INNOVATIVE LANGUAGE TEACHER EDUCATION APPROACHES INTEGRATING AI-ASSISTED MODELS

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ABSTRACT
The growing integration of AI into higher education language teaching offers language teachers, especially in Language for Specific Purposes contexts, both opportunities and pedagogical challenges. Resistance to AI adoption often stems from limited preparation and weak theoretical grounding, making teacher education a key site of intervention. This article presents the AILEM Erasmus+ project (AI-Infused Language Education: Empowering Teachers through Multilingual MOOC Training), a European consortium developing a multilingual miniMOOC for language educators in higher education and professional training. The project centers cognitive, critical, and intercultural dimensions of language learning as the foundation for pedagogically responsible AI integration. The article argues that effective AI integration in LSP education requires not mere technological adoption, but reflective pedagogical mediation grounded in a principled understanding of language, learning, and digital environments.

KEYWORDS
Artificial intelligence; language teacher education;
languages for pedagogical mediation; multilingual MOOCs.

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1. Introduction

In contemporary educational contexts, foreign language learning has never been more essential than it is today. In increasingly interconnected societies, linguistic competence is widely recognized as a key condition for participation in education, employment, mobility, and democratic life. Its strategic importance is broadly acknowledged: European institutions have consistently foregrounded plurilingual competence as a key condition for democratic participation, social cohesion, and professional mobility (Council of Europe, 2001; European Commission: European Education and Culture Executive Agency, 2023). Yet, across many countries, student proficiency remains uneven and often disappointingly low.

Data on foreign language instruction across European school systems reveal significant investment alongside persistent underachievement. In compulsory general secondary education, the annual time allocated to the first foreign language typically ranges from approximately 70 to 200 hours per notional year, with most countries clustering between 90 and 130 hours (European Commission: European Education and Culture Executive Agency, 2023). In terms of expected outcomes, European curricula generally set B1 as the target level at the end of lower secondary education and B2 or, in a minority of high-performing systems, C1 at the end of upper secondary education for the first foreign language. Yet, according to the report, actual proficiency among European learners consistently falls short of these targets, as confirmed by both large-scale international surveys and national assessments. The gap between officially mandated expectations and measurable outcomes points to a structural tension that instruction time alone cannot resolve.

This tension becomes more acute when students transition to higher education. At university level, foreign language competence is no longer a subject to be learned but a medium through which disciplinary knowledge is acquired, communicated, and assessed – particularly in academic and professional contexts where Language for Specific Purposes (LSP) is at stake. Yet many students arrive in higher education without the linguistic autonomy that B2 competence is meant to guarantee, placing an additional burden on tertiary institutions that are rarely equipped or mandated to address foundational language gaps. In addition, learners frequently report that language classes are insufficiently engaging, intellectually challenging, and always meaningful in relation to their lived experience (Dewaele et al., 2023;

Ye, 2024). The result is a growing demand for language instruction at the higher education level that is not merely corrective but genuinely transformative: pedagogically robust, contextually grounded, and aligned with the communicative and epistemic demands of professional and academic life.

This gap between the formal centrality of languages in educational policy and the actual effectiveness of teaching practices points to a structural problem that methodological adjustment alone cannot resolve. It demands a renewed theoretical reflection on what it means to learn and to teach languages today.

Another element of tension may be represented by teacher education, with the rapid evolution of technologies and the expectation that these be integrated into educational systems. Indeed, language teachers are increasingly expected to operate in digitally mediated environments and to integrate technological tools into their pedagogical practice (Godwin-Jones, 2022).

Artificial intelligence, in particular, has entered the educational landscape with considerable force, offering new possibilities for personalized feedback, authentic input, and learner engagement. However, without adequate training that addresses both the technical and the pedagogical dimensions of AI use, resistance is a predictable and rational response.

Addressing this gap requires, at the same time, methodological innovation and a renewed theoretical reflection on what it truly means to learn and to teach languages in contemporary educational contexts. In particular, there is an increasing need for approaches that are pedagogically robust, digitally informed, and aligned with broader European priorities for inclusive and transformative language education.

