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ARTIFICIAL INTELLIGENCE IN ESP EDUCATION: TRANSFORMING SPECIALIZED LANGUAGE LEARNING

Annotation

The findings suggest that, when implemented with proper pedagogical supervision, AI tools can enhance student motivation, independence, and preparedness for real-life communication tasks. The paper underscores that teachers remain essential as guides who ensure the purposeful, ethical, and effective integration of AI in ESP learning environments.

Key words: English for Specific Purposes, ESP, Artificial Intelligence, AI in education, language learning technology, professional communication, adaptive learning, digital tools, specialized vocabulary, language teaching innovation.

ИСКУССТВЕННЫЙ ИНТЕЛЛЕКТ В ОБУЧЕНИИ ESP: ТРАНСФОРМАЦИЯ ОБУЧЕНИЯ СПЕЦИАЛИЗИРОВАННОМУ ЯЗЫКУ

Аннотация

Результаты показывают, что при грамотном педагогическом сопровождении инструменты ИИ способны повысить мотивацию студентов, их автономность и готовность к реальному профессиональному общению. Подчеркивается, что роль преподавателя остается ключевой: он выступает наставником, обеспечивающим целенаправленное, этичное и эффективное использование ИИ в обучении ESP.

Ключевые слова: английский язык для специальных целей, ESP, искусственный интеллект, ИИ в образовании, технологии изучения языков, профессиональная коммуникация, адаптивное обучение, цифровые инструменты, специализированная лексика, инновации в преподавании языков.

ESP TA’LIMIDA SUN’IY INTELLEKT: IXTISOSLASHGAN TIL O‘RGANISHNI TRANSFORMATSIYA QILISH

Annotatsiya

Tadqiqot natijalari shuni ko‘rsatadiki, to‘g‘ri pedagogik rahbarlik ostida SI vositalari talabalarning motivatsiyasi, mustaqilligi va real hayotdagi professional muloqotga tayyorgarligini sezilarli darajada oshirishi mumkin. Maqolada o‘qituvchining roli muhim bo‘lib qolishi ta’kidlanadi: u SI dan maqsadli, mas’uliyatli va samarali foydalanishni ta’minlovchi yo‘lboshchi sifatida faoliyat yuritadi.

Kalit so‘zlar: maxsus maqsadlar uchun ingliz tili, ESP, sun’iy intellekt, ta’limda SI, til o‘rganish texnologiyalari, professional muloqot, adaptiv ta’lim, raqamli vositalar, ixtisoslashgan leksika, til o‘qitishdagi innovatsiyalar.

Introduction. In today’s globalized world, English has become the primary language of international communication in professional and academic contexts. Consequently, the demand for English for Specific Purposes (ESP) has increased, as many learners need English tailored to their particular fields such as business, medicine, law, engineering, or technology. Unlike General English, ESP focuses on specialized vocabulary, authentic tasks, and real-life communication relevant to learners’ future careers. Effective ESP instruction therefore requires attention not only to language skills but also to professional contexts.

At the same time, rapid technological progress, especially in Artificial Intelligence (AI), is transforming educational practices. AI refers to computer systems capable of performing tasks that normally require human intelligence, including language processing, speech recognition, and adaptive learning. In language education, AI-powered tools such as intelligent tutoring systems, chatbots, speech recognition programs, and writing assistants provide personalized learning experiences, immediate feedback, and opportunities for interactive practice.

The integration of AI into ESP teaching is particularly beneficial because ESP learners often have specific goals and limited time. AI technologies can simulate professional situations, generate up-to-date materials, and adapt tasks to individual proficiency levels. This enables students to practice relevant communication skills and acquire field-specific terminology more efficiently. However, the use of AI also presents challenges, including overdependence on technology, concerns about accuracy, ethical issues, and unequal access to digital resources.

Despite these limitations, the teacher’s role remains crucial. Educators guide students in the effective and responsible use of AI tools, evaluate learning outcomes, and ensure that technology supports meaningful language development. This paper explores how AI can enhance ESP instruction by improving specialized language skills while maintaining the essential role of the teacher in the learning process.

Literature review. The growing interest in English for Specific Purposes (ESP) has led researchers to explore innovative approaches that can better address learners’ professional language needs. Traditionally, ESP instruction has emphasized needs analysis, authentic materials, and task-based learning (Hutchinson & Waters, 1987). Scholars argue that ESP differs from General English primarily because it focuses on language use within specific disciplines, requiring learners to master specialized vocabulary, discourse patterns, and communicative functions relevant to their fields.

With the advancement of digital technologies, the integration of Artificial Intelligence (AI) into language education has attracted considerable academic attention. AI-based tools have been shown to support personalized learning by adapting content to learners’ proficiency levels and

learning styles (Holmes et al., 2019). In ESP contexts, such personalization is particularly valuable because students often have diverse linguistic backgrounds but similar professional goals. Studies indicate that adaptive learning systems can improve vocabulary retention, reading comprehension, and task performance by providing targeted practice and immediate feedback.

Research on conversational AI, such as chatbots, demonstrates their effectiveness in promoting speaking skills and learner autonomy. Fryer and Carpenter (2006) found that chatbot interactions can reduce anxiety and encourage students to practice language in a low-risk environment. More recent studies highlight that AI-driven simulations allow ESP learners to engage in realistic professional scenarios, such as business negotiations or medical consultations, thereby enhancing communicative competence.

