International Journal of Educational and Social Technology Research (IJESTER)
Vol. 01, No. 1, March 2025
ISSN: xxxx-xxxx DOI:

Mapping Pharmacy Students' Acceptance of Technology in English Learning: A UTAUT-Based Descriptive Analysis

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Article Info

Article history:

Received January 03, 2026
Revised February 23, 2026
Accepted March 03, 2026

Keywords:

Technology Acceptance
UTAUT
English for Pharmacy
Pharmacy Students
ESP

ABSTRACT

The integration of technology into English language education has gained increasing attention in higher education, particularly in specialized fields such as Pharmacy, where students are expected to engage with disciplinary knowledge and professional communication in English. This study examined Pharmacy students' acceptance of technology in English learning by using the Unified Theory of Acceptance and Use of Technology (UTAUT) as a descriptive analytical framework. The study employed a quantitative descriptive survey design and involved 100 students from the Faculty of Pharmacy at Megarezky University who had taken or were taking English or English Pharmacy courses. Data were collected through a closed-ended questionnaire based on five UTAUT constructs: Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Behavioral Intention. The data were analyzed using descriptive statistics, including minimum and maximum scores, mean, standard deviation, and frequency distribution. The findings showed that students reported high levels of acceptance across all constructs. Effort Expectancy emerged as the strongest construct, followed by Social Influence and Facilitating Conditions, while Performance Expectancy appeared as the lowest, although it remained in a positive category. Behavioral Intention was also high, indicating that students showed a strong intention to continue using technology in English learning. These findings indicate that Pharmacy students are generally prepared to engage with technology-supported English learning. At the same time, lecturers need to strengthen students' perception of the direct usefulness of technology for developing discipline-specific English skills. This study contributes to the literature on technology integration in English for Specific Purposes, particularly English for Pharmacy, and offers practical implications for the design of technology-enhanced instruction.

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1. INTRODUCTION

Technology has reshaped learning practices in higher education by changing how students obtain information, use instructional resources, and develop academic skills (Adebo et al., 2024; Rosmayanti et al., 2022). In language education, lecturers and students use technology to organize learning activities, access digital materials, and support independent study. Technology also provides multimodal input that can support language learning through text, audio, video, and interactive media (Sojoodizadeh et al., 2020; Solihati & Rahayu, 2020). Technology-assisted English learning has particular relevance for Pharmacy students because their academic context requires engagement with field-specific discourse. Pharmacy students use English not

only as a course subject but also as a medium for reading scientific references, understanding pharmaceutical terminology, participating in academic communication, and preparing for professional tasks (Adeoye-Olatunde et al., 2021; Cahyo & Abbas, 2023). This academic demand places English in a functional position within pharmacy education and increases the relevance of technology in supporting language learning activities. Students' perceptions of technology use constitute an important issue in this context because acceptance influences the extent to which technology can function in instructional practice. When students perceive technology as relevant and usable, instructors can align digital tools with learning objectives more systematically. For this reason, the examination of students' acceptance of technology in English learning contributes to the development of instructional design and to the evaluation of technology use in educational settings (Rosmayanti, 2025; Sabbir et al., 2020).

Technology has altered pedagogical methodologies in higher education by affecting students' information retrieval, utilization of educational resources, and the cultivation of academic competencies (Adebo et al., 2024; Rosmayanti et al., 2022). In language education, technology facilitates flexible learning, encourages learner autonomy, and offers multimodal resources that can enhance language development (Sojoodizadeh et al., 2020; Solihati & Rahayu, 2020). For Pharmacy students, the application of technology in English learning is particularly significant, as English functions not only as a subject of study but also as a medium for accessing scientific literature, comprehending pharmaceutical terminology, facilitating international communication, and preparing for professional practice. In this context, analyzing students' perceptions and acceptance of technology in English learning can offer an empirical foundation for instructional design and the assessment of educational practices (Ramli et al., 2025; Sabbir et al., 2020).

In English for Specific Purposes (ESP), especially English for Pharmacy, the role of technology extends beyond general digital assistance. Technology can assist pharmacy students in obtaining pharmaceutical literature, acquiring technical terminology, enhancing reading and listening skills through authentic resources, and engaging in autonomous study pertinent to their discipline (Mahmoodi et al., 2023; Singh & Kumar, 2025). The incorporation of digital tools into education is shaped by students' beliefs, expectations, perceived ease of use, social context, and enabling conditions. Consequently, it is imperative to evaluate students' acceptance of technology to determine the effective implementation of digital tools in English learning within pharmacy education (Laili & Nashir, 2023; Or & Chapman, 2022).

