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Exploring Students' Needs and Perceptions of AI-Assisted ESP Learning in an English Education Program Context

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ABSTRACT

This study demonstrates that AI-assisted English for Specific Purposes (ESP) learning addresses gaps in conventional ESP instruction and better supports pre-service English teachers in an English Education Program. Using a qualitative small-scale case study design, the research involved three students from the English Education Study Program in an ESP course at the University of Muslim Buton, Southeast Sulawesi. Data were collected through written semi-structured interviews administered via Google Forms and were analyzed thematically. Students identified ESP as crucial for developing classroom English, instructional communication, and lesson planning skills. However, they found traditional ESP instruction lacked contextual vocabulary and opportunities for independent material development. The integration of AI-supported learning emerged as a practical solution, enhancing students' understanding of ESP concepts, providing relevant examples, and improving learning efficiency. Students reported increased autonomy and confidence in using English for instruction, while still critically acknowledging risks such as over-reliance on AI and related concerns about academic integrity. They stressed the need for AI to serve as a supportive tool, not a replacement for critical thinking and pedagogical judgment. In summary, the study argues that clearly guided, ethically integrated AI-assisted ESP learning can significantly improve teacher preparation programs.

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INTRODUCTION

Over the past two decades, digital technology has changed English language education (Altun & Ahmad, 2021; Shadiev & Yang, 2020). Artificial Intelligence (AI) is now a central component of English Language Teaching (ELT), aiding personalized, independent, and adaptive skill development. AI-based applications like chatbots, grammar checkers, automated feedback, and writing assistants offer flexible, context-specific resources for lecturers and students (Basaula, 2025). In contemporary ELT studies, AI-assisted learning is seen as having significant potential to address the challenges of language learning in the global and digital era (Babanoğlu et al., 2025; Taşçı & Tunaz, 2024). Key benefits of AI include enabling students to receive instant feedback, develop vocabulary in context, and practice language skills tailored to their individual needs and abilities. Furthermore, AI encourages a shift in the role of lecturers from knowledge transmitters to learning

facilitators who guide students in using technology critically and ethically. Therefore, the integration of AI in ELT is not only a technological issue but also touches on the pedagogical, cognitive, and affective dimensions of language learning. English for Specific Purposes (ESP) is highly relevant to AI studies in ELT. ESP helps develop English proficiency in specific academic and professional fields, such as education, business, and tourism (Al-Malki et al., 2022; Fadlia et al., 2020; Normurodovna, 2025). In English Language Education, ESP bridges general competency and students' workplace or academic needs, requiring mastery of both structure and practical language use (Agzamovna, 2024; Bakhronova, 2025).

Implementing ESP in English Language Education poses challenges. A key issue is the gap between ESP goals and classroom methods. Many courses use generic, textbook-based approaches, often neglecting students' real needs. ESP materials can lack context, limiting relevance to academic and professional demands (Dou, 2024; Sukying et al., 2023). As a result, ESP has not fully supported practical language skills. Additional challenges include limited time, resources, and lecturer readiness for needs-based ESP. Needs analysis is often minimal, resulting in ESP designs not grounded in students' realities (Mao & Zhou, 2024; Park, 2021; Zhang, 2024). Students have diverse backgrounds and goals such as teaching, research, or translation which require flexible ESP, but current practice remains rigid.

This is where AI-assisted ESP learning offers a potential solution. The key benefits of AI for ESP include helping students access language materials that are more specific, authentic, and tailored to their individual needs (Kovalenko & Baranivska, 2024; Qu, 2025; Rudik & Onyshchuk, 2024). Using AI, students can practice writing academic texts, understand technical terms, and simulate language use in specific professional contexts (Zhao, 2025). Additionally, AI supports self-directed learning by providing personalized pathways and resources, which is crucial in ESP, given the limited time available in face-to-face classes. Thus, integrating AI into ESP learning has challenges and controversies. Yet, AI in ESP has challenges and controversies. A central issue is the disconnect between student needs and conventional classroom practices. Many students use AI independently for learning and assignments, but classrooms often lack systematic integration. This gap can reduce ESP effectiveness and blur ethical and academic norms for AI use. oStudent views on AI-assisted learning vary. Some find AI helpful for understanding ESP and building confidence; others worry about over-reliance, reduced critical thinking, and academic integrity issues. To integrate AI effectively, educators need a full understanding of student needs and perceptions. Without this, AI may become a superficial trend with little impact on teaching. ELT research in Indonesia on AI-assisted learning is mostly quantitative, focusing on the effectiveness of the technology (Haryani, 2025; Silitonga et al., 2024). Few qualitative studies dig into students' experiences, needs, and perceptions in ESP programs. Yet, student perspectives are crucial for understanding AI's actual use in learning. Small case studies offer deep, contextual insights into students' learning experiences.

