2025 Volume 3, Issue 4
Educational Innovation Research
ISSN: 3029-1844(Print)
ISSN: 3029-1852(Online)

The Practice and Application of AI in the Teaching of "Japanese Audio-Visual-Speaking" in the AI Era

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Abstract

In the current era of rapid development of artificial intelligence (AI) technology, the field of education is undergoing profound transformations[1]. As a crucial component of the Japanese language teaching system, the traditional teaching model of "Japanese Audio-Visual-Speaking" faces numerous challenges in cultivating students' comprehensive language application abilities. Against the backdrop of the AI era, this paper delves into the practice and application of AI technology in the teaching of "Japanese Audio-Visual-Speaking." By analyzing the current applications of AI technology in Japanese speech recognition, personalized learning, and virtual simulation scenario construction, combined with specific teaching practice cases, this paper elaborates on the innovative breakthroughs brought by AI technology to "Japanese Audio-Visual-Speaking" teaching, including advantages such as improved learning efficiency, enhanced interactivity, and personalized instruction. At the same time, it objectively examines the challenges faced during the application of AI technology, such as technological dependence, the transformation of teachers' roles, and data security, and provides an outlook on the future development trends of AI technology in "Japanese Audio-Visual-Speaking" teaching, offering references for promoting the modernization of Japanese audio-visual-speaking instruction.

Keywords

artificial intelligence
Japanese audio-visual-speaking
teaching practice
personalized learning
virtual simulation

Online publication: May 26, 2025

1. Introduction

1.1. Educational Development Background in the AI Era

In recent years, artificial intelligence technology has experienced explosive growth, achieving remarkable breakthroughs in fields such as natural language processing, computer vision, and machine learning. These technological advancements have provided powerful momentum and support for innovation and transformation in education, driving the shift from traditional teacher-centered models to student-centered approaches. New educational concepts like personalized learning and intelligent teaching are gradually becoming reality. Against the global trend of educational informatization,

the deep integration of AI technology with subject teaching has become an inevitable direction for educational development.

1.2. Importance and Current Status of "Japanese Audio-Visual-Speaking" Teaching

The "Japanese Audio-Visual-Speaking" course is one of the core components of Japanese language education, with its primary objectives being to develop students' Japanese listening comprehension, oral expression, and comprehensive communicative abilities [2]. In traditional teaching models, instructors mainly rely on textbooks, audio tapes, and multimedia courseware, resulting in a standardized and uniform teaching process that struggles to fully meet students' individualized learning needs. As societal demands for comprehensive Japanese language skills continue to rise, the limitations of traditional teaching methods- in terms of instructional effectiveness, student engagement, and resource updating- are becoming increasingly apparent, creating an urgent need to introduce new technologies and methods to enhance teaching quality.

1.3. Necessity of Applying AI Technology to "Japanese Audio-Visual-Speaking" Teaching

AI technology possesses robust capabilities in data processing, intelligent analysis, and adaptive learning, offering diversified solutions for "Japanese Audio-Visual-Speaking" instruction. Applying AI technology to this course can not only overcome the constraints of traditional teaching models by providing students with richer, more dynamic learning resources and scenarios, but also deliver personalized guidance based on students' learning characteristics and needs, while providing real-time feedback on learning outcomes. This approach can effectively boost students' learning motivation and efficiency, meeting the requirements for Japanese language talent cultivation in the new era.

2. The Current Application of AI Technology in "Japanese Audio-Visual-Speaking" Teaching

2.1. Application of Speech Recognition and Evaluation Technology

Speech recognition technology is one of the most widely applied areas of AI in language teaching. In "Japanese Audio-Visual-Speaking" courses, AI-based speech recognition systems can accurately identify students' Japanese pronunciation, compare it with standard pronunciation, and provide real-time feedback on issues such as vowel length, voicing of consonants, pitch accent, and other pronunciation errors, along with corrective suggestions.

2.2. Application of Natural Language Processing Technology

Natural language processing (NLP) enables computers to understand and process Japanese text and speech. In listening comprehension training, AI systems can automatically adjust the difficulty of listening materials based on students' proficiency levels, generate personalized listening exercises, and analyze and evaluate students' comprehension. For spoken dialogue practice, NLP-powered intelligent dialogue systems can engage in real-time conversations with students, simulating authentic Japanese communication scenarios to improve fluency and accuracy. For example, some online Japanese learning platforms have developed AI chatbots that can discuss various topics with students and provide semantic analysis and feedback on their responses.

2.3. Application of Virtual Reality (VR) and Augmented Reality (AR) Technology

VR and AR technologies create immersive learning environments for "Japanese Audio-Visual-Speaking" courses. For instance, when viewing images of Japanese landmarks, AR can overlay relevant Japanese descriptions and dialogue scenarios, enhancing students' learning experience and memory retention. Currently, some university Japanese teaching labs have begun experimenting with VR technology for audio-visual-speaking instruction, achieving positive results.

