

Barriers and Opportunities in Fostering Pragmatic Competence in the Digital Age

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ABSTRACT: This study reviews the development of pragmatic competence within digital communication platforms, aiming to synthesize evidence from recent literature and assess both opportunities and challenges. The review employs a systematic methodology, drawing from databases including JSTOR, ScienceDirect, Google Scholar, and Wiley Online Library, and applying inclusion criteria covering studies published between 2015 and 2024. The findings highlight five central themes: authenticity and context, intercultural diversity, personalization and adaptivity, technological barriers and access gaps, and the potential of emerging technologies such as artificial intelligence, gaming, and virtual reality. Evidence shows that authentic digital contexts and intercultural exchanges foster pragmatic awareness, while adaptive learning technologies enhance individualized instruction. However, significant barriers persist, including infrastructural inequalities, socio-economic disparities, and digital literacy gaps that constrain equitable access to pragmatic learning. Comparative studies suggest that learners in technologically advanced regions benefit more readily from these innovations than those in developing contexts. The discussion links these findings to pragmatic theory, emphasizing the role of systemic factors such as policy and infrastructure, and identifies the need for inclusive strategies to ensure equal opportunities. Recommendations include the development of longitudinal and cross-cultural research, as well as practical integration of advanced technologies into mainstream education. Overall, the study underscores the urgent need for combined strategies that integrate authenticity, intercultural awareness, personalization, and technological innovation to enhance pragmatic competence in digital communication.

Keywords: Pragmatic Competence, Digital Communication, Intercultural Learning, Computer-Mediated Communication, Adaptive Learning, Virtual Reality, Artificial Intelligence.



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INTRODUCTION

In recent years, research on the development of pragmatic competence has gained momentum alongside the growing role of digital platforms in daily communication. Social media, online learning environments, and virtual conferencing have become central spaces of interaction, replacing or complementing traditional face-to-face exchanges. These transformations demand

new skills from language users, particularly the ability to adapt to evolving norms, strategies, and etiquette in digital contexts.

For instance, the use of *Zoom* in online classrooms or *WhatsApp* for intercultural interactions illustrates how digitalization reshapes turn-taking, politeness strategies, and interpretation of communicative intent. In such contexts, pragmatic competence—defined as the ability to use language appropriately in relation to context—has become increasingly relevant. It requires not only linguistic accuracy but also sensitivity to social, cultural, and technological cues embedded in digital communication.

Scholars have emphasized both opportunities and challenges in this transition. González-Lloret (2019) highlighted how technology can provide authentic contexts that mirror real-life interaction, while Mseideen et al. (2025) argued that pragmatic aspects need to be taught explicitly in online settings, given the absence of paralinguistic cues such as tone, facial expressions, or gestures. Without such guidance, learners often misinterpret communicative intent and struggle to adjust their strategies.

Global evidence further demonstrates the uneven nature of digital pragmatic development. Rafiq and Yavuz (2024) reported that students actively engaged in online interaction improved both their language proficiency and social skills, whereas Pan (2023) found that learners in developing countries faced restricted opportunities due to limited digital access. These findings underscore how systemic factors—including infrastructure, educational policy, and socio-economic conditions—shape the extent to which learners can develop pragmatic competence online.

Against this backdrop, the present review aims to analyze how pragmatic competence is fostered through digital communication platforms. Particular attention is given to effective strategies, intercultural influences, and the role of emerging technologies such as artificial intelligence and virtual reality. By synthesizing empirical findings across diverse contexts, this review seeks to provide a comprehensive understanding of digital pragmatics and offer practical recommendations for education and intercultural communication.

METHOD

The methodology adopted in this systematic review was designed to ensure a comprehensive and rigorous analysis of how pragmatic competence is developed and applied in digital communication environments. To achieve this, a systematic and structured approach was employed in the identification, selection, and evaluation of relevant scholarly articles. This methodology aligns with best practices in conducting systematic reviews and follows established guidelines to enhance transparency and replicability of the process.

