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AI TOOLS AND PLATFORMS FOR TEACHING SPEAKING SKILLS IN ENGLISH FOR SPECIFIC PURPOSES (ESP)

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Abstract: This scientific article examines the integration and efficacy of artificial intelligence (AI) tools and platforms specifically designed or adapted for teaching speaking skills within English for Specific Purposes (ESP) curricula. Traditional ESP speaking instruction often faces critical limitations, such as a shortage of specialized conversational partners, severe time constraints within classroom environments, and heightened foreign language anxiety among technical and professional students. Recent developments in natural language processing (NLP), automatic speech recognition (ASR), and generative conversational agents offer a scalable framework to mitigate these pedagogical gaps. This paper provides a rigorous evaluation of leading AI platforms—including ELSA Speak, ChatGPT, Gemini, TalkPal, and specialized intelligent tutoring systems—outlining their structural configurations, instructional affordances, and empirical impacts on learners' oral proficiency, lexical precision, and communicative autonomy. Utilizing mixed-methods empirical data derived from recent academic literature and educational experiments, the study demonstrates that structured AI-mediated training significantly yields an improvement in speech delivery, professional register alignment, and self-regulated communication loops, while lowering communication anxiety. Finally, the article synthesizes pedagogical guidelines and highlights structural challenges, such as contextual misalignment and the necessity of domain-specific teacher retraining frameworks.

Keywords: artificial intelligence, English for Specific Purposes (ESP), oral communication, automatic speech recognition, generative conversational agents, pedagogical digital competence, intelligent tutoring systems.

Introduction

In the contemporary landscape of globalized professional training and higher education, English for Specific Purposes (ESP) serves as a core conduit for occupational mobility, interdisciplinary collaboration, and knowledge dissemination across high-stakes domains such as engineering, aviation, international relations, medicine, and corporate management [1]. Unlike general English instruction, which fosters holistic linguistic fluency, ESP targets the narrow, immediate, and future communicative demands of professional discourse communities [2]. Within these communities, oral proficiency stands out as an indispensable yet notoriously difficult skill to master. Professionals and technical students are routinely required to explain complex technical operations, defend corporate strategies, justify clinical decisions, negotiate complex international treaties, and react dynamically to unpredicted workplace challenges [3]. Consequently, grammatical accuracy alone proves insufficient; ESP speaking skills demand the tight integration of sociolinguistic register, technical lexicon, discourse coherence, and strategic communication strategies [3].

Despite its paramount importance, traditional classroom-bound ESP speaking instruction exhibits deep structural limitations. First, educators face severe time and structural constraints, wherein a single instructor must distribute limited conversational feedback across large student cohorts within rigid schedules [1]. Second, simulating highly authentic, domain-specific communicative scenarios requires substantial domain expertise that general language instructors may lack, creating a pedagogical gap between academic training and actual field practices [2]. Third, psychological barriers, specifically foreign language anxiety and fear of negative

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evaluation by peers or instructors, severely inhibit students' willingness to communicate, preventing the repeated iterative practice required for speech automatization [4].

The rapid digital transformation of higher education has introduced artificial intelligence (AI) as a transformative instrument to address these long-standing pedagogical challenges [5]. Enabled by breakthroughs in machine learning, automatic speech recognition (ASR), natural language processing (NLP), and large language model (LLM) architectures, modern AI tools have evolved from simple grammar checkers into highly adaptive, emotionally responsive interactive dialogue systems [6]. These platforms offer immersive, low-stakes environments capable of providing personalized, instant, and iterative feedback on segmental and suprasegmental features of speech [4]. While the adoption of AI in general linguistics has grown rapidly, its precise application within ESP contexts—where professional authenticity and localized contextual precision are paramount—requires systematic scientific examination. This article provides a comprehensive evaluation of current AI tools and platforms utilized for teaching speaking skills in ESP, identifying their theoretical underpinnings, empirical effectiveness, and underlying instructional limitations.

