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BRIDGING TECHNOLOGY AND PEDAGOGY: A QUALITATIVE STUDY OF DEEP LEARNING-BASED HYBRID LEARNING IN ENGLISH FOR BUSINESS

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ABSTRACT

This study investigates how deep learning–based artificial intelligence (AI) can effectively support hybrid learning in English for Business courses. In response to rapid technological change in higher education, the research explores how digital tools can complement human teaching and learning. Using a qualitative case study design, data were collected from 10 lecturers and 15 students through interviews, classroom observations, and document analysis. The findings reveal that AI-enabled features, such as personalized learning paths, instant feedback, and gamified activities, enhanced students' motivation, supported self-paced learning, and improved awareness of individual strengths and weaknesses. However, participants also reported challenges, including limited digital literacy, unstable internet access, and difficulty managing multiple platforms. Importantly, both lecturers and students emphasized that human interaction remains crucial, with real-time discussion, collaborative activities, and instructor guidance playing key roles in developing confidence and business communication skills. The study concludes that successful AI-enhanced hybrid learning requires not only technological innovation but also strong institutional support and thoughtful pedagogical practice. AI should be viewed as a complementary tool rather than a replacement for the human connections essential to meaningful language learning.

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INTRODUCTION

The rapid evolution of digital technologies has fundamentally transformed higher education globally, necessitating a reimagining of teaching and learning methodologies in the twenty-first century. Hybrid learning, which combines face-to-face instruction with online engagement, has emerged as a particularly compelling pedagogical approach, offering increased flexibility and accessibility while addressing diverse learner needs (Efrizal, 2024). This method builds on foundational blended learning initiatives, but its relevance surged dramatically during the COVID-19 pandemic when the reliance on technology-mediated instruction became a critical necessity instead of an optional enhancement (Alkaabi et al.,

2023). Concurrently, the fast-paced advancements in artificial intelligence (AI), especially through deep learning systems, have unveiled transformative potentials for personalized, adaptive, and data-driven learning support. AI technologies have the capability to offer real-time feedback, performance analytics, and individualized instruction, significantly altering how educational experiences are structured and delivered (Yu et al., 2024; Darsih & Asikin, 2020).

In Indonesia, the integration of hybrid and AI-supported learning systems presents both timely opportunities and complex challenges. Universities across the nation have begun to adopt AI-assisted platforms to bolster language education. However, this implementation is not uniform due to enduring issues such as unequal levels of digital literacy, inconsistent technological infrastructure, and varying degrees of institutional readiness. These challenges are particularly critical in English for Business courses, which require students to master specialized vocabulary, professional communication skills, and intercultural competencies, abilities necessitating not only technological support but also substantial human interaction (Musdariah et al., 2021). While AI can facilitate aspects like pronunciation, writing feedback, and vocabulary enhancement, educators struggle to reconcile the efficiency of automation with the essential interpersonal, social, and contextual elements of language learning that contribute to student achievement (Adekola et al., 2017).

Despite the increasing infusion of deep learning technologies into hybrid educational frameworks, existing research remains largely limited and fragmented. Much of the literature addresses system effectiveness, adoption frameworks, or user satisfaction, while often neglecting the real-world experiences of educators and students who must navigate these tools in practical classroom settings. There is a noticeable scarcity of studies investigating how AI-enhanced hybrid learning reconfigures classroom interactions, impacts student engagement in the face of digital literacy barriers, or transforms educators' pedagogical identities when automated feedback and analytics take precedence in instruction. Furthermore, the unique requirements of Business English learners, whose communication needs are inherently professional, context-specific, and socially negotiated, remain underexplored (Laila et al., 2023; Ahimsa & Khawa, 2025).

In response to these gaps, the present study employs a qualitative case study approach to delve into the experiences of educators and students regarding the implementation of a deep learning-based hybrid learning model in English for Business courses within Indonesian higher education institutions. This research aims to illuminate participants' perceptions, challenges, and motivations through methods such as interviews, classroom observations, and document analysis.

RESEARCH METHOD

Research Design

This study adopts a qualitative research approach to investigate the perceptions, experiences, and challenges of both educators and learners engaged in a deep learning–supported hybrid learning model for teaching English for Business. Qualitative inquiry offers flexible strategies for examining complex issues within real-world contexts (Creswell, 2014). By emphasizing descriptive and interpretive data, the research captures rich, contextualized insights that cannot be easily measured quantitatively. The analysis centers on participants' views, instructional experiences, and the obstacles encountered in implementing hybrid learning enhanced by deep learning technologies.

Participants

The study included English language educators and higher education students enrolled in English for Business courses that utilized a deep learning–based hybrid learning model.

Purposive sampling was applied to select participants with direct and substantial experience in this context, thereby ensuring the relevance and depth of the collected data.

A total of ten university lecturers participated, each with at least two consecutive semesters of experience teaching English for Business using the hybrid model with AI integration. This criterion ensured familiarity with both pedagogical and technological aspects. The lecturers ranged in age from 30 to 55 years, with teaching experience spanning 5 to 20 years. Their technological proficiency ranged from novice to advanced, offering a wide range of perspectives on incorporating deep learning tools into instruction.

Additionally, the study involved fifteen undergraduate students enrolled in English for Business courses delivered through the hybrid platform. All had completed at least one semester using AI-enhanced tools. Participants were between 19 and 24 years old, most of whom were juniors or seniors. The students also demonstrated diverse levels of digital literacy and previous experience with hybrid learning, contributing to varied learner viewpoints.

Participation in the study was voluntary, and confidentiality procedures were explained to all participants to ensure anonymity. The diversity of teaching backgrounds, ages, and technological competencies among both groups enriched the findings by providing multiple perspectives on the implementation of the deep learning–based hybrid model. Participants were grouped according to their roles (educator or learner) and level of involvement in the hybrid program, enabling comparative thematic analysis.