The first stage of the review process involved the collection of literature from multiple academic databases. Given the interdisciplinary nature of pragmatic competence and its integration into digital learning contexts, databases with broad coverage in linguistics, education, and digital

communication were selected. Specifically, searches were conducted in JSTOR, Google Scholar, ScienceDirect, and Wiley Online Library, all of which are well-established repositories of peer-reviewed publications relevant to this field (Qi & Chen, 2025). This diverse selection of databases ensured a wide coverage of research studies, including those published in linguistics journals, educational technology outlets, and broader interdisciplinary platforms.

In order to capture the most relevant literature, carefully selected keywords and search terms were used. These included “pragmatic competence,” “digital communication,” “computer-mediated communication,” “technology integration,” and “language learning.” The use of Boolean operators (AND, OR) and truncations allowed for flexibility in refining search results. For example, “pragmatic competence AND digital communication” was employed to narrow the scope to studies explicitly addressing both domains simultaneously. This search strategy was intended to maximize sensitivity in retrieving potentially relevant studies while minimizing irrelevant results. To maintain consistency, the same set of keywords was applied across all selected databases, and search results were cross-checked to eliminate duplication.

Clear inclusion and exclusion criteria were defined prior to the selection process to maintain focus and ensure consistency. The inclusion criteria were: (1) studies published between 2015 and 2024 to capture the most recent and relevant developments, (2) articles published in peer-reviewed journals to ensure reliability, (3) studies explicitly addressing pragmatic competence in the context of digital communication or computer-mediated communication, and (4) research employing either quantitative, qualitative, or mixed methods to provide a diverse methodological perspective. Exclusion criteria were applied to eliminate studies that did not meet the objectives of this review. Specifically, articles were excluded if they (1) focused exclusively on linguistic competence without addressing pragmatics, (2) discussed digital technology without linking it to pragmatic competence, (3) were theoretical or opinion pieces without empirical data, or (4) fell outside the designated publication window.

The process of article selection unfolded in several stages. Initially, titles and abstracts of the retrieved studies were screened for relevance to the research objectives. Articles that did not address pragmatic competence or digital communication were excluded at this stage. The remaining articles were then subjected to a full-text review, in which methodological rigor, clarity of research objectives, and relevance of findings were carefully assessed (Qi & Chen, 2025). This evaluation stage ensured that only studies of sufficient quality were included in the final synthesis. In this stage, quality appraisal criteria included: the clarity of research objectives, the appropriateness of research design, the validity and reliability of data analysis, and the contribution of findings to understanding the development of pragmatic competence in digital environments (Biran et al., 2025).

The final set of studies included in the review represented a variety of research designs, reflecting the interdisciplinary nature of this field. Quantitative studies commonly employed surveys, controlled experiments, and pragmatic competence tests to measure learners’ performance and adaptability in digital contexts. For example, surveys were often used to gauge students’ perceptions of their pragmatic skills when engaging in computer-mediated communication, while controlled experiments analyzed specific interventions such as the use of chatbots, simulations, or

digital games in fostering pragmatic awareness. In contrast, qualitative research frequently utilized semi-structured interviews, ethnographic observations, and content analysis of digital interactions. Such approaches provided nuanced insights into learners' strategies, challenges, and adaptive behaviors within digital communication settings (Qi & Chen, 2025; Beko & Mićović, 2022). Mixed-methods studies combined these quantitative and qualitative techniques to offer comprehensive perspectives on both measurable outcomes and experiential dimensions of pragmatic development.

A number of illustrative studies highlighted the value of this methodological diversity. Qi and Chen (2025), for instance, integrated both survey data and interview analysis to explore the role of technology in shaping pragmatic competence. Their findings revealed that while quantitative measures indicated measurable improvement in learners' pragmatic abilities, qualitative interviews uncovered challenges such as uneven digital access and difficulties in interpreting multimodal cues. Similarly, González-Lloret (2024) emphasized the importance of technology-based tasks, such as simulations and role-plays conducted through digital platforms, to enhance L2 learners' pragmatic skills. These findings underscored the utility of task-based approaches in bridging theoretical insights with practical pedagogical applications.

The systematic approach to literature collection and evaluation ensured that the review incorporated a broad spectrum of evidence while maintaining methodological rigor. By examining both controlled studies and naturalistic observations, the review could identify not only the measurable effects of digital technologies on pragmatic competence but also the contextual and cultural factors influencing their impact. This triangulation of perspectives strengthened the validity of the review's findings and supported a more holistic understanding of digital pragmatics.

