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ИННОВАЦИЯЛЫК БИЛИМ БЕРҮҮ КОНТЕКСТИНДЕ АР ТҮРДҮҮ МУУНДАГЫ МҮЧӨЛӨРДӨН ТУРГАН КОМАНДАЛАР ҮЧҮН ГИБРИДДИК СТИМУЛДАШТЫРУУ СИСТЕМАЛАРЫН ОПТИМАЛДАШТЫРУУ СТРАТЕГИЯЛАРЫ

СТРАТЕГИИ ОПТИМИЗАЦИИ ГИБРИДНЫХ СИСТЕМ МОТИВАЦИИ ДЛЯ МНОГОПОКОЛЕНЧЕСКИХ КОМАНД В КОНТЕКСТЕ ИННОВАЦИОННОГО ОБРАЗОВАНИЯ

OPTIMIZATION STRATEGIES FOR MULTI-GENERATIONAL TEAM HYBRID INCENTIVE SYSTEMS IN THE CONTEXT OF INNOVATIVE EDUCATION

Кыскача мүнөздөмө: Бул изилдөө глобалдык билим берүүнүн цифрлашуусу жана "Биримдик жана Жол" демилгөсү алкагында Кыргызстан менен Кытайдын билим берүү кызматташтыгынын тереңдешишинде инновациялык билим берүүнү ишке ашыруунун негизги каражаттары катары көп үмүттүү командалардын маанилүүлүгүн ачып берет. Бирок, азыркы стимулдаштыруу системалары көптөгөн маанилүү маселелерди көрсөтөт, анын ичинде межпоколендик керектөөлөргө ылайык келбеши, технологиялык интеграциянын тереңдиги жетишсиз жана чек аралык координация механизмдеринин жоктугу. Бул изилдөөдө адабияттарды анализдөө, учурдагы практикаларды салыштыруу жана өлкөлөр аралык салыштыруу методдору кеңири колдонулган, бул Кытай жана Кыргызстандагы инновациялык билим берүү командаларынын азыркы практикасын талдоо жана көп үмүттүү командалардын ар кандай муундарынын мүчөлөрдүн, орто жаштагы негизги кызматкерлердин жана улуу куратагы мүчөлөрдүн стимулдаштыруу керектөөлөрүн аныктоо үчүн жүргүзүлдү. Натыйжада, деңгээлдүү ылайыкташтыруу, технологиялык байланыш жана чек аралык координация багыттарында гибриддик стимулдаштыруу оптималдаштыруу стратегия системасы иштелип чыкты. Бул стратегия так межпоколендик стимулдаштырууну, технологиялык сценарийлерге терең байланышты жана чек аралык ресурстардын үзгүлтүксүз өз ара байланышын камсыз кылат. Бул изилдөө эки өлкөнүн билим берүүнүн цифрлашуусу үчүн практикалык сунуштарды берет, чек аралык көп үмүттүү командаларды башкаруу боюнча теориялык негиздерди жана практикалык тажрыйбаны толуктайт, ошондой эле "Биримдик жана Жол" демилгөсү алкагында билим берүү кызматташтыгын тереңдөтүү жана кызматташтык натыйжалуулугун арттыруу үчүн теориялык колдоо жана практикалык багыттоолорду сунуштайт.

Аннотация: В условиях глобальной цифровой трансформации образования и углубления образовательного сотрудничества между Китаем и Кыргызстаном в рамках инициативы "Один пояс, один путь" многопоколенческие команды стали основными носителями инновационного образования. Однако существующие системы стимулирования демонстрируют ряд существенных проблем, включая недостаточную адаптацию к межпоколенческим потребностям, недостаточную глубину технологической интеграции и отсутствие механизмов трансграничной координации. В данном исследовании всесторонне использовались методы анализа литературы, сравнительного анализа случаев и межрегионального сравнения для анализа текущей практики типичных команд инновационного образования в Китае и Кыргызстане, а также для выявления дифференцированных потребностей в стимулировании среди молодых членов, основного персонала среднего возраста и старших членов команд. Была построена система оптимизации гибридных стратегий стимулирования

по трём измерениям: адаптация к уровням, технологическая связь и трансграничная координация, с целью достижения точного межпоколенческого стимулирования, глубокой привязки к технологическим сценариям и бесшовной взаимосвязи трансграничных ресурсов. Данное исследование предоставляет практические рекомендации для цифровой трансформации образования в обеих странах, дополняет теоретические основы и практический опыт управления трансграничными многопоколенческими командами, а также предлагает теоретическую поддержку и практические рекомендации для углубления образовательного сотрудничества и повышения эффективности взаимодействия в рамках инициативы "Один пояс, один путь".