Table 1
The participant of the study

Participant Group	Number	Age Range	Gender	Teaching/Enrollment Experience	Tech Proficiency Level
Educators	10	30–55	M/F	5–20 years of teaching experience	Novice to Advanced
Students	15	19–24	M/F	Current semester enrollment	Low to High

Instruments

This study employed multiple qualitative instruments to collect comprehensive data on participants' experiences with the deep learning–based hybrid learning model for English for Business. The primary data collection tool was a semi-structured interview protocol designed to encourage participants to openly share their perceptions while maintaining focus on key research themes. The protocol was developed following a thorough review of relevant literature and refined through a pilot test with three participants, which informed improvements to the clarity, sequencing, and depth of the questions. Interviews were conducted in quiet and comfortable locations selected by participants and lasted between 45 and 60 minutes. The interview schedule included open-ended questions tailored to each group: educators were asked to reflect on the influence of AI tools on their teaching strategies, whereas students were encouraged to describe their learning experiences, motivation, and engagement in the hybrid environment.

To supplement interview data, classroom observations captured real-time instructional and interactional dynamics during synchronous sessions. These observations focused on instructor facilitation practices, student participation behaviors, and the integration of AI-supported features within learning activities. Digital platform logs and interaction records were also analyzed to identify patterns of learner engagement and system usage, strengthening the triangulation of findings. Furthermore, supporting institutional documents, including course syllabi, instructional materials, and platform-generated analytics, were reviewed to provide contextual insight and verify reported practices.

All interviews were audio-recorded with participants' consent and transcribed verbatim to ensure accuracy and preserve the authenticity of their perspectives. Collectively, the use of semi-structured interviews, classroom observations, digital platform data, and document review established a robust foundation for exploring the complex experiences and perceptions of educators and students within the AI-enhanced hybrid learning model.

Data Analysis

Qualitative data from interviews, classroom observations, and document analysis were examined using Braun and Clarke's (2006) six-phase thematic analysis framework to explore participants' perceptions, challenges, and perceived benefits of the hybrid learning model. The analytic process began with familiarization through repeated reading of interview transcripts and observation notes. Open coding was then conducted using NVivo 12, with codes generated primarily inductively, while a smaller set of deductive codes was informed by the research questions and theoretical framework.

A preliminary codebook was iteratively refined as new insights emerged, supported by analytic memos that documented interpretive decisions. For example, descriptive codes such as "tool confusion" and "difficulty navigating platform" were clustered into the subcategory "Digital Literacy Gap," which later formed part of the broader theme "Challenges." Likewise, codes including "time flexibility" and "self-paced learning" were consolidated into the theme "Perceived Benefits." This hierarchical coding process ensured a clear and transparent link between raw data, categories, and emerging themes.

Credibility was strengthened through multiple validation strategies. Two researchers independently coded a subset of the data and resolved discrepancies through discussion to establish intercoder reliability. Member checking with selected participants was used to confirm the accuracy and resonance of the interpretations. Triangulation was achieved by comparing interview data with observation records and institutional documents, such as syllabi, platform analytics, and usage logs. Data saturation was reached when no new themes emerged across sources, indicating analytical completeness.

Throughout the analysis, reflexive journaling was employed to monitor researcher positionality and minimize bias, and a detailed audit trail documented coding decisions, theme development, and peer debriefing sessions. Together, these strategies ensured methodological transparency and analytical rigor, producing findings that are credible and deeply grounded in participants lived experiences.

RESEARCH FINDINGS AND DISCUSSION

Research Findings

To address the research questions, four overarching themes emerged from the thematic analysis: Perceptions of the Hybrid Learning Model, Challenges in Implementation, Motivation and Engagement, and Pedagogical Implications. Table 1 provides an overview of themes, subthemes, illustrative quotes, and frequency of occurrence across participants.

Table 2
Summary of themes and subthemes from interview data

Main Theme	Subtheme	Sample Quote	Frequency (Number of Participants)
Perceptions	Flexibility	"This model allows me to learn anytime..."	22
	Personalization	"The quick feedback motivates me."	18
Challenges	Digital Literacy Gap	"At first, I was confused by the AI features..."	15

	Infrastructure	"Unstable internet made online classes difficult."	13
Motivation & Engagement	Gamification	"The quizzes felt like games, so I was more enthusiastic."	17
Pedagogical Implications	Human Interaction	"Live discussions helped me practice speaking."	20

Perceptions of the Hybrid Learning Model

The data revealed a tension between the benefits of AI-driven personalization and the irreplaceable value of human interaction in language learning. While deep learning tools efficiently supported vocabulary acquisition, grammar correction, and pronunciation practice, educators and students emphasized that these tools could not replicate the nuanced communication skills developed through interpersonal exchanges. For example, instructors underscored the necessity of real-time classroom discussions, role-plays, and group projects to cultivate skills like negotiation, persuasion, and cultural sensitivity, which are essential in business English. One lecturer explained, "AI tools provide excellent drill exercises, but the subtlety of tone, body language, and social cues in business communication can only be learned through live interaction." Students shared similar sentiments, noting that synchronous sessions offered opportunities for spontaneous conversation and feedback that enriched their overall learning experience.

Students in this study demonstrated a predominantly positive perception of the hybrid learning model, appreciating its capacity to combine traditional face-to-face instruction with online learning modalities. This blended approach was particularly valuable in offering flexibility that accommodates students' diverse schedules and learning preferences. Another significant challenge is related to the issue of infrastructure and accessibility. Participants described how limited access to reliable internet connections and compatible devices posed substantial obstacles, particularly for students living in remote or economically disadvantaged areas. Several students reported disruptions during synchronous sessions due to unstable connections, negatively impacting their ability to participate fully in live discussions and assessments. One participant shared, "Sometimes my internet cuts out in the middle of a quiz or group discussion, and it is hard to keep up afterward." Educators expressed concern that these disparities could exacerbate existing educational inequalities. They stressed the importance of institutional policies to provide support mechanisms, such as campus internet hotspots or device loan programs. This highlighted that technological readiness and inclusivity are critical considerations when implementing hybrid models. Students' perceptions further underscored the importance of learner autonomy within the hybrid model. Many expressed that the system encouraged self-directed learning by enabling them to track their progress and access resources beyond scheduled class time. This increased sense of ownership over learning motivated them to take initiative and deepen their study habits. A student remarked, "The platform lets me see where I am strong and where I need improvement so that I can focus my efforts better." However, this autonomy also required discipline and time management skills, which not all students possessed equally.