In current reality, Language Awareness (LA) provides a foundational theoretical lens for rethinking language education in this direction. Rooted in Hawkins' (1984) pioneering work and subsequently developed across metacognitive, critical, and multilingual dimensions (James & Garrett, 1991; Van Lier, 1995), LA foregrounds the learner's conscious understanding of how language functions: as a system, as a social practice, and as a tool for meaning-making. In language teacher education specifically, LA has been reconceptualised as a professional competence. It has become the capacity to reflect on language not only as subject matter but as a medium of epistemic and cultural negotiation (Andrews, 2007). From that moment, such a dual orientation – toward the learner and toward the teacher – makes LA particularly generative as a

framework for designing pedagogically robust, critically informed language education in multilingual and technologically evolving contexts.

The AILEM project – AI-Infused Language Education: Empowering Teachers through Multilingual MOOC Training – is an Erasmus+ initiative that addresses precisely this challenge. Grounded in the theoretical framework of LA and oriented toward the critical integration of AI in LSP teaching, the project has developed a multilingual MOOC designed to support language teachers in higher education and professional training contexts. The article discusses the theoretical foundations of the project, its pedagogical rationale, and the design principles underlying the MOOC structure.

2. Language Awareness as a Theoretical Framework

In the contemporary landscape of language learning, foreign language competence can no longer be interpreted as the simple mastery of grammatical structures or functional communicative skills. Rather, it must be understood within the broader theoretical framework of LA, conceived as a reflective understanding of linguistic processes, their cognitive, social, and cultural implications, and the fundamental role that language plays in the construction of knowledge. From this perspective, learning a language does not merely mean acquiring vocabulary or internalizing rules. It means gaining access to a new symbolic system while simultaneously reshaping one's ways of interpreting reality (James & Garrett, 1991).

Each new alphabetic or linguistic code expands our horizon of understanding and, consequently, our potential for critical thinking. Language learning is therefore not a technical exercise but an epistemic process. Through engagement with different linguistic systems, learners develop analytical abilities, cognitive decentring, and the capacity to question categories that are often taken for granted within their mother tongue. They learn to recognise that meanings are constructed, negotiated, and situated within specific historical, cultural, and institutional contexts (Svalberg, 2007; Svalberg, 2012).

Within this framework, the concept of Critical Language Awareness further extends the scope of linguistic education by foregrounding the relationships between language, power, and ideology. Discursive practices are never neutral; they are embedded in social relations and political dynamics (Hawkins, 1984). Language education thus contributes to the formation of individuals capable of reading texts critically, identifying rhetorical strategies, and unveiling processes of symbolic manipulation. Knowing a foreign language, in this sense, means

acquiring interpretive tools that allow learners to engage critically with public discourse, media narratives, and institutional communication (Fairclough, 1992).

In today's complex social and cultural geography, learning languages other than English is of fundamental importance. Language represents a privileged channel through which access to knowledge is expanded and dialogue among different linguistic systems, cultural traditions, and historical experiences becomes possible. It is through language that alterity can be acknowledged as a resource rather than a threat.

Developing competence in multiple languages therefore contributes to the construction of systems of coexistence grounded in mutual understanding and tolerance. In this sense, language education is not only an educational priority but also a political and ethical commitment. Acquiring plurilingual competence represents a concrete step toward building more democratic societies and toward fostering the conditions for a more peaceful world.

The centrality of multilingualism has been consistently reaffirmed by European institutions. The Council of the European Union and the European Commission have long promoted plurilingual competence as a strategic objective and a key dimension of democratic citizenship and social cohesion. The Council of Europe has contributed to this vision through a range of initiatives developed over more than two decades. The Common European Framework of Reference for Languages conceptualises linguistic competence as an integrated constellation of communicative, pragmatic, and intercultural resources aimed at fostering reflection, communication, and empowerment (Council of Europe, 2001).

Similarly, European language policy initiatives have emphasized the preservation and promotion of linguistic and cultural diversity as a necessary condition for peaceful, cohesive, and democratic societies. Within this perspective, the European Language Portfolio has been conceived as a pedagogical instrument supporting self-assessment, metacognitive reflection, and the recognition of learners' plurilingual repertoires. In parallel, the European Centre for Modern Languages continues to develop projects and guidelines aimed at strengthening the quality of language education across European educational systems (European Centre for Modern Languages, 2024).

Despite sustained policy commitment, however, significant challenges remain. European reports and recommendations continue to highlight that language proficiency levels are uneven and, in many cases, insufficient. This situation

invites educators, researchers, and policymakers to rethink both the aims and the practices of language education in light of ongoing social, technological, and cultural transformations.

