



BRIDGING ENGLISH AND PHARMACEUTICAL PRACTICE: A NEEDS ANALYSIS FOR ESP E-MODULE DEVELOPMENT IN VOCATIONAL HIGH SCHOOLS

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article info

Article history:

Received: 05 November 2025

Accepted: 14 December 2025

Available online: 23 December 2025

Keywords:

Needs analysis

English for Specific Purposes

E-module

Pharmacy students

Vocational high school

abstract

This study explored the English language needs of pharmacy students in vocational high schools as a basis for developing an ESP-based e-module that promotes deep learning. A qualitative approach was employed within a Research and Development framework adapted from Borg and Gall. The participants were 50 eleventh-grade pharmacy students and one English teacher at a vocational high school in Cirebon, Indonesia. Data were collected through open-ended questionnaires and semi-structured interviews and analyzed using thematic analysis. The findings identified eight major themes. From the students' perspectives, these included contextual relevance of English instruction, practical language use and career preparation, the effectiveness of learning media, and student engagement and autonomy. From the teacher's perspective, the themes involved the rationale for ESP and curriculum adaptation, pedagogical strategies for pharmacy-related communication, the facilitative role of learning media, and the principles of meaningful, mindful, and joyful learning. The findings indicate that pharmacy students need English instruction that is relevant to pharmaceutical contexts, supported by interactive digital media, and oriented toward developing both language competence and deeper understanding. The study concludes that needs analysis provides an empirical foundation for designing ESP materials based on authentic learner and professional needs. These findings directly inform the development of an e-module that bridges general English instruction with the communication demands of the pharmaceutical field.

INTRODUCTION

The integration of English for Specific Purposes (ESP) into vocational education has become increasingly critical as global demands for specialized professional communication intensify. In Indonesia, vocational high schools, particularly pharmacy programs, face a persistent challenge: English instruction remains predominantly general in nature, failing to address the specific linguistic needs of students who will work in healthcare and pharmaceutical settings (Fadlia et al., 2022; Arroyyani & Maryani, 2025). While curriculum reforms have been implemented over time, the instability created by frequent changes has left vocational English education without consistent, specialized materials (Husnan et al., 2025). This gap is particularly pronounced for pharmacy students, who require mastery of pharmaceutical terminology, drug information comprehension, and effective patient communication in English.

Previous research has explored various dimensions of ESP in vocational contexts. Several studies have conducted needs analyses for pharmacy students, identifying speaking as the most critical yet challenging skill, alongside difficulties in writing and pronunciation (Astri et al., 2022; Laili & Nashir, 2023; Botirovich et al., 2023). Other researchers have developed ESP learning materials, including digital applications and print-based modules, demonstrating

positive impacts on student motivation and basic language skills (Syakur et al., 2022; Nastiti et al., 2023; Uspayanti & Indriyani, 2024). Relatedly, Kartika and Solihah (2023) examined students' perspectives on ESP materials among Informatics students and found that well-designed ESP materials were perceived as helpful and interesting, supported independent learning, fostered critical-thinking skills, and were presented attractively. Studies have also examined student attitudes toward ESP and curriculum design for pharmacy programs (Amelia, 2021; Rosida & Sujannah, 2023; Kosasih et al., 2024). However, a significant gap remains none of these studies have integrated deep learning principles, emphasizing meaningful, mindful, and joyful learning into ESP material development for pharmacy students. Moreover, existing research has largely stopped at identifying needs or developing isolated products without systematically linking needs analysis findings to the design of interactive, digital e-modules that foster critical thinking, critical reflection, and knowledge application in authentic pharmaceutical contexts.

To address this gap, the present study focuses on conducting a comprehensive needs analysis as the foundational step in developing an ESP-based e-module for eleventh-grade pharmacy students in vocational high schools. The urgency of this needs analysis lies in its direct implications for material design, without a clear understanding of what students and teachers actually require, any developed product risks remaining irrelevant to professional communication demands. Therefore, the purpose of this research is to identify the English language needs of pharmacy students, encompassing their perceptions of contextual relevance, practical application for career readiness, preferences for learning media, and engagement patterns, as well as the teacher's perspective on ESP rationale, pedagogical strategies, and deep learning implementation

METHOD

This study employed a qualitative approach as part of a larger Research and Development (R&D) project adapted from Borg and Gall's framework (Jamaludin & Henderi, 2024). Since the research focused on understanding the experiences, perceptions, and needs of pharmacy students and their teacher regarding English learning, a qualitative design was considered the most appropriate. This approach allowed the researcher to explore complex and subjective phenomena in natural settings without imposing predetermined categories (Mirhosseini, 2020), ensuring that the subsequent e-module development would be grounded in authentic user perspectives. The research was conducted at a vocational high school in Cirebon, and the needs analysis reported in this article represents the initial phase of the R&D process, namely research and information gathering.

