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Evolution of Foreign Language Education in the Age of AI

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Abstract

With the impact of technology, the nature of knowledge (from static to dynamic and from acquired to co-constructed) and learning theories (from behaviourist/approaches to constructivism) have been redefined. This paradigm shift has transformed the roles of the teacher (facilitator) and the student (active learner) and has brought personalised learning and 21st-century skills to the forefront. With the acceleration of this effect by artificial intelligence, language teaching and learning have also been radically affected within this framework. In this context, this conceptual study examines the transformative effect of artificial intelligence on foreign language education. In this study, firstly, the historical development of language teaching methods and the place of AI in this development are discussed. Then, how AI can restructure existing language acquisition theories is mentioned. Finally, the adversities that may be encountered in AI-supported language education are addressed.

Keywords: Foreign Language Teaching; GenAI; AI in Language Education; Second Language Acquisition

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Introduction

The transformation of education by technology is not only an instrumental change but also brings along fundamental theoretical questions such as the nature of knowledge, the purpose of education, learning and teaching processes. With the intervention of technology in education, questions such as what knowledge is and what the relationship between us and knowledge is have come to the fore. The traditional educational paradigm considered knowledge as a static phenomenon acquired in a certain place, from certain people, in a linear process (Erdoğan Coşkun, 2022). However, technological transformation has begun to dominate a new epistemological understanding in which knowledge is dynamic, multi-sourced and constantly evolving. Knowledge is no longer only transferred from teacher to student, but has become a phenomenon that is collectively constructed, constantly updated and developed within social network structures (Martínez & Frutos, 2018). This paradigm shift, which redefines the relationship between us and knowledge, has also affected learning theories, and classical approaches such as behaviourist and cognitive learning approaches have been replaced by connectionist and constructivist learning models. With these new approaches, the act of learning has moved from being an individual and closed process to an experience based on interaction and co-operation and taking place within social networks.

This paradigm shift, which has deeply affected educational approaches and learning theories, has also had important reflections in educational practices. For many years, there has been a need for a fundamental shift from classical approaches such as behaviourist and cognitive learning models to constructivist and connectionist learning models. However, this desired shift often remained unachieved due to limitations in resources, teacher professional development, and other constraints. Now, with the emergence of AI, we have the chance to address these long-standing challenges which are expected to allow us for a more complete realisation of constructivist principles in language education. The emergence of virtual learning environments has redefined the concept of the classroom. Learning is no longer confined to a physical space; instead, new teaching environments have been developed that operate independently of time and location. The relationship between teacher and student has also been redefined in this process. In the traditional approach, while the teacher is the source of knowledge and the person who transfers knowledge to the student, the student is in the role of 'knowledge carrier' who receives knowledge from the teacher who is the source of knowledge. With the new paradigm shift, the teacher has assumed the role of the designer and facilitator of the learning process, while the student has taken the role of the person who accesses

information and synthesises the information in different forms (Patel et al., 2021). Another element of technology intervention is personalised learning experiences. Thanks to the technology that provides the opportunity to offer the infrastructure of learning processes specific to the needs of each student, adaptive learning systems have moved away from uniform learning processes (Kara & Sevim, 2013). Along with all these, 21st-century skills such as critical thinking, problem solving, digital literacy and collaboration, which are the natural outcomes of technology intervention in education, have become an integral part of learning processes.

Both instrumental and theoretical transformation of education supported by technology has gained momentum in recent years with AI, especially generative artificial intelligence (GenAI). Inspired by the neural structure of the human brain, AI is an advanced technology that aims to simulate human intelligence and cognitive processes by computer systems (Naveed Uddin, 2019). This technology incorporates the ability to learn from data, pattern recognition, logical inference and problem solving using complex algorithms and computational models. AI is based on sub-branches such as deep learning and machine learning. These systems can extract meaningful patterns by processing large data sets, make generalisations from these patterns and apply what they have learned to new situations. Just as educators create instructional designs, methods, and strategies by considering variables like students' learning styles, strengths and weaknesses, interests, and learning speeds, AI also makes decisions by evaluating similar factors. However, it can analyse data at a scale and speed that human instructors cannot perform due to limited time and capacity. From this point of view, AI has the potential to be the biggest supporter of both the student and the teacher in the teaching and learning process (Tang, 2024).