Previous studies have consistently highlighted AI's potential to enhance language learning through personalized feedback, adaptive learning pathways, and increased learner autonomy (Babanoğlu et al., 2025; Taşçı & Tunaz, 2024). However, these studies largely conceptualize AI as a technological enhancer of general language proficiency, with limited attention to ESP research, which emphasizes needs analysis and context-specific language use (Hyland, 2022). Here, AI integration remains limited. Some suggest AI supports vocabulary and discourse development (Zhao, 2025), but often assume technology's benefits transfer directly, without assessing alignment with ESP goals. In teacher education, ESP covers domain language, instructional discourse, and classroom interaction (Zhao et al., 2022). However, most AI in ELT research focuses on student performance, neglecting teacher preparation. There is a need to study AI as a pedagogical tool in ESP for pre-service teachers, where professional identity and ethical issues are central. Professional identity, ethical awareness, and instructional competence become central.

Despite a growing body of research on AI in English Language Teaching (ELT), most studies have focused on general language-learning contexts, emphasizing technological effectiveness, learner performance, or experimental outcomes. Limited attention has been given to how AI intersects with English for Specific Purposes (ESP) in teacher education programs, particularly in preparing pre-service English teachers to use English as a pedagogical and professional tool. In ESP for teacher education, language is not only a medium of communication but also a means of

instruction, classroom management, and pedagogical interaction, which requires a more context-sensitive and profession-oriented approach.

Moreover, existing studies on AI-assisted learning in ELT often overlook students' situated experiences, needs, and perceptions, particularly in qualitative and small-scale contexts (Liu, 2024). As a result, there remains a gap in understanding how pre-service teachers engage with AI to support their ESP learning, interpret its pedagogical value, and navigate related challenges. This study addresses the limited, contextualized understanding of AI-assisted ESP learning in English teacher education, especially from the student perspective as future educators. Without this, AI integration may remain superficial and disconnected from pedagogical needs. By situating AI-assisted ESP learning within a teacher education context, where ESP involves both discipline-specific and pedagogical language development, the study directly confronts this gap. It advances the field by focusing on the intersection of AI use, pedagogical ESP needs, and pre-service teacher identity. The qualitative case study approach offers an in-depth, contextually grounded account of students' needs and perceptions, often overlooked in the current literature.

Accordingly, this study aims to explore students' needs and perceptions of AI-assisted ESP learning in an English Education Program, with the expectation that the findings will contribute to more pedagogically grounded, context-responsive, and ethically informed integration of AI in ESP teacher education. This study is distinct from prior AI-in-ELT research in that it does not primarily examine learning effectiveness, but rather focuses on pedagogical ESP needs in teacher education and how AI mediates the development of instructional language competence among pre-service teachers.

METHOD

This study used a qualitative, small-scale case study design to explore students' needs and perceptions of AI-assisted English for Specific Purposes (ESP) learning within an English Education Program. The qualitative method was fitting because the study aimed to understand participants' experiences, perspectives, and reflections in depth. The case study approach enabled the researcher to investigate the phenomenon within a specific, context-bound setting: an ESP course in a teacher education program.

The study was conducted in the English Education Study Program at the University of Muslim Buton, Southeast Sulawesi, Indonesia, where ESP is a compulsory subject. The participants were three undergraduate students enrolled in the ESP course during the data collection period. Participants were selected using purposive sampling, with the following criteria: (1) they had completed or were currently taking the ESP course, and (2) they had experience using AI-based tools (e.g., ChatGPT, Grammarly, or similar applications) to support their learning. The small number of participants was an intentional choice to enable a close, detailed exploration of each participant's unique experiences, which aligns with the qualitative design's aim for depth and context-specific insight rather than breadth or statistical representation.