The participants were selected using purposive sampling to ensure that individuals with direct experience and relevant knowledge of English for Specific Purposes instruction in pharmacy vocational schools were included (Cairns et al., 2024). The sample consisted of two groups. The first respondent was eleventh-grade pharmacy students from the selected vocational high school. The total population was 50 students divided into two classes. From this population, two students were selected for semi-structured interviews based on their provision of detailed and rich responses in the initial open-ended questionnaire. The criteria for selection included completeness of answers, depth of explanation, and willingness to participate further. The second respondent was one English teacher who taught the eleventh-grade pharmacy program at the same school. The teacher had over five years of experience teaching English in vocational settings and was directly responsible for delivering English instruction to pharmacy students. The teacher's involvement was considered crucial because educators

possess pedagogical insights into curriculum adaptation, classroom implementation challenges, and strategies for integrating ESP into existing frameworks.

Two instruments were used to collect data for the needs analysis. The first instrument was an open-ended questionnaire consisting of 15 questions designed to gather written responses from pharmacy students. The questions explored students' perceptions of the relevance of current English instruction to their pharmacy major, the practical application of English for career readiness, the effectiveness of existing learning media, and student engagement and autonomy in learning. Open-ended questions were chosen over closed formats because they allow participants to express their views, experiences, and suggestions freely in their own words, which is essential for qualitative inquiry to understand complex phenomena deeply (Mirhosseini, 2020). The second instrument was semi-structured interview guides, with separate guides developed for students and the teacher. Each guide contained 10 questions for students and 15 questions for teacher aligned with the research objectives. The semi-structured format provided a balance between consistency in topics discussed and flexibility to probe emergent issues (Braun & Clarke, 2021). Student interview questions focused on perceptions of English learning differences, alignment with pharmacy needs, helpfulness for practice simulations, media preferences, and independent learning experiences. Teacher interview questions explored ESP rationale, curriculum adaptation strategies, pedagogical approaches for pharmacy-contextualized communication, use of learning media, and implementation of meaningful, mindful, and joyful learning principles.

Data collection was conducted over a four-week period following a sequential order. First, the researcher obtained official research permission from the university and the target vocational high school. Ethical considerations were addressed by explaining the research purpose to all participants, obtaining informed consent, assuring confidentiality, and confirming the right to withdraw at any time. Second, the open-ended questionnaires were distributed to all 50 eleventh-grade pharmacy students. Completed questionnaires were collected immediately. Third, based on analysis of questionnaire responses, two students were purposively selected for follow-up interviews. The teacher participant was also scheduled for an interview. Each semi-structured interview was conducted in Indonesian to allow participants to express themselves naturally without language barriers. All interviews were audio-recorded with participants' permission.

The data were analyzed using thematic analysis following the six phases outlined by Braun and Clarke (2022). In the first phase, all questionnaire responses were compiled into a single document, and interview audio recordings were transcribed verbatim using transcription software followed by manual verification against original recordings to ensure accuracy (Hecker & Kalpokas, 2025). In the second phase, the researcher generated initial codes by identifying meaningful segments of data relevant to the research question. Coding was conducted systematically across the entire dataset, and AI was used as an assistive tool to help identify potential codes, which were then reviewed and refined by the researcher. In the third phase, codes were grouped into potential themes. For student data, four themes emerged: contextual relevance of English instruction, practical application and career readiness, effectiveness of learning media, and student engagement and autonomy. For teacher data, four themes emerged: ESP rationale and curriculum adaptation, pedagogical strategies for pharmacy-contextualised communication, learning media as a facilitative tool, and meaningful, mindful, and joyful learning as guiding principles. In the fourth phase, each theme was reviewed to ensure it was coherent, distinct, and supported by sufficient data. Themes were checked against coded extracts and the entire dataset to confirm they accurately represented participants' perspectives. In the fifth phase, each theme was clearly defined, and concise names were

assigned. In the final phase, the findings were written with illustrative quotes from participants, and direct quotes were translated into English while preserving original meaning.

FINDINGS AND DISCUSSION

The needs analysis conducted in this study aimed to identify what pharmacy students and their teacher actually require in learning English for pharmacy contexts. Four themes emerged from the student data, and four themes emerged from the teacher data. These themes are presented and discussed together to provide a comprehensive understanding of the needs that inform e-module development.

