

## Learning Languages in the 21st Century: the Digital and Ai Transformation

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**ABSTRACT:** The article deals with the problem of the learning languages in the 21<sup>st</sup> century: the digital and AI transformation. The aim of this article is to explore and clarify the transformative impact of digital technologies on foreign language teaching. This article explores the evolution of language learning from classroom-based methods to the incorporation of digital instruments, Artificial Intelligence (AI), and Information and Communication Technologies (ICT). Digital tools such as language learning applications, online dictionaries, multimedia resources, and language exchange platforms have made language acquisition more accessible and engaging. AI technologies introduce intelligent tutoring systems, personalized learning experiences, and advanced language processing capabilities, while ICT tools like Learning Management Systems (LMS) and virtual classrooms facilitate effective communication and information processing.

The benefits of these advancements are multifaceted, including increased accessibility and flexibility, enhanced engagement and motivation, personalized learning paths, and improved collaboration and communication. However, challenges such as the digital divide, variability in resource quality, data privacy concerns, and the need for continuous teacher training must be addressed. Looking ahead, future trends such as augmented and virtual reality, blockchain technology, AI-driven content creation, IoT integration, and multimodal learning experiences promise to further transform the landscape of language education. These innovations will pave the way for more immersive and interconnected language learning experiences, contributing to a more multilingual global society.

**KEYWORDS:** digital technologies, language learning, artificial intelligence, information and communication technologies, personalized learning

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### INTRODUCTION

The field of education has undergone significant transformations over the past few decades, with digital technology playing a central role in reshaping how we teach and learn. In the realm of foreign language education, the integration of digital instruments, Artificial Intelligence (AI), and Information and Communication Technologies (ICT) has introduced new methodologies, tools, and practices that have significantly improved the learning experience. This article explores the various digital applications, technologies, and innovations that have revolutionized foreign language teaching, highlighting their benefits, challenges, and future prospects.

### THE MAIN MATERIAL

#### The Evolution of Foreign Language Teaching

Historically, foreign language teaching relied on traditional classroom-based methods, including lectures, textbooks, and memorization. While these traditional methods have their merits, they often lack the engagement and interactivity that modern learners expect. The internet and digital technologies, however, have introduced a lot of resources and tools that facilitate more interactive and engaging learning experiences. Thus, the shift from conventional teaching to digital methodologies marks a significant evolution in educational practices.

Traditional language teaching methods primarily focused on face-to-face interaction, the use of textbooks, and the grammar-translation method. These methods emphasized the memorization of vocabulary and grammar rules, often through repetitive exercises and direct instruction. While effective to some extent, these approaches could be monotonous and less engaging for learners, potentially leading to lower motivation.

The study has shown that this generation prefers interactive forms of education to traditional lectures and discussions [7].

As for the digital technologies, online interaction through video conferencing tools allows for flexible scheduling and remote learning. Students can connect with native speakers from around the world, providing authentic language practice. Digital content, including e-books, online articles, and multimedia resources, offers a more dynamic and interactive learning experience. It allows for the integration of various media formats and real-time updates. Immersive and interactive learning methods use multimedia,

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simulations, and gamification to create an engaging learning environment. These methods help students develop all language skills (listening, speaking, reading, writing) in a more balanced and enjoyable way. Contextual learning places language in real-life situations. Digital tools provide contextual practice through interactive dialogues, virtual environments, and practical exercises, making learning more meaningful and relevant.

An incorporation of digital tools into a practice of teaching foreign languages is recognized in foreign studies as one of the basic conditions of increasing efficiency of education as well as in the professional activity to follow [1; 2].

The evolution of foreign language teaching from traditional methods to digital technologies has brought about profound changes in the educational landscape. While traditional methods laid a strong foundation with their structured approaches, digital technologies have opened up new prospects for interactive, engaging, and personalized learning experiences. By considering the strengths of both traditional and digital methods, educators can create a comprehensive and effective language learning environment that meets the diverse needs of students in today's digital age.

### Digital instruments for learning foreign languages

Digital instruments encompass a wide range of tools and platforms designed to improve language learning through technology.

