

Planning, Personalization, Implementation (PPI): Technology-Mediated Language Teaching

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1.1 New Gaps in Technology-Mediated Language Teaching

Among the sectors most significantly affected during the global COVID-19 pandemic was education. Institutions, educators, students and their families were forced to adapt to a new way of learning, mediated by technology. In the context of language teaching, this global crisis considerably transformed the traditional learning ecosystem, which had primarily revolved around in-person classes and the use of technology as a mere accessory in the teaching process (Arias Ortiz *et al.*, 2020; BBC, 2020; CEPAL-UNESCO, 2020; Suárez Pertierra, 2020).

Lockdown compelled educational institutions to adopt an entirely virtual teaching model and design contingency plans. Educators had no choice but to reassess their teaching methods. Meanwhile, students had to instantly take control of their own learning process and achieve greater autonomy. Certain data, such as the fact that only 53% of the global population (58% of men and 48% of women) used the internet (ITU Report, 2020), proving particularly concerning in developing countries (United Nations, 2022), revealed our inability to tackle a global pandemic in a coordinated manner (Broom, 2020). In this context, clear dichotomies emerged, even in countries with an established technological trajectory such as the United States. Here, the so-called ‘homework gap’ brought to light the internet connection issues that existed both in rural areas and outside the country’s main cities (Auxier & Anderson, 2020; Horrigan, 2015; Ovide, 2020).

During the pandemic, decision-making in schools was influenced by a range of financial, professional and educational factors. The decisions

focused on ensuring the proper functioning of institutions and significantly impacted society. Certain changes led to the reassessment of educational practices, including international study programs at university, which are essential for the development of intercultural and linguistic skills (Ridler, 2020; Soler Montes & Juan-Lázaro 2025; Strawbridge, 2023; University Council for Languages, 2020). Consequently, it became necessary to re-invent the concepts of *space* and *time* in order to adapt to this new reality. As a result of the physical distance imposed by lockdown, **three educational gaps** emerged in the context of language acquisition:

- (1) A **teaching gap**, where educators, who were used to teaching in person, had to quickly adapt to a virtual environment. As a result, they gained new skills and redesigned essential aspects of their work, such as lesson planning, presenting new learning content and engaging with students in the virtual world.
- (2) A **learning gap**, where students faced challenges regarding accessibility, interaction and learner autonomy, all essential components for the construction of their virtual identity in the classroom.
- (3) A **digital gap**, associated with the technological disparity that paradoxically both connects and separates all those involved (schools, educators and students) in terms of accessibility, availability and technology resource management. Indeed, this exposed the need to make efficient use of technology when it comes to knowledge acquisition.

Within this context, this book goes beyond simply exchanging experiences, adaptations, reformulations and techniques used throughout the years of language teaching and learning in the pandemic: it also reveals the lessons we have learned, focusing on both the present and the future of language teaching through the use of artificial intelligence (AI) applications and prototypes (Muñoz-Basols *et al.*, 2023; Muñoz-Basols & Fuertes Gutiérrez, 2025b). It introduces the **PPI (Planning, Personalization and Implementation) model**, which provides language instructors with the tools they need to exploit the opportunities the virtual world can offer. In this way, the book highlights the need to adopt a comprehensive outlook based on the educational environment's characteristics for the successful implementation of a technology-mediated language teaching model.

1.2 Technology and Learning Environments

More than a decade ago, Goertler (2011) had already identified **four reasons** for the implementation of hybrid and online classrooms in language study plans:

- (1) A **logistical reason**: according to Goertler (2011), technology can optimize the cost–benefit ratio within institutions, reduce spatial and temporal limitations, foster inter-institutional collaboration, as well as facilitate the teaching of minority languages.
- (2) A **theoretical reason**: technology is both a cause of and a means for digital literacy, which is more an ‘ethical imperative’ rather than an ‘option’, according to Ortega & Zyzik (2008). Not only this, technology also allows instructors to apply many of the methodological principles of acquisition theories, including cognitive and socio-constructivist approaches. This is achieved by providing access to authentic material, offering feedback, encouraging interaction and adapting to the learner’s level (see, among others, Cerezo *et al.*, 2015).
- (3) A **pedagogical reason**: technology can go beyond facilitating the development of the four traditional skills (Oskoz, 2025), by promoting competences such as learner autonomy (Lee, 2016) and intercultural communication (Godwin-Jones, 2019; O’Dowd & Dooly, 2020). It can also favor greater consistency in educational programs through the standardization of language courses.
- (4) An **empirical reason**: there is a growing number of synthetic publications and meta-analyses that point towards the effectiveness of hybrid and online teaching, compared to fully in-person models (Cerezo *et al.*, 2014; Gironzetti *et al.*, 2020; Grgurović *et al.*, 2013; Plonsky & Ziegler, 2016).