Rather than aiming for statistical generalization, this study prioritizes informational adequacy (Malterud et al., 2016). Here, the richness and relevance of the data determine the sufficiency of the sample. Because of the narrow research focus, the specific participant criteria, and the depth of responses, the data were deemed sufficient to capture meaningful patterns in students' needs and perceptions. Reaching data saturation was not the main goal. Instead, the study emphasizes depth, nuance, and contextual insight.

Data were collected through written semi-structured interviews administered via Google Forms. This method allowed participants to reflect on their responses without time pressure and to provide more considered and detailed answers. The interview guide included 18 open-ended questions, grouped into themes: (1) students' ESP learning needs, (2) experiences using AI tools, (3) perceived benefits of AI-assisted learning, (4) challenges and concerns, and (5) expectations for future ESP instruction. The questions drew on established ESP needs analysis frameworks and recent language learning studies involving AI.

Before data collection, participants were informed about the study's purpose and provided informed consent. They were assured that their responses would remain confidential and would be used solely for research purposes. Participation was voluntary, and participants could withdraw at any time. The data were analyzed using thematic analysis following the framework proposed by Braun & Clarke (2006). The analysis was conducted systematically through several stages.

First, the researcher became familiar with the data by reading and re-reading participants' responses. This provided an overall understanding. Second, initial coding was done by identifying meaningful data units related to students' needs and perceptions of AI-assisted ESP learning. These codes were created inductively, with patterns allowed to emerge from the data instead of being imposed. Third, the codes were grouped into candidate themes by gathering similar or related codes into broad categories. Fourth, themes were reviewed and refined to ensure internal coherence and distinctness. Finally, the themes were defined, named, and supported with illustrative excerpts from participants.

To enhance analytical rigor, the researcher maintained an audit trail documenting coding decisions, theme development, and interpretive reflections throughout the analysis process. Peer debriefing was also conducted with a colleague familiar with qualitative research to review the coding scheme and thematic structure, ensuring consistency and reducing subjective bias. To ensure the trustworthiness of the findings, this study followed the criteria proposed by Lincoln & Guba (1985), including credibility, transferability, dependability, and confirmability.

Credibility came through prolonged engagement with the data, careful interpretation, and using direct participant quotations. Transferability was supported by clearly describing the research context, participants, and procedures, so readers can assess the applicability of the findings. Dependability was addressed through a transparent, systematic process with clear documentation for data collection and analysis. Confirmability was enhanced by maintaining an audit trail and using reflective practices, grounding findings in the data rather than researcher bias.

RESULTS AND DISCUSSION

This section presents the results and discussion of research based on written interviews with three English Language Education students who have taken the ESP course. Data was analyzed using thematic analysis. Six main themes emerged, reflecting students' needs and perceptions of AI-assisted ESP learning. The findings are discussed in depth by linking empirical data, research objectives, and theoretical perspectives on ESP and AI in ELT.

ESP as a Pillar of Professional Development for pre-service English teachers

The research results show that students view ESP courses as essential for developing their professional identity as pre-service English teachers. Students see ESP not as just another language course. Instead, they perceive it as a unique space connecting linguistic skills with the demands of education and teaching.

Student 1 emphasized the practical function of ESP in a professional context:

> "*Mata kuliah ESP membantu calon guru memahami penggunaan bahasa Inggris sesuai konteks akademik dan profesional." ("The ESP course helps prospective teachers understand the use of English in academic and professional contexts").*

This statement demonstrates that students recognize the importance of functional and contextual English, not just mastering grammar or general vocabulary. ESP is understood as a means of preparing pre-service English teachers to use English in real-world situations, such as teaching, explaining material, and interacting with students.

Student 3 provided a more profound reflection by linking ESP to pedagogical competence:

> *“ESP melatih saya untuk melakukan needs analysis, sehingga saya mampu merancang pembelajaran yang relevan dengan kebutuhan peserta didik.” (“ESP trained me to conduct needs analysis, so I am able to design learning that is relevant to the needs of students.”)*

These findings reinforce the argument that ESP in English Language Education Study Programs serves a dual purpose: language learning and pedagogical training. ESP helps students understand that the use of English in educational contexts must be tailored to learning objectives, student characteristics, and classroom context. This discussion aligns with Hutchinson and Waters's view that ESP is not a specific language product, but rather a needs-based learning approach (Warti, 2020).