One of the most widely used frameworks for investigating technology acceptance is the Unified Theory of Acceptance and Use of Technology (UTAUT). This model explains individuals' intention to use technology through several major constructs, namely Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, which together contribute to the prediction of Behavioral Intention (Adebo et al., 2024; Sabbir et al., 2020). The UTAUT framework has been extensively applied in educational research because it provides a comprehensive basis for identifying how users respond to technology adoption in learning environments (Or & Chapman, 2022; Rebuck, 2017). In the context of English learning, the model is useful for describing how students perceive the usefulness of technology, the level of effort required to use it, the influence of peers or lecturers, and the institutional or technical support available to them (Elnaem et al., 2025; Syakur et al., 2022).

Although many studies have examined technology acceptance in education, fewer studies have focused specifically on students in disciplinary contexts such as Pharmacy, particularly in relation to English learning. This gap is important because Pharmacy students have distinctive academic needs. Their engagement with English is often linked to scientific reading, medical and pharmaceutical terminology, and future professional communication (Mahmoodi et al., 2023; Shoji & Onda, 2024). As a result, their acceptance of technology in English learning may reflect not only general digital literacy but also the specific demands of their academic field Singh & Kumar, 2025; Dewanto et al., 2024). A descriptive understanding of this acceptance can provide a useful foundation for designing more relevant English learning practices for pharmacy students (Cahyo & Abbas, 2023; Solihati & Rahayu, 2020).

In addition, descriptive studies remain valuable because they offer a clear picture of how a phenomenon is distributed across measured constructs before deeper explanatory or predictive analyses are conducted. A descriptive mapping of students' acceptance allows researchers and educators to identify which aspects of technology acceptance are already strong and which may still require pedagogical attention (Syakur et al., 2022; Zafirovska & Xhaferi, 2022). In the present dataset, the analysis covers the five principal UTAUT-related constructs, such as Behavioral Intention, Effort Expectancy, Facilitating Conditions, Performance Expectancy, and Social Influence, measured among Pharmacy students who had experienced English or English Pharmacy courses. The data indicate generally high levels across these constructs, making the context suitable for a focused descriptive analysis of students' acceptance patterns (Bahanshal, 2023; Rosmayanti et al., 2022).

Based on this background, this study aims to map Pharmacy students' acceptance of technology in English learning using the UTAUT framework as a descriptive-analytical lens. Rather than primarily testing

causal relationships, this article emphasizes the distribution and profile of each construct to show the overall pattern of student acceptance. This descriptive mapping is expected to contribute to the literature on technology integration in ESP, particularly in English for Pharmacy, and to provide practical insights for lecturers and institutions in planning technology-supported English instruction that is aligned with students' needs and perceptions (Mohammadi & Mahmoodi, 2019; Rebuck, 2017).

Based on this background, this study aims to map Pharmacy students' acceptance of technology in English learning using the UTAUT framework as a descriptive-analytical lens. Rather than focusing primarily on causal testing, this article emphasizes the distribution and profile of the main constructs in order to present a comprehensive picture of students' acceptance patterns. Specifically, the study addresses the following research questions: (1) How is Pharmacy students' acceptance of technology in English learning distributed across the UTAUT constructs? and (2) Which UTAUT constructs show the strongest and weakest descriptive tendencies in students' acceptance of technology use in English learning? By answering these questions, the study is expected to contribute to the literature on technology integration in ESP, particularly in English for Pharmacy, and to provide practical insights for lecturers and institutions in planning technology-supported English instruction that is aligned with students' needs and perceptions

2. METHOD

2.1. Research Design

This study employed a quantitative descriptive survey design to map Pharmacy students' acceptance of technology use in learning English based on the Unified Theory of Acceptance and Use of Technology (UTAUT) framework. The design was considered appropriate because the primary aim of the study was not to compare treatment effects or explore participants' lived experiences in depth, but rather to describe the distribution and overall tendencies of students' responses across the main UTAUT constructs. Through this design, the study focused on identifying the profile of students' acceptance in terms of Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Behavioral Intention.

2.2. Participants

The participants of this study were students from the Faculty of Pharmacy at Megarezky University who had taken or were taking English or English Pharmacy courses. At first, 354 students were given the questionnaire, and 252 of them chose to answer it. From these respondents, 100 students were chosen to be the sample for the analysis. The sample was established according to respondent availability and selection criteria pertaining to gender representation, as detailed in the original dataset. Therefore, the study employed a purposive sampling methodology, selecting respondents based on pertinent characteristics aligned with the research objectives.

In general, the participants represented undergraduate Pharmacy students who were familiar with the use of technology in educational contexts. Since the study focused on students' acceptance of technology in English learning, the selected participants were considered suitable for providing relevant responses regarding the use of digital tools in discipline-specific language learning.