Methodology

This study employs a secondary meta-analytical and systematic review methodology, adhering to rigorous qualitative and quantitative data synthesis principles to evaluate the deployment of AI speaking platforms in ESP. The investigation is grounded in the communicative competence framework of Celce-Murcia, expanding strategic and discourse competencies to include human-AI text-to-speech interaction loops [3]. The corpus of data analyzed in this paper comprises peer-reviewed scientific literature, experimental datasets, pedagogical models, and institutional surveys published primarily between 2023 and 2026 across reputable academic indexes.

To ensure empirical reliability, a systematic literature search was executed across international databases, including Google Scholar, Scopus, ScienceDirect, and the Education Resources Information Center (ERIC). The search parameters utilized precise Boolean operators targeting intersections of key terms: ("Artificial Intelligence" OR "AI Chatbots" OR "ASR") AND ("English for Specific Purposes" OR "ESP" OR "Professional Communication") AND ("Speaking Skills" OR "Oral Proficiency" OR "Pronunciation"). The initial search yielded 111 relevant publications. Following a strict screening process based on empirical validity, sample size criteria, and explicit focus on ESP or professional school populations, a final cohort of high-quality scientific papers was selected for detailed thematic and statistical analysis.

The quantitative dimension of the methodology integrates findings from controlled pedagogical experiments, measuring changes in students' speaking proficiency across standardized rubrics (fluency, lexical precision, pronunciation accuracy, and register appropriateness) and motivational indexes. For instance, statistical data from a one-semester controlled pedagogical experiment involving 84 technical students ($n = 42$ in the experimental group utilizing AI platforms; $n = 42$ in the conventional control group) were synthesized to evaluate cognitive and communicative growth [1]. Additionally, cross-sectional survey data from 206 business students [7] and qualitative institutional survey data from members of national ESP teacher associations [8] were integrated to cross-validate user experiences, perceived benefits, and technological limitations.

Results

The systematic aggregation of empirical and experimental data reveals that the strategic integration of AI platforms into ESP curricula exerts a powerful, statistically significant impact on the development of oral communication skills. The platforms analyzed generally fall into two structural categories: ASR-driven pronunciation systems specialized in phonetic calibration, and generative LLM-driven chatbots designed for interactive, scenario-based discourse simulations.

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In the domain of automated phonetic evaluation and speech synthesis, the platform ELSA Speak (English Language Speech Assistant) represents a key Education 4.0 tool [7]. Quantitative evaluation from recent field studies indicates that ELSA Speak's proprietary AI engine, trained on diverse non-native acoustic models, successfully identifies phonemic deviations with high precision [7]. In a cross-sectional study involving 206 business school students who engaged in a four-week structured intervention with ELSA Speak for professional communication, SPSS-driven statistical analysis confirmed a massive increase in learners' oral performance, engagement, and overall learning outcomes [7]. The application's capacity to deliver localized feedback allowed students to progress rapidly from segmental training (individual vowel and consonant clarity) to suprasegmental mastery (intonation, word stress, and rhythm), which are vital for clear professional presentations.

Simultaneously, generative AI platforms, such as ChatGPT, Gemini, TalkPal, and LanguaTalk, have restructured the operational parameters of discourse practice [1]. In a controlled, single-semester pedagogical experiment containing 84 engineering and computer science students divided into equal control and experimental cohorts (n = 42 each), the experimental group utilized AI platforms to simulate professional negotiation and technical problem-solving scenarios [1]. The final evaluation utilized an explicit speaking rubric assessing fluency, coherence, register appropriateness, lexical precision, and argumentation. The empirical results demonstrated that the AI-enhanced instructional design led to a substantial 35% increase in students' situational motivation and willingness to communicate [1]. More remarkably, the integration of generative AI platforms improved the technical students' advanced cognitive and analytical skills by 42%, as they were forced to critically evaluate AI-generated outputs, reformulate complex prompts, and dynamically adapt their verbal arguments during professional simulations [1].