Contextual Relevance of English Instruction

The first theme from student data revealed that students believed English learning in vocational high school should be connected to their pharmacy and healthcare contexts. Students stated that English was important not only for general communication but also for understanding pharmaceutical terms, reading drug information, and preparing for future careers. One student explained that *"the material used in this school is slightly different from general school, but essentially almost the same as general English materials,"* indicating minimal differentiation between vocational-specific content and general language instruction. Another student noted that the integration did not go too deep into professional needs.

This finding aligns with Arroyyani and Maryani (2025), who found that English learning in vocational high schools still lacks specialized learning resources and tailored instructional materials that address specific industry needs. The gap between what students expect and what they receive is significant. Students in this study recognized that their future careers demand specialized language competence, yet their current instruction remains predominantly general. This finding also supports Amelia's (2021) critical review of ESP curriculum for pharmacy students, which revealed that English programs following the national curriculum mostly teach general English instead of pharmacy-specific English.

The implication of this finding is that any e-module developed must prioritize contextual relevance. Students need to see direct connections between what they learn in English class and what they will encounter in pharmacy practice, such as reading prescriptions, understanding drug labels, and communicating with patients. Without this connection, student motivation and perceived usefulness of English instruction will likely remain low.

Practical Application and Career Readiness

The second theme from student data demonstrated that students possess a strong forward-looking orientation toward their future careers. Students articulated specific benefits of learning English, including understanding drug labels, communicating with healthcare workers and patients, reading English-language pharmaceutical references, and preparing for higher education or immediate employment. One student explained, *"In pharmacy, a lot of people use English. There are pharmacy terminology that use English, for example is Effervescent (type of medicine)."* This statement demonstrates that students have encountered pharmaceutical terminology and recognize its importance.

However, this finding also exposed a critical gap. Students could recognize terms but lacked confidence in productive skills. This finding extends the work of Laili and Nashir (2023),

who found that speaking was the most difficult yet most important skill for pharmacy diploma students in Indonesia, with significant challenges in writing and pronunciation as well. The current study reveals that students themselves are aware of the gap between receptive knowledge, such as recognizing terms like "effervescent," and productive skills such as confidently explaining medications to patients or engaging in professional dialogue.

The practical implication for e-module development is that materials must not only provide pharmaceutical vocabulary and reading texts but also prioritize interactive, production-based activities. Students need structured opportunities to practice speaking, writing, and patient-facing communication in English. The e-module should include role-play scenarios, monologue tasks where students describe drug uses and dosages, and guided speaking activities that build confidence gradually.

Effectiveness of Learning Media

The third theme from student data revealed that digital and multimedia learning tools made English lessons more engaging, accessible, and easier to understand. Students stated that images, audio, videos, and interactive games helped them grasp complex material, reduced boredom, and supported different learning styles. One student explained, *"Because there are images, audio, and videos, the material is easier to understand."* Another student highlighted *"learn while playing games,"* noting how gamified elements increase participation and reduce learning anxiety. Students also appreciated that digital modules could be revisited anytime for self-paced learning, with one student stating that *"PowerPoint helps understand the material and you can learn it again anytime."*

However, a small number of students reported that some media formats remained passive, with one student admitting they simply *"just sit back and listen."* This indicates that not all media is equally effective. Interactive design quality varies, and some students require more engaging formats to stay motivated. This finding aligns with Hakim and Wahyuni (2024), who stated that learning media should be interactive, innovative, and appropriate to student characteristics to raised interest, attention, and motivation. The current study confirms that when media is well-designed with multimodal elements, it significantly enhances student engagement and comprehension. Conversely, passive media formats fail to activate the same level of cognitive engagement.

For e-module development, this finding demands integration of varied media formats, including images and visual aids, audio recordings, gamified quizzes, and digital content that requires active student responses. The e-module should move beyond static, text-only instruction to create a multimodal learning environment. QR codes linking to interactive tasks, such as Jotform worksheets and Canva activities, can transform passive content consumption into active learning experiences.

Student Engagement and Autonomy

The fourth theme from student data revealed that effective learning media did more than just deliver content; it actually encouraged students to take charge of their own learning. Many students described how media sparked their curiosity and pushed them to explore further on their own. One student shared, *"I'm looking for the meaning of words that I don't understand yet."* Another student said, *"Usually I watch from YouTube,"* showing that students naturally turn to online resources when something interests them. A different student mentioned that simulation *"explains the drug to the patient,"* indicating that role-play and scenario-based activities helped them imagine real pharmacy situations.