**Table 1. Digital Methods**

<b>Digital Instruments in Language Learning</b>	<b>Language learning applications</b>	<b>Duolingo:</b> uses gamification to motivate learners through points, levels, and streaks.	These popular language learning apps offer gamified lessons, interactive exercises, instant feedback, and a structured learning path to engage learners. They cover various aspects of language learning, including vocabulary, grammar, listening, and speaking. They offer flexibility, allowing learners to practice anytime and anywhere. The use of games and rewards systems keeps learners motivated, while the personalized feedback helps learners identify and improve their weak areas.
		<b>Babbel:</b> offers structured courses focusing on practical conversation skills.	
		<b>Rosetta Stone:</b> emphasizes immersive learning using visual and auditory cues.	
	<b>Online dictionaries and translation tools</b>	<b>Google Translate:</b> provides instant translation services across numerous languages.	These tools provide instant translations, contextual examples, and pronunciation guides. They offer quick assistance with understanding and using new vocabulary, making them valuable resources for independent learning and real-time communication.
		<b>Reverso:</b> offers contextual translations and examples.	
		<b>Linguee:</b> combines dictionary and translation search engine functionalities.	
<b>Multimedia resources</b>	<b>Podcasts and videos:</b> platforms like YouTube and Spotify host language learning channels and podcasts.	<b>Audio and Video Content:</b> Platforms like YouTube and educational websites provide access to a vast array of audio and video content, including language tutorials, movies, music, and podcasts. These resources help students improve their listening and comprehension skills. <b>Interactive Software:</b> Language learning software often includes interactive elements such as animations, quizzes, and games that make learning fun and engaging. Multimedia resources cater to different learning styles and provide engaging, context-rich content that supports	
	<b>Interactive storybooks and audiobooks:</b> enhance listening and comprehension skills.		

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			language acquisition.
	<b>Language exchange platforms</b>	<b>HelloTalk:</b> Connects learners with native speakers for language exchange.	These platforms enable real-time interaction with teachers and native speakers, facilitating authentic communication and cultural exchange. Virtual classrooms and language exchange platforms provide opportunities for learners to practice speaking and listening skills in realistic contexts, promoting fluency and confidence.
		<b>Tandem:</b> Facilitates language practice through text, audio, and video chats.	
<b>Artificial Intelligence in Language Learning</b>	<b>Intelligent Tutoring Systems (ITS)</b>	<b>AI-driven Feedback:</b> provides instant, personalized feedback on language exercises.	<b>Personalized Learning Paths:</b> AI algorithms analyze student performance and adapt the learning path to meet individual needs. This personalization ensures that students receive targeted practice and support in areas where they struggle. <b>Chatbots and Virtual Tutors:</b> AI-powered chatbots provide instant feedback and conversation practice. Virtual tutors simulate real-life interactions, helping students develop their speaking and listening skills in a safe environment.
		<b>Adaptive Learning:</b> tailors lessons based on the learner's progress and proficiency level.	
	<b>Natural Language Processing (NLP)</b>	<b>Speech Recognition:</b> Improves pronunciation through real-time feedback (e.g., Google Assistant, Siri).	
		<b>Chatbots:</b> Simulate conversation practice with AI-powered virtual partners (e.g., Replika, Mondly).	
<b>Machine Learning Algorithms</b>	<b>Personalized Learning Paths:</b> Analyze learner data to customize curriculum.	Machine learning algorithms are revolutionizing language learning by providing personalized, efficient, and engaging educational experiences. Through adaptive learning paths, predictive analytics, real-time feedback, and content recommendation, these algorithms enhance the effectiveness of language instruction and support a wide range of learners. By leveraging the power of machine learning, educators and developers can create more dynamic and responsive learning environments that cater to the individual needs of each learner, paving the way for more successful language acquisition and proficiency.	
	<b>Predictive Analytics:</b> Identify potential learning challenges and suggest interventions.		
<b>Information and Communication Technologies (ICT) in Language Teaching</b>	<b>Learning Management Systems (LMS)</b>	<b>Moodle:</b> Open-source LMS that supports course management and content delivery.	They provide comprehensive tools for course management, content delivery, assessment, and communication. Platforms like Moodle, Canvas, Blackboard Learn, Google Classroom, and Edmodo offer robust features that enhance the learning experience, making education more accessible, organized, and effective. By leveraging the capabilities of LMS platforms, educators can create dynamic and personalized learning environments that cater to the diverse needs of learners, ultimately fostering better educational outcomes. Platforms like Zoom and Microsoft Teams enable real-time interaction between teachers and students, replicating the
		<b>Canvas:</b> Cloud-based LMS with features for collaboration, assessment, and reporting.	
	<b>Virtual Classrooms</b>	<b>Zoom:</b> Facilitates real-time video classes and language practice.	
		<b>Microsoft Teams:</b> integrates with educational tools and resources for	