Specific and Pedagogical ESP Needs for Pre-service Teachers

The second theme relates to the identification of students' ESP needs as prospective English teachers. All participants consistently emphasized that their ESP needs differ from those in other fields, as they place greater emphasis on the language of instruction and classroom interaction.

Students 1 and 2 explicitly identified classroom English as a primary need:

"Classroom English, karena digunakan langsung saat mengajar di kelas." ("Classroom English, because it's used directly in classroom teaching.")
“Classroom English lebih efektif untuk menciptakan strategi mengajar yang membantu siswa dan pengajar meraih hasil belajar yang optimal.” ("Classroom English is more effective for creating teaching strategies that help students and teachers achieve optimal learning outcomes.")

These findings indicate that students need ESP that focuses on teaching practices, such as giving instructions, managing the classroom, providing feedback, and explaining concepts. These needs are highly contextual and cannot be optimally met through a General English approach.

Student 3 added the dimension of lesson planning:

“Lesson plan melatih calon guru untuk menyusun pembelajaran yang terarah dan sistematis.” (“Lesson plans train pre-service teachers to develop focused and systematic learning.”)

These findings emphasized that ESP for pre-service teachers should integrate language and pedagogy rather than treat them separately. ESP should help students understand how English is used as a pedagogical tool rather than simply as an object of learning. Thus, students' ESP needs are pedagogical, a relatively rare area of attention in ELT literature.

The Gap between ESP Demands and Conventional Learning Practices

The third theme revealed a gap between the demands of ESP learning and the conventional learning practices students experience. Before using AI, students reported various difficulties, demonstrating the limitations of traditional ESP approaches.

Students 1 and 2 highlighted the limitations of ESP vocabulary:

"Kurang kosakata dan sulit memahami konteks ESP. ("Lack of vocabulary and difficulty understanding ESP contexts.”)
"Kosa kata khusus ESP jarang muncul di teks umum." ("ESP-specific vocabulary rarely appears in general texts.”)

This statement indicates that conventional ESP materials do not provide sufficient exposure to vocabulary and context. Students are faced with texts and terms they rarely encounter in general English lessons, requiring additional support.

Student 3 highlighted this aspect of material development:

“Kesulitan yang juga saya alami sebelum menggunakan AI adalah mengembangkan materi ESP secara mandiri” (Another difficulty I experienced before using AI was developing ESP materials independently.”)

This difficulty highlighted a pedagogical gap: students are required to understand and develop ESP material, but are not always equipped with adequate learning strategies and resources. This situation reinforces the argument that conventional ESP instruction is often not fully grounded in students' needs.

AI as a Pedagogical Solution in ESP Learning

The fourth theme indicates that students view AI as a pedagogical solution that helps overcome the limitations of conventional ESP learning. Students use various AI tools, such as ChatGPT, Grammarly, Gemini, and Perplexity, to support material comprehension, idea development, and academic writing.

Student 3 explained the role of AI in lesson plan development:

"AI membantu memberikan contoh learning objectives, aktivitas kelas, dan penggunaan classroom English yang sesuai." ("AI helps provide examples of learning objectives, class activities, and appropriate use of classroom English.")

This statement demonstrates that AI serves as a flexible and accessible pedagogical resource. AI assists not only with linguistic aspects but also with lesson planning and teaching strategies.

Students also experienced significant changes in their learning process:

"Setelah menggunakan AI, proses belajar menjadi lebih efisien karena AI dapat memberikan penjelasan yang sederhana dan contoh konkret." ("After using AI, the learning process becomes more efficient because AI can provide simple explanations and concrete examples.")

These findings suggest that AI acts as a digital scaffold, helping students learn independently and reflectively. AI allows students to access knowledge at their own pace, thus supporting the principle of learner autonomy in ESP and aligning with the student-centered learning paradigm in modern ELT.

Critical Perceptions of the Risks of Addiction and Academic Ethics

Although students had positive perceptions of AI, they also demonstrated critical awareness of its potential risks in ESP learning. The main issues raised were overreliance and academic honesty.