2.4. Application of Intelligent Recommendation Systems

Intelligent recommendation systems, powered by AI machine learning algorithms, analyze students' learning history, progress[3], and preferences to recommend suitable Japanese audio-visual-speaking resources, such as film clips, news reports, and dialogue exercises. For example, certain Japanese learning platforms automatically provide

listening materials and speaking practice topics tailored to students' proficiency levels and interests, ensuring precise resource matching and improving learning efficiency.

3. Practical Cases of AI Technology in Japanese Audio-Visual-Oral Teaching

3.1. Application of Personalized Learning Platforms in Comprehensive Japanese Audio-Visual-Oral Teaching

Some universities have collaborated with educational technology companies to develop personalized learning platforms for Japanese audio-visual-oral instruction. These platforms integrate a vast array of learning resources and utilize AI technology to personalize the learning process. In practice, students first complete a proficiency test provided by the platform, which then designs a tailored learning plan, setting goals and pathways based on the results. During the learning process, the platform tracks students' progress and performance in real time, automatically adjusting the content and difficulty according to their mastery level [4]. For example, if a student performs poorly on a specific type of listening exercise, the platform will increase the volume of such exercises and provide relevant hints and explanations. Additionally, the platform includes an interactive communication module, allowing students to engage in real-time discussions with teachers and peers to share learning experiences and insights.

The application of this personalized learning platform has effectively enhanced students' motivation and self-directed learning abilities. The platform's personalized recommendations and adaptive learning features enable students to achieve a sense of accomplishment with content suited to their proficiency level, thereby stimulating their interest in learning. At the same time, the accumulated student data provides teachers with valuable insights for pedagogical research and methodological improvements.

3.2. Practice of Virtual Simulation Scenarios in Cross-Cultural Communication Teaching for Japanese Audio-Visual-Oral Instruction

To enhance students' cross-cultural communication skills in Japanese, a language training institution used VR technology to construct virtual Japanese socio-cultural scenarios, such as traditional festival celebrations, business meetings, and family gatherings. In teaching practice, students wear VR devices to enter these virtual scenarios, assuming roles like tourists at a festival or employees in a business negotiation, and engage in Japanese conversations with NPCs (non-player characters). The VR system generates real-time feedback and plot developments based on students' language expressions and behaviors, simulating authentic cross-cultural communication scenarios.

This virtual simulation teaching practice allows students to experience the atmosphere of real Japanese socio-cultural settings in a safe and controlled environment, improving their ability to use Japanese in diverse contexts and enhancing their cross-cultural communication awareness. Students generally report that after practicing in virtual scenarios, they feel more confident when interacting with native Japanese speakers and are better able to understand and respond to different cultural situations.

4. Advantages of Applying AI Technology to Japanese Audio-Visual-Oral Teaching

4.1. Enhancing Learning Efficiency and Enabling Personalized Instruction

AI technology facilitates precise teaching tailored to individual student differences, creating customized learning plans and content for each student, thereby avoiding the "one-size-fits-all" drawbacks of traditional teaching. By intelligently analyzing student data, AI systems can quickly identify learning challenges and weaknesses, offering targeted resources and guidance [5]. For instance, in listening exercises, AI systems can recommend materials of varying difficulty levels based on students' proficiency, ensuring each student progresses within their zone of proximal development.

4.2. Increasing Interactivity and Engagement in Learning

AI technology introduces diverse interactive formats and engaging learning experiences to Japanese audio-visual-oral teaching. Applications like intelligent dialogue systems and virtual simulation scenarios allow students to

practice Japanese through interactions with machines or virtual characters, breaking the monotony of traditional classroom interactions. Furthermore, AI can enhance learning fun through gamification, point rewards, and other methods, boosting student motivation. For example, some Japanese learning apps design audio-visual-oral exercises as game levels, where students earn points and rewards by completing tasks, thereby increasing their enthusiasm for learning.

4.3. Providing Real-Time Feedback and Accurate Assessment

AI technology enables real-time, comprehensive evaluation of student performance, offering detailed feedback. In areas like pronunciation assessment, listening comprehension, and oral expression, AI systems can quickly and accurately diagnose learning issues, pinpointing areas for improvement and helping students adjust their strategies promptly. This real-time feedback mechanism allows students to continuously optimize their learning behaviors and improve outcomes. Simultaneously, AI systems provide teachers with objective, comprehensive data to support instructional decision-making and evaluation.