The transformation of education by technology is the result of a process ranging from simple technological tools to complex digital systems, but it is necessary to open a separate parenthesis for AI in this transformation process. The reason for this is the autonomous decision-making ability and adaptive learning capacity of AI, unlike other technological tools and systems (Borah et al., 2024). While traditional educational technologies mostly have a static and linear structure, AI has the power to radically change the theory and practice of education with its dynamic structure that can learn on its own, can be fed with big data and can constantly optimise itself. This capacity for change has the power to penetrate deeply into areas such as teaching, learning, design, assessment and evaluation, which are the most basic components of education and training processes. By means of this power, educational

technologies will have a more substantial role in learning and teaching processes than ever before. In this respect, this study aims to contribute to the current scholarship by offering a conceptual analysis of how AI is fundamentally reshaping foreign language education, from its historical methodologies to its theoretical underpinnings and practical challenges.

The Evolution of Language Teaching and the Rise of AI

Historically, foreign language teaching has been shaped and changed according to the needs of learners and the context of the time. Throughout different periods, various methods have emerged, evolved, or been completely abandoned due to their specific characteristics and dynamics. One of the most important reasons for the transformation in language learning methods and techniques is technological developments (Zhao, 2013). The limitations and failures of traditional methods have led to the emergence of new methods on the axis of new technologies with each developing technology. Before discussing the effects of AI in language teaching, it would be appropriate to examine the main traditional approaches to language teaching.

Since the 19th century, the widely used Grammar Translation Method has largely shaped foreign language learning through the teaching of grammar rules and text translations. Students focus on memorising grammar rules and translating texts to improve their reading and writing skills in the target language. This method prioritises the correct learning of grammar rules over the practical use of the language (Zimmerman, 1996). However, this approach does not contribute sufficiently to the development of speaking and listening skills and makes it difficult to use the knowledge learnt in real life (Piantaggini, 2020).

Communicative Language Teaching, popularised after the 1970s, focuses on the use of language as a means of communication. Students learn how language is used in natural contexts and aim to be able to communicate effectively in real life. This method employs interactive activities and simulations to develop speaking and listening skills. However, the fact that classroom interactions do not always reflect real life and the lack of structured grammar instruction are among the criticisms of this approach (Didenko & Pichugova, 2016).

Task Based Learning, another unique learning method, develops students' language skills through specific tasks or projects. Students learn through activities that require the use of language for a specific purpose. For example, they work on tasks such as ordering at a restaurant or asking for directions. Task-based learning allows students to explore the

functional use of language, but some students may struggle with the lack of a grammar-based approach (Gray & Smithers, 2019). Moreover, the natural and systematic teaching of grammar can sometimes be overlooked.

Similarly, many different language teaching methods have been developed in line with the needs but have not been successfully implemented due to certain limitations. One of these limitations is the one-way focus of these methods. While grammar-based methods neglected communication, communication-based methods neglected grammar education. In addition, their distance from real-life applications prevented the pragmatic use of language and artificial interaction attempts failed. Another important limitation is the fundamental deficiency of such methods in individualising the learning and teaching processes. These shortcomings resulted in learners having learning experiences that were not suitable for their learning speed, individual differences and interests. As a result, traditional language teaching methods may be insufficient to meet the needs and expectations of learners. These shortcomings, especially with the new opportunities offered by technological developments, have paved the way for the rise of AI-assisted approaches in language teaching. AI has a significant potential in the evolution of language teaching by offering innovative solutions such as personalised learning, automatic feedback and simulation of real-life scenarios.

AI's Transformative Impact on Language Education

AI, with its potential to overcome the aforementioned limitations of traditional teaching methods, is causing radical changes in the field of language education and redefining existing learning theories and practices. Expanding the traditional boundaries of language teaching, AI makes teaching processes more effective, personalised and interactive. This transformation can be analysed through how language learning theories are restructured by AI and how teaching practices are revolutionised. AI has the potential to make educational processes more effective by challenging and transforming traditional language teaching methods. In particular, AI has had a profound impact on language acquisition theories, reshaping both theoretical approaches and making practical applications more dynamic and personalised.