Educators expressed that the hybrid model provided an opportunity to extend learning beyond the physical classroom, allowing students to engage with materials at their own pace and revisit complex topics as needed. One lecturer commented, "This model allows me to support students more effectively by giving them multiple channels to access information, whether it has recorded lectures, interactive quizzes, or live discussions." Students echoed this appreciation, noting that the hybrid format reduced barriers to learning, such as time constraints and commuting difficulties. They emphasized that the ability to review recorded sessions and online resources empowered them to tailor their study habits according to their individual

needs, which was especially helpful for mastering challenging business English concepts. Moreover, integrating deep learning technologies within the hybrid learning model amplified these perceived benefits by introducing adaptive learning capabilities. Educators reported that AI-driven tools facilitated more personalized instruction through data-driven insights into learner progress and challenges. For example, several instructors noted how the system's analytics enabled early identification of students struggling with specific language skills, such as business writing or oral presentations, allowing for timely intervention. One educator shared, "The deep learning platform gives me detailed reports on which students have difficulty with negotiation vocabulary or email etiquette so that I can focus on those areas during class." Students also highlighted the immediate, individualized feedback they received from AI-powered exercises, which contrasted positively with the delayed responses typical of conventional assessment methods. Many expressed that such real-time feedback increased their motivation to engage more deeply with the material and improve their proficiency. In addition to flexibility and personalization, participants highlighted the interactive nature of the hybrid learning model as a key factor enhancing their learning experience. Multimedia content, gamified quizzes, and virtual collaboration tools created a dynamic environment encouraging active participation. Educators explained that various technological tools helped diversify instructional methods, preventing monotony and catering to different learning styles. For instance, one lecturer explained, "I can use videos, simulations, and AI-powered speech recognition to address listening and speaking skills, which makes learning more enjoyable and effective." Students responded positively to these interactive features, reporting increased enthusiasm and confidence in practicing their English language skills. They felt that the technology-enabled activities not only made learning more accessible but also fostered a sense of autonomy and responsibility for their progress. Despite the many positive perceptions, participants also articulated several challenges that complicated their experience with the hybrid learning model. A recurrent concern was the digital literacy gap, particularly among students less familiar or comfortable with advanced learning technologies. Some students admitted feeling overwhelmed by the complexity of the AI-based tools and the multiplicity of platforms used in the course. This gap sometimes led to frustration and even withdrawal from certain activities. An interviewee noted, "At first, I was confused by how to navigate the system and use all the AI features, and without enough guidance, I felt left behind." Educators recognized this barrier and emphasized the need for structured orientation and ongoing technical support to ensure equitable access to learning. They acknowledged that addressing digital literacy was fundamental to the success of the hybrid model, especially in contexts where students' prior experience with technology varied widely. In addition, educators reflected on the pedagogical shifts required to integrate deep learning into hybrid teaching effectively. They noted that designing learning activities harmoniously combining AI tools and human facilitation demanded substantial time, effort, and continuous professional development. "It is not just about using the technology, but understanding how to blend it with effective teaching strategies," one instructor explained. This sentiment was echoed across interviews, with participants highlighting the need for ongoing institutional support, including training workshops and peer collaboration, to build capacity in this new instructional paradigm. Educators also emphasized the importance of balancing technological innovation with pedagogical soundness to avoid over-reliance on AI and maintain meaningful learner engagement.

The perceptions of the hybrid learning model among educators and students were multifaceted and deeply intertwined with the affordances and constraints of technology, pedagogy, and learner context. The model was valued for its flexibility, personalization, and engagement-enhancing features, primarily driven by integrating deep learning tools. At the same time, challenges related to digital literacy, infrastructure, and the irreplaceable nature of

human interaction moderated these perceptions. The findings underscore that successful implementation requires technological readiness, pedagogical innovation, and institutional support to address learner diversity and equity. These insights provide a rich foundation for understanding how deep learning-based hybrid models function in practice and inform strategies to optimize their effectiveness in teaching English for Business.

Challenges in Implementation

Students consistently identified challenges that complicated its effective implementation, despite the promising advantages of the deep learning-based hybrid learning model in English for Business education. These challenges were multifaceted, encompassing technological, pedagogical, and socio-economic dimensions, and significantly impacted both educators' and students' experiences. One of the most frequently mentioned issues concerned the digital literacy gap among students. Many learners struggled to navigate the sophisticated interfaces of AI-powered platforms, which required basic computer skills and an understanding of how to interact meaningfully with adaptive learning tools. A student reflected, "I found the system confusing at first because there were many features I did not know how to use, and I did not want to make mistakes." This digital literacy gap created anxiety and sometimes led to disengagement, particularly among those less experienced with technology or from backgrounds with limited exposure to digital learning environments. Beyond digital literacy, infrastructure and accessibility posed considerable challenges. Reliable internet connectivity and access to compatible devices were not universally available to all students, especially those in remote or economically disadvantaged areas. Multiple students reported frequent disruptions during live online sessions or difficulty completing asynchronous tasks due to unstable internet connections. One participant described, "Sometimes I lost connection during quizzes, and the system wouldn't save my answers, which was frustrating and stressful." Such technical difficulties hindered equitable participation and learning continuity, raising concerns about the risk of exacerbating educational inequalities. Educators stressed that without institutional support to provide hardware, software, and connectivity resources, the hybrid model's benefits might remain inaccessible to a substantial portion of the student population. In addition to technical and pedagogical challenges, participants identified motivational and psychological barriers impacting the adoption of the hybrid model. Some students experienced feelings of isolation or reduced social presence in online learning components, which negatively affected their engagement and persistence. The absence of physical classroom cues and spontaneous peer interaction was particularly difficult for learners who thrived in collaborative, face-to-face settings. A student commented, "Sometimes I feel disconnected when studying online, and staying motivated without classmates is harder." Educators recognized that fostering a strong online community and encouraging active participation were crucial yet challenging tasks in hybrid environments, necessitating deliberate design of synchronous sessions and social interaction opportunities. The cognitive load associated with managing multiple platforms and technological tools further complicates students' learning experiences. Participants reported that switching between various applications, logging into different systems, and handling technical glitches consumed cognitive resources and distracted them from actual learning. One student stated, "Sometimes I spend more time figuring out how to access assignments or troubleshoot errors than focusing on the content itself." Educators agreed that simplifying the technology ecosystem and integrating tools more seamlessly could alleviate this burden and enhance the user experience.