Furthermore, nationwide institutional surveys conducted among active ESP lecturers provide crucial insights into contemporary pedagogical adoption trends [8]. Quantitative survey distributions indicate that while AI adoption is still in its early transitional phase, 76% of modern language educators report using AI-powered tools regularly to assist in course delivery, needs analysis, and speech practice [5]. The most frequently deployed tools are AI chatbots (used for open-ended professional dialogue simulations) and voice recognition systems built into mobile applications (used for asynchronous pronunciation training) [8]. Teachers heavily value the ability of these tools to act as scalable, 24/7 accessible auxiliary resources that provide real-time automated assessment, thereby drastically reducing the grading burden on instructors while allowing students to engage in rapid, iterative oral practice loops [8].

Analysis and Discussion

The analytical synthesis of these findings proves that AI tools serve as a highly effective pedagogical instrument within ESP instruction, shifting the educational model from static language acquisition to dynamic, purposeful action within professional contexts [1]. The core advantage of AI speaking platforms lies in their ability to operationalize Lev Vygotsky's Zone of Proximal Development (ZPD) through automated, adaptive scaffolding [4]. In a traditional classroom, a student cannot pause a conversation repeatedly to fix pronunciation or experiment with technical synonyms without disrupting the communicative flow and experiencing heightened anxiety. AI platforms, by contrast, create a low-pressure, learner-controlled environment where students can test varied speech acts, receive instant corrections, and repeat dialogues until they reach a high level of oral automation [4]. This structural setup substantially lowers foreign language communication anxiety, which is a primary psychological barrier to speech fluency [6].

From a linguistic standpoint, the benefits of generative conversational agents extend beyond basic pronunciation. As students interact with advanced LLMs, they are exposed to rich, context-

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aware linguistic inputs, including domain-specific terminology, professional idiomatic expressions, and diverse structural patterns that standard textbooks frequently omit [6]. The interactive nature of tools like ChatGPT and Gemini requires students to continuously activate their strategic competence [3]. If the AI agent misinterprets a student's spoken input due to an error in structural cohesion or lexical choice, the learner must dynamically adjust their syntax, execute repairs, or paraphrase their argument to advance the simulation [3]. This recursive process directly builds real-world professional communicative competence.

However, a critical analysis of the empirical data also highlights severe pedagogical and technical challenges that prevent seamless AI integration in ESP. The most significant gap identified in recent research is the issue of "contextual misfit" or a lack of specialized situational appropriateness [4]. Standard commercial AI tools are fundamentally optimized for general English conversations. When applied to highly regulated, high-stakes professional fields, general AI tools often fail to capture critical discourse constraints. For example, in aviation English, where flight attendants or pilots must adhere to strict, unambiguous phraseology defined by international regulations, a general LLM might generate creative, overly polite, or linguistically complex sentences that violate safety protocols [4]. Similar risks apply to legal and medical ESP, where conversational creativity can introduce dangerous misinterpretations.

Conclusion

The integration of artificial intelligence tools and platforms represents a major paradigm shift in teaching speaking skills within English for Specific Purposes. Empirical evidence and experimental data confirm that platforms utilizing automatic speech recognition and large language models provide powerful instructional benefits, including a 35% boost in learning motivation and a 42% enhancement in students' professional cognitive and communicative competencies [1]. By offering personalized, immediate, and low-stakes feedback, these tools successfully dismantle psychological barriers, increase the availability of conversational practice, and allow for autonomous, self-paced mastery of professional discourse.

Nevertheless, AI systems cannot serve as a complete replacement for the complex socio-cognitive role of a human educator. The limitations of commercial AI regarding domain-specific contextual appropriateness, the risk of technical hallucinations, and the potential for student overreliance underscore the need for a balanced, blended approach. To fully exploit the potential of AI in ESP speaking instruction, educational institutions and policymakers must prioritize two strategic pathways. First, commercial AI language models must be technically adapted and trained on specialized, curated professional corpora to ensure absolute contextual precision for fields like medicine, engineering, and aviation. Second, language teachers must receive targeted professional development to build their digital pedagogical competence, enabling them to design effective prompt-based speech tasks, set firm boundaries for academic integrity, and guide students toward reflective, purposeful communication. Ultimately, the future of ESP pedagogy lies in a hybrid model where artificial intelligence handles scalable, iterative training, while human instructors focus on complex, empathetic, and culturally nuanced communicative instruction.

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