Student 3 stated:

"AI sebaiknya digunakan sebagai alat pembantu, bukan pengganti proses belajar."(AI should be used as a tool, not a substitute for the learning process.")

This statement demonstrates that students understand the importance of balancing technology use with the development of independent thinking skills. AI is viewed as a supporting tool, not a quick fix.

Issues of academic ethics are also a concern:

"AI boleh digunakan, tetapi harus tetap menjunjung kejujuran akademik." ("AI can be used, but it must still uphold academic honesty.") (Student 1)

This finding is significant because it demonstrates that students possess ethical literacy regarding technology, a crucial aspect of AI integration in higher education. This awareness can serve as a basis for lecturers to design more transparent and more educational AI policies.

Expectations for AI Integration in ESP and the Future of the Teaching Profession

The final theme concerns students' hopes for the future of ESP learning and the English teaching profession in the AI era. Students agreed that AI will not replace teachers, but rather strengthen their role as facilitators and guides.

Student 3 stated comprehensively:

"AI dapat membantu guru dan siswa mengakses ide dan materi dengan lebih cepat… namun profesi guru tetap sangat dibutuhkan untuk mengarahkan penggunaan AI dan membangun interaksi belajar." ("AI can help teachers and students access ideas and materials more quickly… but the teaching profession remains crucial for guiding the use of AI and building learning interactions.")

The study's conclusions support the usefulness of English for Specific Purposes (ESP) as a needs-driven strategy, especially in relation to English teacher preparation. According to modern ESP theory, ESP has broadened to encompass pedagogical, digital, and professional competencies in addition to occupational or disciplinary language training (Anthony, 2025; Hyland, 2022). Pre-

service English instructors in this study believed that ESP was crucial for improving classroom English, instructional communication, and lesson planning abilities. This suggests a move toward what more recent researchers refer to as pedagogical ESP. This supports Basturkmen's (2021) assertion that language use in educational contexts should be the primary focus of ESP in teacher education, rather than only on content-specific terminology.

The results, however, also highlight a continuing problem with traditional ESP education: its inability to adapt to each student's unique needs and the pedagogical demands of the setting. Traditional ESP courses have been challenged by recent ESP studies for relying on static materials that do not account for students' changing professional identities and digital learning contexts (Hyland, 2022). The participants' challenges with autonomous material generation and the use of contextual vocabulary point to a disconnect between the real pedagogical duties pre-service teachers are expected to carry out and the content of ESP courses. This disparity underscores the need for more flexible ESP methods that integrate technological and educational aspects.

AI can be a useful mediating tool in closing this gap, as seen by the favorable opinions of ESP learning with AI assistance. AI-assisted learning aligns with the dynamic needs analysis principle, which acknowledges that learners' needs are context-dependent and flexible, as seen from a modern ESP perspective (Anthony, 2025). AI tools increased the relevance and usefulness of ESP learning by providing students with instant explanations, generating contextualized examples, and supporting lesson planning. This result is consistent with current research on AI-enhanced ELT, which contends that AI can promote professional language development and provide individualized learning pathways (Teng et al., 2024).

Additionally, a broader shift in ESP pedagogy toward self-regulated, technology-mediated learning is reflected in the reported rise in learner autonomy and confidence. Learner agency in developing professional discourse competency is emphasized by modern ESP frameworks (Hyland, 2022). By allowing students to freely investigate instructional language use while aligning with their future teaching duties, AI-assisted ESP learning seems to complement this objective.

However, the necessity of ethical and pedagogically supervised AI integration is highlighted by participants' critical awareness of potential pitfalls, such as over-reliance on AI and concerns about academic integrity. Critical thinking, needs analysis, and teacher mediation should not be replaced by technology, according to recent research in digital ESP (Basturkmen, 2021b). In this sense, the results point to an ESP pedagogical improvisation where AI serves as a supplementary tool rather than a dominant teaching authority.

Overall, this study contributes to current discussions on AI-assisted ESP learning by providing a small-scale, student-centered perspective from a pre-service English teacher education context. The findings suggest that AI tools may support certain aspects of pedagogical ESP learning, particularly in helping participants access contextual examples, develop instructional materials, and engage in more independent learning practices. However, these findings should be interpreted cautiously due to the limited number of participants and the study's contextual nature.