An example of the impact of AI on language acquisition theories is Stephan Krashen's Input Hypothesis. According to Krashen, learners develop their language skills best when they are exposed to comprehensible input in the target language (Krashen, 1985). However, it has been criticised that this theory does not give enough importance to output (Swain, 1993). By redefining this theory, AI technologies create the opportunity to present both input and output

in a more balanced way. For instance, AI-supported language learning apps encourage learners to produce immediate responses by processing their language inputs in real-time and providing feedback or adjusting the inputs in a way that the learner can understand. Recent empirical studies further demonstrate how intelligent tutoring systems leverage AI to provide precisely calibrated comprehensible input, adapting difficulty levels dynamically to learner proficiency and performance (Wang, 2025; Zhou, 2024). This real-time adaptation ensures that learners consistently receive input just beyond their current level, optimising acquisition. In this way, the language acquisition process becomes more interactive and result-oriented.

Similarly, according to Lev Vygotsky's socio-cultural theory, language learning takes place through social interaction and environmental factors (Lantolf & Pavlenko, 1995). AI can take this theory to a broader framework. AI has the ability to create environments that provide learners with experiences that enhance their understanding of global and cultural contexts. For example, through AI-based simulations and dialogues, students can experience interacting with people from different parts of the world. Research on AI-driven virtual reality environments has shown particular promise in facilitating authentic social interactions and deep cultural immersion, allowing learners to navigate real-world linguistic and cultural contexts in a safe, simulated space (Betaubun et al., 2023; Lou, 2025). AI creates virtual conversation partners and role-play scenarios that model real-world language use to enable students to better understand socio-cultural contexts. In this way, language learning takes place in a broader cultural context and the social dimension of language is explored more deeply.

Following the redefinition of traditional language teaching methods by AI, it is important to examine how this technology is integrated into modern teaching approaches. AI can revolutionise language learning processes, especially by making communicative and task-based methods more effective and personalised. For example, AI further strengthens contemporary language teaching approaches such as communicative language teaching (CLT) and task-based learning (TBL). AI increases the effectiveness of these approaches with adaptive learning technologies that personalise learning processes. AI-powered applications offer personalised course content by analysing students' language skills and learning speed. These contents, which are adjusted according to students' learning styles, enrich the learning experience by providing tasks and activities suitable for the specific needs of each student. Communicative activities are made more effective with interactive simulations and role-playing games supported by AI. Such tasks become more efficient thanks to AI's ability to offer instant feedback and performance tracking.

In addition, AI monitors the progress of students' language skills, analysing which areas they struggle or are strong in. In this way, AI-based systems optimise the learning process by adapting lesson plans and tasks according to the student's performance. For example, for a learner with pronunciation difficulties, AI can provide specific pronunciation exercises, or for a learner who wants to reinforce certain grammar rules, AI can provide relevant exercises. This personalisation makes language learning more effective and learner-centred.

One of the most important contributions of AI to traditional language acquisition methods and techniques is its role in creating student-centred environments. AI creates more interactive and dynamic learning experiences by crossing the boundaries of traditional classroom environments. For example, AI-based chatbots function as virtual conversation partners for students to practice their language skills. These bots provide feedback by analysing students' speaking speed, pronunciation and sentence structure. Moreover, students can practice with these chatbots at any time of the day, regardless of time and place, making the language learning process continuous and accessible. AI makes learning more fun and motivating by using interactive games, simulations and multimedia tools to keep students engaged.

Another important advantage of AI is its ability to provide instant feedback (Tay, 2024). When students are doing speaking or writing exercises, AI systems instantly detect errors and offer suggestions on how to correct them. For example, when a student uses an incorrect grammatical structure, the system highlights this error and shows the correct structure. In pronunciation problems, AI-supported software provides students with examples of correct pronunciation and allows them to practice. Such dynamic feedback allows students to quickly recognise and correct their mistakes, thus accelerating the learning process.