Educators acknowledged this barrier as a significant impediment to achieving the full potential of the hybrid learning model. Several instructors mentioned needing extra guidance and technical support, often outside regular teaching hours, to help students acclimate to the system. One educator said, "We have to spend considerable time teaching students how to use

the platform itself, which detracts from focusing on the course content." This additional workload created strain and highlighted the necessity for more structured orientation programs and ongoing technical assistance as integral components of the hybrid learning design. Another notable challenge is the complexity of integrating AI and hybrid teaching pedagogies. Educators found that designing, implementing, and managing deep learning-based activities required a steep learning curve and significant time investment. Several instructors commented that preparing adaptive learning content, monitoring AI-generated analytics, and adjusting instructional plans accordingly demanded skills beyond traditional teaching competencies. "It's not just about using new tools; it's about rethinking pedagogy and understanding what works in this blended, AI-supported environment," remarked an experienced lecturer. The demand for continuous professional development and institutional capacity building was apparent, with educators calling for targeted training programs and peer support mechanisms to navigate these complexities effectively. Assessment and feedback mechanisms also presented challenges within the hybrid model. While AI tools offered rapid, personalized feedback on specific language skills, participants noted limitations in the depth and nuance of such automated evaluations. Educators emphasized the need to complement AI-generated feedback with human judgment, especially for complex tasks like business communication and presentation skills. One instructor observed, "AI can point out grammar errors quickly, but assessing tone, style, and persuasive elements requires human insight." Balancing automated and instructor feedback proved essential but demanding, requiring additional coordination and time investment. Furthermore, institutional readiness and support emerged as critical factors influencing the success of hybrid learning implementation. Participants highlighted variability in organizational infrastructure, policy frameworks, and resource allocation across faculties and departments. Some educators expressed frustration with inconsistent administrative guidance and insufficient technological infrastructure, which hampered their ability to deliver cohesive hybrid courses. "Without clear policies and sufficient support from the administration, it's difficult to sustain these initiatives effectively," an instructor explained. This indicated that institutional commitment and strategic planning were prerequisites for scaling and sustaining hybrid learning innovations. Finally, cultural attitudes towards technology and educational change influenced the pace and extent of hybrid model adoption. Both educators and students described initial resistance rooted in unfamiliarity and skepticism about the efficacy of AI-assisted learning. Overcoming these cultural barriers required patience, transparency, and demonstration of tangible benefits. An educator remarked, "Some colleagues were hesitant at first, worried that technology would replace them or complicate their work unnecessarily." Gradually, positive experiences and growing digital competencies contributed to shifting mindsets, but cultural readiness remained an ongoing challenge to address.

The challenges in implementing the deep learning-based hybrid learning model in English for Business education are complex and interrelated, spanning digital literacy, infrastructure, pedagogical innovation, psychological factors, assessment design, institutional readiness, and cultural acceptance. Addressing these challenges holistically is essential to harness the full potential of hybrid learning and AI technologies. The findings emphasize that successful implementation requires technological tools, comprehensive support systems, professional development, inclusive policies, and sustained efforts to build digital and pedagogical capacities among all stakeholders.

Learner Motivation and Engagement

The theme of learner engagement and motivation emerged strongly throughout the study, reflecting the critical role of the deep learning-based hybrid learning model in shaping students' involvement and enthusiasm in English for Business courses.

Students frequently highlighted that combining hybrid delivery and AI-enhanced tools fostered a more active and sustained engagement than traditional instructional approaches. Educators observed that students were more willing to participate in course activities when learning was interactive and personalized, which aligned with contemporary theories emphasizing learner-centred education. One instructor explained, "When students know the system adapts to their needs and gives instant feedback, they feel more connected and motivated to keep improving." This sense of connection to the learning process was reported as a vital factor in maintaining high levels of engagement over the semester. Students' reflections revealed that gamified learning activities embedded in the hybrid model significantly contributed to their motivation. Features such as point scoring, badges, and progress tracking created a competitive yet supportive learning environment, encouraging learners to complete assignments and participate actively. A student noted, "I liked the quizzes because they felt like games, and seeing my progress motivated me to study more regularly." These gamification elements, integrated with deep learning algorithms, reduced anxiety and made language learning feel less daunting and more enjoyable. Educators also observed that gamified tasks increased attendance and completion rates for asynchronous activities, which traditionally suffer from low participation. The personalized nature of the learning experience further enhanced student motivation. Many students appreciated the AI-powered adaptive assessments that adjusted difficulty based on their performance, ensuring they were neither bored by overly easy tasks nor discouraged by excessive difficulty. One participant described, "The system challenges me at just the right level, so I am always pushed to improve without feeling overwhelmed." This adaptive scaffolding was noted to build confidence gradually, fostering a growth mindset essential for language acquisition. Educators corroborated this, explaining that personalized pathways helped maintain students' interest by addressing individual weaknesses and promoting mastery learning. Additionally, the immediacy of feedback provided by deep learning tools played a pivotal role in sustaining motivation. Unlike traditional assignments with delayed feedback, automated systems offered real-time corrections and suggestions, enabling students to reflect promptly and adjust their learning strategies. A student commented, "Getting instant feedback on my pronunciation or grammar helped me understand mistakes immediately, so that I could correct them immediately." This promptness was perceived to create a more dynamic and responsive learning environment, which reinforced positive study habits and reduced frustration. Educators noted that this feature was especially beneficial for language learners, who often require frequent and specific feedback to progress effectively.Moreover, the hybrid learning model facilitated varied interaction forms, further boosting engagement. Synchronous online discussions, virtual breakout rooms, and collaborative projects complemented asynchronous activities, providing students multiple avenues to practice their language skills.