However, these four arguments are not without challenges and conflicting views. For example, the educational use of technology varies greatly among different geographic areas, institutions and individuals in terms of financial resources (Dooly & Comas-Quinn, 2025), skills, attitudes and knowledge about its didactic potential (Gomez Soler & Tecedor, 2025). In turn, these differences have led to widespread heterogeneity in the development of hybrid and online language teaching programs (Blake *et al.*, 2025).

Events such as the COVID-19 pandemic brought about new technology migration scenarios, extending beyond the four reasons identified by Goertler (2011). These include an initial phase involving the creation and implementation of contingency plans and a subsequent phase for assessment, adjustment and projection towards the future (Gacs *et al.*, 2020). In the first stage, lockdown and the need to teach exclusively online challenged the traditional classifications of technology-mediated learning. Historically, researchers and consortia such as the Babson Research Group, the EDUCAUSE Center for Analysis and Research, and the Online Learning Consortium have defined up to **four types of learning environment** according to the percentage of technologically distributed educational content:

- (1) **First environment:** in-person learning where the use of technology is confined to the classroom or limited to the sharing of logistical content.
- (2) **Second environment:** technology-enhanced classrooms where technology is used to share educational content (whether it be learning content, assessment-related content or both) in up to 30% of the course's teaching hours.
- (3) **Third environment:** 'mixed' teaching where the online teaching percentage may reach up to 80%. Some researchers, including Gruba and Hinkelman (2012), distinguish between blended learning (up to 45%) and hybrid learning (between 45% and 80%) in this case.
- (4) **Fourth environment:** online learning where more than 80% of the educational content is shared and negotiated digitally.

The conclusion of this initial emergency phase, in which most institutions were compelled to replace the first environment with the fourth, gave way to the need for a subsequent phase of assessment, adjustment and projection towards the future. This can be applied to all institutions, both those that created their online classrooms from scratch, as well as those that had already made a head start. Those institutions that created their online classrooms from scratch will have to resort to existing research, including studies on student and teacher perceptions regarding various in-person and online teaching models, as well as empirical studies on their effects on learning processes and outcomes. As argued by Egbert (2005: 5), to prevent teaching from being based solely on trial and error, practice should be guided by theory. On the other hand, those institutions that developed their programs from previous curricula based on academic research will need to assess how they function (González-Lloret, 2025), since in this case practice may contribute to the modification and creation of learning theories (Hulstijn, 2000; Youngs *et al.*, 2011). As stated by Youngs *et al.* (2011: 25), this constant interaction between theory, application/research and theoretical development will allow us to grow both as researchers and educators.

This theoretical development should also consider the ability of technology to include different communicative contexts and to generate discourse hybridity that brings oral and written modes closer together (Schneider *et al.*, 2020). The use of technology tools designed to comprehensively take advantage of multimodality (text, images and sound) blurs the traditional distinction between oral and written texts (Koch & Oesterreicher, 1990; Söll, 1985). In this medium, the communicative parameters and stimuli that regulate face-to-face interaction, characteristic of immediacy, can also be found in written contexts that are traditionally defined by their communicative distance. Indeed, this is the case when it comes to 'chats', as they often include non-verbal elements such as emoticons.

Similarly, the essential proliferation of online environments for language teaching not only encourages us to explore the past and assess the present by identifying perceptions and outcomes of online teaching models: it also compels us to look towards the future and build a new teaching paradigm in which technology plays a central role. This aspect is further reinforced by AI breakthroughs in education, with the emergence of generative AI tools such as ChatGPT. Although these have not been designed specifically for educational purposes, the potential for their use in this context is considerable (Muñoz-Basols *et al.*, 2023; Muñoz-Basols & Fuertes Gutiérrez, 2025b).