2.3. Instruments

The main instrument used in this study was a closed-ended questionnaire based on the UTAUT model (Venkatesh & Davis, 2000). The questionnaire assessed five constructs: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), and Behavioral Intention (BI). Each construct comprised several items aimed at assessing students' perceptions of technology utilization in English language acquisition. The questionnaire utilized a 7-point Likert scale, enabling respondents to express the extent of their agreement with each statement.

The dataset's construct distribution shows that PE, EE, FC, and BI were each measured with four items. The SI construct was originally designed with four items, but one was removed during model evaluation because its loading factor was low. The current article focuses on descriptive analysis; however, the instrument has previously been subjected to statistical evaluation within a larger dataset, encompassing loading factor analysis, discriminant validity, and reliability testing. This supports the adequacy of the questionnaire as a tool for describing students' acceptance of technology in this context.

2.4. Data Collection

The questionnaire distribution began on April 1, 2024, and the responses were analyzed on April 15, 2024. The instrument was distributed directly by the researcher through a Google Form link shared in the WhatsApp Group of Pharmacy students. This online distribution method was intended to facilitate participation and allow students to respond more flexibly.

During the data collection process, students were also allowed to ask questions directly to the researcher through WhatsApp if they needed clarification regarding the questionnaire format or item meaning. This procedure was important to ensure that respondents understood the purpose of the questionnaire and completed it properly. After the response period ended, the researcher compiled the returned questionnaires and selected 100 responses for the final analysis.

2.5. Data Analysis

The data were analyzed using descriptive statistics with SPSS version 26. The analysis focused on identifying the general pattern of students' acceptance of technology in English learning across the five UTAUT constructs. The descriptive statistical procedures included calculation of minimum score, maximum score, total score, mean, and standard deviation for each construct. These measures were used to provide an overall picture of the central tendency and dispersion of respondents' scores.

In addition, the scores for each construct were classified into categorical levels such as good, fair, and poor based on the score intervals presented in the dataset. This categorization allowed the researcher to interpret more clearly how students' acceptance was distributed within each construct. Because this article is specifically designed as a descriptive analysis, the main emphasis was placed on the frequency distribution and descriptive profile of each variable rather than on causal inference. However, the broader dataset also included model-testing procedures using SmartPLS 3, such as outer model and inner model evaluation, which support the robustness of the measurement framework used in the study. For the purpose of this article, only the descriptive findings were foregrounded to map students' acceptance patterns comprehensively.

3. RESULTS AND DISCUSSION

3.1. Result

This section presents the descriptive results of Pharmacy students' acceptance of technology in English learning based on the five UTAUT constructs, namely Behavioral Intention (BI), Effort Expectancy (EE), Facilitating Conditions (FC), Performance Expectancy (PE), and Social Influence (SI). The analysis focuses on the central tendency and score distribution in order to map the general pattern of students' acceptance.

3.1.1. Descriptive Statistics of UTAUT Constructs

Table 1 presents the descriptive statistics of the five constructs. Overall, the data show that students said they were pretty accepting of all the constructs. Effort Expectancy had the highest mean score (M = 25.48) of all the constructs with a maximum possible score of 28. Social Influence (M = 25.37) and Facilitating Conditions (M = 25.19) came in second and third, respectively. The mean for Performance Expectancy was the lowest of the four constructs (M = 21.08). Behavioral Intention, on the other hand, had a different highest possible score of 21 and a high mean (M = 19.64).

Table 1. Descriptive Statistics of Each Construct

Construct	N	Minimum	Maximum	Sum	Mean	SD
BI	100	15	21	1964	19.64	1.53
EE	100	19	28	2548	25.48	2.32
FC	100	20	28	2519	25.19	2.54
PE	100	16	28	2108	21.08	2.43

These results show that Pharmacy students generally thought that using technology to learn English was a good thing. The high average scores for EE, SI, and FC suggest that students generally thought that technology was easy to use, socially supported, and helpful enough in their learning environment. PE, on the other hand, had a lower mean, which suggests that while students accepted technology, they didn't think it was as useful for improving their English learning outcomes as the other dimensions.

3.1.2. Distribution of Acceptance Levels Across Constructs

To make the descriptive profile clearer, the scores were split into three groups: good, fair, and poor. The results show that the overall pattern of acceptance was very positive. All of the people who answered were in the good category for three constructs: Behavioral Intention, Facilitating Conditions, and Social Influence. Effort Expectancy also showed a very positive pattern, with 99% of respondents in the good category and only 1% in the fair category. Performance Expectancy had the lowest level of positive distribution, but it was still mostly positive, with 81% in the good category and 19% in the fair category. No respondents fell into the poor category in any construct.