From this perspective, LA can be conceptualized as a multidimensional construct encompassing cognitive, affective, social, power-related, and performative dimensions (Svalberg, 2007). It engages learners emotionally as well as intellectually, fosters intercultural sensitivity, and strengthens the analytical capacities underpinning critical thinking. In doing so, it contributes directly to the broader educational goal of developing reflective, critically minded citizens capable of participating actively in democratic life.

The AILEM Erasmus project seeks to place artificial intelligence and language learning in productive dialogue by exploring the pedagogical potential of AI tools while also carefully examining their challenges. Through research, experimentation, and collaborative design, the project aims to support teachers in developing innovative multilingual learning environments that are both technologically enhanced and pedagogically meaningful.

3. AI and Language Education: Opportunities and Limits

Within the broader field of language education, Languages for Specific Purposes (LSP) represent a particularly significant area for investigating the pedagogical implications of artificial intelligence. Traditionally defined as an approach to language teaching grounded in the specific communicative needs of learners operating within professional, academic, or institutional domains (Hutchinson & Waters, 1987), LSP is characterized by its close connection to specialized discourse, situated communication, and context-dependent linguistic practices. Unlike more general language instruction, LSP learning requires learners not only to acquire linguistic forms but also to develop familiarity with disciplinary conventions, genre-specific communication, and the pragmatic dimensions of professional interaction. These characteristics make LSP contexts especially sensitive to technological transformation and particularly relevant for the integration of AI-assisted pedagogical models.

The increasing availability of AI-based tools has opened new possibilities for LSP teaching and learning, especially in relation to the creation of authentic materials, adaptive feedback, terminology support, and simulated communicative environments (Godwin-Jones, 2022). At the same time, however, AI integration in LSP contexts raises complex pedagogical and epistemological questions. Specialized discourse is highly context-sensitive and

often depends on nuanced forms of meaning negotiation that cannot be fully reduced to automated linguistic processing. Recent studies have begun to explore both the opportunities and the limitations of AI tools in English for Specific Purposes education, highlighting the need for critically informed approaches that balance technological innovation with pedagogical mediation (Kovačić & Bubaš, 2023). These considerations reinforce the importance of preparing language teachers to engage critically and reflectively with AI-enhanced educational environments.

One of the most debated issues of the last decade concerns precisely the relationship between language learning and artificial intelligence. AI technologies undoubtedly offer powerful opportunities: they facilitate access to authentic texts, provide immediate and personalised feedback, and expand possibilities for linguistic exposure beyond traditional classroom boundaries. When integrated in a pedagogically informed way, they can enrich learning environments and support differentiated instruction (Godwin-Jones, 2022).

Yet, AI cannot replace the way in which authentic and reflective linguistic competence are constructed. Linguistic competence remains, and will remain, a fundamentally human prerogative, because it is deeply rooted in the symbolic, relational, and ethical dimensions of experience. In a historical moment increasingly characterized by digital mediation and automation, LA assumes an even more decisive educational function: forming individuals capable of understanding language, using it responsibly, and critically interrogating its implications.

Automatic translation systems, based on large neural models, are today capable of producing rapid, fluent, and increasingly accurate translations. AI operates through the statistical processing of large quantities of data and the probabilistic modelling of linguistic sequences. It simulates competence, but does not possess it in any human sense. It does not experience context, does not interpret communicative intentions in their situated depth, and does not participate in the intersubjective dimension of language. Human linguistic competence, by contrast, is intrinsically connected to the capacity to attribute meaning, to negotiate sense, and to adopt critical positions (Chomsky, 1965; Hymes, 1972).

4. The AILEM Project and Teacher Education for AI Integration in LSP Instruction

Within this broader scenario of rapidly evolving AI-enhanced language education, the AILEM project (AI-Infused Language Education: Empowering Teachers through Multilingual MOOC Training) provides a concrete operational framework for translating the theoretical considerations outlined above into a structured teacher education intervention. The AILEM project is an Erasmus+ cooperation project, led by Pegaso Digital University and funded under the Erasmus+ KA220-HED - Cooperation partnerships in higher education programme (Project No. KA220-HED-D6888EC3). The project is being implemented between September 2024 and August 2027. The project brings together a consortium of six partner organizations from four European countries, including Adam Mickiewicz University (Poznań, Poland), Burdur Mehmet Akif Ersoy University (Burdur, Turkiye), Josip Juraj Strossmayer University (Osijek, Croatia), SmartEd srl (Naples, Italy), and ZSI SIGID Sp. z o.o. (Poznań, Poland). The consortium combines expertise in language education, instructional design, digital pedagogy, educational technology, and professional training, creating an interdisciplinary environment for exploring innovative approaches to AI-enhanced language learning.