In short, current educational models are entirely different from their predecessors, in the sense that technology is not merely a means to transmit knowledge but, rather, a tool for its collective and collaborative construction. Specifically, in the context of language teaching, technology has not only allowed for a shift in focus from the development of receptive to productive skills, as well as communicative interaction and competence: it has also given way to new combinations of individual and collective language learning environments, requiring innovation not only of a technological but also of an educational nature (White, 2017). As stated by Comas-Quinn, de los Arcos and Mardomingo (2012):

attempts to promote interaction in online classrooms necessarily involve a constant redefinition of traditional roles, consequently challenging teacher/learner hierarchies. In fact, this observation can be applied to any technology-mediated educational environment (Muñoz-Basols & Fuertes Gutiérrez, 2025a).

Within this process, Fischer (2012: 28) notes that it is the instructor's responsibility **to empower their students**. This is achieved not only by teaching them to make accurate educational decisions, as attested by the resurgence of research on metacognitive instruction, but also by showing them how to use a variety of technology resources to support such decisions (Cerezo & Pujolà, 2025).

However, as argued in section I.3, this empowerment cannot take place without **first empowering educators in their use of technology**. To this end, sections 1.3 and 1.4 discuss the pedagogical model on which this book is based. This model seeks to raise awareness among language instructors regarding the need to take a series of steps or actions that involve *technology planning* in teaching, *content personalization* according to each group's reality, as well as the *implementation of resources* intended to facilitate and mediate learning.

I.3 Technology Empowerment and Language Teaching

The emergence of cooperative learning technologies (CLTs) and empowerment and participation technologies (EPTs) has shed light on

the gradual integration of information and communication technologies (ICTs) in language teaching. This new environment involves technological changes that affect both curriculum design and the way in which languages are taught.

One of the most significant implications of this new scenario is the importance of identifying and satisfying both students' and educators' needs. On the one hand, integrating technology into teaching requires the use of certain tools and resources that sometimes come with costs for educators, learners and institutions. These may include, for example, devices with an internet connection or software licenses. On the other hand, this change also imposes the need to equip all stakeholders with the skills and competencies necessary to use technology efficiently, effectively and profitably in academic contexts.

As a result, we define **technology empowerment** as educators' and learners' ability to become familiar with tools designed to teach either synchronously (in real-time) or asynchronously, and to actively participate in virtual learning environments. They must also be aware of how to manage the communicative codes specific to these exchanges, which differ from those involved in face-to-face interactions.

Becoming aware of these differences within virtual environments and understanding the opportunities that technology can offer in education has the potential to empower both teachers and students alike. In turn, this allows them to use the available tools in a more efficient manner (Mizza & Rubio, 2025), consequently enhancing the learning experience. Based on this premise, language instructors will also be positioned to gain new skills already present in the context of in-person teaching, but with differences in their approach and execution. To achieve this, they will need to seek strategies that preserve their students' motivation (Cerezo & Yanguas, 2025); promote collaborative learning and interaction; manage anxiety, especially when developing speaking skills (Bárkányi, 2025); deal with participants' expectations in relation to the instructor's availability; and, finally, tackle ethical concerns arising from the use of technology in language classrooms (Álvarez, 2014). Other effects associated with the integration of technology include the need to adapt materials, assessment practices and feedback to this new environment (Bailini, 2025).

While technology-mediated teaching offers social inclusion opportunities for learners with disabilities, it is also crucial to address potential accessibility issues arising from the platforms used, as these may affect certain users. However, if educators are neither exposed to the importance of all these variables, nor provided with information to help them understand the virtual environment's workings and particularities, the technology empowerment necessary to change their attitude towards online practices will not be achieved. Hampel and Stickler (2005) note that all these aspects require educators to develop certain skills which,

generally speaking, are acquired and applied progressively. That being said, this information is rarely centralized, as it depends on every individual institution as well as the experiences each educator has accumulated throughout their career.

In this technological context that is so crucial for language teaching and learning, this book aims to address many of the primary challenges faced by educational program leaders, language instructors and students, including the integration of AI. To this end, it gathers contemporary research in three indispensable knowledge areas to support all language professionals in their pursuit of efficient technology management and use: **knowing how to plan** technology and curriculum needs; **knowing how to personalize** teaching according to different learner profiles; and **knowing how to implement** technology resources and media.