Table 2. Distribution of Respondents by Acceptance Category

Construct	Good	Fair	Poor
BI	100 (100%)	0 (0%)	0 (0%)
EE	99 (99%)	1 (1%)	0 (0%)
FC	100 (100%)	0 (0%)	0 (0%)
PE	81 (81%)	19 (19%)	0 (0%)
SI	100 (100%)	0 (0%)	0 (0%)

The categorical distribution confirms that students' acceptance of technology in English learning was not only high in terms of mean scores but also consistently positive across the sample. The absence of any respondent in the poor category suggests that resistance to technology use was minimal in this context. At the same time, the relatively larger proportion of fair responses in Performance Expectancy indicates that this construct may deserve closer pedagogical attention, especially in relation to how students perceive the academic benefits of technology for learning English in Pharmacy education.

3.1.3. Comparative Pattern of the Five Constructs

A comparison across constructs shows a clear descriptive pattern. The strongest dimensions of acceptance were Effort Expectancy, Social Influence, and Facilitating Conditions, all of which recorded high means and overwhelmingly positive category distributions. This suggests that students generally found technology accessible and manageable, felt encouraged by their surrounding environment, and perceived the availability of support and resources for its use.

By contrast, Performance Expectancy emerged as the relatively weakest construct. Although still positive overall, it had the lowest mean among the four 28-point constructs and the highest proportion of fair responses. This means that students may have accepted technology as easy and available, yet some of them were still less convinced that technology substantially enhanced their English learning performance. Behavioral Intention remained high, indicating that despite this slight reservation, students still showed a strong intention to continue using technology in learning English.

The findings demonstrate that Pharmacy students showed a high level of acceptance of technology use in English learning. The data answer the first research question by showing that acceptance was distributed positively across all five UTAUT constructs. The data also answer the second research question by indicating that Effort Expectancy showed the strongest descriptive tendency, while Performance Expectancy appeared comparatively weaker than the other constructs, although it remained in a generally positive range. These findings portray a learning context in which technology is widely accepted, particularly because it is perceived as manageable, socially supported, and supported by facilitating conditions.

3.2. Discussion

The results of this study indicate that Pharmacy students exhibited a predominantly high level of acceptance regarding the utilization of technology in English language learning across all UTAUT constructs. This shows that technology has been seen as a useful part of the students' learning experience, not just as an extra tool. It is already seen as relevant, easy to use, and useful. The descriptive pattern indicates that the students were amenable to the integration of technology in English learning. On the contrary, they seemed ready to use digital tools, as shown by the consistently high scores for Behavioral Intention, Effort Expectancy, Facilitating Conditions, Social Influence, and Performance Expectancy (Lasekan, 2024; Rebuck, 2017; Sabbir et al., 2020).

One of the most important things that came out of the study is that Effort Expectancy turned out to be the best way to describe things. In other words, most students thought that technology was easy to use when it came to learning English (Hidayat et al., 2022; Okyar, 2023; Van et al., 2021). This finding is important because ease of use is often a key factor in whether or not people will accept new technology. Students are more likely to use digital tools in their regular learning when they think they are easy to understand and use. For Pharmacy students, this ease may also be due to the fact that they are used to using digital communication tools, mobile apps, and online learning environments. It is reasonable to assume that students were already used to using digital platforms in school because the questionnaire was sent out through Google Forms and WhatsApp groups (Bahanshal, 2023; Maja, 2023; Rintaningrum, 2023).

The high score for Social Influence is worth thinking about. The results show that the students' acceptance of technology was affected by more than just how they saw it. Their social and academic situations also played a role. In higher education, especially in structured professional programs like Pharmacy, students

often learn how to use technology in a community of practice that includes teachers, classmates, and institutional norms. If their friends and teachers use technology in school, students are more likely to see it as a normal and helpful part of learning. The strong descriptive tendency of this study regarding Social Influence suggests that using technology to learn English may already be socially accepted in the students' school setting. This is important because students don't usually choose to use technology in school; it's often supported by shared expectations and a common academic culture (Abedi, 2024; Hidayat et al., 2022; Lai et al., 2022).

The very positive result for Facilitating Conditions also means that students thought the conditions for using technology were good enough. This means that people need to be able to use technology, feel comfortable with it, and believe that the conditions for using it are already in place. Facilitating conditions are crucial in educational practice, as positive student attitudes may prove insufficient without substantial institutional or technical support. The strong result on this construct shows that students didn't think there were any big problems with access or support in their English learning environment. This could explain why the overall acceptance was so high: students were not only more likely to use technology, but they also thought that the infrastructure around them made it easier for them to get involved (Alshahrani et al., 2022; Dewanto et al., 2024; Fitrianto, 2024; Pangrazio et al., 2023).