These findings connect to Fullan et.al (2020) describe as the 6Cs of global competencies, particularly collaboration, communication, and critical thinking. When students actively seek out information and make connections on their own, they are practicing deeper learning skills. The current study adds that vocational students, particularly those in pharmacy programs, demonstrate readiness for self-directed learning when provided with engaging and relevant materials. However, not all students felt the same level of independence. A few admitted they were still less active and struggled to interpret new material without direct teacher guidance, suggesting that while many students are ready for self-directed learning, others still need scaffolding.

For e-module development, this finding shaped the inclusion of features that support and channel student curiosity. QR codes for self-directed tasks, role-play and simulation activities, and a self-paced structure were incorporated. The e-module was designed to nurture active, curious learners while also providing enough scaffolding for students who are still building their independence. The goal is to gradually move all students toward taking more responsibility for their own learning, which is exactly what deep learning requires.

ESP Rationale and Curriculum Adaptation

Moving to teacher findings, the first theme revealed that the teacher explained vocational school students are prepared to work right after graduation, so English instruction must be tailored to their professional futures. The teacher stated, *"Because of this, vocational school students have been educated from the beginning to be ready to work after graduation. Well, if he is ready to work, it means that more or less the learning he gets will affect the world of work."* However, the teacher also faced a real problem: the school follows the national Merdeka Curriculum, which does not include a dedicated ESP curriculum for pharmacy.

To work around this, the teacher gathers materials from external sources including YouTube videos, news articles, social media posts, and pharmaceutical publications. The teacher explained, *"If we want to rely on school textbooks, it is not related to their vocational. So we take it from the external sources."* The teacher also mentioned using observation rather than formal questionnaires to figure out what students need. *"I observe with their vocational learning — for example, I look at other vocational textbooks, or see them in the laboratory, what do you practice,"* the teacher said.

This finding aligns with Amelia (2021), who found that ESP programs for pharmacy students often follow the national curriculum and mostly teach general English instead of pharmacy-specific English. The current study confirms that teachers are aware of this gap and are actively trying to fill it through creative resource gathering, but they need better support and structured materials. The teacher's observation-based approach to needs identification, while practical, may miss some student needs that formal questionnaires could capture. For e-module development, this finding indicates that the e-module must fill the gap between the national curriculum and pharmacy-specific needs by providing ready-to-use ESP materials, pharmaceutical topics, structured ESP progression, and flexible resources that can be used in various classroom contexts.

Pedagogical Strategies for Pharmacy-Contextualised Communication

The second teacher theme revealed specific teaching strategies used to bring ESP into the classroom. The teacher's primary strategy is role play, where students act out situations like serving customers at a drugstore or helping someone pick up a prescription. The teacher

explained, *"The most basic is role play — for example, the theme of role play later on how to serve customers in drugstores."* This strategy makes sense because pharmacy work is fundamentally about interpersonal communication. If students only memorize vocabulary without practicing conversation, they will not be ready when a real patient asks them a question in English.

Another strategy the teacher uses is monologue tasks. The teacher said, *"I ask them to choose one drug, later they will make a monologue — they describe what the drug is for, what its uses, what dosage it is used for."* This pushes students to move beyond recognizing terms and actually produce full sentences explaining medicine to others. The teacher also follows a specific vocabulary approach, introducing pharmaceutical terms through reading texts first, then having students practice building sentences, and later finding synonyms. The teacher explained, *"From the terminology, such a building sentence will be developed."*

These findings relate to Rosmayanti et.al (2024), who found that teachers use ICT and real-world tasks in ESP courses. The current study adds that teachers do not just use any activity; they deliberately choose tasks that mirror pharmacy workflow, such as serving customers or explaining drug information. For e-module development, this finding led to the inclusion of speaking activities where students create dialogues using the AREL method (Assertion, Reason, Evidence, Link Back). Example dialogues show students arguing about healthy lifestyles, a structure that can later be applied to pharmacy dialogues such as explaining why a patient should finish their antibiotics. The e-module also includes listening and pre-reading activities that activate prior knowledge, mirroring the teacher's approach of connecting English class to what students learn in pharmacy lab sessions.

Learning Media as a Facilitative Tool

The third teacher theme revealed that the teacher sees media as helpful and important but not as the main determinant of whether students learn. What matters more, according to the teacher, is whether the media creates two-way interaction between teacher and students. The teacher stated, *"No matter how good the media is, if the delivery is not two-way, it will still not go through learning."* The teacher also mentioned that media selection depends on student ability levels, with simpler media for lower level classes and more complex materials for higher level classes.