Educators reported that these interactive formats encouraged peer-to-peer learning and social presence, critical factors in online learning motivation. One lecturer reflected, "Students are more engaged when they can discuss and collaborate with peers, even through a screen." Students valued these opportunities for communication, highlighting that such interactions enhanced their confidence in using English in business contexts. However, the data also revealed that sustaining motivation over time required continuous scaffolding and support. Some students indicated that the novelty of the technology could wear off, leading to reduced enthusiasm if not supplemented by engaging content and meaningful human interaction. A participant expressed, "Sometimes I get tired of using the apps every day; it becomes routine without interesting topics or teacher support." Educators acknowledged this challenge and emphasized the importance of regularly updating materials, incorporating relevant business cases, and balancing technology use with instructor presence to maintain momentum. Self-regulation and time management challenges were also noted as factors affecting engagement.

While the hybrid model afforded greater autonomy, not all students possessed the skills to manage their learning independently. Several students reported struggling to keep up with deadlines or to allocate sufficient time for practice outside of class. An educator observed, "Some learners thrive in self-paced environments, but others need more structure and reminders to stay on track." This finding underscores the need for instructional designs that support developing learner autonomy, such as guided schedules, progress monitoring, and motivational prompts embedded within the platform. Interestingly, the sense of achievement fostered by mastering progressively challenging tasks contributed to reinforcing learner motivation. Students' confidence and willingness to engage with more complex materials increased as they completed AI-adapted exercises and saw measurable improvement. One student remarked, "Seeing my scores improve made me feel proud and motivated to tackle harder assignments." Educators identified this positive feedback loop as a powerful driver of sustained engagement, especially with supportive instructor feedback during synchronous sessions. Lastly, the broader institutional and cultural context shaped how engagement and motivation manifested among participants. The rapid shift to hybrid learning during the pandemic created urgency and openness to experimentation with technology-enhanced learning. Participants expressed a collective sense of adapting to a "new normal," influencing their motivation to engage with the hybrid model. Educators emphasized that institutional encouragement and recognition of the model's benefits played a crucial role in fostering positive attitudes. One instructor commented, "When the university supports innovation and provides resources, teachers and students are more motivated to embrace hybrid learning." This institutional backing was essential for embedding the hybrid approach sustainably within English for Business education.

Learner engagement and motivation within the deep learning-based hybrid model were shaped by multiple interconnected factors. The flexibility, gamification, personalized learning pathways, and immediate feedback afforded by AI-driven tools fostered active and sustained participation. However, maintaining motivation over time requires thoughtful integration of human interaction, scaffolding of self-regulatory skills, and continuous content refreshing. Institutional support enhanced positive engagement by legitimizing the hybrid approach as a viable and effective learning mode. These findings highlight the critical role of combining technological innovation with pedagogical and organizational strategies to cultivate motivated and engaged learners in English for Business contexts.

Pedagogical Implications and Human Interaction

Integrating deep learning technologies within the hybrid learning model introduced significant pedagogical implications that educators and students had to navigate. While technology facilitated adaptive and personalized learning paths, participants emphasized that effective language instruction in English for Business cannot rely solely on automated systems. Human interaction remains a cornerstone of pedagogical effectiveness, particularly in developing the complex communication and interpersonal skills essential in business contexts. Educators reflected that while deep learning tools were invaluable for reinforcing grammar, vocabulary, and pronunciation, these systems could not simulate the nuanced dynamics of real-world business communication, such as managing tone, interpreting nonverbal cues, and negotiating meaning. One lecturer explained, "Technology can teach language mechanics, but it's through live interaction that students learn how to persuade, negotiate, and build professional relationships."

Students as students also valued the opportunities provided by synchronous sessions and face-to-face meetings to practice oral communication and receive immediate, contextual feedback. They expressed that role-playing exercises, group discussions, and presentations conducted in real time were indispensable for building confidence and fluency in authentic

business scenarios. Many learners indicated that while AI-based pronunciation tools helped improve individual skills, they could not replace the motivation and accountability fostered by peer and instructor presence. A student shared, "Practicing in front of classmates and the teacher pushes me to do better than just practicing alone with an app." This underscores that human interaction contributes to affective learning dimensions, including motivation, confidence, and social engagement, which technology alone cannot replicate.The pedagogical implications extend to how educators design and implement hybrid learning curricula. Participants highlighted the importance of balancing technological integration with meaningful human facilitation. The human dimension also influenced learner engagement and satisfaction. Participants highlighted that emotional support, encouragement, and rapport-building remain vital for sustaining motivation and resilience, especially in online or blended environments. Students noted that interactions with empathetic instructors who provided personalized feedback and showed genuine interest positively affected their commitment and learning experience. An interviewee commented, "Knowing my teacher is paying attention and cares about my progress makes me want to work harder." This aligns with existing research that emphasizes the social presence of educators as a critical factor in online learning success. The findings also suggest that hybrid models promote the development of digital literacy and autonomous learning skills, which are increasingly important in the 21st-century workplace. Students acquire competencies in self-regulation, critical thinking, and technology use by engaging with deep learning tools, which complement their language skills. Educators observed that such skills prepare learners for lifelong learning and adaptability in dynamic professional contexts. However, they cautioned that support structures must be in place to scaffold these skills effectively, especially for students less familiar with digital environments. Despite the many pedagogical benefits, participants acknowledged that challenges remain in fully integrating human interaction within technologically mediated learning. Scheduling synchronous sessions, accommodating diverse time zones, and personal commitments posed logistical difficulties. Additionally, maintaining dynamic and inclusive discussions online requires skillful facilitation to prevent disengagement. Educators shared strategies such as smaller breakout groups, varied activity formats, and regular check-ins to foster interaction. However, they emphasized that face-to-face interactions, when possible, remain invaluable for relationship-building and community formation. Institutional policies and resources also influenced pedagogical practices. Support for smaller class sizes, technology infrastructure, and professional development opportunities was a crucial enabler of effective hybrid teaching. Educators desired more straightforward guidelines and frameworks to support best practices blending AI technologies with human-centred pedagogy. One participant noted, "Institutions must recognize that effective hybrid learning requires investment not only in technology but also in people and pedagogical innovation."

