Region - Educational Research and Reviews, 2025, Volume7, Issue7
DOI: 10.32629/rerr.v7i7.4285
ISSN Online: 2661-4634
ISSN Print: 2661-4626

Research status of artificial intelligence in Russian language teaching: a literature review

Jing CHENG

Shihezi University, Shihezi 832003, China

Abstract: With the rapid advancement of artificial intelligence technology, its application in foreign language education has become increasingly widespread and profound. This study analyses literature related to artificial intelligence/AI and Russian language teaching based on search data from China National Knowledge Infrastructure (CNKI), outlining the current research status and practical applications of AI technology in Russian language instruction. The article first examines the theoretical foundations underpinning AI-enhanced Russian language instruction, including generative learning theory, embodied cognition theory, and the intercultural communicative competence model. Subsequently, it elaborates on specific application scenarios and empirical outcomes of AI technology across four dimensions: vocabulary and grammar instruction, translation competence development, innovative curriculum models, and the construction of intelligent teaching environments. Finally, it summarises existing research challenges such as algorithmic bias, insufficient digital literacy among teachers and learners, and ethical risks. It also outlines future research directions, including enhancing cultural databases, expanding practical training scenarios, and establishing an ecosystem for cultivating multi-skilled talent. This paper aims to provide reference for future research and practice, promoting the deep integration of AI technology with Russian language teaching.

Keywords: Russian language teaching; artificial intelligence/AI; research status

1 Introduction

Artificial intelligence technology is driving profound transformations in global educational ecosystems. In Russian language teaching, traditional instructional models face multiple challenges, including insufficient applicability, lack of personalization, limited interactivity, scarcity of high-quality teaching resources, and disconnection from students' future career needs [1]. The breakthroughs in generative AI offer new pathways to address these pain points.

In recent years, domestic scholars have conducted diverse theoretical explorations and empirical research on AI-empowered Russian teaching, covering classroom practices, instructional model reforms, translation competence reconstruction, and macro-level talent cultivation systems. However, systematic review studies remain inadequate. The data for this research is sourced from the CNKI academic database. Advanced retrieval was performed using CSSCI, ASAD, AMI, and core journal databases with the query: *(Subject: Artificial Intelligence * Russian (Exact)) OR (Subject: Artificial Intelligence * Russian Teaching OR AI * Russian (Exact))*.

Through combined retrieval, 13 valid studies were ultimately identified as research data. These were then analyzed to

map the current state of AI research in Russian language teaching, its application outcomes, existing challenges, and future trends, thereby providing a clear roadmap for subsequent research and development in this field.

2 Theoretical foundations and research scope of AI-empowered russian teaching

The application of AI in Russian teaching is not merely a technical overlay but is supported by solid theoretical frameworks. Existing research primarily builds on the following theories:

First, generative learning theory. The SOI model (Select-Organize-Integrate) proposed by Fiorella & Mayer provides core support for the "input-reproduction-recreation" teaching model. This theory emphasizes learning as an active process of meaning construction by learners. AI serves as a "cognitive collaborator" in this process, generating multimodal content to help learners connect new information with prior knowledge and experiences.

Second, embodied cognition theory. This theory highlights the close relationship between cognitive process and bodily perceptions/kinesthetic experiences. In Russian teaching, AI technology can create multisensory learning environments (e.g., virtual costume museums) through virtual reality and haptic simulations, thereby enhancing vocabulary retention and semantic understanding.

Third, the three-dimensional intercultural communicative competence model. Byram's model (knowledge/skills/awareness) provides a critical foundation for AI-driven intercultural teaching. AI can construct databases integrating Chinese and Russian cultural symbols and systematically enhance students' intercultural sensitivity and communicative competence through project-based tasks (e.g., the "Designer Going Global" project).

In terms of research scope, existing literature can be categorized into four directions:

(1) AI-based classroom practices and model construction, focusing on micro-level innovations like vocabulary/grammar teaching and cross-cultural project design;

(2) Curriculum reform and instructional model innovation, exploring deep integration of PBL and blended learning models with AI;

(3) Translation competence reconstruction and pedagogy, emphasizing cultivation of technical skills (e.g., CAT tools, machine translation post-editing);

(4) Macro-level talent cultivation systems and smart teaching environments, involving ecological niche development, resource platforms, and composite talent frameworks. These studies collectively outline a multilevel research landscape of AI-Russian teaching integration.