While AI technologies offer significant opportunities for content creation, feedback generation, personalized learning, and communication, many language teachers report uncertainty regarding their effective and ethical use (Godwin-Jones, 2022). These challenges are particularly relevant in LSP education, where language learning is closely connected to disciplinary knowledge, professional communication, and context-dependent practices. AILEM therefore seeks to address a critical gap in contemporary language teacher education, where the increasing availability of AI tools in education and the limited preparedness of teachers to integrate them in ways that are both pedagogically grounded and critically informed by providing educators with the knowledge, skills, and reflective competences necessary to engage with AI critically and responsibly.

The AILEM project is positioned as a targeted intervention addressing the specific needs of language teachers working in LSP contexts, where disciplinary discourse, professional communication, and situated language use require particularly careful pedagogical mediation. In this respect, the project is guided by a set of interconnected aims that translate this challenge into actionable objectives. The overall aim of the project is to empower language teachers and educational stakeholders to integrate AI technologies into language teaching

and learning environments while maintaining a strong focus on pedagogical quality, multilingualism, inclusivity, and ethical awareness. More specifically, the project pursues several interconnected objectives: (1) to enhance teachers' AI literacy and digital competences; (2) to promote innovative approaches to LSP instruction supported by AI tools; (3) to foster critical awareness of the opportunities, limitations, and ethical implications of AI-generated content; (4) to support multilingual and intercultural approaches to language education; and (5) to strengthen collaboration between educational institutions, researchers, and professional stakeholders.

To achieve these objectives, AILEM is developing a multilingual educational ecosystem centered on an open-access miniMOOC available in five languages: English, Italian, Polish, Croatian, and Turkish. The course is designed primarily for language educators working in higher education, vocational education and training, adult education, and other professional learning environments. In addition, it addresses external stakeholders interested in the application of AI within language-related professional sectors. The pedagogical model combines theoretical foundations, practical demonstrations, collaborative activities, and opportunities for critical reflection. Particular attention is devoted to the use of AI within LSP instruction, where specialised communication requires not only linguistic accuracy but also an understanding of disciplinary conventions, professional genres, and context-sensitive language use (Hutchinson & Waters, 1987).

One of the distinctive characteristics of the project is its dual-track structure. The MOOC includes a pathway specifically designed for educators, focusing on pedagogical integration, instructional design, assessment, and classroom implementation, as well as a second pathway for stakeholders interested in innovation, entrepreneurship, and the broader application of AI in language-related professional contexts. This structure reflects the project's commitment to bridging educational and professional perspectives while promoting lifelong learning and digital transformation.

The project's activities are organized through five work packages covering areas such as project management, research and needs analysis, MOOC development and design, piloting and evaluation, dissemination, and sustainability. Among its principal outputs are: a multilingual miniMOOC on AI in language education; a collection of educational resources and teaching materials; methodological guidelines for the integration of AI into LSP instruction; a framework for AI-supported language teaching; a system of microcredentials and digital badges;

and a community of practice connecting educators, researchers, and stakeholders across Europe.

The expected impact of the AILEM project extends beyond the immediate training of participants. The project aims to contribute to the development of a new generation of language educators capable of engaging with AI technologies in a critical, reflective, and pedagogically informed manner. Furthermore, it seeks to support the broader European agenda for digital transformation in education by promoting inclusive, multilingual, and ethically responsible approaches to technological innovation. Through its combination of teacher education, LA, AI literacy, and multilingual collaboration, AILEM offers a concrete model for preparing educators to navigate the opportunities and challenges of AI-assisted language education in contemporary learning environments.

5. The MOOC: Design and Structure

To support the integration of AI into LSP teaching in higher education and professional training and thus to cover the main aims of the AILEM project, the miniMOOC was designed. The focus of this project is not on the tools themselves, but on how these tools can be embedded in pedagogical practice. The course is based on a connectivist approach, in which learning is distributed among participants, resources, and digital environments (Siemens, 2005). At the same time, it adopts a miniMOOC format, which allows to maintain a balance between depth and accessibility, especially for professionals with limited time (Jansen & Schuwer, 2015).