Educators noted that effective hybrid teaching required deliberate blending of asynchronous, technology-driven tasks with synchronous, interactive sessions to maximize learning outcomes. One instructor explained, "We use AI tools for practice and drills but reserve live sessions for complex discussions and role-plays that demand real-time responses." This strategic sequencing allows learners to build foundational knowledge independently while applying and deepening their skills through interactive practice. The approach aligns with scaffolding principles in language education, where technology supports lower-level skill acquisition, and human interaction targets higher-order communicative competence. In addition, the shift to hybrid models necessitated changes in teaching roles and practices. Educators transitioned from knowledge transmitters to facilitators and learning coaches, guiding students through personalized learning journeys while providing timely support. The availability of AI-generated learner analytics empowered instructors to identify struggling students and tailor interventions more precisely. However, this also required developing new

pedagogical competencies, including interpreting data insights and designing responsive instructional activities. Several educators expressed that professional development focused on blending technology and pedagogy was critical. One lecturer remarked, "We must learn to read the data, but also know when to step in and when to let students explore on their own." Furthermore, cultural and contextual factors shaped how pedagogical approaches were received. Educators emphasized the need to consider students' cultural backgrounds, language proficiency levels, and learning preferences when designing hybrid courses. For example, some students preferred more structured guidance and direct instruction, while others thrived in autonomous, technology-enhanced settings. Adapting pedagogy to accommodate these variations was essential to equity and inclusivity. A lecturer explained, "Understanding students' needs and adjusting the balance between technology and human interaction helps create a supportive learning environment for everyone."

The pedagogical implications of implementing a deep learning-based hybrid model are profound and multifaceted. While technology enhances personalized learning and provides valuable data insights, human interaction remains essential for developing complex communication skills, motivation, and social presence in English for Business education. Integrating both elements requires thoughtful curriculum design, evolving teaching roles, cultural sensitivity, and institutional support. These findings highlight the need for balanced, learner-centred approaches that leverage the strengths of technology without neglecting the irreplaceable value of human connection in language learning.

Institutional Support and Training

The successful implementation of a deep learning-based hybrid learning model in English for Business education heavily depends on comprehensive institutional support and practical training for educators and students. Participants across the study consistently highlighted that without adequate infrastructure, clear policies, and ongoing professional development, the potential benefits of hybrid learning and AI integration could not be fully realized. Educators emphasized that institutional commitment is foundational to providing the necessary resources, technical assistance, and pedagogical guidance that enable effective adoption. One instructor remarked, "No matter how innovative the technology is, without solid backing from the institution, it is tough to sustain these initiatives."

A critical aspect of institutional support involved providing and maintaining technological infrastructure. Reliable platforms, robust internet connectivity, and access to suitable devices were essential prerequisites mentioned by participants. Many educators and students reported that while the university had progressed in upgrading systems, inconsistencies remained regarding server stability and user accessibility. These technical issues sometimes led to interruptions in learning activities, affecting motivation and engagement. A student shared, "Sometimes the learning platform is slow or crashes, which makes it frustrating to complete assignments on time." Therefore, institutional investment in scalable and user-friendly technology infrastructure was seen as non-negotiable for smooth hybrid learning experiences.Equally important was the availability of technical support services.

Students noted that responsive and knowledgeable IT support teams were vital in addressing technical problems and minimizing downtime. Training for students was also highlighted as a key institutional responsibility. Many participants emphasized that learners needed structured orientation and continuous guidance to familiarize themselves with digital platforms and deep learning tools. Students who received clear instructions and had opportunities for hands-on practice were better able to navigate the system and engage fully. One student commented, "The initial training sessions helped me understand how to use the learning platform and AI features, which made studying much easier." Institutions that

embedded digital literacy development into their curricula supported more equitable participation and reduced frustration among diverse student populations. Participants discussed financial investment as another dimension of institutional support. Implementing and sustaining deep learning-based hybrid models required funding for technology acquisition and training, support services, and research on pedagogical effectiveness. Educators called for dedicated budgets to enable experimentation and innovation without overburdening individual instructors. One participant stated, "Without funding for professional development and technical resources, it is hard to keep up with rapidly evolving educational technologies." Institutions with stable funding streams were better positioned to foster long-term hybrid learning initiatives. Lastly, participants highlighted the need for continuous evaluation and feedback mechanisms supported by institutional structures. Regular assessment of technological tools, training programs, and pedagogical outcomes was necessary to identify gaps, measure impact, and inform improvements. moted responsiveness and adaptability, key attributes for evolving hybrid education models.

Educators described situations where timely assistance prevented disruptions to teaching schedules and helped build confidence in using new digital tools. Conversely, delayed or inadequate support led to stress and reduced technology adoption. One educator explained, "Having a reliable help desk means I can focus on teaching rather than troubleshooting, which makes a huge difference." Students similarly valued prompt support to navigate platforms and troubleshoot issues, contributing to positive learning experiences. Professional development and training programs emerged as another cornerstone of institutional support. The transition to hybrid and AI-enhanced teaching required educators to develop new competencies, including digital literacy, instructional design for blended learning, and data interpretation skills. Participants underscored that practical training should go beyond technical tutorials to include pedagogical strategies and best practices for integrating technology meaningfully. An instructor said, " Workshops combining technical skills with teaching methods help us transform traditional lessons into engaging hybrid experiences." Institutions prioritizing comprehensive and ongoing training cultivated more confident and innovative educators capable of leveraging the hybrid model's full potential. Another recurring theme was the importance of fostering a supportive community of practice. Educators advocated for institutional initiatives encouraging collaboration, knowledge sharing, and peer mentoring around hybrid teaching and learning innovations. Such communities provided valuable forums for exchanging experiences, troubleshooting challenges, and developing collective solutions. One lecturer noted, "Having colleagues to discuss ideas and challenges makes adopting new technology less isolating and more manageable." Institutions facilitating these networks contributed to sustainable professional growth and continuous pedagogical improvement. Educators appreciated when institutions solicited their input and involved them in decision-making processes regarding hybrid learning strategies. Students also valued channels for providing feedback on usability and learning experiences. This iterative approach pro Institutional leadership and clear policy frameworks were drivers of successful hybrid learning adoption.