Rather than positioning AI as a comprehensive pedagogical solution, this study suggests that AI-assisted ESP learning can serve as a complementary, flexible learning support when guided by clear pedagogical objectives and ethical considerations. The study also highlights the importance of maintaining critical thinking, lecturer guidance, and responsible technology use within ESP instruction. In this sense, the findings support the growing view of ESP as an adaptable, context-sensitive approach that can respond to technological developments while maintaining its pedagogical and professional foundations.

CONCLUSION

This study explored how English education students perceive and need AI-assisted English for Specific Purposes (ESP) instruction. Participants saw ESP as pedagogical preparation, linked to lesson planning, instructional communication, classroom English, and language acquisition. They also viewed AI-assisted learning as a useful tool that helps them grasp ideas, access contextualized examples, and learn more independently and effectively. The survey revealed students' awareness of AI's potential dangers, such as over-reliance and academic integrity issues. These results suggest ethical awareness and pedagogically guided implementation are as crucial as technological access in successful AI-supported ESP learning.

The main contribution of this study is to highlight AI-assisted ESP learning from a teacher education viewpoint. In contrast to general AI-in-ELT research focused on language acquisition or technology, this study emphasizes AI's role in developing pedagogical language skills for pre-service English instructors. The findings highlight the need to align AI integration with students' educational and professional needs. This study's small-scale qualitative method and inclusion of only three participants from one institution are limitations. Thus, the findings provide context-specific insights rather than generalizable conclusions. Further research could use longitudinal methods, larger samples, or diverse educational settings to examine long-term effects.

REFERENCES

Agzamovna, T. U. (2024). Bridging Language and Professional Skills: Effective ESP Pedagogy for Diverse Learner Needs. *Current Research Journal of Pedagogics*, *5*(10), 36–41.

Al-Malki, E. A. A., Javid, C. Z., Farooq, M. U., Algethami, G. F., & Al-Harthi, A. A. (2022). Analysis of the English Language Needs of the Saudi Tourism Workforce: A First Step into Designing ESP Teaching Materials. *International Journal of Learning, Teaching and Educational Research*, *21*(2), 72–88. https://doi.org/10.26803/ijlter.21.2.5

Altun, M., & Ahmad, H. K. (2021). The Use of Technology in English Language Teaching: A Literature Review. *International Journal of Social Sciences & Educational Studies*, *8*(1), 226–232. https://doi.org/10.23918/ijsses.v8i1p226

Anthony, L. (2025). AI-Assisted ESP Course Design and Implementation. *ASp. La Revue Du GERAS*, *88*, 217–232. https://doi.org/10.4000/15c2g

Babanoğlu, M. P., Karataş, T. Ö., & Dündar, E. (2025). Envisioning the Future of AI-Assisted EFL Teaching and Learning: Conceptual Representations of Prospective Teachers. *SAGE Open*, *15*(2).

Bakhronova, M. A. (2025). Enhancing ESP Students' Professional Competence in Teaching English. *Eurasian Journal of Academic Research*, *5*(4), 69–73.

Basturkmen, H. (2021a). ESP Research Directions: Enduring and Emerging Lines of Inquiry. *Language Teaching Research Quarterly*, *23*, 5–11. https://eric.ed.gov/?id=EJ1314913

Basturkmen, H. (2021b). *Linguistic description in English for academic purposes*. Routledge.

Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology; in Qualitative Research in Psychology. *Uwe Bristol*, *3*(2), 77–101. http://eprints.uwe.ac.uk/11735

Dou, A. (2024). Needs Analysis of ESP Courses from the Perspective of Students and Teachers. *Frontiers in Educational Research*, *7*(6), 132–138.