Abstract: In the dual context of global education digital transformation and deepening China-Kyrgyzstan educational cooperation under the Belt and Road Initiative, multi-generational teams have emerged as the core carriers for implementing innovative education. However, existing incentive systems exhibit prominent issues including insufficient adaptation to intergenerational needs, inadequate depth of technology integration, and a lack of cross-border coordination mechanisms. This study comprehensively employed literature analysis, case comparison, and cross-regional comparative methods to analyze the current practices of typical innovative education teams in China and Kyrgyzstan, and to identify differentiated incentive needs among younger members, middle-aged core personnel, and senior members. A hybrid incentive optimization strategy system was constructed across three dimensions: tiered adaptation, technology linkage, and cross-border coordination, to achieve precise intergenerational incentives, deep binding with technological scenarios, and seamless interconnection of cross-border resources. This study provides actionable implementation references for the digital transformation of education in both China and Kyrgyzstan, supplements theoretical dimensions and practical experience for cross-border multi-generational team management, and offers theoretical support and practical guidance for deepening educational cooperation and enhancing collaborative effectiveness under the Belt and Road Initiative framework.

Негизги сөздөр: Технологиялык жактан интеграцияланган стимулдар; Билим берүүдө чек ара аралык координация; Көп муундагы командаларды башкаруу; Инновациялык билим берүү; Сандык трансформация.

Ключевые слова:Технологически интегрированные стимулы; Трансграничная координация в сфере образования; Управление многопоколенческими командами; Инновационное образование; Цифровая трансформация.

Keywords: Technologically integrated incentives; Cross-border coordination in education; Managing multi-generational teams; Innovative education; Digital transformation.

1. Introduction. With the comprehensive advancement of the University 4.0 strategy and the continuous deepening of global education digital transformation, innovative education has become the core direction for the development of higher education cooperation between China and Kyrgyzstan [1]. China has constructed a technology-enabled innovative education ecosystem through digital education strategic actions and future school construction. Kyrgyzstan has accelerated the construction of multi-generational innovative education teams by relying on national education development strategies and international cooperation with information technology development in its higher education sector, providing fundamental support for innovative education [2], [3]. As the key carrier for implementing innovative education, multi-generational teams consist of younger members adept at technological innovation, middle-aged core personnel with both management and teaching capabilities, and senior members with profound experience. The significant differences in intergenerational needs notably affect team collaboration efficiency and innovation output [4], [5].

The cultivation of innovative culture is the core issue in the development of innovative education, while incentive mechanisms constitute the key element for activating team innovation vitality [6]. However, traditional single-mode incentive systems have proven insufficient for adapting to the differentiated needs of multi-generational teams in both countries. Among existing studies, Chandra et al. (2021) indicated that innovative education requires the construction of adapted team incentive frameworks [7], and Haidamaka et

al. (2022) explored collaborative incentive issues in postmodern education [8]. However, neither conducted in-depth research combined with technology-enabled scenarios such as human-computer collaborative teaching and smart learning environments, nor China-Kyrgyzstan cross-regional practices. Kuswara & Yulianah (2025) emphasized that multi-generational workforce management in the digital era requires targeted solutions to intergenerational collaboration challenges [9], and Ramadevi et al. (2023) proposed artificial intelligence collaborative learning models, providing theoretical references for technology-education integration [10]. Additionally, van Zyl & Magau (2024) confirmed the cross-border spillover effects of incentive mechanisms [11]. Overall, existing research has not adequately addressed the three key issues of intergenerational adaptation, technology integration, and cross-border coordination in China-Kyrgyzstan multi-generational team incentives.

This study is grounded in the realities of China-Kyrgyzstan innovative education cooperation, integrates educational practice experience from both countries and international academic achievements, focuses on the pain points of incentive imbalance in multi-generational teams, and aims to construct a hybrid incentive mechanism across three dimensions: tiered adaptation, technology linkage, and cross-border coordination. The innovation of this study is prominently reflected in precisely matching differentiated needs of various generational groups to achieve personalized incentives, promoting deep binding between incentive measures and digital education scenarios to strengthen technology enablement, and constructing cross-border incentive coordination systems to expand the cross-regional applicability of incentive mechanisms.