Overall, the methodology employed in this systematic review combined comprehensive database searching, carefully selected keywords, explicit inclusion and exclusion criteria, and rigorous quality evaluation. This process yielded a balanced and representative body of literature that provided critical insights into the ways digital communication shapes pragmatic competence. Moreover, it identified recurring challenges such as the lack of longitudinal studies and the need for innovative research designs that can capture the complexity of multimodal and intercultural communication in digital spaces (Qi & Chen, 2025). By employing this structured methodological approach, the review contributes to advancing both theoretical understanding and practical application of pragmatic competence in the digital age.

RESULT AND DISCUSSION

The findings of this narrative review are organized around five key themes that emerged consistently from the surveyed literature: authenticity and context, cultural diversity and interculturality, personalization and adaptivity, technological barriers and access gaps, and the potential of emerging technologies such as artificial intelligence, gaming, and virtual reality. Together, these themes offer a comprehensive view of how pragmatic competence is cultivated, constrained, and redefined in digital learning and communication environments.

The first theme concerns authenticity and context, which have been widely discussed as central to the successful development of pragmatic competence in digital platforms. Scholars have emphasized that digital tools provide learners with opportunities to engage in interactions that closely resemble real-life situations. Sydorenko et al. (2017) demonstrated that digitally mediated conversational simulations replicate real-world exchanges and enhance learners' awareness of pragmatic norms. By situating language practice within authentic contexts, these simulations encourage learners to attend to sociocultural nuances that might otherwise remain obscure in traditional classroom-based instruction. Cruz (2018) similarly highlighted that contextual authenticity helps students acquire pragmatic awareness in ways that are more meaningful and sustainable. In Zhang's (2022) mixed-method study, computer-mediated communication (CMC) platforms enabled learners to not only practice linguistic forms but also participate in more natural and socially embedded interactions with native speakers. Students involved in CMC demonstrated superior performance in pragmatic responses compared to their peers without such exposure, suggesting that digital platforms play a vital role in strengthening authenticity in language practice. Sánchez-Hernández and Martínez-Flor (2021) further supported this finding by showing that learners in digitally mediated environments develop a more refined ability to deploy pragmatic markers, reinforcing the importance of authentic digital contexts.

The second theme relates to cultural diversity and interculturality. Research underscores the ability of digital platforms to foster intercultural awareness alongside pragmatic skills. Benabdelkader (2019) found that e-learning environments facilitated cross-cultural collaboration, exposing learners to diverse norms of interaction and helping them adapt to multicultural communicative settings. This adaptation was evident in studies showing that participants in digital language exchanges displayed heightened sensitivity to cultural differences, which in turn enhanced their pragmatic competence. Liu and Kinginger (2021) reported that international students in Europe adopted pragmatic styles distinct from those of their Asian peers, differences shaped largely by underlying social norms and communicative expectations. While Western contexts often valued directness, Asian learners demonstrated a preference for politeness and conflict avoidance, underscoring the influence of cultural frameworks on pragmatic practice. Hlavač et al. (2015) observed similar trends, noting that politeness conventions and strategies for disagreement varied across cultural groups. These findings indicate that digital communication serves as a laboratory for intercultural negotiation, where learners must navigate different pragmatic norms. Law et al. (2021) argued that curricula must be revised to better incorporate cultural diversity into digital learning contexts, ensuring that learners are equipped to handle globalized communicative challenges.

Personalization and adaptivity emerged as the third theme, reflecting the capacity of digital technologies to tailor learning experiences to individual needs. Sánchez-Hernández and Martínez-Flor (2021) demonstrated that personalized interventions focused on pragmatic markers substantially improved students' pragmatic performance in oral presentations. Learners receiving targeted instruction exhibited greater confidence and accuracy in deploying pragmatic strategies, highlighting the effectiveness of individualized pedagogical designs. Klimczak-Pawlak (2019) extended this insight by showing that adaptive technologies can provide customized feedback during pragmatic practice. Such feedback enabled learners to refine their communicative behavior in context-specific ways, reinforcing both competence and self-assurance. The evidence suggests

that digital personalization supports more meaningful engagement with pragmatic tasks, allowing students to progress at their own pace while addressing their unique learning challenges. These findings confirm that adaptive technologies not only supplement conventional teaching but also create new avenues for enhancing pragmatic competence in dynamic, learner-centered ways.