Speech recognition technology has also gained prominence in language learning research. According to Liakin, Cardoso, and Liakina (2015), pronunciation tools based on automatic speech recognition can significantly improve learners’ intelligibility and fluency. In ESP settings, accurate pronunciation is essential for professional communication, especially in fields where misunderstandings may have serious consequences, such as aviation or healthcare.

Another important area of AI application is automated writing support. Tools powered by natural language processing can assist learners in producing reports, emails, and other professional documents by offering grammar correction, vocabulary suggestions, and structural guidance. Studies suggest that such tools can enhance writing quality and help students become more aware of formal language conventions (Ranalli, 2018). However, researchers also caution that excessive reliance on automated feedback may limit the development of independent writing skills.

Despite the numerous benefits, scholars emphasize several challenges associated with AI integration in ESP education. Ethical concerns, including data privacy and academic integrity, are frequently discussed in the literature. Additionally, the accuracy of AI-generated content may vary, particularly in highly specialized fields where precise terminology is crucial. Access to technology is another issue, as not all learners or institutions have equal resources to implement advanced digital tools.

Importantly, most researchers agree that AI should complement rather than replace the teacher. The instructor’s role remains essential in selecting appropriate tools, designing meaningful tasks, and providing human feedback that technology cannot fully replicate. Teachers also help students develop critical digital literacy skills, enabling them to evaluate AI outputs responsibly.

In summary, the literature indicates that AI has significant potential to enhance ESP instruction by supporting personalized learning, authentic communication, and efficient skill development. At the same time, successful implementation requires careful pedagogical planning, ethical consideration, and continued teacher involvement. These findings provide a theoretical foundation for examining how AI tools can be effectively integrated into ESP classrooms to improve learning outcomes.

Research methodology. This study adopts a qualitative descriptive research approach to explore the use of Artificial Intelligence (AI) tools in teaching English for Specific Purposes (ESP). A qualitative design was selected because it enables a detailed examination of learners’ experiences, attitudes, and the effectiveness of AI-supported instruction in authentic educational settings.

Participants

The study involved ESP students from a university program representing different professional disciplines such as business, law, engineering, and information technology. Participants were chosen through purposive sampling, focusing on those who were studying ESP courses that incorporated AI-based tools. Additionally, several ESP teachers participated to provide professional perspectives on instructional practices and challenges.

Data Collection Methods

To ensure comprehensive and reliable results, data were gathered from several sources:

Questionnaires were distributed to students to identify their perceptions of AI tools, including advantages and difficulties.

Semi-structured interviews with selected students and instructors offered deeper insights into their experiences.

Classroom observations allowed the researcher to examine the practical integration of AI tools and student engagement during lessons.

Analysis of student work and AI-generated materials was conducted to assess improvements in language performance.

Procedure

The research was carried out over a defined period during which AI technologies - such as conversational chatbots, adaptive learning systems, speech recognition programs, and writing support tools - were actively used in ESP classes. Students completed professional-oriented tasks, including simulations, written assignments, and vocabulary activities, while instructors supervised the process and tracked progress.

Data Analysis

The collected information was analyzed using thematic analysis to identify common patterns related to motivation, participation, skill development, and challenges. Data from different sources were compared to ensure consistency and strengthen the validity of the findings.

Ethical Considerations

All participants took part voluntarily and provided informed consent. Their identities remained confidential, and personal information was not disclosed. The research adhered to standard ethical principles for educational studies.

Summary

In general, the methodology was designed to offer a thorough understanding of the impact of AI tools on ESP teaching and learning. By using multiple methods of data collection and analysis, the study aims to present dependable conclusions about the advantages, limitations, and practical implications of integrating AI into ESP education.

Analysis and results. The findings of the study show that the integration of Artificial Intelligence (AI) tools into English for Specific Purposes (ESP) instruction had a generally positive effect on students’ language development and learning experience. Students demonstrated noticeable improvement in acquiring specialized vocabulary related to their professional fields, as AI platforms provided contextual explanations, examples, and practice activities. The use of chatbots and speech recognition tools also supported the development of speaking skills by allowing learners to practice realistic professional situations and receive immediate feedback on pronunciation and fluency. In addition, AI writing assistants helped students produce more accurate and well-structured professional texts, though some reliance on automated corrections was observed.

The data further indicated increased motivation and learner autonomy, as personalized tasks and instant responses encouraged students to engage more actively both inside and outside the classroom. However, several challenges were identified, including technical difficulties, concerns about the

accuracy of AI-generated content, and unequal access to digital resources. The results also emphasize the crucial role of the teacher in guiding the effective use of AI, monitoring progress, and providing human feedback. Overall, the study suggests that AI tools can significantly enhance ESP learning outcomes when integrated thoughtfully and supported by appropriate pedagogical supervision.

Conclusion. To conclude, the integration of Artificial Intelligence (AI) into English for Specific Purposes (ESP) teaching provides valuable opportunities to improve language learning for professional needs. The study shows that AI tools can facilitate the acquisition of specialized vocabulary, enhance communication and writing skills, and increase learners' motivation and independence. Features such as personalized instruction, interactive activities, and instant feedback make AI especially beneficial for students who require targeted language competence within a limited timeframe.

At the same time, AI should complement rather than replace conventional teaching methods. Potential challenges—including excessive dependence on technology, concerns about reliability, and unequal access to digital resources—need to be carefully managed. The teacher continues to play a key role in directing the learning process, supporting students, and ensuring the effective and responsible use of technological tools.

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