3 Practical applications of AI in Russian language teaching

3.1 Vocabulary and grammar teaching: from personalization to intelligence

AI demonstrates significant efficacy in knowledge-intensive modules like vocabulary and grammar. Liao et al. (2025) developed a three-dimensional "input-reproduction-recreation" model enabling *five-senses-linked* vocabulary acquisition. For example, in a "Global Costume Museum" virtual scenario, students observe Sino-Russian traditional costumes in 360°, with clickable components triggering Russian vocabulary subtitles. Haptic simulations (e.g., silk texture for"шёлк") increase vocabulary retention efficiency by 30%.

In grammar teaching, Bai Yun reformed courses using problem-based learning (PBL) and proposed the PAPPP model (problem-acquisition-presentation-practice-production) [2]. AI acts as a personalized learning assistant: providing customized grammar videos/practice resources during the *knowledge acquisition* phase and offering diverse output formats with intelligent evaluations during the *production* phase. He Yangyang utilized Russia's YaGPT tool for elementary Russian courses [3]. Students engaged in grammar sentence construction, error correction, and lexical differentiation through tailored command templates, boosting learning motivation (65.22% reported increased interest).

3.2 Translation competence reconstruction: human-machine collaboration and technical empowerment

AI has revolutionized Russian translation pedagogy and practice. Studies agree that AI complements rather than replaces translators, advancing a human-machine collaboration paradigm [4]. Market surveys indicate industry demands have shifted from traditional "bilingual competence" to translation technology capabilities, including CAT tool application, terminology management, post-editing, and information retrieval.

Wang Jinghui described computer-assisted translation (CAT) courses for Russian MTI students, covering information literacy, SDL Trados operation, corpus technology, and subtitling [5]. Mastery of CAT tools is now essential for professional translators. Hou Lina explored ChatGPT-generated Russian test question banks, proposing *imitation* (based on exam patterns) and *customization* (parameter-defined output) methods [6]. Generated questions met pedagogical requirements in difficulty, accuracy, and novelty, offering new pathways for digitizing assessments.

3.3 Course innovation and instructional model reconstruction

AI has catalyzed innovative Russian teaching models. Liao et al.'s (2025) "Designer Going Global" project exemplifies interdisciplinary integration, where students use AI tools to fuse Chinese-Russian clothing patterns and provide cultural annotations in Russian, unifying language learning and cultural internalization.

Bai (2025) deeply integrated AI into PBL models, restructuring Russian grammar courses. AI assists in creating communicative scenarios during *problem identification*, enables personalized learning during *knowledge acquisition*, enriches interactions during *lecture and practice*, and diversifies evaluation methods during *output*, forming a "teacher-student-machine" tripartite learning ecosystem.

Han et al. employed ChatGPT as a virtual teaching assistant in "Russian Literature History" courses. It facilitated terminology previews, open-ended discussions, and post-class reflections, addressing content-heavy passive learning while cultivating critical thinking.

3.4 Smart teaching environment construction and talent cultivation

Macroscopically, research focuses on building holistic smart teaching ecosystems. Su Liwei applied educational ecology theory to propose military academy strategies: achieving personalized teaching via AI analytics [7]; integrating resources under the "principle of optimal moderation"; and using VR/AR to create *virtual battlefield environments* simulating military tasks to enhance language application in authentic contexts.

Zheng Guangjie constructed a conceptual model of smart teaching for Russian studies through grounded theory [8]. The model positions intelligent technology and teaching resources as *external support*, teaching strategies/management/learning methods as internal planning, and their synergy drives the ultimate outcome of teacher transformation and student development.

Addressing new quality productivity demands for composite talents, Li Axue proposed systemic cultivation paths: vertical integration of basic-secondary-tertiary education; horizontal convergence breaking disciplinary barriers via optimized "Russian +" curricula [9]; and multi-agent collaborative education with digitalized teaching to holistically enhance talent quality.