Furthermore, AI encourages students to manage their own learning process, making learning more autonomous and student-centred. AI-based platforms help students track their progress, set personal goals and chart their own learning paths. Students can choose which skills they want to work on and progress at their own pace. This provides a more motivating and effective experience by customising language learning to the learner's interests and needs (Yang, 2024).

As a result, AI reshapes the theoretical and practical foundations of language education, offering more dynamic, interactive and personalised learning environments. The innovative solutions offered by AI not only make language learning more accessible but also develop

modern approaches that enable learners to use their language skills effectively in the real world. This transformation further increases the importance of AI-based solutions in the future of language education. Table 1 serves as a crucial conceptual framework, categorising traditional language teaching methods and showing their core principles through the lens of GenAI's potential support and associated challenges. This framework is vital for understanding the effective integration of AI across diverse pedagogical approaches.

Table 1. Traditional language teaching methods and GenAI

Overarching Approach	**Core Principles**	**GenAI Support**	**Challenges with GenAI Integration**
Structural/ Formalist Approaches	- Focus: Advanced grammar/phonology accuracy. - Method: Explicit rule teaching, translation, repetition, habit formation.	- Instant, detailed grammar explanations. - Targeted practice exercise generation. - Powerful translation tools. - Endless drill variations. - Immediate feedback on grammatical form.	- Threatens perceived value of deep linguistic analysis & rigorous cognitive effort. - Risk of superficial language grasp. - Challenges core pedagogical assumptions of these methods.
Cognitive Approaches	- Learning: Active mental process (acquiring, storing, retrieving knowledge). - Emphasis: Meaningful learning, active information processing, learner constructs understanding; errors seen as natural.	- Personalized learning paths. - Interactive problem-solving scenarios. - Metacognitive support.	- Ease of answers: risk of reduced depth in cognitive processing. - Incorrect info risk: necessitates careful critical engagement. - Over-simplification risk: may lead to superficial understanding.
Communicative Approaches	- Goal: Communicative competence development. - Emphasis: Authentic materials, real-life tasks, fluency; key processes include interaction & meaning negotiation.	- Simulated interaction: Chatbots as conversation partners. - Task design & material generation assistance for teachers. - Instant feedback on communicative attempts.	- Over-reliance risk: could diminish crucial human-to-human interaction. - Real-world complexity: may not be fully replicated by AI.

Humanistic/ Affective Approaches	- Focus: Whole learner (emotions, feelings); aims to lower anxiety, foster support. - Central: Learner autonomy, self-confidence, intrinsic motivation.	- Low-anxiety, non-judgmental practice space (especially speaking); helps lower affective filter. - Learner autonomy support (self-paced exploration, topic choice). - Tailored language sample/instruction generation.	- Lacks true human empathy, understanding, or nuanced guidance crucial for these methods. - Cannot replace essential human connection & affective support.

Assessing Traditional Language Teaching Methods through a GenAI Lens

The emergence of Gen AI and its tremendous impact on language teaching and learning necessitates a closer examination of the transformational power of GenAI on traditional language teaching methods and their core principles. Rather than focusing on distinct language teaching methods, we can broadly categorize them into four overarching categories as (1) Structural/Formalist Approaches (e.g., Grammar-Translation Method, Audiolingual Method), (2) Cognitive Approaches (representing a move to understanding language learning as an active mental process, theories like Information Processing Theory, Schema Theory, and elements of Krashen's Monitor Model), (3) Communicative Approaches (e.g., Communicative Language Teaching - CLT, Task-Based Language Learning - TBLL) and (4) Humanistic/Affective Approaches (e.g., The Silent Way, Community Language Learning - CLL, Total Physical Response - TPR).

Structural/Formalist Approaches

The core principle of structuralist/formalist approaches, such as the grammar translation method or audio-lingual method, is advanced accuracy in grammar and/or phonology (Siregar, 2018). Such approaches dictate explicit teaching of grammar rules, translation and repetition through habit formation (Vireak & Bunrosy, 2024). Generative AI can significantly support these methods by providing instant, detailed explanations of grammatical structures, generating numerous targeted practice exercises, and offering powerful translation tools for comparative analysis. Furthermore, GenAI can create endless variations of drills crucial for pattern practice and deliver immediate feedback on grammatical form in written outputs. However, the integration of GenAI with these approaches comes with some challenges. GenAI poses a

potential threat to the perceived value of deep linguistic analysis and the rigorous cognitive effort traditionally associated with these methods. If learners can bypass the intensive process of grammatical analysis, pattern recognition, and rule internalisation by relying on GenAI, this can lead to a superficial grasp of the language structure. This directly challenges the core pedagogical assumption of such methods.

