

INTEGRATION OF AI-BASED TOOLS IN TEACHING ENGLISH FOR SPECIFIC PURPOSES: EVIDENCE FROM A MIXED-ROLES CROSS-CULTURAL STUDY

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Abstract: This article presents a comprehensive study of the integration of AI-based tools (ChatGPT, Grammarly, ELSA Speak) into teaching English for Specific Purposes (ESP). Adopting a mixed-roles cross-cultural design, the study engaged 40 participants: 20 ESP learners from Chirchik State Pedagogical University (Uzbekistan) participated in a six-week quasi-experimental intervention, while 20 native-speaker students from the University of Warwick (United Kingdom) completed a parallel survey on AI in language education. The experimental group of Uzbek learners achieved modestly higher proficiency gains than the control group across all four language skills: writing (12% vs. 7%), speaking (10% vs. 6%), reading (11% vs. 8%), and listening (8% vs. 6%). The AI-based group also reported significantly higher motivation (4.6 vs. 3.8 on a 5-point Likert scale), engagement (4.7 vs. 3.6), and learner autonomy (4.5 vs. 3.4). British native-speaker respondents expressed broadly favorable views on AI in language education while raising concerns about authenticity, over-reliance, and academic integrity. The findings support a hybrid approach to ESP teaching that combines the structured guidance of traditional methods with the motivational and individualization benefits of AI-based tools, accompanied by explicit AI-literacy training for both teachers and learners.

Keywords: ESP, artificial intelligence, ChatGPT, Grammarly, ELSA Speak, mixed-roles design, cross-cultural study, experimental research, native-speaker perspectives, higher education, Uzbekistan.

Annotatsiya: Ushbu maqolada AI-asoslangan vositalarni (ChatGPT, Grammarly, ELSA Speak) maxsus maqsadlar uchun ingliz tilini (ESP) o'qitishga integratsiyalashning kompleks tadqiqoti taqdim etilgan. Aralash rollar (mixed-roles) madaniyatlararo dizayni qo'llanilib, tadqiqotda 40 nafar ishtirokchi qatnashgan: Chirchiq davlat pedagogika universiteti (O'zbekiston) 20 nafar ESP o'rganuvchisi 6 hafta davomida kvazi-eksperimental tadqiqotda ishtirok etgan, Warwick universiteti (Birlashgan Qirollik) 20 nafar ona tili sohibi talabasi esa AI haqida parallel so'rovnoma

qatnashgan. Al-asoslangan eksperimental guruh nazorat guruhidan barcha to'rt til ko'nikmasi bo'yicha biroz yuqori natija ko'rsatgan: yozish (12% va 7%), nutq (10% va 6%), o'qish (11% va 8%), tinglash (8% va 6%). Al guruh shuningdek motivatsiya, jalb qilinish va o'rganishda mustaqillik bo'yicha sezilarli yuqori ko'rsatkichlarni namoyish etgan. Britaniyalik ona tili sohiblari Al haqida umuman ijobiy fikr bildirgan, ammo tabiiy ovoz, ortiqcha ishonish va akademik halollik bo'yicha xavotirlarini ifoda qilgan.

Kalit so'zlar: ESP, sun'iy intellekt, ChatGPT, Grammarly, ELSA Speak, aralash rollar dizayni, madaniyatlarda tadqiqot, eksperimental tadqiqot, ona tili sohibi nuqtai nazari, oliy ta'lim, O'zbekiston.

Introduction: The teaching of English for Specific Purposes (ESP) has, since the 1960s, focused on the concrete language needs of learners in professional, academic, and occupational contexts. T. Hutchinson and A. Waters, in their seminal 1987 work, defined ESP as an approach in which all decisions regarding content and methodology are based on the learner's reason for learning [1]. In Uzbekistan, the strategic importance of foreign language education has been articulated in the Presidential Decree No. PF-60 "On the Development Strategy of New Uzbekistan for 2022–2026" and Resolution PQ-4623 on the modernization of foreign language teaching. ESP, with its focus on professional preparation, is particularly aligned with these strategic priorities.

The rapid development of generative artificial intelligence (AI) tools — ChatGPT, Grammarly, ELSA Speak, and similar systems — has introduced new pedagogical possibilities. These tools can generate authentic professional content, provide personalized feedback, and support extensive practice beyond the classroom. However, their effective integration into ESP teaching requires both a coherent theoretical foundation and empirical evaluation. While many studies have evaluated AI tools through learner-only designs [2, 3], few have incorporated cross-cultural perspectives from native speakers of English. Moreover, cross-cultural research in ESP faces a methodological challenge: native speakers cannot serve as ESP learners, since the field is by definition designed for foreign-language learners.