2. Materials and Methods.

2.1 Research Materials. This study collected three types of materials to ensure comprehensiveness and reliability:

1. Academic literature (2020–2025) from Web of Science, Scopus, CNKI, and Wanfang Database, using keywords such as innovative education, multi-generational teams, hybrid incentives, human-computer collaboration, and China-Kyrgyzstan cooperation, to lay a theoretical foundation.

2. Practical materials from typical teams (Lanzhou University of Technology's "Red Willow Maker Dream Factory" and Kyrgyz National University's Smart Classroom R&D team), including operational documents, curriculum materials, and project reports, sourced from university websites, public reports, and news.

3. Policy and industry materials, such as China-Kyrgyzstan educational cooperation plans, Luban Workshop operation data, and industry trend analyses, to provide realistic and contextual support.

2.2 Research Methods. Literature analysis: Used keywords (innovative education multi-generational teams etc.) to review relevant materials referencing Chandra et al. (2021)'s [7] framework and Ramadevi et al. (2023)'s [10] AI model to extract core links between technology intergenerational needs and incentives and clarify China-Kyrgyzstan commonalities and differences.

Case comparison: Selected two typical teams (benchmark practices with clear multi-generational structures goals and traceable incentives) and applied Kartika (2024)'s [12] framework to compare incentive measures technology adaptation and intergenerational collaboration identifying optimization space.

Cross regional comparison: Compared China-Kyrgyzstan technology application differences (investment coverage iteration) via Erdolatov et al. (2023) [2] and analyzed cross border incentive feasibility using van Zyl & Magau's (2024) [11] spillover research.

The sampling criteria for this study were that case teams must possess clear multi-generational member structures clear innovative education goals and traceable incentive practice records. Literature materials must be core journal publications or authoritative institutional reports from the past five years to ensure timeliness and scientific nature. The selected research methods are repeatable and other researchers can conduct similar studies by retrieving literature from the same databases and obtaining publicly available case materials.

3. Results. Through literature review and case comparison, this study systematically presented the incentive status differences of multi-generational innovative education teams between China and Kyrgyzstan, clarified the incentive needs characteristics of different generational members, and extracted core optimization directions for hybrid incentive mechanisms based on these findings.

3.1 Comparison of Incentive Status between Typical Innovative Education Teams in China and Kyrgyzstan. Representative teams from both countries were selected for comparison across three dimensions: incentive measures, technology adaptation, and intergenerational collaboration effectiveness, with results presented in Table 1.

Table 1. Comparison of Incentive Status between Typical Innovative Education Teams in China and Kyrgyzstan

Evaluation Dimension	Lanzhou University of Technology "Red Willow Maker Dream Factory" Team	National University of Kyrgyzstan Smart Classroom R&D Team
Incentive Measures	Multi-dimensional compound: development incentives, resource incentives, outcome incentives	Characteristic focus: honor incentives as core, basic support as foundation
Technology Adaptation	High level: deep integration of artificial intelligence, coordinated closed loop	Medium level: basic application implementation, artificial intelligence linkage under exploration
Intergenerational Collaboration	Mature stage: clear division of labor, deep integration of experience and technology	Improving stage: mechanism under construction, intergenerational complementation advancing orderly
Incentive Orientation	Outcome orientation and career development driven, abundant innovation vitality	Cohesion orientation and capability improvement equally emphasized, solidifying development foundation

Sources: [13-16].

The comparative analysis reveals that the incentive measures of the Chinese team exhibit compound characteristics of technology and diversified benefits, and is closely linked with academic advancement and career development, adapting to the core demands of domestic multi-generational members. This effectiveness is consistent with the incentive satisfaction-productivity positive correlation theory proposed by Bose & Mohanty (2024) [17]. The Kyrgyz team emphasizes honor incentives and basic resource support, but due to limitations in information technology development levels, notable shortcomings exist in technology adaptation (insufficient depth of artificial intelligence application) and intergenerational collaboration mechanisms (lack of normalized experience sharing and technology complementarity platforms). Both country teams emphasize the combination of incentives and innovation goals. However, the Chinese team's incentive measures are more detailed with closer linkage to technology scenarios such as artificial intelligence-assisted teaching. The Kyrgyz team needs to learn from the Chinese team's mature experience in cross-generational collaboration to improve incentive precision.