Cognitive Approaches

Cognitive approaches shifted the focus in language teaching towards understanding learning as an active mental process of acquiring, storing, and retrieving knowledge, rather than mere habit formation (Ellis, 1999). These approaches emphasise meaningful learning, where learners actively process information, make connections to existing knowledge, and construct their own understanding, with errors viewed as natural indicators of this developmental process. Generative AI can align with these principles by creating personalised learning paths that adapt to individual cognitive processing, offering interactive problem-solving scenarios where learners can query the AI and test hypotheses, and providing metacognitive support to help learners reflect on their strategies. However, the ease with which GenAI provides answers might risk reducing the depth of cognitive processing if learners become passive recipients. Furthermore, the potential for GenAI to generate plausible but incorrect information necessitates careful critical engagement from learners to avoid internalizing errors, and there's a risk that GenAI might over-simplify complex linguistic phenomena which can lead to a more superficial understanding than desired by a truly cognitive engagement.

Communicative Approaches

Communicative approaches, such as Communicative Language Teaching and Task-Based Language Learning prioritise the development of communicative competence (Shahi, 2022). These methods emphasise authentic materials, real-life tasks, and fluency, with interaction and negotiation of meaning being key classroom processes (Richards, 2005). GenAI offers significant support by providing simulated interaction through sophisticated chatbots that can act as conversation partners for practising dialogues and role-plays, thereby potentially offering an authentic, interactional language learning environment. It can also assist teachers in designing communicative tasks and generating diverse, relevant materials, while offering personalised scenarios to increase engagement and provide instant feedback on communicative attempts. Despite these strengths, over-reliance on AI for practice could also diminish crucial

human-to-human interaction, and the complexity of real-world communication may not be fully replicated, while the ease of generating solutions with GenAI might undermine the critical thinking and language use processes central to TBLL if not carefully managed.

Humanistic/Affective Approaches

Humanistic and affective approaches, methods like The Silent Way, Community Language Learning, and Total Physical Response, place strong emphasis on the whole learner, including their emotions and feelings, aiming to lower anxiety and foster a supportive, non-threatening learning environment (Rahman, 2008). Central to these approaches are learner autonomy, self-confidence, and intrinsic motivation. GenAI can contribute by offering a low-anxiety, non-judgmental space for practice, especially for speaking, which can help lower the affective filter. It can also support learner autonomy by allowing individuals to explore language at their own pace and choose topics of interest, and potentially generate tailored language samples or instructions that align with the teacher's facilitative role in methods like CLL or TPR. However, the core of these methods relies heavily on the nuanced teacher-student relationship and genuine interpersonal dynamics, elements where GenAI inherently falls short as it cannot replicate true human empathy, understanding, or guidance crucial in approaches like The Silent Way or the community-building aspect of CLL. Thus, while GenAI can be a supportive tool, it cannot replace the essential human connection and affective support that are the hallmarks of these pedagogical philosophies.

Challenges in AI-Assisted Language Education

While AI significantly contributes to language education, it also brings a variety of complex challenges. These challenges are critical issues that need to be addressed to ensure that this technology is used effectively, fairly and safely. Issues such as data privacy, digital equity, ethical questions and AI literacy are the main challenges that need to be addressed in AI-supported language education.

One of the most important issues in the integration of AI into language education is data security (Yunina, 2023). AI-based language learning platforms collect large amounts of data to better understand students' learning processes and provide customised feedback. These data include learners' personal information, performance analyses, and language skills. In addition, some systems may also contain sensitive data of learners' audio and video. However, this data collection process raises important concerns about data privacy and security. In particular, strict

data security measures are required to protect students' identities and to ensure that the information collected is not misused. While data security related to artificial intelligence is an important and unresolved issue in all fields, the use of artificial intelligence in the language learning process, where there is a lot of personal data, also has its share of data privacy problems.