Regarding specific media, the teacher uses PowerPoint, sometimes with Canva, YouTube videos, audio, games, worksheets, and Kahoot for post-tests because it makes students excited. The teacher said, *"When a child feels, oh this is exciting, usually the child will be stunned to get excited about doing something."* The teacher also balances speaking and writing tasks so that students who struggle with speaking are not left behind.

These findings align with Hakim and Wahyuni (2024), who stated that learning media should be interactive and appropriate to student characteristics. The current study adds that teachers see media as a support tool, not a magic solution. Interaction and student level matter more than how sophisticated the media appears. For e-module development, this finding ensured that the e-module is not just a static PDF. It includes QR codes linking to interactive tasks, so students actively respond rather than just reading. The teacher can choose to use the e-module digitally or print worksheets, providing flexibility based on classroom needs.

Meaningful, Mindful, and Joyful Learning as Guiding Principles

The fourth teacher theme revealed that the teacher uses meaningful, mindful, and joyful learning principles to guide daily classroom decisions. To make learning meaningful, the

teacher starts each lesson with current health or pharmacy issues. The teacher explained, "We discuss hot issues, health-related issues, pharmaceuticals, we will give it first, later from the issue, from the news, from the video, we give questions related to the article." For mindful learning, the teacher helps students understand why English matters beyond the classroom. The teacher stated, "Being aware means that the child understands the importance of learning, their awareness that learning English does not only stop when we are in school, but we will use these English provisions, vocabulary, and sentences later." To keep learning joyful, the teacher uses various media sources so students can explore material in different ways.

These findings align with Hasanah et.al (2025), who stated that deep learning in Indonesian education focuses on meaningful, mindful, and joyful elements. The current study shows that teachers already try to apply these principles, but they need materials that support them. For e-module development, the researcher designed the e-module to support all three principles. For meaningful learning, reading texts and listening audio connect English to real health topics that pharmacy students care about. For mindful learning, the e-module includes a chapter summary that reviews why analytical exposition text matters for expressing opinions and arguments, helping students see the purpose of what they are learning. Learning objectives at the beginning of each section make clear what students should achieve. For joyful learning, the e-module includes QR codes linking to interactive games and Jotform tasks, plus a variety of media such as images, audio, and videos. Grammar tasks are designed as interactive activities rather than dull worksheets, and writing tasks follow the teacher's preferred approach where students first develop arguments in groups before writing individually.

CONCLUSION

The needs analysis revealed that pharmacy students require English instruction that is contextually relevant to their pharmaceutical field, practically applicable to their future careers, and delivered through engaging interactive media. Four student themes emerged: the need for contextual relevance of English to pharmacy contexts, practical application for career readiness such as understanding drug labels and communicating with patients, preference for digital modules with multimedia elements over printed materials, and readiness for self-directed learning when content is engaging. From the teacher perspective, four themes emerged: the challenge of adapting the national curriculum to ESP needs through external resources, implementation of role play and monologue tasks that mirror pharmacy workflow, use of media as a facilitative tool prioritizing two-way interaction, and application of meaningful, mindful, and joyful learning principles. The impact of this needs analysis is significant because it provides empirical evidence that ESP materials must be systematically designed based on authentic user needs rather than adapted from general English resources. These findings directly inform the development of an e-module that bridges the gap between general English instruction and the specialized professional communication demands of the pharmaceutical field, ultimately better preparing vocational students for workplace success and further education.

DECLARATION OF AI AND AI-ASSISTED TECHNOLOGIES

During the preparation of this paper, the author utilized AI-assisted technologies to support specific aspects of the research and writing process. Claude AI Sonnet 4.6 was employed as an assistive tool to help identify potential codes during the thematic analysis of the open-ended questionnaire data. Specifically, after the researcher conducted initial manual coding, Claude AI Sonnet 4.6 was used to cross-check code identification and suggest

additional code groupings, which were then reviewed, refined, and verified by the researcher to ensure alignment with the contextual meaning of participants' responses. TurboScribe was used to assist with the transcription of audio recordings from the semi-structured interviews. The automatically generated transcripts were subsequently manually verified against the original audio recordings by the researcher to ensure accuracy and completeness. All AI-assisted output, including code suggestions and transcriptions, was subsequently reviewed, revised, and validated by the author to ensure accuracy, contextual appropriateness, and fidelity to the original data. The author assumes full responsibility for all final content, including data interpretation, analysis, and conclusions presented in this publication.

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