3.2 Matching Intergenerational Incentive Needs with Optimization Strategies. Based on the generational composition characteristics of teams from both countries, the core needs of different generational members were organized using publicly available member files and project participation records from the case teams, and targeted optimization strategies were proposed, with results presented in Table 2.

Table 2 Matching Intergenerational Incentive Needs with Optimization Strategies for China-Kyrgyzstan Multi-generational Teams

Generational Group	Core Needs	Optimization Strategies
Younger Members (under 30)	Technology practice platforms, career growth paths, international exchange opportunities	Cross-national technology training projects, innovation-specific awards, enterprise resource connections
Middle-aged Core Personnel (30-50)	Overall decision-making authority, professional certification of achievements, coordination support guarantees	Project leader system, special assessment mechanisms, research and development funds
Senior Members (over 50)	Recognition of experience value, professional honor acquisition, discourse rights protection	Inheritance mentor honorary titles, textbook writing special funding, review and decision-making participation rights

Sources: [4; 5; 9; 18].

The analysis indicates that younger members focus on technology and growth demands, middle-aged core personnel emphasize management and coordination support needs, and senior members value experience inheritance and honor recognition.

Optimization strategies need to solve the following problems: younger members lack technology platforms, middle-aged core personnel lack coordination incentives, and senior members lack honor guarantees. Specifically, for younger members, the artificial intelligence collaborative learning concept from Ramadevi et al. (2023) should be borrowed to strengthen technology practice enablement [10]. For middle-aged core personnel, the incentive performance correlation framework from Kartika (2024) should be referenced to improve assessment-incentive linkage mechanisms [12]. For senior members, the innovative culture cultivation viewpoints from Fuad et al. (2022) should be combined to improve honor inheritance systems [6]. Through tiered design, precise matching between incentives and needs is achieved, while the successful experience of existing China-Kyrgyzstan cases is borrowed to ensure strategy feasibility and effectiveness.

4. Discussion. The results indicate that China-Kyrgyzstan multi-generational innovative education teams align with the multi-generational team need differentiation theory [4]. The Chinese team's multi-dimensional compound incentive model, due to its deep binding with technology scenarios and career development, better adapts to digital-era management needs [10]. Although the Kyrgyz team's honor incentives conform to local cultural contexts, problems of insufficient technology adaptation and weak intergenerational collaboration confirm the lag in its higher education IT development [2].

Intergenerational adaptation is the fundamental prerequisite for incentive mechanism optimization. The experience of Lanzhou University of Technology in covering different generations through multiple incentives, combined with Richards et al.'s (2024) gamified intergenerational communication model [19], can enhance collaboration willingness. More importantly, intergenerational adaptation requires constructing a dynamic need-incentive feedback mechanism.

Technology integration is a key for incentive effectiveness. The Chinese team combines AI applications with incentive mechanisms, promoting technology innovation and team vitality. This resonates with China Industry News (2025) [20]. Zhylchieva & Egamberdieva (2024) confirm AI technology promotes students' critical thinking [21]. Sulaymanova & Alymkulova (2024) emphasize preparing modern teachers with appropriate pedagogical frameworks [22]. The Kyrgyz team's incentive design related to technology iteration still has optimization space.

Cross-regional coordination is an important extension for China-Kyrgyzstan cooperation. By establishing cross-national incentive systems through platforms such as Luban Workshops, collaborative

mechanisms can be enhanced through mutual recognition of teaching outcomes for professional title evaluation, joint special funds allocation, and co-construction of technology training platforms. This provides reference paradigms for managing cross-border multi-generational teams in University 4.0 [1].

The positive cycle between incentives and performance is the optimization goal. Bose & Mohanty (2024) confirmed correlation between incentives, satisfaction, and productivity [17]. Research suggests fairness and transparency should be strengthened, with quantified assessment systems established to ensure team members receive incentives matching their contributions [5].

Compared with existing research, this study's three-dimensional hybrid incentive mechanism of tiered adaptation, technology linkage, and cross-border coordination breaks through single-dimensional limitations. Grounded in China-Kyrgyzstan cooperation context, it addresses insufficient attention to cross-border multi-generational team issues in specific regions. Different from pure theoretical discussions, it constructs an operable and practical strategy system.