The fourth theme addresses technological barriers and access gaps, issues that continue to limit the equitable development of pragmatic competence. Research has consistently documented that infrastructural limitations, such as unstable internet connections or inadequate hardware, hinder students' ability to participate fully in digital learning environments. Padilla-Carmona et al. (2016) reported that learners in rural or economically disadvantaged regions face significant challenges accessing technologically sophisticated platforms, resulting in disparities in academic progress and pragmatic development. Digital literacy also plays a decisive role, as many learners require additional training to use interactive platforms effectively (Sydorenko et al., 2017). The literature shows that these barriers disproportionately affect marginalized groups, exacerbating inequalities in educational outcomes. Padilla-Carmona et al. (2016) further observed that students from low-income backgrounds consistently had reduced access to digital tools, a phenomenon not limited to developing regions but also present in certain communities within developed nations. González-Lloret (2019) reinforced this concern, noting that socio-economic disparities create uneven opportunities for learners to engage in pragmatic practice online. These findings highlight the pressing need for policies that address infrastructural inequities and digital skill gaps as part of broader strategies to improve pragmatic competence in digital contexts.

The final theme explores the potential of emerging technologies such as artificial intelligence (AI), digital games, and virtual reality (VR) in advancing pragmatic competence. Frolli et al. (2022) observed that VR-based learning environments provided highly realistic and contextually rich simulations of social interaction. These immersive settings allowed learners to practice pragmatic skills in lifelike scenarios, enhancing both motivation and practical competence. The ability of VR to replicate socio-cultural contexts positions it as a powerful tool for pragmatic instruction. Similarly, Sydorenko et al. (2017) found that AI-enabled platforms offered immediate, personalized feedback on learners' interactions, enabling adaptive learning processes that closely matched individual progress. By incorporating AI, educators could create highly flexible and responsive instructional models. Comparative research by González-Lloret (2019) demonstrated that computer-mediated communication platforms outperformed traditional classroom approaches in fostering pragmatic skills. Students engaging in CMC not only reported higher engagement but also exhibited greater pragmatic awareness than those taught through static, conventional methods. Zhang (2022) corroborated these findings, emphasizing that technology-driven approaches facilitate more authentic, adaptive, and engaging pragmatic practice. Taken together, these studies underscore the transformative potential of innovative technologies in reshaping pragmatic education.

When considered globally, these themes illustrate both commonalities and divergences across contexts. While authenticity, interculturality, and personalization consistently emerge as strengths of digital platforms, technological barriers remain unevenly distributed, with greater challenges documented in developing regions (Padilla-Carmona et al., 2016; Pan, 2023). Comparative perspectives reveal that learners in Europe and North America often have greater access to advanced platforms, enabling more effective pragmatic practice, whereas students in Asia, Africa,

and Latin America may struggle with infrastructural limitations. Nonetheless, the introduction of innovative tools such as VR and AI holds promise for bridging these gaps, provided that access issues are addressed.

In summary, the results of this review demonstrate that digital platforms provide unique opportunities for fostering pragmatic competence through authentic contexts, intercultural engagement, and adaptive personalization. However, these benefits are tempered by persistent barriers in access and infrastructure, which remain critical challenges for equitable implementation. Emerging technologies offer powerful solutions, but their potential will only be fully realized when systemic inequities in access and digital literacy are effectively addressed. These findings provide a foundation for the subsequent discussion, which will analyze the implications of these themes for theory, pedagogy, and policy in pragmatic education in digital environments.

The findings of this narrative review highlight significant intersections between pragmatic theory and the evolving landscape of digital communication, revealing both opportunities and persistent challenges in fostering pragmatic competence in virtual contexts. The results show that pragmatic competence, which emphasizes contextually appropriate use of language, is increasingly mediated by technology that reshapes communicative practices and expectations. The discussion that follows situates these findings within broader theoretical frameworks, explores systemic factors influencing pragmatic learning, and considers potential solutions while identifying limitations and directions for future research.