4 Challenges and reflections

Despite notable achievements, this study identifies urgent challenges through literature review:

Technical and data limitations: AI-generated content risks algorithmic bias and cultural stereotypes. Inadequate specialized corpora for Russian (particularly culture-rich contexts) may cause "cultural annotation blind spots" or inaccuracies.

Insufficient digital literacy: Teachers struggle with role transitions and lack AI-pedagogical competence. Students may over-rely on technology, weakening autonomous thinking and interpersonal skills.

Ethical risks: Data privacy, academic integrity (e.g., AI-generated assignments), human-machine responsibility boundaries, and value alignment require effective ethical frameworks.

Ecosystem fragmentation: AI-teaching integration lacks compatibility with existing curricula and assessment systems. Universal solutions ignore significant differences across educational stages (basic/higher) and institution types (military/comprehensive/vocational).

Resolving these challenges demands collaborative efforts among educators, researchers, and administrators, balancing technological adoption with pedagogical integrity through systematic planning.

5 Conclusion and prospects

AI is reshaping Russian teaching ecosystems by empowering vocabulary/grammar learning, reconstructing translation competence, innovating course models, and building smart environments. Its efficacy in improving learning efficiency, motivation, and intercultural competence is preliminarily validated.

However, current integration remains at an exploratory stage. Future priorities include:

Deepening resource development: Building large-scale, high-quality parallel corpora and cultural databases for Chinese-Russian contexts to eliminate bias and enhance depth.

Expanding practical scenarios: Leveraging VR/AR/metaverse for immersive simulations (e.g., "virtual business negotiations") to advance higher-order thinking.

Elevating stakeholder literacy: Training teachers as learning designers/facilitators while fostering students' critical thinking and responsible AI use.

Constructing composite ecosystems: Cultivating interdisciplinary talents with language proficiency, technical mastery, and cultural empathy by breaking academic silos and enabling school-enterprise collaboration.

AI-Russian teaching integration is inevitable. Future research must be systematic and forward-looking, embracing innovation while safeguarding educational essence and humanistic values to nurture pillar talents for national strategies.

Acknowledgments

This work was supported by the project "A Study on the Perception of the Belt and Road Initiative by Mainstream Media in Central Asian Countries" (Grant No. ZYJY2022008), hosted by the Center for Central Asian Education and Humanities Exchange Research, Shihezi University.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

References

[1] Liao YX, et al. 2025. AI-empowered immersive cross-cultural Russian teaching innovation: classroom practice of the "input-reproduction-recreation" model in "designer going global". University Education.

[2] Bai Y. 2025. PBL-oriented reform and practice of Russian grammar courses in the AI era. *Educator (Higher Education Forum)*, 15.

[3] He YY. 2024. Exploration and reflection on integrating generative AI tools in elementary Russian courses. *Heilongjiang Education (Theory & Practice)*, 8.

[4] Li SX, et al. 2019. Research on Russian translation competence in the AI era. *Journal of Theoretical Observation*, 6.

[5] Wang JH, et al. 2025. Teaching practice and reflection on computer-assisted translation courses for Russian MTI in the AI era. *English Square*, (01).

[6] Hou LN, et al. 2024. Generating Russian test question banks using ChatGPT. *Zhejiang Examinations*, 11.

[7] Su LW, et al. 2025. Constructing an educational ecological environment for military academy Russian courses in the AI era. *Education and Teaching Forum*, 27.

[8] Zheng GJ. 2024. Conceptual dimensions and enhancement strategies for smart teaching in Russian academia: a grounded theory study based on Russian literature. *Chinese Russian Teaching*, 43(03): 85-95.

[9] Li A. 2019. Constructing a ubiquitous learning resource platform for Russian in universities: a review of introduction to big data and AI. *China Sciencepaper*.

About the Author

Jing Cheng (1985-), Female, Han ethnicity, native of Hebei Province. Associate Professor at Shihezi University. Research Focus: Russian language, Central Asian regional studies.