5. Conclusion. This study, taking typical innovative education teams from China and Kyrgyzstan as research subjects, comprehensively employed literature analysis, case comparison, and cross-regional comparative methods to systematically analyze the intergenerational incentive need differences of multi-generational teams, and clarified the following core findings: younger members focus on technology and growth demands, middle-aged core personnel emphasize management and coordination support needs, and senior members value experience inheritance and honor recognition. Additionally, problems existing in current incentive mechanisms of both countries were revealed: insufficient precision in intergenerational adaptation, inadequate depth of incentive-technology scenario integration, and lack of cross-border incentive coordination mechanisms.

Based on the above research findings, a three-dimensional hybrid incentive optimization strategy system of tiered adaptation, technology linkage, and cross-border coordination was constructed. In the tiered adaptation dimension, precise policies are implemented according to the needs of different generational groups: strengthening technology practice platforms and growth enablement incentives for younger members, improving assessment-incentive linkage mechanisms for coordination contributions for middle-aged core personnel, and completing honor guarantee systems for experience inheritance for senior members. In the technology linkage dimension, incentive measures are promoted to deeply bind with digital education scenarios such as artificial intelligence-assisted teaching and smart classroom construction, and dynamic linkage mechanisms of technology breakthrough-incentive upgrade are established. In the cross-border coordination dimension, relying on existing cooperation platforms such as Luban Workshops, cross-border incentive resource interconnection systems of teaching and research outcome mutual recognition, special fund co-construction, and technology training sharing between China and Kyrgyzstan are constructed.

This three-dimensional optimization strategy deeply integrates multi-generational team management theory, artificial intelligence-enabled education concepts, and cross-border collaboration governance experience. It not only fully aligns with the practical needs of China's innovative education ecosystem improvement and Kyrgyzstan's education digitalization transformation but also possesses solid theoretical support and empirical foundations. It can effectively enhance the innovation vitality and collaboration efficiency of multi-generational teams, deepen pragmatic cooperation in the education sector between China and Kyrgyzstan, and provide new practical paths for cross-border educational cooperation under the Belt and Road Initiative.

Future research can expand case coverage to different disciplines and scales, adopt tracking research methods for long-term effectiveness feedback, and focus on practical issues like outcome mutual recognition standards and fund management mechanisms to promote strategies from theoretical frameworks to implementation.

References

1. Madaliev M. M., Nuraliev N. A., Erkebulanova N. S., Kylychbekov A. B., Ryspaeva S. S. The national strategy for the development of education in Kyrgyzstan: Problems and prospects in the era of “University

