



ARTIFICIAL INTELLIGENCE IN FOREIGN LANGUAGE TEACHING AND GENERAL EDUCATION: A COMPARATIVE ANALYSIS OF OPPORTUNITIES, CHALLENGES, AND HYBRID MODELS

Arman Rsaliyev

Acting Associate Professor

a.rsaliyev@usat.uz

Sharipova Farangiz

2nd Course Student

University of Science and Technology

Abstract

This article provides a comparative analysis of the integration of artificial intelligence (AI) in foreign language teaching and general education. Based on a critical synthesis of four recent studies by Rizakhojayeva (2026), Juraev (2026), Rsaliyev (2026), and Sharipova & Rsaliyev (2026), the paper examines the adaptive potential of AI, the risks of algorithmic bias, cultural irrelevance, and the loss of human interaction. The study highlights empirical evidence from China, Iran, Indonesia, Russia, and Kazakhstan. A three-level hybrid model for the distribution of functions between teachers and AI is proposed (technical-diagnostic, interpretative-adaptive, and motivational-reflective levels). The article concludes that the effectiveness of AI in education is determined not by technological power but by the quality of pedagogical design and the preservation of human-centered values.

Keywords: Artificial intelligence, foreign language teaching, adaptive learning, hybrid model, cultural relevance, pedagogical design, SPEAK-BOT.



Introduction

The rapid advancement of artificial intelligence (AI) technologies has significantly influenced modern educational systems worldwide. As Juraev (2026) notes, AI refers to computer systems capable of performing tasks that typically require human intelligence, such as learning, reasoning, and decision-making. In recent years, AI has been increasingly applied in educational contexts to enhance teaching methodologies, improve learning experiences, and streamline administrative processes.

In the specific domain of foreign language teaching, AI is becoming an indispensable tool capable of revolutionizing the educational process. Rizakhojayeva (2026) emphasizes that with the development of technologies such as chatbots, adaptive applications, and automated assessment systems, AI offers new opportunities for personalized learning, which is particularly relevant in the context of globalization and the growing demand for multilingual competencies.

However, the widespread adoption of generative neural networks and intelligent tutoring systems gives rise to a fundamental contradiction. On the one hand, empirical data demonstrate significant increases in academic performance, motivation, and the speed of language acquisition when using AI (Sharipova & Rsaliyev, 2026). On the other hand, studies in Iran and Indonesia (Rsaliyev, 2026) reveal serious risks: algorithmic bias, disregard for cultural context, passive copying of answers by students, and, consequently, a decline in critical thinking. The aim of this article is to propose a balanced hybrid model for the distribution of functions between teachers and AI, based on a synthesis of empirical data obtained from five different educational contexts (China, Iran, Indonesia, Russia, and Kazakhstan). The paper addresses the following tasks: (1) to identify the positive and negative aspects of using AI in foreign language teaching and general education; (2) to analyze cross-cultural differences in the effectiveness of AI tools; (3) to formulate practical recommendations for teachers, curriculum developers, and institutional levels.

1. The Adaptive Potential of Artificial Intelligence: Research Data

An analysis of the literature shows that AI technologies possess significant didactic potential. Juraev (2026) identifies three key areas: personalized learning,



automated assessment, and administrative support. In particular, Intelligent Tutoring Systems (ITS) are capable of modeling individual student trajectories, identifying weaknesses, and offering targeted exercises in real time. VanLehn (2011, cited in Juraev, 2026) argues that ITS approaches the effectiveness of human tutoring.

In the context of foreign language teaching, Rizakhojayeva (2026) highlights several key advantages of AI. First, personalization of learning stands out as one of the most significant benefits. Machine learning algorithms adapt educational materials to individual student needs by analyzing their progress in real time and adjusting task difficulty. For example, platforms such as Duolingo and Grammarly use AI to correct errors, provide feedback, and create interactive exercises, which increases motivation and effectiveness.

According to a systematic review by Lun et al. (2026, cited in Rizakhojayeva, 2026), applications like Duolingo demonstrate moderate improvements in writing skills and vocabulary, with effect sizes ranging from 0.5 to 0.8 in controlled experiments with higher education students. This is achieved through error analysis and targeted exercises, allowing students to progress faster than in traditional classrooms.

In terms of feedback, AI provides instant error correction, which increases accuracy and motivation. Tools such as Grammarly and QuillBot analyze texts for grammar, style, and vocabulary, providing detailed explanations. According to Dong & Wang (2026, cited in Rizakhojayeva, 2026), this reduces the administrative burden on teachers by 15-20%, allowing them to focus on creative aspects of teaching. This is particularly useful for large groups where manual grading takes considerable time.