Institutional support and training emerged as critical enablers of effective deep learning-based hybrid learning implementation. Robust technological infrastructure, responsive support services, comprehensive professional development, clear leadership, financial investment, community building, and continuous evaluation collectively created the foundation for successful adoption. Institutions that strategically addressed these areas empowered educators and students to navigate the complexities of hybrid learning and maximize its pedagogical benefits in English for Business education.

Discussion

This study critically examines the evolving interplay between artificial intelligence (AI) and human-centric pedagogy within hybrid Business English education. Rather than merely reinforcing existing perceptions of the benefits of hybrid learning, the findings highlight the nuanced tensions and theoretical implications that arise when deep learning technologies are introduced into under-resourced contexts. These complexities necessitate a re-evaluation of established pedagogical frameworks and reaffirm the importance of human interaction for cultivating high-stakes communicative competence.

The Community of Inquiry (CoI) framework, developed by Garrison et al. (2000), serves as a key interpretive lens for understanding these dynamics. This framework emphasizes three interrelated constructs: cognitive presence, social presence, and teaching presence. In this context, the integration of AI technologies enhances cognitive presence by providing adaptive and individualized learning pathways. Participants reported that AI-driven feedback on aspects such as pronunciation, grammar, and vocabulary significantly improved language accuracy and deepened their conceptual understanding. Such findings align with the emergent literature emphasizing AI's role in scaffolding foundational linguistic skills, as noted by (Xiao, 2025). However, despite these benefits, AI's support remains inherently bounded. While effective at strengthening recall and form-focused performance, it falls short of facilitating higher-order reasoning, negotiation, and interpretive nuance, which are essential for advanced business communication. Learners emphasized that competencies involving these dimensions necessitate interactive meaning-making processes with peers and instructors, underscoring the belief that reflective, dialogic inquiry—a core aspect of sustained cognitive presence—cannot be wholly automated (Aslam, 2025).

Furthermore, the findings surface persistent tensions surrounding social presence within hybrid learning settings. Although hybrid platforms enable a form of digital communication, participants underscored the necessity of authentic human interaction for the development of pragmatic and intercultural competences. Instructors characterized the AI tools as "efficient but emotionally flat," while students conveyed that their confidence in engaging in persuasive or cross-cultural exchanges was nurtured only through authentic conversations with live counterparts. This poses challenges to the longstanding assumption that technology can independently generate the open communication and group cohesion that the CoI framework suggests (Fitriani et al., 2025). Instead, AI's integration amplifies the need for intentional pedagogical design that fosters connections through synchronous dialogues, collaborative projects, and reflective facilitation. Absent this human mediation, social presence remains tenuous, highlighting the emotional and relational dimensions integral to effective language learning (Aslam, 2025).

Teaching presence emerges as the most dynamically reconfigured component within the investigated landscape. The role of the educator transitions from that of a mere content deliverer to an orchestrator of blended pedagogy, harmonizing automation with necessary human facilitation. This reflects Kohnke's (2022) assertion that effective AI utilization requires intentional design strategies that promote learner agency and dialogue (Alcívar et al., 2024). Educators in this study reported reallocating their time from providing routine feedback to engaging in mentoring, facilitating discussions, and fostering critical reflections—responsibilities that closely align with the functional aspects of design, facilitation, and direct instruction outlined in the CoI framework. However, significant gaps in digital literacy continue to influence the realization of teaching presence. Following the work of Adarkwah (2021) and Asamoah (2023), this study reveals that without robust professional development and institutional backing, the orchestration required for equitable AI-mediated teaching remains inconsistent (Xiao, 2025). Meaningful integration of AI thus depends not only on the

availability of technology but also on pedagogically grounded capacity-building that empowers educators to deploy AI licenses critically and purposefully.

Collectively, the findings extend the CoI framework by demonstrating that deep learning technologies recalibrate rather than replace the triad of presences. AI amplifies cognitive presence through personalized pathways, reveals deficiencies in social presence, and necessitates a reimagined teaching presence centered on orchestration, empathy, and relational pedagogy. In the context of Business English education, this recalibration yields a balanced model where AI supports scalable skill practice and precision, while human facilitation remains crucial for co-constructing meaning, pragmatic nuances, and intercultural competence.

Therefore, the potential of deep learning in hybrid education lies not in its capability to replicate human intelligence but rather in its ability to amplify distinctly human capabilities within thoughtfully designed educational frameworks. Progress in this domain demands a shift from an overwhelming reliance on technological enthusiasm to a more critical pedagogical design that yields hybrid models that are equitable, contextually responsive, and sustained through ongoing institutional investment. Such conditions are essential for ensuring that AI integration enriches rather than undermines the human relationships vital to effective language education (Fitriani et al., 2025).

CONCLUSION

This study illustrates the promise and complexity of integrating deep learning–enhanced hybrid learning into Business English education. At its core, the findings highlight a tension between the personalization and efficiency offered by AI and the enduring importance of human connection in language learning. While adaptive feedback, flexible pathways, and gamified features can enhance motivation and engagement, their impact is shaped by how educators guide, contextualize, and humanize the learning experience. In this sense, the role of the teacher is not diminished but redefined, shifting from transmitter of knowledge to facilitator of technology-mediated learning. Students, too, are challenged to become more autonomous, requiring support in digital literacy and self-regulation to fully benefit from these models.