4.0” // Lifelong Learning in Central Asia / ed. by E. G. Popkova. — Springer, 2025. — P. 85–102. — DOI: 10.1007/978-981-96-1941-2_8.
2. Erdolatov S. S., Ibraev A. D., Esenalieva G. A., Bekezhanov M. M., Kaldybaev S. K. Status and prospects for the development of information technology in the higher education system of Kyrgyzstan // Bridging the Gap Between the Higher Education and Labor Markets / ed. by E. G. Popkova. — Springer, 2025. — P. 267–278. — DOI: 10.1007/978-981-96-1933-7_26.
3. Pulatova M. S. Developing innovative education in Central Asia state policy // Galaxy International Interdisciplinary Research Journal. — 2022. — Vol. 10, No. 4. — P. 318–322.
4. Chaudhary H. K., Shamim Ahmed M. S., Abidi S. A. A. Multi generational workforce management: Fostering collaboration, knowledge transfer, and employee satisfaction across generations // Review Journal of Social Psychology & Social Works. — 2025. — Vol. 3, No. 2. — P. 813–820. — DOI: 10.71145/rjsp.v3i2.238.
5. Lima S. A., Rahman M. M. Generational diversity and inclusion: HRM challenges and opportunities in multigenerational workforces // International Journal of Humanities Social Science and Management (IJHSSM). — 2025. — Vol. 5, No. 3. — P. 704–710. — DOI: 10.2139/ssrn.5330092.
6. Fuad D. R. S. M., Musa K., Hashim Z. Innovation culture in education: A systematic review of the literature // Management in Education. — 2022. — Vol. 36, No. 3. — P. 135–149. — DOI: 10.1177/0892020620959760.
7. Chandra P., Tomitsch M., Large M. Innovation education programs: A review of definitions, pedagogy, frameworks and evaluation measures // European Journal of Innovation Management. — 2021. — Vol. 24, No. 4. — P. 1268–1291. — DOI: 10.1108/EJIM-02-2020-0043.
8. Haidamaka O., Kolisnyk Humeniuk Y., Storizhko L., Marchenko T., Poluboiaryna I., Bilova N. Innovative teaching technologies in postmodern education: Foreign and domestic experience // Postmodern Openings. — 2022. — Vol. 13, No. 1 Suppl. 1. — P. 159–172. — DOI: 10.18662/po/13.1Sup1/419.
9. Kuswara G. B., Yulianah Y. Human resources management challenges and solutions in managing a multi generational workforce in the digital era // Jurnal Ilmiah Multidisiplin Indonesia (JIM ID). — 2025. — Vol. 4, No. 10. — P. 1346–1355. — URL: https://ejournal.seaninstitute.or.id/index.php/esaprom/article/view/7501 (accessed: 29.09.2026).
10.Ramadevi J., Sushama C., Balaji K., Talasila V., Sindhwani N. AI enabled value oriented collaborative learning: Centre for innovative education // The Journal of High Technology Management Research. — 2023. — Vol. 34, No. 2. — Art. 100478. — DOI: 10.1016/j.hitech.2023.100478.
11.van Zyl G., Magau M. D. Employee productivity spillovers generated by incentive schemes // SA Journal of Human Resource Management. — 2024. — Vol. 22. — Art. 2240.
12.Kartika L. The influence of employee incentives and work motivation on employee performance // Journal of Economic, Management and Entrepreneurship. — 2024. — Vol. 2, No. 3. — P. 132–138. — DOI: 10.61502/jemes.v2i3.108.
13.Semenov S. R., Otorchieva A. Z., Semenov N. S., Tulegenova Z. K. Digital transformation of education in the Kyrgyz Republic as a direction of innovation in the development of the university // Management of Digital Technologies in the Innovative Economy / ed. by E. G. Popkova. — Springer, 2025. — P. 391–402. — DOI: 10.1007/978-3-031-83331-1_36.
14.Zhang Y., Zhang M., Wu L., Wang L., Chen H., Liu J. Digital transition framework for higher education in AI assisted engineering teaching // Science & Education. — 2025. — Vol. 34. — P. 933–954. — DOI: 10.1007/s11191-024-00575-3.
15.UNESCO. Operational evaluation report of smart classrooms at the National University of Kyrgyzstan. International Education Cooperation Project Documentation [Electronic resource]. — 2025. — URL: https://www.ichei.org/news/information/199.html (accessed: 29.09.2026).
16.China Education Daily. Lanzhou University of Technology promotes deep integration of professional education and innovation entrepreneurship education [Electronic resource] // China Education Daily. — 2025. — URL: http://paper.jyb.cn/zgjyb/html/2025-03/24/content_144742_18373428.htm (accessed: 29.09.2026).

17.Bose S., Mohanty S. Interrelationship between motivation with job satisfaction and productivity parameter by talent acquisition team: A case study // Paper ASIA. — 2024. — Vol. 40, No. 4b. — P. 19–30. — DOI: 10.59953/paperasia.v40i4b.107.
18.Xie F., Zhou C. Construction of incentive mechanisms for efficient management teams in enterprises: A case study of state owned enterprises // China Business Review. — 2021. — No. 9. — P. 103–105. — DOI: 10.19699/j.cnki.issn2096-0298.2021.09.103.
19.Richards M. B., Becker K. L., Stollings Holder J. Escaping generational conflict: Using gamification to examine intergenerational communication and problem solving // Review of Managerial Science. — 2024. — Vol. 18. — P. 1597–1616. — DOI: 10.1007/s11846-023-00669-2.
20.China Industry News. Research on AI enabled outcome oriented education and teaching innovation practices [Electronic resource] // China Industry News. — 2025. — URL: http://dzb.cinn.cn/zggyb/h5/html5/2025-12/29/content_20_339908.htm (accessed: 29.09.2026).
21.Zhylchieva D. S., Egamberdieva A. A. Developing students' critical thinking and analytical abilities through artificial intelligence // Vestnik KNU im. Zh. Balasagyna. — 2024. — No. 3 (119). — P. 451–455. — URL: https://elibrary.ru/item.asp?id=74919223 (accessed: 29.09.2026).
22.Sulaymanova R. T., Alymkulova N. A. Preparing modern teachers to enhance students' cognitive activity // Vestnik KNU im. Zh. Balasagyna. — 2024. — P. 38–45. — URL: https://www.elibrary.ru/item.asp?id=74919223 (accessed: 29.09.2026).

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