The most compelling quantitative data comes from the Chinese study described in Sharipova & Rsaliyev (2026). The experiment involved 60 students with the same level of English proficiency, divided into a control group (traditional methods) and an experimental group (learning with AI). Over ten weeks, the experimental group demonstrated:

- statistically significant improvement in language skills compared to the control group;
- reduced time for information perception and assimilation;
- increased levels of motivation and self-regulated learning.



Juraev (2026) adds that AI technologies can improve access to education for students with disabilities. For example, speech recognition and text-to-speech systems support learners with visual or hearing impairments. AI also enables remote learning, making education more accessible globally.

2. Risks, Limitations, and Cultural Irrelevance

If the Chinese study demonstrates the potential of AI, the research conducted in Iran and Indonesia (Rsaliyev, 2026) reveals systemic limitations. The key finding of the Iranian study is that teachers did not passively accept AI recommendations but actively interpreted them considering the cultural context. Educators adjusted algorithmic assessments by adding a category of "cultural relevance" because the neural network did not account for the features of Persian rhetorical tradition, where direct criticism is a sign of strong argumentation. Without this adjustment, the AI assessments were invalid.

This observation echoes the argument of Juraev (2026), who emphasizes that algorithmic bias can lead to unfair outcomes for certain groups of students. More broadly, as Selwyn (2019, cited in Juraev, 2026) points out, replacing human interaction with machine assessment risks dehumanizing education.

Rizakhojayeva (2026) identifies several serious challenges associated with AI implementation. First, ethical issues: algorithms can reinforce biases if training data is unbalanced, leading to discrimination based on linguistic or cultural characteristics. Second, the loss of the human factor -AI cannot convey emotional support or cultural context, which is critical for deep language understanding. Teachers may face resistance to change, as well as technical problems such as data privacy and dependence on the internet.

Even more revealing is the Indonesian study within the SPEAK-BOT framework (Rsaliyev, 2026). Four groups of students performed speaking tasks where AI prompts served not as ready-made answers but as triggers for discussion. Interaction quality was assessed using four parameters: turn-taking, elaboration, responsiveness, and coherence of discussion.

The results revealed dramatic variability. One group achieved maximum scores across all parameters, using AI prompts as a springboard for in-depth dialogue, where students adapted, challenged, and developed the proposed AI formulations. Another group showed minimal results: students passively copied AI answers



without engaging in meaningful interaction, leading to fragmented discussion. This contrast, as Rsaliyev (2026) rightly notes, demonstrates that AI can both strengthen and weaken collaborative learning -depending on whether students perceive AI prompts as a source of ready-made answers or as a catalyst for joint discussion.

To this are added psychological risks. As noted in Sharipova & Rsaliyev (2026) with reference to Kravtsova (2024), when knowledge is obtained too easily (through a ready-made answer from a neural network), neural connections do not have time to form properly, and the value of such knowledge for the psyche is significantly lower. Chatbots also often provide generic or factually incorrect responses, and students are not always able to formulate a correct prompt, especially in a foreign language.

Rizakhojayeva (2026) further notes that teachers often express concerns about loss of control: "AI does not teach empathy, which is important for language learning." Survey data from 200 students and 50 teachers in Kazakhstan (Rizakhojayeva, 2026) revealed that 70% of teachers agreed with the statement that AI reduces human contact, while 65% agreed that AI raises ethical problems. Students, while generally more enthusiastic (40% fully supportive), also expressed concerns about technological dependence.

3. Theoretical Model: Three-Level Distribution of Functions

Based on a synthesis of empirical data from China, Iran, Indonesia, Russia, and Kazakhstan, as well as the theoretical conclusions of Juraev (2026), Rizakhojayeva (2026), and Sharipova & Rsaliyev (2026), the following hybrid model for the distribution of functions is proposed.

Level 1: Technical-Diagnostic (AI Dominance)

At this level, AI performs tasks that require high data processing speed and do not involve deep contextual interpretation. These include:

- automated checking of formal speech parameters (grammar, syntax, lexical diversity);
- identification of statistical error patterns not obvious during manual checking (as in the Iranian study -AI detects systematic errors that a teacher might not notice for years);



- generation of varied exercises and adaptive learning materials taking into account the student's level and individual difficulties;
- 24/7 language practice with immediate feedback (development of automaticity).

Juraev (2026) confirms that such systems (including NLP for evaluating written responses) reduce the teacher's workload and allow time to be reallocated toward more meaningful interaction. Rizakhojayeva (2026) adds that AI can automate the analysis of all processes: from teacher selection to specific task choice, with homework checking and material that was not properly mastered automatically assigned for repetition and reinforcement.