I.4 The PPI Model: Planning, Personalization and Implementation

The design of the PPI model serves as the foundation for this book. The model is based on three fundamental steps, or actions, for technology-mediated teaching:

Planning → Personalization → Implementation

This approach takes into account the analysis of needs prior to sharing knowledge, individual and contextual variables that impact teaching and learning, and the management of tools and resources needed to teach. In the book, four chapters are devoted to each of these three steps, which together constitute a tool that encourages readers to reflect on the instructor's role in technology-mediated language teaching (Figure I.1).

These 12 basic building blocks of the PPI model can be expanded, adapted and redesigned according to the individual educational needs. That said, taken as a whole, the content of the book forms a tool for technology empowerment. This is due not only to the significance of the chosen topics but also to the applicability of the information this book offers.

Part 1 focuses on planning technology-mediated teaching from the perspective of the three main technology needs: those related to curriculum, practice and methodology.

In Chapter 1, 'Access to Technology and Social Justice', Melinda Dooley and Anna Comas-Quinn highlight the importance of considering access-related aspects as an opportunity to promote social justice in online language teaching, keeping in mind the gap caused by socioeconomic inequality in relation to the learners' specific profiles.

Chapter 2, 'Curriculum Planning and Development in Virtual Environments', addresses the main considerations when it comes to

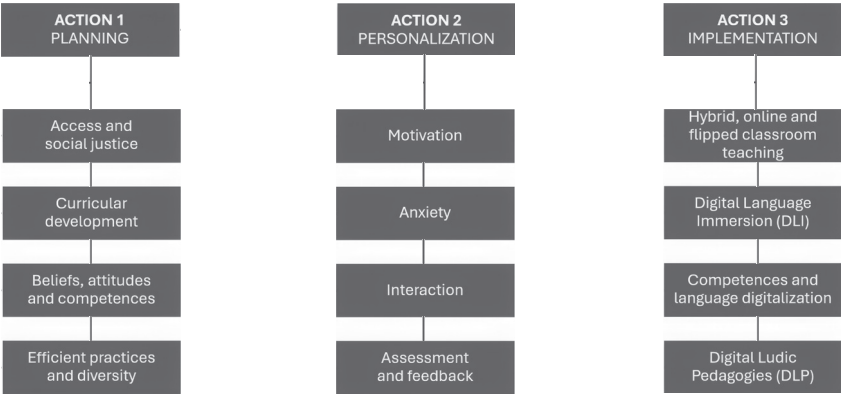


Figure I.1 Application of the PPI (Planning, Personalization, Implementation) model in this edition

successfully planning online language courses. Marta González-Lloret considers the role of methodology, materials, the level of technology integration and teacher training, presenting the ADDIE model (Analysis–Design–Development–Integration–Evaluation) for implementing technology in education.

In Chapter 3, ‘Virtual Teachers’ Beliefs, Attitudes and Competence’, Inmaculada Gómez Soler and Marta Tecedor gather knowledge, skills, competences, values, attitudes and behaviors of language teachers in virtual environments, based on a quantitative study conducted with 241 Spanish teachers in 39 countries across 5 continents. The aim is to encourage the development of digital competences and to promote a positive attitude towards teaching in virtual environments.

Chapter 4, ‘Effective Technological Practices and Diversity’, concludes this first section with a collection of methodological experiences that prove effective for online language teaching. Daria Mizza and Fernando Rubio base their research on the pedagogical principles of the Universal Design for Learning (UDL) paradigm to develop educational programs based on the idea that, in terms of learners’ knowledge and skills, diversity is the norm in any language course.

Part 2 analyzes how to personalize teaching by establishing a direct connection between technology and its ability to adapt, satisfy motivational needs, as well as manage important variables such as anxiety and processes like interaction. It also analyzes how to develop pedagogical interventions in assessment and feedback, keeping in mind the different learner profiles in the classroom.

In Chapter 5, ‘Motivation and Virtual Learning’, Luis Cerezo and Íñigo Yanguas highlight that this crucial aspect in learning has mainly

been researched from the perspective of in-person teaching. In their chapter, these authors offer guidelines to develop and maintain learner motivation in technology-mediated teaching environments.

In Chapter 6, 'Anxiety and Virtual Learning', Zsuzsanna Bárkányi explores, through quantitative data, the anxiety suffered by language students in virtual environments. The research demonstrates that learners' self-efficacy beliefs are stronger at the end of language courses compared to the beginning. As for their anxiety levels, however, these remain stable. Anxiety, as an affective variable, prevents many students from fully participating in oral activities. The author offers recommendations on how to cope with anxiety related to speaking in a virtual environment.