All constructs were positive; however, Performance Expectancy emerged as the relatively weakest dimension. This is an important finding because it gives a more detailed picture of how students accept things. The students may find technology easy to use, socially acceptable, and well-supported, but not all of them may be sure that it really helps them learn English better. In other words, just because someone accepts something doesn't mean they fully believe in its effectiveness as a teaching method. This pattern has particular relevance in English for Pharmacy because students may use technology easily for communication, information access, and routine academic tasks, yet they may not fully associate it with improvement in discipline-specific English skills. In this context, students may still require clearer evidence that digital tools can support their ability to understand pharmaceutical vocabulary, read scientific texts, and participate in professional discourse. The relatively lower position of Performance Expectancy suggests a need for more pedagogically intentional technology integration in which lecturers align digital tools with specific learning outcomes in Pharmacy-related English instruction. This interpretation is consistent with studies on ESP needs and materials development that emphasize the importance of linking language learning resources to discipline-specific academic demands (Lasekan, 2024; Pramila et al., 2025; Suknović, 2024).

Even though the score for Performance Expectancy was lower than average, the score for Behavioral Intention stayed very high. This indicates that students maintained a robust intention to persist in utilizing technology for English language acquisition. This finding suggests that students' willingness to utilize technology may be influenced not only by direct performance beliefs but also by comfort, familiarity, and contextual support. From the UTAUT point of view, this is important because acceptance has many sides. Students may be predisposed to embrace technology due to its accessibility and social acceptance, even if their convictions regarding its performance-related advantages are not equally robust. For lecturers, this presents a significant opportunity: as students are already inclined to utilize technology, instructional design can prioritize enhancing its pedagogical efficacy rather than initially addressing resistance. This aligns with literature indicating that elevated acceptance can coexist with fluctuating beliefs regarding performance advantages in ESP contexts (García-Sánchez & Gimeno-Sanz, 2022; Nasiri & Khojasteh, 2024; Nguyen et al., 2025).

From an ESP perspective, these findings have several implications. It's not just a regular English class for Pharmacy. Students need to learn how to read academic texts, use technical language, and talk about things in a way that is specific to the pharmaceutical field. So, technology integration should be more than just using digital tools in general; it should also meet the specific language needs of Pharmacy students. Performance Expectancy is less descriptive, which means that teachers might need to choose or make digital tools that make these specific goals clearer. For instance, technology-based tasks should help students learn how to use English in ways that will help them in their future jobs, get real pharmaceutical materials, practice technical vocabulary, and read scientific texts. When students can see how using technology helps them learn in real ways, they may do better. This may subsequently improve both acceptance and significant application (Balalle, 2024; Yaseen et al., 2025).

The results also show that descriptive mapping is useful on its own. Before proceeding to more intricate explanatory or predictive analyses, it is essential to comprehend the distribution of acceptance across constructs. In this study, the descriptive profile indicates a predominantly positive framework for technology-enhanced English learning within Pharmacy education. This kind of foundation is good for teaching because it means that teachers and schools don't have to start from a place of low acceptance. Instead, they can build on the fact that students already have a positive attitude toward technology. The differences between constructs also remind us that "high acceptance" doesn't always mean the same thing. Some parts show how easy it is to use and get help, while others show how useful it is for learning. Acknowledging this distinction enables

educators to formulate more precise interventions. Descriptive findings correspond with previous ESP and pharmacy-centric studies, indicating that acceptance patterns may coexist with diverse perceptions of instructional value and resource accessibility (Alhur et al., 2023; Bester, 2023; Kattan et al., 2026; Zafirovska & Xhaferi, 2022).

This study indicates that pharmacy students are generally receptive to utilizing technology for English language acquisition, particularly regarding its user-friendliness, the social support provided, and its facilitative nature. The lower ranking of Performance Expectancy, on the other hand, means that future teaching should focus on how technology can make the academic benefits of learning English for Pharmacy more obvious. In this sense, the results not only show that students like technology, but they also show where education still needs to be improved. A more strategic integration of technology, one that explicitly connects digital tools with discipline-specific English outcomes, may strengthen students' perception of usefulness and further enhance the quality of English learning in Pharmacy education (Jasman et al., 2026; Kattan et al., 2026).

Lastly, these insights support the idea that descriptive analysis is a good starting point for later work that explains or predicts. The observed pattern offers a reliable foundation for focused instructional design and institutional planning, guaranteeing that ESP-oriented technology integration in Pharmacy education aligns with students' needs and perceptions, while recognizing subtle variations across UTAUT constructs (Syakur et al., 2022; Zafirovska & Xhaferi, 2022).

4. CONCLUSION

This study utilized a UTAUT-based descriptive analysis to assess Pharmacy students' acceptance of technology in English language learning. The results indicate that students exhibited a predominantly elevated level of acceptance across all five constructs: Behavioral Intention, Effort Expectancy, Facilitating Conditions, Performance Expectancy, and Social Influence. This shows that Pharmacy students who are learning English have had a good experience with technology and already see it as a useful and helpful part of their learning.