Another important problem to be considered in the integration of artificial intelligence into language education is the problem of equal access. Access to AI-supported language learning tools is not provided equally throughout the world. Especially in low-income regions and countries with inadequate digital infrastructure, students have serious difficulties in accessing these technologies (Gao, 2024). This digital inequality can further deepen the inequality of opportunity in education. In order for AI to be used in education in a fair and inclusive way, it is important to develop educational policies, improve technological infrastructure and provide more students with these innovative tools. These efforts are necessary to ensure that everyone can equally benefit from the advantages offered by artificial intelligence.

One of the major problems encountered in AI-based language education is the lack of AI literacy among both students and teachers (Lérias et al., 2024). AI literacy refers to the ability of users to understand, effectively use and critically evaluate AI systems. However, many teachers and students do not have sufficient knowledge about what AI is, how it works, how it should be used. This lack of knowledge makes it difficult to use AI-based tools effectively and consciously and may lead to misunderstandings or misapplications. In addition, users who do not fully grasp the potential of artificial intelligence may not be able to take full advantage of the opportunities offered by these technologies.

Another problem in the integration of AI into education is ethical issues, and these concerns also manifest themselves in language education. The impartiality, transparency, and ability of AI algorithms to conduct fair assessments are among the controversial issues (Zhai & Nehm, 2023). For example, AI systems may create non-objective feedback or cultural biases in language learning processes. This may increase the risk of students being exposed to unfair assessments. Furthermore, the proliferation of AI may reduce teacher-student interactions, which may lead to a weakening of a human-centred understanding of education. Maintaining the human element and the empathic bond in education is also of great importance in AI-assisted language education. One of the main challenges in AI-assisted education is that

teachers should not lose their guiding role in the classroom and students should not be condemned to an interaction limited only to technological solutions. Language learning is not just memorising grammar rules, but also understanding cultural nuances, being able to empathise and developing effective communication skills. In this context, although AI cannot fully replace human beings, it is important to balance teachers' critical abilities such as cultural understanding, emotional intelligence and mentoring with AI tools. Achieving this balance requires teachers to shift from the traditional 'teacher' role to more of a 'facilitator' role. Thus, teachers do not only teach students grammar or communication skills, but also raise awareness about the correct and ethical use of these tools. This approach, which combines the possibilities offered by AI with a student-centred learning experience, aims to offer an educational process balanced with both technology and the human element.

The challenges faced in AI-supported language education are complex issues that need to be resolved to ensure responsible and effective use of these technologies. Issues such as data privacy, digital equity, lack of AI literacy and ethical issues need to be addressed through the collaborative work of educators, technology developers and policy makers. Overcoming these challenges is important to maximise the potential of AI in language education while at the same time guaranteeing students' safety, equity and ethical learning environments.

Conclusion

AI-supported language education has led to radical changes in both theoretical and practical dimensions. This technology has reshaped traditional language teaching methods, making educational processes more personalised, interactive and effective. AI's capabilities such as instant feedback, customised content and data analysis transform learning into a more dynamic and learner-centred experience. While traditional approaches based on knowledge transfer have been replaced by adaptive learning methods offered by AI, language learning theories have become more flexible and adaptive to individual needs. However, these innovations also necessitate the preservation of the human dimension of education. Language education is a process that requires not only the transmission of language rules but also empathy, cultural awareness and meaningful human interactions. Therefore, integrating AI into teaching processes makes the critical roles of instructors such as guidance, cultural bonding and emotional intelligence even more important.

While AI offers great opportunities in education, it has also brought various challenges with it such as data privacy, digital equity and ethical concerns. Overcoming these challenges

is inevitable for the effective and safe use of AI. Educators, technology developers and policy makers must work together to ensure the responsible use of AI and ensure that these technologies enrich students' learning experiences while remaining in balance with the human element. AI-enabled education represents a multidimensional transformation process that requires developing more sustainable and inclusive solutions in education, considering both its advantages and risks. This transformation redefines not only the teaching and learning processes but also the future building blocks of language education.

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