4.4. Expanding Teaching Resources and Learning Scenarios

AI technology transcends the limitations of traditional teaching resources, offering students a wealth of Japanese audio-visual-oral materials. Through the internet and AI algorithms, students can access the latest Japanese films, news, music, and more, broadening their learning horizons. Additionally, VR and AR technologies create diverse learning scenarios, enabling students to practice Japanese audio-visual-oral skills in various virtual environments. This addresses the lack of scenario diversity in traditional classrooms and enhances students' practical application of the language.

5. Challenges of Applying AI Technology to Japanese Audio-Visual-Oral Teaching

5.1. Over-Reliance on Technology and Uncertain Teaching Outcomes

Despite its advantages, excessive reliance on AI technology may lead to issues. For example, speech recognition technology may occasionally misjudge pronunciations, affecting students' self-assessment. If the recommendation algorithms are flawed, the suggested resources may not align with students' actual needs. Moreover, AI currently cannot fully replicate the emotional care and creative teaching of human instructors, limiting its effectiveness in fostering cross-cultural communication skills and emotional attitudes.

5.2. Shifting Teacher Roles and Demands for Professional Competence

In the AI era, Japanese audio-visual-oral teachers must transition from traditional knowledge transmitters to learning facilitators, curriculum designers, and student partners. This requires teachers to not only possess solid Japanese expertise and teaching skills but also understand the principles and applications of AI technology, enabling them to adeptly use AI tools and platforms [6]. However, many Japanese teachers currently have limited knowledge of AI, hindering their ability to leverage its full potential in teaching. The shift in roles and the need for upskilling present significant challenges.

5.3. High Costs and Barriers to Technology Adoption

Implementing AI technology in Japanese audio-visual-oral teaching requires substantial investment, including purchasing AI equipment, developing or licensing platforms, and training teachers. These high costs may impede widespread adoption. Furthermore, AI applications depend on robust hardware and network infrastructure, which may not be universally available, limiting their scalability.

6. Future Trends of Japanese Audio-Visual-Oral Teaching in the AI Era

6.1. Multi-Technology Integration Driving Instructional Innovation

In the future, AI will further integrate with big data, IoT, 5G, and other technologies, unlocking new possibilities for Japanese audio-visual-oral teaching. For example, combined with big data analytics, AI systems can more accurately predict student needs and trends, offering

hyper-personalized learning plans [7]. The integration of multiple technologies will drive the teaching model of "Japanese Audio-Visual-Oral Course" toward a more intelligent, personalized, and immersive learning platform [8] and development direction[8].

6.2. Deep Fusion of AI and Traditional Teaching

AI will not replace traditional teaching but will deeply integrate with it, creating complementary instructional models. Teachers will increasingly leverage AI's strengths in data processing and personalized guidance while retaining their role in emotional support and creative teaching. For instance, AI can handle pre-class assessments, in-class interactions, and post-class grading, while teachers lead discussions and cultural experiences, achieving a harmonious blend of AI and traditional methods.

6.3. Emphasis on Interdisciplinary Talent Development

As AI becomes ubiquitous in Japanese audio-visual-oral teaching, the demand for interdisciplinary competence among educators will grow. Future efforts must bridge Japanese studies with computer science, pedagogy, and psychology to cultivate professionals proficient in both Japanese language and culture and AI technology. Such talent will better design and implement AI-enhanced teaching solutions, driving innovation.

6.4. Data-Driven Instructional Decision-Making

The vast amount of student learning data accumulated through AI technology in teaching will become a valuable educational resource. In the future, the "Japanese Audio-Visual-Oral Course" will place greater emphasis on data-driven instructional decision-making. By conducting in-depth analysis of student learning data, educators can better understand students' learning characteristics and needs, optimize teaching content and methods, and enhance the precision and effectiveness of instruction. Additionally, based on analytical results, personalized learning paths tailored to students' abilities and interests can be designed [9]. Data-driven instructional decisions will also provide educational administrators with scientific evidence for policymaking, promoting the overall development and quality improvement of Japanese audio-visual-oral teaching.

7. Conclusion

In the AI era, Japanese audio-visual-oral teaching faces new opportunities and challenges. AI applications in speech recognition, natural language processing, and virtual reality offer powerful tools to improve teaching quality, enabling personalized instruction, real-time feedback, and rich learning scenarios. However, challenges like over-reliance on technology, shifting teacher roles, and data security must be addressed[10].

As AI technology evolves, its integration with Japanese audio-visual-oral teaching will deepen. We should embrace AI's transformative potential while proactively tackling challenges. Through multi-technology integration, blending AI with traditional teaching, fostering interdisciplinary talent, promoting data-driven decisions, and addressing ethical concerns, Japanese audio-visual-oral teaching can innovate and lay a solid foundation for cultivating highly skilled professionals with strong language and cross-cultural communication abilities.

Funding

Exploration and Application of AI in the Teaching Model of "Japanese Audio-Visual-Speaking" (Project No. 2025JGZD132)

Disclosure statement

The author declares no conflict of interest.

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