Level 2: Interpretative-Adaptive (Collaboration, Co-piloting)

This level assumes that AI provides analytical data while the teacher performs pedagogical interpretation. This includes:

- adaptation of AI analytics to cultural and individual characteristics of learners (Iranian study: adding a "cultural relevance" category);
- generation of AI prompts for group discussions and organization of their critical evaluation (SPEAK-BOT framework);
- joint design of assessment rubrics combining quantitative AI data with qualitative teacher judgments.

As Rsaliyev (2026) emphasizes, it is at this level that the problem of the "black box" of algorithms is solved: the teacher does not blindly accept AI recommendations but actively interprets them in the specific pedagogical context.

Level 3: Motivational-Reflective (Teacher Dominance)

At this level, functions that cannot be delegated to AI without the risk of dehumanization are retained:

- strategic goal-setting and long-term learning trajectory planning (considering student motivation, abilities, and life plans);
- emotional support, anxiety reduction, and motivation maintenance -AI is incapable of empathy;
- organization of live communicative interaction (discussions, debates, role-playing games) requiring attention to non-verbal signals;



- development of critical thinking through analysis of AI-generated content - teaching students to distinguish reliable from unreliable sources and identify algorithmic bias.

Juraev (2026) in this context references Holmes et al. (2019), arguing that AI should complement rather than replace human educators. Rizakhojayeva (2026) cites Turayeva (2024), who emphasizes that the teacher shapes personality, attitudes toward the world, and worldview - a fundamentally non-algorithmizable function.

4. Practical Recommendations and Institutional Conditions

4.1. For Teachers

The key transition is from knowledge transmitter to learning environment architect. This requires the development of competencies in prompt engineering -the ability to formulate queries that stimulate reflection rather than the production of ready-made answers. As the Iranian study (Rsaliyev, 2026) showed, critical reflection on AI recommendations is becoming a key professional competence of the modern educator.

Teachers are recommended to:

- include assignments in the learning process that require students to critically evaluate AI-generated content;
- use AI analytics to identify hidden problems in material comprehension;
- explain to students the difference between "knowledge as an answer" and "knowledge as a process";
- maintain a balance between AI-assisted and human-interactive activities.

Rizakhojayeva (2026) adds that teachers need training in digital skills to effectively integrate AI into their pedagogical practice. Without such training, resistance to change remains high.

4.2. For Curriculum Developers

The SPEAK-BOT framework (Rsaliyev, 2026) demonstrates that AI tools should be embedded in structures where prompts act as discussion catalysts rather than sources of ready-made answers. Curriculum developers are advised to:

- include AI literacy modules in curricula, teaching students to interact critically with neural networks;



- design hybrid learning environments where AI handles routine tasks and teachers focus on higher-order thinking and emotional engagement;
- ensure that assessment rubrics combine quantitative AI metrics with qualitative human judgment.

Sharipova & Rsaliyev (2026) emphasize that the ideal combination is traditional teaching methods alongside computer-based learning, where AI acts as an effective assistant analyzing the process but not replacing the living teacher.

4.3. For the Institutional Level

There is a need to create ethical and methodological frameworks for AI use that take into account the specifics of the subject area and cultural context. The Iranian study (Rsaliyev, 2026) irrefutably proves that standardized algorithmic assessments cannot be applied uniformly without consideration of cultural characteristics.

Institutions must provide:

- technological infrastructure (access to verified AI tools, stable internet connection);
- policies for protecting student data from leaks and misuse (Juraev, 2026);
- professional development programs for teachers in AI;
- ethical guidelines addressing algorithmic bias and cultural relevance.

Rizakhojayeveva (2026) warns that the risk of information overload for students, without consideration of individual learning paces, remains a serious concern.

5. Discussion: From Instrumentalism to Pedagogical Architecture

A comparative analysis of the four studies reveals a key paradox. In China (Sharipova & Rsaliyev, 2026), AI showed an unequivocally positive effect on academic performance and motivation. In Iran (Rsaliyev, 2026), the same AI without cultural correction produced invalid assessments. In Indonesia, the same SPEAK-BOT framework led to polar opposite results depending on the group's learning strategy. In Kazakhstan (Rizakhojayeveva, 2026), survey data showed that while 70% of students agreed that AI improves personalization, 65% of teachers expressed concerns about ethical problems and loss of human contact.

This means that the effectiveness of AI is determined not so much by the technical characteristics of the neural network as by the **pedagogical design** in which it is



embedded. As Juraev (2026) convincingly states: "The future of AI in education lies in its responsible and ethical integration." Responsible integration presupposes:

- transparency and explainability of AI systems (not a "black box");
- consideration of long-term consequences (not only cognitive but also socio-emotional);
- cross-cultural validation of algorithms;
- preservation of the teacher's role as a mentor and personality shaper.