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		collaborative learning.	classroom experience online. These tools support video calls, screen sharing, and collaborative activities.
	<b>Social Media and Communication Tools</b>	<b>WhatsApp and Telegram:</b> used for group discussions and language practice.	Social media and communication tools have transformed language learning by providing interactive, engaging, and flexible platforms for practice and collaboration. Tools like WhatsApp, Telegram, Facebook, Instagram, Twitter, and Discord offer features that support real-time communication, multimedia sharing, and community building. These tools enhance engagement, provide real-world practice opportunities, foster community support, and offer flexible and accessible learning options. By integrating these tools into language learning, educators and learners can create a more dynamic and effective educational experience, making language acquisition more engaging and successful.
		<b>Facebook and Instagram:</b> support language learning communities and content sharing.	
	<b>E-learning Platforms</b>	<b>Coursera and Udemy:</b> offer online courses in various languages taught by experts.	E-learning platforms have significantly transformed language learning by offering accessible, flexible, and engaging educational experiences. Platforms like Coursera, Udemy, Khan Academy, edX, and Babbel provide structured courses, interactive content, assessments, and certification options. The features of these platforms, such as mobile accessibility, instructor support, and peer interaction, enhance the learning process and make it more effective. With the advantages of cost-effectiveness, diverse course offerings, and the ability to connect with a global community, e-learning platforms are paving the way for innovative and inclusive language education.
		<b>Khan Academy:</b> provides free educational resources, including language courses.	





Developments in AI-powered technologies are bringing new opportunities for the development of reading and other communicative skills within foreign language learning (Table 2). Text-based generative AI can support teachers to produce a range of text types for students that can then be adapted to students' different foreign language proficiencies [3; 4]. This provides opportunities to expose students to a much wider variety of suitable reading material than is usually available within textbooks. In addition, AI can also easily generate comprehension and expansion questions, whether open-ended or multiple choice [3; 4].

When analyzing the motivation of English language learners the following factors are usually focused on: students' reasons to learn English (also called orientations) including their short-term and long term goals (personal or professional), their determination and the effort made to achieve these goals, the interest in the subject, students' attitude towards English and English speaking countries, their enjoyment of the language learning process, and finally the way students self-regulate their learning efforts over time [5, p. 314].

**Table 2. Possible uses of artificial intelligence-powered technologies**

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For developing the four communicative skills in foreign language learning [6]

 Reading	 Listening	 Speaking	 Writing
<p><b>Text-based generative artificial intelligence (AI)</b> can help teachers more easily differentiate reading material and associated comprehension activities.</p>	<p><b>AI voice generators</b> and other technologies can support teachers to more easily create their own listening resources for a particular purpose, student need or proficiency level.</p>	<p><b>AI chatbots</b> provide students with low-stakes conversation partners to enhance spoken interaction.</p> <p><b>Automated speech recognition tools</b> can support students' pronunciation, giving personalised feedback and modelling how different sounds are formed.</p>	<p><b>Automated evaluation and corrective feedback and editing tools</b> provide extensive support to improve the quality of students' writing.</p> <p><b>Text-based generative AI</b> can support students to practise their written interaction skills. It can also allow teachers and students to generate endless model texts to inform learners' own writing.</p> <p><b>Machine translation</b> can support students to work at word and sentence level to put together a text and enhance their linguistic understanding.</p>

### Benefits of Digital Technologies in Language Learning

The integration of digital technologies in language learning has revolutionized the way learners acquire new languages. These technologies provide numerous benefits that improve the overall learning experience, making it more accessible, engaging, personalized, and collaborative. Here's a closer look at the key benefits.