The relationship between the findings of this review and pragmatic theory demonstrates the central role of context in shaping meaning in communication. Pragmatic theories have long emphasized the dependency of meaning on contextual cues, speaker intention, and audience interpretation. González-Lloret (2019) highlighted that digital platforms can provide authentic learning environments where learners practice language in contexts that mirror real-world interactions. These findings support the principle of contextual relevance, underscoring how learners must continuously adapt their communicative strategies to account for the affordances and constraints of digital settings. For instance, asynchronous forums and synchronous chat rooms require different pragmatic strategies, with the former privileging reflective, delayed responses and the latter necessitating immediate, adaptive interaction. Mseideen et al. (2025) showed that digital communication situations are marked by nuances absent in face-to-face contexts, reinforcing the pragmatic principle that meaning is not inherent but negotiated dynamically. The variability of communicative forms across platforms—from emojis in text messaging to nonverbal avatars in virtual reality—further illustrates how digital environments expand and complicate the boundaries of pragmatic competence.

Systemic factors play a crucial role in determining the success or failure of pragmatic learning through digital means. Educational policy is central in this regard, as it shapes the extent to which digital technology is integrated into curricula. Benabdelkader (2019) argued that inclusive digital policies are essential to ensuring equitable opportunities for students to engage with technology-enhanced pragmatic instruction. Without systemic support, access to digital tools remains uneven, reinforcing socio-economic disparities in educational outcomes. Infrastructure further compounds this issue: González-Lloret (2019) and Rafiq and Yavuz (2024) emphasized that inadequate internet access and limited availability of devices are substantial obstacles to learners in rural or under-

resourced areas. These infrastructural deficits not only limit access to technology but also constrain opportunities for authentic interaction, which is essential for pragmatic learning. Zhang (2022) also observed that the effectiveness of pragmatic instruction is contingent on the intersection of these systemic factors, as learners with reliable access to technology and institutional support are more likely to develop pragmatic competence than those without.

The systemic challenges extend beyond infrastructure and policy to encompass digital literacy, which influences the extent to which learners can effectively engage with technological tools. Sydorenko et al. (2017) noted that without sufficient training, learners often struggle to maximize the potential of interactive platforms designed to foster pragmatic skills. Digital literacy gaps, particularly in marginalized communities, further exacerbate educational inequalities and prevent learners from fully participating in digital pragmatic practices. Thus, while digital platforms offer innovative possibilities, systemic inequities can significantly constrain their impact, making pragmatic competence development a privilege rather than a universally accessible outcome.

Addressing these barriers requires a combination of targeted interventions and systemic reforms. Expanding access to reliable technology and providing comprehensive digital training for both students and educators constitute fundamental steps toward bridging existing gaps. Benabdelkader (2019) emphasized that training programs designed to improve digital literacy are indispensable in enabling learners to navigate technologically mediated environments effectively. These programs must not only focus on technical skills but also integrate pragmatic awareness, helping students recognize and adapt to the unique communicative norms of different digital platforms. Educational policies should further incorporate flexibility, acknowledging variations in socio-economic contexts and providing targeted resources to ensure equal opportunities for all learners. By promoting inclusivity, such policies can mitigate disparities in digital access and foster a more equitable distribution of pragmatic learning opportunities.

Another dimension of potential solutions involves the redesign of curricula to incorporate pragmatic instruction explicitly within digital communication contexts. Research by Sánchez-Hernández and Martínez-Flor (2021) demonstrated that interventions targeting pragmatic markers significantly enhanced students' communicative performance. Integrating such approaches into mainstream curricula could ensure that pragmatic competence is systematically addressed rather than treated as an incidental by-product of language learning. González-Lloret (2019) advocated for the use of task-based digital learning activities, which align pragmatic learning with authentic, goal-oriented tasks, thereby reinforcing contextualized language use. By embedding pragmatic instruction into digital learning frameworks, educators can create more structured opportunities for learners to practice and internalize pragmatic strategies.