The development process follows a structured sequence to ensure coherence between design and implementation. Rather than presenting AI tools as neutral technological solutions, the pedagogical architecture of the MOOC is designed to foster reflective and critically informed engagement with AI-enhanced language education. In this sense, the course positions teachers not as passive users of technology, but as active mediators capable of evaluating, adapting, and contextualizing AI tools within specific pedagogical and disciplinary settings.

The pedagogical design integrates three complementary elements. First, the connectivist model, where knowledge is constructed through interaction, exchange, and collaboration (Siemens, 2005). Second, the cMOOC approach supports co-creation of knowledge rather than passive consumption, particularly through shared tasks and discussions. Third, the miniMOOC format,

which limits the duration of each module and increases completion rates (Jansen & Schuwer, 2015). The combination of these elements allows us to balance flexibility with structure.

The course is structured as a progression from understanding to application and then to critical reflection. It begins with AI in education and LSP frameworks, establishing the conceptual foundation. The central part of the course focuses on implementation, including pedagogy, instructional design, and content creation using AI tools. The final module introduces a critical perspective, addressing limitations, risks, and ethical issues. This progression ensures that learners do not only use AI, but also understand its implications.

One of the key design decisions is the dual-track structure. Track A is designed for educators and focuses on pedagogical application, scaffolding, and classroom integration. Track B is designed for stakeholders and focuses on innovation, product development, and market-oriented applications. At the same time, each module follows a standardized internal structure, which includes a theoretical component, practical demonstrations, and reflective activities. This ensures consistency across the course and supports different learning needs.

The MOOC is designed to be fully multilingual and accessible. It is available in five languages, which allows us to reach a wider European audience. Translation is supported by AI tools, but all content is reviewed to ensure academic quality and terminological accuracy. In addition, accessibility is ensured through subtitles, transcripts, and captions, supporting different learning preferences and needs.

Assessment is designed to measure both engagement and learning outcomes. Participants are required to complete at least 75 percent of the course content and achieve a minimum score of 70 percent in assessments. Assessment includes quizzes and task-based activities, ensuring that learners not only understand the content but can also apply it. Successful participants receive microcredentials and digital badges, which are designed to be verifiable and portable.

The certification pathway is aligned with the European Qualifications Framework (Cedefop, 2017), ensuring that learning outcomes are comparable across contexts. Microcredentials are used to recognise specific competences, particularly in the use of AI for LSP teaching and content development. This

supports professional development and increases the practical value of the course.

6. Conclusions

The rapid diffusion of artificial intelligence within educational environments is profoundly reshaping the landscape of language teaching and teacher education. In this context, the integration of AI into LSP education cannot be understood merely as a technical innovation or as the simple adoption of new digital tools. Rather, it requires a broader pedagogical and epistemological reflection on the nature of language learning, the role of teachers, and the forms of knowledge and interaction that educational systems seek to promote.

This article has argued that LA provides a particularly relevant theoretical framework for approaching AI-enhanced language education. By foregrounding the cognitive, social, intercultural, and critical dimensions of language learning, LA makes it possible to move beyond purely instrumental or technocentric conceptions of AI integration. From this perspective, AI should not be viewed as a substitute for human linguistic competence or pedagogical expertise, but as a mediated resource whose educational value depends on the ways in which it is critically interpreted, contextualised, and incorporated into teaching practice.

Within this framework, the AILEM project represents an attempt to develop pedagogically meaningful approaches to AI-supported LSP education through the design of a multilingual and connectivist miniMOOC addressed to teachers and professional stakeholders. The project combines technological innovation with reflective pedagogy, multilingualism, collaborative learning, and critical engagement with digital tools. In doing so, it seeks to support the development of professional competences that are not limited to the operational use of AI technologies, but also include ethical awareness, pedagogical judgement, and the capacity to critically evaluate the implications of AI-mediated communication.

The pedagogical architecture of the MOOC highlights the importance of designing teacher education initiatives that are flexible, accessible, and responsive to the evolving realities of digitally mediated educational contexts. At the same time, the project underlines the continuing centrality of human agency in language education. Even in increasingly automated environments, language learning remains deeply connected to interpretation, social interaction, intercultural understanding, and the construction of meaning.

Future developments of the project may include empirical evaluation of participant experiences, analysis of learning outcomes, and further investigation into the long-term impact of AI-supported multilingual teacher education. Additional research will also be needed to explore how critical AI literacy can be integrated more systematically into language teacher education frameworks and how AI-enhanced pedagogies can contribute to more inclusive, democratic, and reflective forms of language learning across diverse educational contexts.

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