In Chapter 7, 'Interaction in Virtual Learning Environments', Javier Muñoz-Basols and Mara Fuertes Gutiérrez focus on one of the fundamental pillars of language teaching based on a qualitative case study. The authors present a template for the analysis of interactions in synchronous environments, taking into account their nature and content. Examples of real-life interactions in virtual Spanish tutorials are also provided, alongside recommendations for the promotion of interaction in virtual environments.

Chapter 8, 'Assessment and Feedback in Virtual Learning Environments', concludes the second part of the volume with an analysis of the pros and cons of transferring assessment and feedback to virtual environments. Sonia Bailini considers several variables related to the physical context and their impact on the preparation of oral and written tests. The author also offers practical recommendations for the preparation and management of online exams, as well as suggestions for optimal use of information and communication technologies (ICTs) as tools to provide either mediated or automated digital feedback.

Part 3 explores different ways to implement tools and resources to maximize students' learning experience in technology-mediated environments. These may include hybrid, online or flipped classroom teaching models, as well as virtual language immersion environments. There is also a clear focus on the development of digital language skills and the application of ludic teaching methods online.

In Chapter 9, 'Hybrid and Online Teaching and the Flipped Classroom', Robert Blake, Lillian Jones and Cory Osburn present the main characteristics of virtual learning in hybrid, flipped classroom or fully online formats, from an interactionist perspective. A series of practical suggestions is offered regarding the design of online courses, which encompasses both lexico-grammatical and cultural aspects, harnessing students' natural ability to be storytellers (*homo fabulans*).

Chapter 10 contributes to redefining the role of the instructor in intercultural competence acquisition. In 'Digital Language Immersion (DLI) and Virtual Exchanges', Carlos Soler Montes and Olga Juan-Lázaro address the need to practice languages in face-to-face immersion

contexts through resources present in virtual learning environments enriched with pedagogical interventions. The chapter offers a critical analysis of sociolinguistic and intercultural competence acquisition, promoting telecollaboration and production in transmedia formats.

In Chapter 11, ‘Competences and Language Digitalization: Podcasts and Digital Stories’, Ana Oskoz demonstrates how digital tools such as podcasts and digital stories have the power to stimulate learners’ imaginations as they create and develop new meanings. The author describes their potential to develop listening, speaking and writing skills, promote autonomy and provide feedback, as well as mediate the development of language and meaning.

Chapter 12 concludes Part 3. It clarifies the key concepts for understanding the integration of gamification in language teaching. In ‘Digital Ludic Pedagogies (DLP): Videogames, Minigames, Extended Realities and Robots’, Luis Cerezo and Joan-Tomàs Pujolà pay special attention to digital ludic resources such as videogames, minigames, extended reality and robots. The authors also offer considerations for teaching practices in relevant research areas, such as the teaching and learning of vocabulary (incidental, vicarious and intentional learning) and grammar (feedback, guided induction and the persona effect).

Chapter 13 serves as an epilogue to the book, addressing several characteristics of the emerging technological scenarios that AI offers in the context of language teaching. In ‘Opportunities for Artificial Intelligence (AI) in Language Teaching and Learning’, Javier Muñoz-Basols and Mara Fuertes Gutiérrez explore the potential applications of generative AI, paying special attention to the widespread accessibility of such tools and the need to define the role of this technology in terms of its effectiveness and ethical usage. The chapter presents AI as a paradigm shift in the traditional interactional dynamics in education and suggests how this technology can immediately contribute to language acquisition processes through key aspects, including informal learning, learner autonomy and (self)-evaluation.

1.5 Structure of Chapters

To facilitate publication and meet diverse reader expectations, a distinct structure has been adopted.

Parts 1 and 2 follow a similar structure that focuses on (a) the definition of concepts and a historical view of the topics addressed (b) the analysis of the current landscape and research advancements; (c) the presentation of practical recommendations; (d) suggestions for future lines of research; and (e) the presentation of annotated additional reading.

Part 3 is divided into (a) the demonstration of the use of specific teaching tools and their characteristics; (b) a review of the current status

of the topics explored; (c) the analysis of research on curriculum design and teaching practices; (d) the presentation of conclusions and future lines of research; and (f) the presentation of annotated additional reading.

