



Integrating Technology into ESP Instruction: Teaching English for Pharmacy Students

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Introduction

Previous studies have investigated ICT utilization in English language teaching for Academic and Specific Purposes (Hidayati, 2016; Sharma, 2011; Salem & Mohammadzadeh, 2018; Lubis, 2018; Badaruddin et al., 2019). Other studies also concern teachers' and students' perceptions of ICT teaching (Dela Rosa, 2016; Saglam & Sert, 2012; Muslem et al., 2018; Poudel, 2018; Basri & Paramma, 2019). It is evident from the studies that the utilization of ICT in all life fields has become inevitable to survive in the competitive world. Besides, Hidayati (2016) argued that ICT integration is promising for changing and improving the effectiveness of the current Indonesian ELT condition when it is carried out in line with effective language teaching and learning principles.

The investigation of the use of technology in language instruction has provided positive results, including in ESP instruction. This investigation aligns with what Bloch (2013) pointed out: Technology plays an essential role in ESP teaching as a supporting tool to provide the context for communicating the language. However, despite the positive attitudes toward using technology in teaching among language teachers globally, some teachers still struggle to integrate technology. This condition is happening with ESP teachers due to a lack of awareness, comfort in text environments, and lack of computer literacy (Lili, 2019).

There has been a growing demand for understanding increased specialized language, knowledge, and practice in which English plays a pivotal role in mediating the development of learners' specialized language competence and disciplinary knowledge and skills (Widodo, 2016). The ESP teachers are challenged to refocus on teaching strategies, adopt new approaches, and effectively and efficiently incorporate technologies into the language learning process. Studies on technology in teaching languages have proposed that technology could promote English teaching and learning. In this situation, incorporating technology in English teaching would also make it possible for English teachers to resolve the need for relevant English in their field of study. In addition, integrating technology in English instruction will also facilitate the English teachers in addressing the students' need for specific English in their field of study.



Technologies offer authentic resources or real-life scenarios for students that cannot be taken on by instructors who also do not have the basic knowledge of the pharmacy field to teach.

The use of technology has been widespread in ESP instruction. However, more research is needed, as Constantinou and Papadima-Sophocleous (2020) revealed that ESP practitioners utilize technologies in their teaching; more research is required to identify how widely technology is used in ESP. Despite the increasing popularity and use of ICT in ESP teaching, limited studies have investigated ICT integration in English for pharmacy. Therefore, this research is expected to contribute to language teaching in ESP, especially in pharmacy. Therefore, this study explored the implementation of technology integration in ESP learning, especially in English pharmacy. This study proposed the research question, "how is technology integration in teaching English pharmacy?" Technology in ESP learning is very important to help English teachers in teaching certain fields that the teacher does not necessarily master. Technology with the internet network provides a variety of authentic materials that can be used in the classroom to provide real experiences related to the pharmaceutical field. These authentic materials can be in the form of prescription drugs, drug labels, drug use instructions, etc. This research explores how the learning procedures and activities were carried out in the classroom and integrated with technology. Many other studies have studied the use of technology in language learning in general, but not much literature has examined technology integration in ESP learning, especially in English pharmacy studies.

Method

The Design of the Study

This case study used open-ended surveys and semi-structured interviews as data collection methods in the Faculty of Pharmacy, Universitas Megarezky, South Sulawesi, Indonesia. The English Pharmacy course is one of the compulsory courses that is included in the curriculum of a Pharmacy study program. The researchers distributed an open-ended questionnaire containing case questions to fifty students and invited five to participate in an interview and two lecturers. The semi-structured interview was performed to obtain data that cannot be collected through an open-ended questionnaire alone. In conducting the interview, the researchers adopted the interview protocol by Wilson (2013) to help the interviewer stay on track. In this semi-structured interview, the researchers followed the procedure conducted by Braun and Clarke (2013). There were two main stages completed. First, all participants were contacted and asked for their availability. Participants could freely choose to be interviewed at a location that was convenient for them. Second, participants were interviewed by the first and second authors. The results of the open-ended questionnaire and the interviews with five students and two lecturers enabled the researchers to understand the teaching and learning process during the English Pharmacy course. Semi-structured interviews were conducted with lecturers and students to determine how technology is used in the classroom to teach English Pharmacy. In addition, open-ended questionnaires were distributed as supporting data from interview results. The results of the open-ended questionnaire and the interviews with five students and two lecturers enabled the researchers to understand the teaching and learning process during the English Pharmacy course.