Fadlia, F., Zulida, E., Asra, S., Rahmiati, R., & Bania, A. S. (2020). English subject on English for Specific Purposes (ESP) in Vocational Schools. *Language Literacy: Journal of Linguistics, Literature, and Language Teaching*, *4*(2), 358–367. https://doi.org/ 10.30743/ll.v4i2.3064

Haryani, S. (2025). Artificial Intelligence Use in ESP Teaching Among Indonesian ESP Teachers Association Members. *Jurnal Smart*, *11*(1), 18–26. https://doi.org/10.52657/js.v11i1.2645

Hyland, K. (2022). English for Specific Purposes: What is it and Where is it taking us? *ESP Today-Journal of English for Specific Purposes at Tertiary Level*, *10*(2), 202–220. https://doi.org/10.18485/esptoday.2022.10.2.1

Kovalenko, I., & Baranivska, N. (2024). Integrating Artificial Intelligence in English Language Teaching: Exploring the potential and challenges of AI tools in Enhancing Language Learning Outcomes and Personalized Education. *Європейські Соціо-Правові Та Гуманітарні Студії*, *1*, 86–95. https://doi.org/10.61345/2734-8873.2024.1.9

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. sage.

Liu, W. (2024). *Exploring Learners'beliefs About Language Learning In The AI Era*.

Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample size in qualitative interview studies: guided by information power. *Qualitative Health Research*, *26*(13), 1753–1760.

Mao, F., & Zhou, J. (2024). A Needs Analysis of ESP Courses in Colleges of Art and Design: Consensus and Divergence. *Plos One*, *19*(6), e0305210. https://doi.org/10.1371/journal.pone.0305210

Normurodovna, M. A. (2025). The Importance of Teaching English For Specific Purposes. *International Conference on Scientific Research in Natural and Social Sciences*, 148–156.

Park, E. J. (2021). Affordances and Challenges of Mixed-Methods Needs Analysis for the Development of ESP Courses. *Language Teaching Research Quarterly*, *23*, 12–22. https://eric.ed.gov/?id=EJ1314910

Qu, M. (2025). Future of Language Learning: Unveiling the Power of AI-Driven Adaptive Platforms to Tailor Language Learning Based on Learners' Needs, Proficiency and Learning Styles. *European Journal of Education*, *60*(2), e70116. https://doi.org/10.1111/ejed.70116

Rudik, I. V, & Onyshchuk, I. Y. (2024). *Artificial Intelligence Tools for Developing Educational resources: enhancing digital learning experience for teachers and learners*. https://dspace.uzhnu.edu.ua/items/0a0b1792-a3e6-4a61-b7ae-747bd7878f37

Shadiev, R., & Yang, M. (2020). Review of Studies on Technology-Enhanced Language Learning and Teaching. *Sustainability*, *12*(2), 524.

Silitonga, L. M., Wiyaka, W., & Prastikawati, E. F. (2024). Boosting Students' ESP Vocabulary by Utilizing an AI Chatbot. *ETERNAL (English Teaching Journal)*, *15*(2), 275–283. https://doi.org/10.26877/eternal.v15i2.605

Sukying, A., Supunya, N., & Phusawisot, P. (2023). ESP Teachers: Insights, Challenges and Needs in the EFL Context. *Theory and Practice in Language Studies*, *13*(2), 396–406.

Taşçı, S., & Tunaz, M. (2024). Opportunities and Challenges in AI-assisted Language Teaching: Perceptions of Pre-service EFL Teachers. *Araştırma ve Deneyim Dergisi*, *9*(2), 74–83. https://dergipark.org.tr/en/pub/adeder/article/1575897

Teng, M. F., Kukulska-Hulme, A., & Wu, J. G. (2024). *Theory and practice in vocabulary research in digital environments*. Routledge.

Warti, W. (2020). ESP Students' Needs Analysis Based On The Learning-Centred Approach. *Wanastra: Jurnal Bahasa Dan Sastra*, *12*(2), 164–170. https://doi.org/10.31294/w.v12i1

Zhang, H. (2024). Translanguaging Space and Classroom Climate Created by The Teacher's Emotional Scaffolding and Students' Emotional Curves about EFL Learning. *International Journal of Multilingualism*, *21*(1), 298–324.

Zhao, D. (2025). The Impact of AI-Enhanced Natural Language Processing Tools on Writing Proficiency: An Analysis of Language Precision, Content Summarization, and Creative Writing Facilitation. *Education and Information Technologies*, *30*(6), 8055–8086. https://link.springer.com/article/10.1007/s10639-024-13145-5

Zhao, H., Li, D., & Zhong, Y. (2022). Teacher Emotion and Pedagogical Decision-making in ESP Teaching in a Chinese University. *Frontiers in Psychology*, *13*, 955474. https://doi.org/10.3389/fpsyg.2022.955474