The structure makes it easier for readers to become familiar with the content presented in each chapter. Consequently, the book serves as a versatile tool to reflect on teaching practices.

I.6 Interdisciplinary Reading Routes

While the chapters do follow a sequence, the book is acutely versatile in terms of its management. Indeed, this is evidenced by the various interdisciplinary reading routes that may be followed in order to get the most out of its content (Figure I.2).

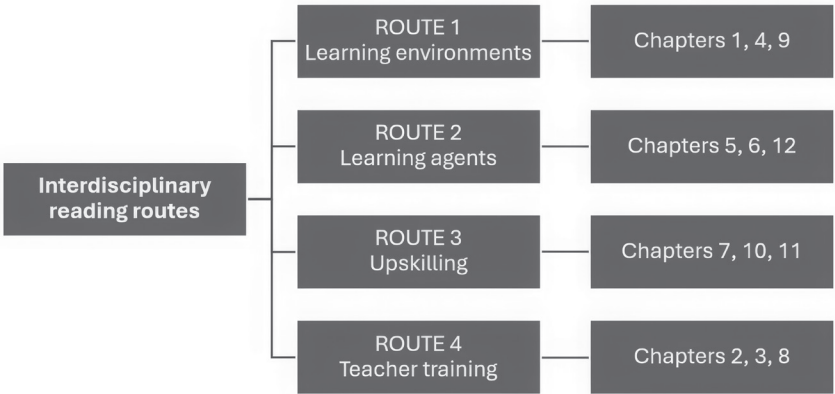


Figure I.2 Interdisciplinary reading routes in the book

I.6.1 Route 1: Learning environments

This route focuses on the importance of offering accessible teaching and reducing the socioeconomic gap in the classroom (Chapter 1), the efficiency and diversity of technology practices in the classroom (Chapter 4), and the differences between hybrid, online and flipped classroom teaching (Chapter 9).

I.6.2 Route 2: Learning agents

This route shines the spotlight on the learner, addressing topics such as motivation and learning dynamics in the classroom (Chapter 5), anxiety with regard to oral production (Chapter 6) and the management of digital ludic resources (videogames, minigames, extended reality and robots) to reinforce the pedagogical component of language learning (Chapter 12).

1.6.3 Route 3: Upskilling

The aim of this route is to support the development of language and intercultural skills, including **interaction** in the classroom (Chapter 7), linguistic immersion to interact with others and relevant content (Chapter 10), and the development of productive and receptive skills through tools such as podcasts and digital stories (Chapter 11).

1.6.4 Route 4: Teacher training

This last route addresses several fundamental aspects of planning and curriculum development to integrate technology into language teaching (Chapter 2), the beliefs, attitudes and competences of virtual teachers (Chapter 3), and assessment and feedback in virtual environments (Chapter 8).

1.7 Target Audience and Open Science

This book is aimed at a wide variety of readers, from both a theoretical and practical perspective. They may be classified into three main groups:

- (1) **Educators.** The book is suitable for individuals who currently work in languages education and show an interest in technology-mediated teaching. This includes people with experience in online teaching who wish to expand their potential or develop new techniques. It is also aimed at future language instructors currently pursuing a Master's or PhD.
- (2) **Researchers.** The book is also recommended for researchers who focus on second language acquisition in general, or for those who wish to further their understanding of the current state of technology-mediated language teaching.
- (3) **Program or team leaders.** The book contains relevant information for department heads or team coordinators. It offers guidelines for teacher training, as well as important content to support decision-making when it comes to implementing technology resources in educational institutions.

In light of the above, the book is an essential resource, allowing readers to maximize their use of technology in language teaching, while keeping in mind the specific learning environment, learner profiles and the use of digital tools. A further objective of this project is to consolidate technology-mediated language teaching as a discipline, identifying distinguishing features that set it apart as an independent area of knowledge.

From its inception, it was essential for the book to be an open science publication (Spanish Ministry of Science and Innovation, 2023), thereby enabling its content to reach a broad audience of teaching professionals worldwide. As a result, it serves not only as an essential source of knowledge on technology-mediated language teaching but the concepts presented herein can also be applied immediately to improve teaching practices. We hope that the fully open access publication of this book has a transformative impact and serves to inspire language teaching professionals.

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