The present study addresses these gaps through a mixed-roles cross-cultural design. The research was guided by three questions: (1) Do AI-based tools produce greater proficiency gains than traditional ESP teaching among Uzbek learners? (2) How do learners experience and

perceive AI-supported ESP teaching? (3) What perspectives do native English speakers offer on the use of AI-based tools in supporting non-native learners?

Literature Review

The theoretical foundations of ESP rest on three core principles: needs analysis, authenticity, and learner autonomy. H. Basturkmen [4] argues that every ESP course must begin with a careful analysis of what learners need to do with English in their professional life. T. Dudley-Evans and M. J. St John [5] refined this framework by distinguishing the absolute and variable characteristics of ESP. J. M. Swales' work on genre analysis [6] and K. Hyland's research on disciplinary writing [7] have provided additional tools for understanding professional discourse.

The integration of AI into language learning is supported by several established theories of language acquisition. **S. Krashen's Input Hypothesis** [8] argues that language acquisition occurs when learners receive comprehensible input slightly above their current level ($i+1$). **L. S. Vygotsky's sociocultural theory** [9] introduces the Zone of Proximal Development — the gap between what a learner can do independently and what they can do with help. **J. Piaget's constructivism** [10], **G. Siemens's connectivism** [11], and **J. Sweller's cognitive load theory** [12] complete the theoretical framework, providing a robust foundation for AI integration in language learning.

Contemporary research on AI in education has produced a growing body of empirical work. L. Kohnke and colleagues [2] showed that ChatGPT can effectively support language teaching when used with appropriate pedagogical scaffolding. R. Godwin-Jones [3] documented the effectiveness of intelligent writing assistants. R. Luckin [13] distinguishes three categories of educational AI: learner-facing, teacher-facing, and system-facing. W. Holmes and colleagues [14] emphasize ethical considerations including data privacy, algorithmic bias, and academic integrity. In the Uzbek context, X. Rajabov and M. Xasanova [15] have documented early integration of AI tools in foreign language teaching at Uzbek universities.

Methodology

Participants and rationale for the mixed-roles design. Forty students participated in the study: 20 ESP learners from Chirchik State Pedagogical University (Uzbekistan) and 20 native-speaker students of English from the University of Warwick (United Kingdom). All Uzbek participants were at the B1–B2 level of English proficiency according to the Common European

Framework of Reference (CEFR) and were enrolled in an ESP course covering tourism and educational contexts. The British participants were undergraduate students from various disciplines who agreed to participate as survey respondents.

Native speakers were not subjected to ESP proficiency tests for principled reasons. ESP is by definition designed for foreign-language learners; administering an ESP proficiency test to native speakers would produce ceiling effects (scores at or near 100% on the pre-test), leaving no room for measurable change. Such a comparison would be methodologically invalid. Instead, the British participants contributed perspectives through an online questionnaire on AI-based tools in language education — a design choice consistent with the foundational ESP principle articulated by Hutchinson and Waters.

Design. The study employed a mixed-roles cross-cultural design with three components: (a) a quasi-experimental intervention with the Uzbek learners, (b) a learner survey on motivation and attitudes for the Uzbek participants, and (c) a separate online survey on AI in language education for the British native-speaker respondents.

Experimental component. The 20 Uzbek learners were divided into an experimental group ($n = 10$, using AI-based tools) and a control group ($n = 10$, using traditional methods). Both groups followed parallel ESP content over six weeks, covering professional communication in educational and tourism contexts, specialized vocabulary, and genre conventions. The experimental group used ChatGPT for content generation and feedback, Grammarly for writing assistance, and ELSA Speak for pronunciation practice. The control group followed traditional textbook-based instruction supplemented by teacher feedback.

Survey component. The 20 Warwick students completed an online questionnaire including background information, 10 Likert-scale items on general views of AI in language learning, 5 Likert-scale items specific to ESP, and 5 open-ended questions inviting qualitative reflection.

Instruments. The pre-tests and post-tests included four sections: writing (a professional email task), speaking (a guided oral presentation), reading (comprehension questions on a professional text), and listening (comprehension questions on authentic professional audio). Each section was scored on a 25-point scale. The motivation and attitudes survey used a 5-point Likert scale to measure interest, engagement, perceived

usefulness, and learner autonomy. All instruments were piloted before use to ensure validity and reliability.

Ethical considerations. All participants provided informed consent. Responses were anonymized. Participants were informed of their right to withdraw at any time without penalty. The study followed established ethical guidelines for educational research.

Results

Proficiency gains (Uzbek learners). The post-test results showed that the AI-based experimental group achieved modestly higher proficiency gains than the control group across all four skills. In writing, the AI-based group improved by 12%, while the control group improved by 7%. In speaking, the AI-based group gained 10%, while the control group gained 6%. In reading, the AI-based group improved by 11%, compared to 8% in the control group. In listening, the smallest difference was observed: the AI-based group gained 8%, while the control group gained 6%. The AI advantage thus ranged from 2 to 5 percentage points across the four skills.