The originality of this study lies in demonstrating how these dynamics play out within a developing country context, where infrastructure limitations and institutional capacity profoundly shape what AI can achieve. This underscores a broader implication: technology alone does not transform education; its effectiveness depends on pedagogy, equity, and institutional will. As hybrid learning continues to evolve, the key question for educators, policymakers, and researchers is not simply how to adopt AI, but how to design learning environments where technological innovation enhances rather than replaces the human dimensions of language education.

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REFERENCES

Adarkwah, M. A. (2021). "I'm not against online teaching, but what about us?": ICT in Ghana post COVID-19. *Education and Information Technologies, 26*(2), 1665–1685. https://doi.org/10.1007/s10639-020-10331-z

Adekola, J., Dale, V., & Gardiner, K. (2017). Development of an institutional framework to guide transitions into enhanced blended learning in higher education. *Research in Learning Technology, 25*(0). https://doi.org/10.25304/rlt.v25.1973

Ahimsa, A., & Khawa, D. (2025). The impact of artificial intelligence on English language teaching: Opportunities and challenges in technology era. *Ideas Journal on English Language Teaching and Learning Linguistics and Literature, 13*(1), 191–201. https://doi.org/10.24256/ideas.v13i1.6270

Alcívar, D., Macías, M., & Vera, A. (2024). Integration of artificial intelligence in English teaching. https://doi.org/10.37811/cli_w1046

Alkaabi, A., Qablan, A., Alkatheeri, F., Alnaqbi, A., Alawlaki, M., Alameri, L., … & Malhem, B. (2023). Experiences of university teachers with rotational blended learning during the COVID-19 pandemic: A qualitative case study. *PLOS ONE, 18*(10), e0292796. https://doi.org/10.1371/journal.pone.0292796

Asamoah, M. K. (2023). COVID-19 and the digital divide: A review of the literature on the digital divide and its implications for online learning in the post-pandemic era. *Journal of Educational Technology Systems, 51*(3), 301–323. https://doi.org/10.1177/00472395231156958

Aslam, B. (2025). Beyond grammar correction: Generative AI and the cultivation of higher-order thinking in EFL writing. *Journal of Applied Linguistics and TESOL (JALT), 8*(4), 388–404. https://doi.org/10.63878/jalt1341

Braun, V., & Clarke, V. (2006). *Using thematic analysis in psychology*. Qualitative Research in Psychology, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.

Darsih, E., & Asikin, N. (2020). Mobile assisted language learning: EFL learners' perceptions toward the use of mobile applications in learning English. *English Review: Journal of English Education, 8*(2), 19. https://doi.org/10.25134/erjee.v8i2.2999

Efrizal, D. (2024). Boosting students' learning English experiences in Islamic higher education: The integration of artificial intelligence. *PIJED, 3*(2), 35–49. https://doi.org/10.59175/pijed.v3i2.301

Fitriani, F., Olivia, O., & Ulfah, Y. (2025). The utilization of artificial intelligence (AI) in English skills as an implementation of the Industrial Revolution 5.0. *International Journal of Current Science Research and Review, 8*(8). https://doi.org/10.47191/ijcsrr/v8-i8-25

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2–3), 87–105. https://doi.org/10.1016/S1096-7516(00)00016-6

Huang, R., & Annamalai, N. (2024). Seeking the optimal SPOC-based blended learning approach to enhance deep learning from the community of inquiry perspective. *Contemporary Educational Technology, 16*(4), ep537. https://doi.org/10.30935/cedtech/15574

Kohnke, L. (2022). A qualitative study of student perceptions of using AI-powered writing tools in a L2 writing class. *Computers and Education: Artificial Intelligence, 3*, 100099. https://doi.org/10.1016/j.caeai.2022.100099

Laila, F., Adityarini, H., & Maryadi, M. (2023). Challenges and strategies in teaching English speaking skills to young learners: Perspectives of teachers in Indonesia. *VELES: Voice*

of English Language Education Society, 7(3), 542–556. https://doi.org/10.29408/veles.v7i3.24030

Li, H. (2024). School environment, cooperative learning and English language deep learning strategy among Chinese college students. *International Journal of Research Studies in Language Learning, 10*(1). https://doi.org/10.5861/ijrsll.2024.007

Li, X. (2025). Design and implementation of a vocational education English adaptive teaching system based on deep learning and optical technologies. https://doi.org/10.1117/12.3073828

Musdariah, A., Basri, M., & Jabu, B. (2021). The impact of hybrid learning in teaching English for business communication in vocational higher education of Indonesia. *International Journal of Humanities and Innovation (IJHI), 4*(3), 104–110. https://doi.org/10.33750/ijhi.v4i3.124

Ruan, Q., Nadjwa, M., & Sazalli, N. (2024). Blended learning for improving English writing skills among university students: A systematic literature review. *International Journal of Academic Research in Business and Social Sciences, 14*(2). https://doi.org/10.6007/ijarbss/v14-i2/20668

Stoian, C., Fărcașiu, M., Dragomir, G., & Gherheș, V. (2022). Transition from online to face-to-face education after COVID-19: The benefits of online education from students' perspective. *Sustainability, 14*(19), 12812. https://doi.org/10.3390/su141912812

Xiao, L. (2025). A data-driven exploration of AI-enhanced educational models. *Studies in Linguistics and Literature, 9*(2), 10. https://doi.org/10.22158/sll.v9n2p10

Xu, Q., Chen, S., Wang, J., & Suhadolc, S. (2021). Characteristics and effectiveness of teacher feedback on online Business English oral presentations. *The Asia-Pacific Education Researcher, 30*(6), 631–641. https://doi.org/10.1007/s40299-021-00595-5

Yu, Y., Deng, N., Xu, M., & Liang, S. (2024). From classroom to marketplace: Empowering Business English students with cross-border product digital storytelling. *Journal of Research in Vocational Education, 6*(8), 73–79. https://doi.org/10.53469/jrve.2024.06(08).16

Zhang, Q., 大津, 浩., & Teng, W. (2025). The effects of learning experience on college students' deep English learning: A study of the chain mediation effect of motivation and strategy. *PLOS ONE, 20*(6), e0325491. https://doi.org/10.1371/journal.pone.0325491