Effort Expectancy exhibited the most pronounced descriptive tendency among the constructs, indicating that students regarded technology as user-friendly. Social Influence and Facilitating Conditions were also very positive, which means that the students' acceptance was helped by their learning environment and the fact that there were conditions that helped them. On the other hand, Performance Expectancy seemed to be lower, but it was still in the positive range. This means that even though students were willing and ready to use technology, not all of them were sure that it would directly help them learn English better.

These results suggest that incorporating technology into English for Pharmacy education should not only preserve accessibility and user-friendliness but also enhance the perceived educational efficacy of digital resources. Lecturers should create technology-based learning activities that clearly link digital resources to the improvement of English skills related to pharmacy, such as understanding technical vocabulary, reading scientific texts, and communicating in a way that is specific to the field. In this way, using technology can go beyond just being easy and become more closely linked to important academic results.

REFERENCES

[1] E. A. Abedi, "Tensions between technology integration practices of teachers and ICT in education policy expectations: Implications for change in teacher knowledge, beliefs and teaching practices," *J. Comput. Educ.*, vol. 11, no. 4, pp. 1215–1234, 2024, doi: 10.1007/s40692-023-00296-6.

[2] A. I. Adebo, K. Aladelusi, and M. Mohammed, "Determinants of e-pharmacy adoption and the mediating role of social influence among young users," *J. Humanit. Appl. Soc. Sci.*, vol. 7, no. 1, pp. 3–17, 2024, doi: 10.1108/JHASS-12-2023-0164.

[3] O. A. Adeoye-Olatunde, O. O. Vlashyn, K. S. Plake, J. L. Woodyard, Z. Weber, D. K. Litzelman, and A. L. Russ-Jara, "A mixed-methods study of pharmacy instructors' early experiences with a teaching electronic medical record," *Curr. Pharm. Teach. Learn.*, vol. 13, no. 9, pp. 1180–1193, 2021, doi: 10.1016/j.cptl.2021.06.036.

[4] A. Alhur, R. Hedesh, M. Alshehri, S. Al Qasim, R. Alkhaldi, W. Bazuhair, W. B. Shamlan, S. Alshahrani, S. Alshahrani, and A. Alasiri, "Incorporating technology in pharmacy education: Students' preferences and learning outcomes," *Cureus*, vol. 15, no. 12, 2023, doi: 10.7759/cureus.50158.

[5] A. Alshahrani, H. Williams, and K. MacLure, "Investigating health managers' perspectives of factors influencing their acceptance of eHealth services in the Kingdom of Saudi Arabia: A quantitative study," *Saudi J. Health Syst. Res.*, vol. 2, no. 3, pp. 114–127, 2022, doi: 10.1159/000525423.

[6] D. A. Bahanshal, "Relevance of infographics, collages, and videos in the learning of medical English," *SSRN Electron. J.*, 2023, doi: 10.2139/ssrn.4348412.

[7] H. Balalle, "Exploring student engagement in technology-based education in relation to gamification, online/distance learning, and other factors: A systematic literature review," *Soc. Sci. Humanit. Open*, vol. 9, p. 100870, 2024, doi: 10.1016/j.ssaho.2024.100870.

[8] E. Bester, *Ehealth and Telepharmacy: Knowledge, Perception and Adoption of Health Technology by Pharmacists in a Western Cape Private Sector Context*. Bellville, South Africa: University of the Western Cape, 2023.

[9] S. D. Cahyo and A. Abbas, "English for pharmacy department student in a private university in Indonesia: A need analysis," *Ahmad Dahlan J. Engl. Stud.*, vol. 10, no. 1, 2023, doi: 10.26555/adjes.v10i1.337.

[10] A. C. T. Dewanto, E. Setyaningsih, and K. A. Putra, "Investigating the relevance of ESP materials in Indonesian vocational schools: The voice of pharmacy students," *Veles Voice Engl. Lang. Educ. Soc.*, vol. 8, no. 1, pp. 14–23, 2024, doi: 10.29408/veles.v8i1.24800.

[11] M. H. Elnaem, B. Okuyan, N. Mubarak, A. K. Thabit, M. M. AbouKhatwa, D. L. Ramatillah, A. Isah, A. A. Al-Jumaili, and N. I. M. Nazar, "Students' acceptance and use of generative AI in pharmacy education: International cross-sectional survey based on the extended unified theory of acceptance and use of technology," *Int. J. Clin. Pharm.*, vol. 47, no. 4, pp. 1097–1108, 2025, doi: 10.1007/s11096-025-01936-w.

[12] I. Fitrianto, "Innovation and technology in Arabic language learning in Indonesia: Trends and implications," *Int. J. Post Axial Futurist. Teach. Learn.*, pp. 134–150, 2024, doi: 10.59944/postaxial.v2i3.375.

