent competency in future learners — all exercised in conditions of unlimited digital information access and linguocultural diversity.

This definition advances existing scholarship in three respects. It incorporates the digital environment as a constitutive rather than incidental context; it includes the linguocultural dimension specific to foreign language education; and it foregrounds the dual pedagogical responsibility unique to teacher preparation.

CONCLUSION

This study has established that critical thinking, far from being a modern Western construct, possesses deep and parallel roots in both Eastern and Western intellectual traditions. The convergence of Al-Farabi's epistemic reasoning, Descartes' methodological doubt, Dewey's reflective thinking, and Kahneman's System 2 processing around a common core — the

principled, evidence-based, self-regulated evaluation of claims — constitutes a robust cross-cultural philosophical foundation for contemporary critical thinking pedagogy.

The psychological analysis confirms that critical thinking formation is supported by cognitive development (Piaget), social scaffolding (Vygotsky), self-efficacy (Bandura), deliberate analytical processing (Kahneman), and metacognitive regulation (Flavell) — all of which must be addressed systematically in digital teacher preparation contexts.

The comparative definitional analysis demonstrates that existing frameworks, while valuable, insufficiently address the convergence of digital mediation, linguocultural complexity, and dual professional responsibility that characterises the situation of future foreign language teachers. The proposed integrative-digital definition fills this gap and provides the conceptual anchoring for the methodological framework developed in subsequent sections of the dissertation.

Future research should empirically validate this framework through experimental teacher preparation programmes, develop assessment instruments for the constituent competencies, and investigate context-specific barriers to critical thinking development in Uzbekistan's educational system.

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YANGI DAVR ILM-FANI: INSON UCHUN INNOVATSION G'OYA VA YECHIMLAR

XII RESPUBLIKA ILMIY-AMALIY KONFERENSIYASI MATERIALLARI
2026-yil, 26-iyun

Mas'ul muharrir: *F.T.Isanova*
Texnik muharrir: *N.Bahodirova*
Diszayner: *I.Abdihakimov*

Yangi davr ilm-fani: inson uchun innovatsion g'oya va yechimlar.
XII Respublika ilmiy-amaliy konferensiyasi materiallari to'plami.
2-jild, 12-son (iyun, 2026-yil). – 223 bet.

Mazkur nashr ommaviy axborot vositasi sifatida 2025-yil, 8-iyulda
C-5669862 son bilan rasman davlat ro'yaxatidan o'tkazilgan.

ISSN: 3093-8791 (onlayn)

Elektron nashr: <https://konferensiyalar.com>

Konferensiya tashkilotchisi: "Scienceproblems Team" MChJ

Konferensiya o'tkazilgan sana: 2026-yil, 24-iyun.

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