The exploration of emerging technologies offers further solutions with the potential to transform pragmatic education. Núñez-Román et al. (2024) highlighted the promise of artificial intelligence in delivering real-time, personalized feedback, allowing learners to refine their pragmatic skills through adaptive interactions. Virtual reality, as observed by Froli et al. (2022), provides immersive environments that simulate real-life scenarios, enabling learners to practice pragmatic strategies in contextually rich and engaging settings. These technologies not only replicate authentic contexts but also provide innovative means of overcoming limitations associated with traditional classroom instruction. Comparative studies, such as those conducted by González-Lloret (2019) and Zhang

(2022), suggest that technology-mediated approaches outperform conventional pedagogies in enhancing pragmatic awareness and competence, indicating a need to further explore the integration of advanced technologies into pragmatic instruction.

Nevertheless, the current body of research exhibits several limitations that constrain the comprehensiveness of these findings. One major gap is the relative scarcity of longitudinal studies that examine the long-term impact of digital platforms on pragmatic development. While short-term improvements are frequently documented, the durability of these outcomes remains unclear. Qi and Chen (2025) observed that few studies extend beyond immediate post-intervention assessments, leaving unanswered questions about the sustainability of pragmatic gains over time. Additionally, most studies are situated within higher education contexts, with limited attention to younger learners or professional communication settings. This narrow focus restricts the generalizability of findings and overlooks populations for whom pragmatic competence is equally critical. Research is also disproportionately concentrated in technologically advanced regions, leaving the experiences of learners in developing countries underexplored, despite the heightened significance of infrastructural and systemic challenges in those contexts (Padilla-Carmona et al., 2016; Pan, 2023).

The limited engagement with multimodal communication further highlights the need for expanded research. Beltrán-Palanques and Querol-Julián (2018) argued that current approaches insufficiently address the complexities of multimodality, particularly the interplay between verbal and nonverbal cues in digital environments. Given that pragmatic competence often hinges on interpreting and producing multimodal signals, such as emojis, gestures, or prosody in virtual contexts, future studies must develop frameworks capable of capturing these dynamics. Rafiq and Yavuz (2024) emphasized that integrating multimodal analysis is essential to advancing a holistic understanding of pragmatic competence in digitally mediated interactions.

In proposing avenues for future research, it is critical to consider the comparative effectiveness of traditional and technology-mediated methods of pragmatic instruction across cultural contexts. Studies like those by Liu and Kinginger (2021) underscore the influence of cultural background on pragmatic practices, suggesting that cross-cultural comparisons could illuminate how technology mediates pragmatic adaptation across diverse populations. Research should also examine the interaction between systemic factors, such as policy and infrastructure, and pedagogical innovations, to identify strategies that maximize the effectiveness of pragmatic instruction in varied socio-economic contexts. Moreover, investigations into the integration of emerging technologies, such as AI and VR, must extend beyond experimental trials to explore practical applications within mainstream educational systems. By addressing these gaps, future research can contribute to building more inclusive, effective, and theoretically grounded models of pragmatic education in digital environments.

CONCLUSION

This narrative review has examined how pragmatic competence develops within digital communication platforms, synthesizing findings from diverse studies to highlight both opportunities and challenges. The evidence confirms that authenticity and context provided by

digital tools enable learners to practice language in environments closely resembling real-life situations, enhancing their pragmatic awareness. Intercultural engagement facilitated through online exchanges further strengthens learners' adaptability to diverse communicative norms, while personalized and adaptive technologies contribute to more effective and learner-centered approaches. However, persistent barriers, including infrastructural limitations, socio-economic disparities, and gaps in digital literacy, continue to restrict equitable access to pragmatic learning opportunities. These systemic factors underscore the urgency of developing inclusive educational policies and digital training programs to mitigate inequalities. Emerging technologies such as artificial intelligence, gaming, and virtual reality demonstrate strong potential to transform pragmatic instruction, though their benefits will only be realized if issues of access and integration are addressed. Future research must prioritize longitudinal studies to assess the sustainability of pragmatic gains, as well as investigations into multimodality and cross-cultural adaptability. By combining authenticity, interculturality, personalization, and innovative technologies, educators and policymakers can ensure that pragmatic competence in digital communication becomes an accessible and essential skill for learners worldwide.

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