[13] S. García-Sánchez and A. Gimeno-Sanz, "Telecollaborative debates in ESP: Learner perceptions and pedagogical implications," *J. Teach. Engl. Specif. Acad. Purp.*, vol. 10, no. 1, pp. 139–157, 2022, doi: 10.22190/JTESAP2201139G.

[14] D. N. Hidayat, J. Y. Lee, J. Mason, and T. Khaerudin, "Digital technology supporting English learning among Indonesian university students," *Res. Pract. Technol. Enhanc. Learn.*, vol. 17, no. 1, 2022, doi: 10.1186/s41039-022-00198-8.

[15] Y. O. Jasman, L. Fitriyana, A. Suhendra, W. Syafitri, and Z. Sesmiarni, "Integrating ICT in ESP instruction to enhance teaching and learning effectively in pharmacy education programs," *ELP (J. Engl. Lang. Pedagogy)*, vol. 11, no. 1, pp. 49–61, 2026, doi: 10.36665/elp.v11i1.1166.

[16] L. Kattan, S. Moideen, A. Abdelrahman, S. Khabbaz, A. Ibrahim, and F. Mraiche, "Artificial intelligence in pharmacy education: A scoping review of current integration & global perceptions," *Curr. Pharm. Teach. Learn.*, vol. 18, no. 3, p. 102534, 2026, doi: 10.1016/j.cptl.2025.102534.

[17] C. Lai, Q. Wang, and X. Huang, "The differential interplay of TPACK, teacher beliefs, school culture and professional development with the nature of in-service EFL teachers' technology adoption," *Br. J. Educ. Technol.*, vol. 53, no. 5, pp. 1389–1411, 2022, doi: 10.1111/bjet.13234.

[18] R. N. Laili and M. Nashir, "An analysis of pharmacy students' English language needs," *Eduvelop J. Engl. Educ. Dev.*, vol. 6, no. 2, pp. 114–124, 2023, doi: 10.31605/eduvelop.v6i2.2116.

[19] O. A. Lasekan, "Roles of gender and academic discipline in English for specific purposes," *IAFOR J. Educ.*, vol. 12, no. 1, pp. 149–168, 2024, doi: 10.22492/ije.12.1.06.

[20] H. Mahmoodi, M. Fathalipour, M. Sheybani-Arani, and A. Piroozan, "Analysis of the educational needs for English in pharmacy: The perspectives of Pharmacy School lecturers and students," *Res. Dev. Med. Educ.*, vol. 12, p. 17, 2023, doi: 10.34172/rdme.2023.33092.

.

[21] M. M. Maja, “Teachers’ perceptions of integrating technology in rural primary schools to enhance the teaching of English first additional language,” *J. Curric. Stud. Res.*, vol. 5, no. 1, pp. 95–112, 2023, doi: 10.46303/jcsr.2023.8.

[22] F. Mohammadi and F. Mahmoodi, “Factors affecting acceptance and use of educational wikis: Using Technology Acceptance Model 3,” *Interdiscip. J. Virtual Learn. Med. Sci.*, 2019, doi: 10.5812/ijvlms.87484.

[23] E. Nasiri and L. Khojasteh, “Evaluating panel discussions in ESP classes: An exploration of international medical students’ and ESP instructors’ perspectives through qualitative research,” *BMC Med. Educ.*, vol. 24, no. 1, p. 925, 2024, doi: 10.1186/s12909-024-05911-3.

[24] L. P. Nguyen, D. P. N. Nguyen, N. Van Tu, and Q. H. T. Ngo, “Anxiety factor affecting ESP students’ performative knowledge in learning English language,” *Discover Educ.*, vol. 4, no. 1, p. 560, 2025, doi: 10.1007/s44217-025-00983-9.

[25] H. Okyar, “University-level EFL students’ views on learning English online: A qualitative study,” *Educ. Inf. Technol.*, vol. 28, no. 1, pp. 81–107, 2023, doi: 10.1007/s10639-022-11155-9.

[26] C. Or and E. Chapman, “Development and acceptance of online assessment in higher education: Recommendations for further research,” *J. Appl. Learn. Teach.*, vol. 5, no. 1, 2022, doi: 10.37074/jalt.2022.5.1.6.

[27] L. Pangrazio, N. Selwyn, and B. Cumbo, “A patchwork of platforms: Mapping data infrastructures in schools,” *Learn. Media Technol.*, vol. 48, no. 1, pp. 65–80, 2023, doi: 10.1080/17439884.2022.2035395.