One of the most significant advantages of digital technologies in language learning is the accessibility and flexibility they offer. Traditional classroom settings often require learners to be present at specific times and locations, which can be limiting. In contrast, digital platforms enable learners to access educational content anytime and anywhere, breaking down geographical and temporal barriers. Learners can engage with language courses and materials from the comfort of their homes, during commutes, or while travelling. This flexibility allows individuals to incorporate language learning into their daily routines, making it more convenient and consistent. Digital technologies support self-paced learning, allowing learners to progress through courses at their own speed. This approach accommodates different learning paces and styles, reducing the pressure associated with rigid schedules and improving comprehension.

Digital technologies use interactive and multimedia resources to create engaging and motivating learning experiences. Traditional language learning methods, often dependent on textbooks and lectures, can sometimes lack the dynamic elements that keep learners interested and motivated. Many digital platforms incorporate gamification elements such as points, badges, and leaderboards. These features turn learning into an interactive and fun activity, encouraging learners to stay motivated and achieve their goals. Digital technologies offer a wide range of multimedia resources, including videos, podcasts, interactive exercises, and games. These diverse formats cater to different learning styles, ensuring that visual, auditory, and kinesthetic learners all have access to materials that suit their preferences.

Another significant benefit of digital technologies in language learning is the ability to provide personalized and adaptable learning experiences. Unlike traditional methods, which often follow a one-size-fits-all approach, digital platforms can tailor content and activities to meet individual learner needs. Advanced algorithms and artificial intelligence can track learners' progress and adapt the curriculum accordingly. This personalization ensures that learners receive content that is appropriate for their skill level, helping them advance more efficiently and effectively. Digital platforms can offer real-time feedback on exercises and assessments. This immediate response helps learners understand their mistakes and correct them promptly, leading to better learning outcomes. Additionally, platforms can provide targeted practice activities that focus on areas where learners need improvement.

Digital technologies also improve collaboration and communication, providing opportunities for learners to interact with native speakers and join global language learning communities. These interactions are crucial for developing practical language skills and cultural understanding. Tools such as video conferencing, chat applications, and language exchange platforms facilitate real-time communication with native speakers. These interactions help learners practice speaking and listening in a natural context, improving their fluency and confidence. Online communities bring together learners from different parts of the world, creating a supportive network where members can share resources, tips, and experiences. These communities develop a sense of belonging and provide valuable peer support, improving the overall learning experience.

So, the benefits of digital technologies in language learning are vast and transformative. By offering accessibility and flexibility, improving engagement and motivation, enabling personalization and adaptability, and fostering collaboration and communication,

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digital tools have redefined how languages are taught and learned. As these technologies continue to evolve, they promise to further enrich the language learning landscape, making it more inclusive, effective, and enjoyable for learners around the globe.

### Challenges and considerations

While digital technologies offer significant benefits for language learning, they also present several challenges that must be addressed to ensure equitable and effective education. The digital divide highlights the need for greater access to technology and internet, particularly in underserved regions. Ensuring the quality and credibility of online resources is crucial for effective learning. Data privacy and security concerns must be addressed to protect learners' information. Finally, teacher training and continuous professional development are essential for the successful integration of digital technologies in language education. By acknowledging and addressing these challenges, educators and policymakers can work towards creating a more inclusive and effective digital learning environment for all language learners.

### Future Prospects

As technology continues to evolve, the future of language learning promises even more innovative and immersive experiences. Emerging technologies such as Augmented Reality (AR) and Virtual Reality (VR) will offer immersive simulations and cultural experiences, improving language practice and understanding. Blockchain technology will provide secure and verifiable certification of language proficiency and support decentralized peer-to-peer learning platforms. AI-driven content creation will automate the generation of customized learning materials and assessments, further personalizing the learning experience.

The integration of the Internet of Things (IoT) will transform classrooms into smart, interconnected learning environments, improving engagement and data-driven insights. Multimodal learning experiences, combining text, audio, video, and interactive elements, will cater to diverse learning styles and ensure that language education is engaging and effective.

## CONCLUSION

The integration of digital instruments, AI, and ICT in foreign language teaching has significantly transformed the educational landscape. These technologies offer unprecedented opportunities for personalized, engaging, and effective language learning experiences. However, it is essential to address the associated challenges, including the digital divide, quality of resources, data privacy, and the need for continuous teacher training. As technology continues to evolve, the future of language learning promises even more innovative and immersive experiences, paving the way for a more interconnected and multilingual world.

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