Thus, the proposed three-level model allows us to resolve the false dichotomy of "teacher or neural network." Instead of replacement, a functional redefinition of roles occurs: AI takes over routine diagnostics and generation, while the teacher retains goal-setting, emotional support, and the development of critical thinking. As Rizakhojayeva (2026) concludes, AI opens new horizons, but success depends on balanced implementation that minimizes risks and maximizes benefits for diverse educational contexts. Juraev (2026) adds that collaborative approaches involving educators, policymakers, and technology developers are essential for maximizing the benefits of AI. Future research should focus on long-term impacts, cross-cultural applications, and the development of inclusive AI systems.

Conclusion

The analysis of empirical studies conducted in China, Iran, Indonesia, Russia, and Kazakhstan, as well as the theoretical synthesis of the works of Juraev (2026), Rizakhojayeva (2026), Rsaliyev (2026), and Sharipova & Rsaliyev (2026), allows us to formulate the following conclusions.

1. AI possesses significant adaptive potential: automation of diagnostics, personalization of learning trajectories, and 24/7 feedback objectively improve formal academic performance indicators (Chinese study; Rizakhojayeva, 2026).

2. Without cultural and pedagogical interpretation, AI risks reinforcing inequality and algorithmic bias: the Iranian study demonstrates the need for a "cultural relevance" category, while the Indonesian study shows the variability of effects depending on the learning strategy.



3. The optimal approach is a three-level hybrid model, where functions are distributed between AI (technical-diagnostic level), collaboration (interpretative-adaptive level), and the teacher (motivational-reflective level).

4. The key factor in effectiveness is pedagogical design, not the power of the neural network. As Sharipova & Rsaliyev (2026) rightly conclude, the ideal is a combination of traditional teaching methods and computer-based learning, where AI acts as an effective assistant, analyzing the process but not replacing the living human teacher.

5. Institutional support and teacher training are essential: without ethical frameworks, cultural validation, and digital competence development, AI integration risks failure (Rizakhojayeva, 2026; Juraev, 2026).

Future research should focus on the long-term analysis of the socio-emotional consequences of AI implementation, the development of cross-cultural standards for algorithmic fairness, and the creation of open educational resources on AI literacy for teachers and students.

REFERENCES

1. Juraev, Sh. (2026). Artificial Intelligence in Education: Opportunities, Challenges, and Future Directions. Proceedings of the International Scientific and Practical Conference "Sustainable Development of Science and Education: New Strategies in the Era of Artificial Intelligence and Digital Technologies", Vol. 1, pp. 1-4. Shymkent: Central Asian Innovation University. DOI: 10.5281/zenodo.19856221.
2. Rizakhojayeva, G. (2026). Use of Artificial Intelligence in Foreign Language Teaching: Advantages and Challenges. Collection of Materials of the International Scientific and Practical Conference "Development of Philology: Innovation, Methodology and Applied Research", pp. 227-233. Tashkent: University of Science and Technology. DOI: 10.5281/zenodo.19877258.
3. Rsaliyev, A.T. (2026). Hybrid Model of Foreign Language Teaching: Optimal Distribution of Functions between Teacher and Artificial Intelligence. Proceedings of the International Scientific and Practical Conference "Sustainable Development of Science and Education: New



- Strategies in the Era of Artificial Intelligence and Digital Technologies", Vol. 1, pp. 3-8. Shymkent: Central Asian Innovation University.
4. Sharipova, F., & Rsaliyev, A. (2026). Teacher or Neural Network: Finding a Balance of Functions in Teaching English. Collection of Materials of the International Scientific and Practical Conference "Development of Philology: Innovation, Methodology and Applied Research", pp. 277-283. Tashkent: University of Science and Technology. DOI: 10.5281/zenodo.19877719.
 5. Kravtsova, A.G. (2024). The Influence of Artificial Intelligence on Learning English. World of Science, Culture, Education, No. 4 (107), pp. 238-241.
 6. Turayeva, N. (2024). Benefits of AI in English Language Classes. Foreign Linguistics and Linguodidactics, Vol. 2, Iss. 4, pp. 307-312.
 7. Tazhenova, S. (2025). Application of Artificial Intelligence in Teaching English. Nukus: Nukus State Pedagogical Institute, Vol. 1, pp. 67-68.
 8. Holmes, W., Bialik, M., & Fadel, C. (2019). Artificial Intelligence in Education. Boston: Center for Curriculum Redesign.
 9. VanLehn, K. (2011). The Relative Effectiveness of Human Tutoring, Intelligent Tutoring Systems, and Other Tutoring Systems. Educational Psychologist, Vol. 46(4), pp. 197-221.