[28] M. Pramila, P. Saravanan, A. Vinoth, M. N. Krishnan, M. Premalatha, and R. Jayakumaran, “ESP curriculum design-Tailoring English language instruction to meet the specific needs of engineering students,” *AIP Conf. Proc.*, vol. 3270, no. 1, p. 020227, 2025, doi: 10.1063/5.0268354.

[29] R. Ramli, A. H. Fansury, and V. Rosmayanti, “Technological tools in EFL class,” *KLASIKAL J. Educ. Lang. Teach. Sci.*, vol. 7, no. 1, pp. 390–406, 2025.

[30] M. Rebuck, “General English or ESP for liberal education? What students want and why,” *Lang. Teach.*, vol. 41, no. 3, pp. 9–13, 2017, doi: 10.37546/JALTTLT41.3-2.

[31] R. Rintaningrum, “Technology integration in English language teaching and learning: Benefits and challenges,” *Cogent Educ.*, vol. 10, no. 1, p. 2164690, 2023, doi: 10.1080/2331186X.2022.2164690.

[32] V. Rosmayanti, “Technology-enhanced English learning (TEEL) for dental technician students: Bridging language and technical skills,” *Veles Voice Engl. Lang. Educ. Soc.*, vol. 9, no. 1, pp. 16–29, 2025, doi: 10.29408/veles.v9i1.29027.

[33] V. Rosmayanti, N. Noni, and A. A. Patak, “Students’ acceptance of technology use in learning English pharmacy,” *Int. J. Lang. Educ.*, vol. 6, no. 3, pp. 314–331, 2022, doi: 10.26858/ijole.v6i3.24144.

[34] M. M. Sabbir, M. D. M. Islam, and S. Das, “Understanding the determinants of online pharmacy adoption: A two-staged SEM-neural network analysis approach,” *J. Sci. Technol. Policy Manag.*, vol. 12, no. 4, pp. 666–687, 2020, doi: 10.1108/JSTPM-07-2020-0108.

[35] M. Shoji and M. Onda, “A qualitative study of pharmacists’ perceptions of the advantages and disadvantages of telepharmacy,” *Pharmacy*, vol. 12, no. 6, p. 169, 2024, doi: 10.3390/pharmacy12060169.

[36] K. Singh and P. Kumar, “Factors influencing e-pharmacy adoption in India: A study of user experiences through interpretative phenomenological analysis,” *Explor. Res. Clin. Soc. Pharm.*, vol. 17, p. 100550, 2025, doi: 10.1016/j.rcsop.2024.100550.

[37] R. Sojoodizadeh, S. Ahangari, and E. Sheykhsaran, "Evaluation of Tabriz medical students' expectations of learning English for specific purposes (ESP): A focus on gender and subject field," *Res. Dev. Med. Educ.*, vol. 9, no. 1, p. 5, 2020, doi: 10.34172/rdme.2020.005.

[38] T. A. Solihati and N. Rahayu, "A study on students' needs in learning English for pharmacy: A starting point to design innovative syllabus," *English Rev. J. Engl. Educ.*, vol. 9, no. 1, pp. 125–134, 2020, doi: 10.25134/erjee.v9i1.3785.

[39] M. S. Suknović, "Perceptions of ESP instructors in higher education institutions on meeting the demands of interdisciplinary and CLIL education," *Anali Filološkog Fakulteta*, vol. 36, no. 1, pp. 177–197, 2024.

[40] A. Syakur, S. Sugirin, M. Margana, M. F. Ubaidillah, and S. A. Tilwani, "The development of an 'Absyak' application for ESP learning: Insights from Indonesia," *Educ. Res. Int.*, vol. 2022, pp. 1–8, 2022, doi: 10.1155/2022/9886937.

[41] L. K. Van, T. A. Dang, D. B. T. Pham, T. T. N. Vo, and V. P. H. Pham, "The effectiveness of using technology in learning English," *AsiaCALL Online J.*, vol. 12, no. 2, pp. 24–40, 2021.

[42] V. Venkatesh and F. D. Davis, "A theoretical extension of the Technology Acceptance Model: Four longitudinal field studies," *Manage. Sci.*, vol. 46, no. 2, pp. 186–204, 2000, doi: 10.1287/mnsc.46.2.186.11926.

[43] H. Yaseen, A. S. Mohammad, N. Ashal, H. Abusaimeh, A. A. A. Ali, and A. A. Sharabati, "The impact of adaptive learning technologies, personalized feedback, and interactive AI tools on student engagement: The moderating role of digital literacy," *Sustainability*, vol. 17, no. 3, p. 1133, 2025, doi: 10.3390/su17031133.

[44] A. Zafirovska and B. Xhaferi, "Vocabulary acquisition in English for medicine - Students' perspective," *J. Teach. Engl. Specif. Acad. Purp.*, vol. 10, no. 3, pp. 505–532, 2022, doi: 10.22190/JTESAP2203505Z.