Motivation and learner attitudes. The motivational findings were more striking than the proficiency findings. On the 5-point Likert scale, the AI-based group reported an average motivation score of 4.6, compared to 3.8 in the control group. Engagement was rated 4.7 versus 3.6. Perceived usefulness was rated 4.5 versus 3.7, and learner autonomy 4.5 versus 3.4. The motivational gap (0.8–1.1 points) was substantially larger than the proficiency gap, suggesting that the value of AI in ESP teaching lies as much in the learning conditions it creates as in the immediate proficiency outcomes.

Open-ended survey responses provided qualitative insight into how these gains occurred. Learners in the AI-based group reported that AI tools provided immediate, individualized feedback that would have been impossible in a teacher-only setting. They could draft a professional email, receive corrections from Grammarly, request stylistic suggestions from ChatGPT, and revise — all within a single study session. They could practice pronunciation with ELSA Speak as often as they wanted, without the social anxiety of speaking in front of peers. The cumulative effect was extensive, individualized, low-anxiety practice — exactly what the theoretical framework (Krashen, Vygotsky) predicted would support second-language acquisition.

Native-speaker perspectives (Warwick respondents). Warwick students reported high familiarity with AI-based tools in their own studies;

most had used ChatGPT or Grammarly regularly. They expressed broadly favorable views on AI's role in supporting non-native learners. The average rating that AI effectively supports language learning for non-native speakers was 4.2 out of 5. Respondents agreed that AI improves writing skills (4.3) and that AI is useful for ESP specifically (4.1). At the same time, they expressed thoughtful concerns: AI-generated language sometimes sounds unnatural or generic (3.9 agreement); AI may reduce independent thinking if over-used (3.8); and AI raises concerns about academic integrity (4.1).

Discussion

The findings indicate that AI-based ESP teaching produces measurable but modest additional gains in language proficiency compared with traditional methods. The 2–5 percentage-point advantage in proficiency, combined with substantially higher motivation and autonomy scores, suggests that AI's pedagogical value lies as much in the learning conditions it creates as in immediate proficiency outcomes. This aligns with S. Krashen's [8] emphasis on affective factors in language acquisition and with R. Luckin's [13] argument that educational AI should be evaluated through a broader lens than test scores alone.

Several theoretical frameworks help explain these findings. The AI tools, by providing personalized *i+1* input (Krashen), function as a “digital more knowledgeable other” within the learner's ZPD (Vygotsky). They support active knowledge construction (Piaget) and reduce extraneous cognitive load (Sweller). The motivational findings, in particular, are consistent with the prediction that low-anxiety, individualized practice creates favorable conditions for sustained learning. The proficiency findings, while modest, are consistent with the recognition that AI literacy itself requires time to develop — a six-week intervention may not be sufficient to realize the full pedagogical potential of AI integration.

The Warwick survey responses provide a useful cross-cultural complement. Native speakers, having extensive personal experience with AI tools, view them as valuable aids for non-native learners while remaining aware of their limitations. Their concerns about authenticity of voice, over-reliance, and academic integrity align with broader scholarly debates [14]. The combined perspective from Uzbek experimental data and Warwick survey responses supports a balanced view: AI is a powerful complement to traditional ESP teaching, particularly for motivation and individualized practice, but its integration requires careful pedagogical design and explicit AI-literacy training.

Conclusion

This study has demonstrated that AI-based tools in ESP teaching produce modestly higher proficiency gains than traditional methods, alongside substantially higher motivation, engagement, and learner autonomy. Native-speaker perspectives from Warwick reinforce this interpretation while highlighting concerns about authenticity, over-reliance, and academic integrity. The findings support a **hybrid approach** to ESP teaching that combines the structured guidance of traditional methods with the motivational and individualization benefits of AI — while explicitly training learners to preserve their own communicative voice and to use AI critically.

The study has limitations. The sample of 20 Uzbek learners is modest. The six-week intervention is short, and longer studies may yield different patterns. The Warwick survey, while informative, did not constitute a controlled comparison. Different ESP domains — medical English, legal English, technical English — may yield different results. Future research should address these limitations through longer interventions, larger samples, and domain-specific replication.

The mixed-roles cross-cultural design adopted here has methodological implications beyond the present study. By engaging native speakers as survey respondents rather than as ESP learners, the design preserves methodological validity while providing meaningful cross-cultural perspective. This approach can be adapted to other ESP contexts and other pairs of national settings. As AI continues to transform language education, methodologically rigorous cross-cultural research will become increasingly important; the mixed-roles design offers one principled approach.

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