Data Analysis

The data of this research were analyzed using thematic analysis as proposed by Braun and Clarke (2013) to identify themes and patterns of meaning across a dataset concerning a research question. The researchers carefully listened to and transcribed the interview recording in the first stage. Secondly, the researchers imported the interview transcription and the questionnaire results into Nvivo R14.1 software to generate initial coding. Thirdly, the researchers reviewed the coding results, which resulted in tentative themes. Fourthly, the researchers examined the tentative themes to look for motifs or themes that are relevant to the

research objectives. After analyzing the tentative themes, the next stage was defining and naming the primary themes. Moreover, the last stage was producing the report.

Results and Discussion

Results

After generating initial coding from the transcription of the interview, the thematic analysis resulted in eight tentative themes, which were (1) Speaking, reading, writing, and listening activities using applications, (2) Teachers' use of technology in teaching, (3) Technology integrated teaching procedures, (4) Electronic adaptive teaching materials/ topics, (5) Preparing authentic materials from the Internet, (6) Application-based assessment. The tentative themes presented are in relation to the integration of technology in class activities. The findings are presented concerning implementing ICT-based instruction in the English Pharmacy course. The following initial themes have been sorted based on the coding references from the highest to the lowest number of coding references.

TABLE 1
Tentative Themes of the Implementation of ICT-Based Instruction in English Pharmacy

No	Initial Theme	Number of coding references	The aggregate number of coding references
1	Speaking, reading, writing, and listening activities using the application	10	20
2	Teacher use technology in teaching	5	10
3	Technology integrated teaching procedure	4	8
4	Electronic adaptive teaching materials/ topics	4	8
5	Preparing authentic materials from the Internet	2	4
6	Application-based Assessment	2	4

The first tentative theme identified from the analysis is speaking, reading, writing, and listening activities using applications. Teachers usually carry out class activities by considering four skills. The speaking activity was conducted through projects such as reviewing drugs in English, introducing herbal plants, and short speeches. The students recorded their performance for the speaking project and shared the video with the class. Through this project, the students learned English writing and speaking related to the pharmaceutical content, and at the same time, learned to deal with technology. In this case, the students wrote the script of their speech, then recorded the video themselves, edited it, and posted their performance. Students rely on their smartphones or laptops to read and listen to their learned materials for reading and listening activities. The following excerpt shows how teachers conducted speaking, reading, writing, and listening activities in the class. Each reference is supported by the percentage of coverage which indicates the volume of narration covered by each excerpt.

TABLE 2
Excerpt of Coding References: Speaking, Reading, Writing, and Listening Activities Using Applications

Reference	Coverage	Excerpt
Reference 1	3.49%	I prepared the structure or steps of the speech and the useful language to use. The students then need to make the script. The students make a video recording and the students conduct video editing. The students post their videos to the group/ social media.
Reference 2	0.59%	I ask the students to read the text and then answer the questions that follow it correctly
Reference 3	0.52%	To practice writing, I asked students to make a script before performing

The second theme is the teachers' use of technology in teaching. During the interview, the participants said they use technology to teach English Pharmacy courses. Technology helps teachers prepare teaching materials, present materials, and other class activities. Teachers rely on laptops and smartphones as primary teaching tools supported by applications such as Google Classroom, Quizizz, Edpuzzle, Zoom, Screencast-Omatic, etc. Teachers' use of technology can be seen in the following coding excerpt. Each reference is supported by the percentage of coverage which indicates the volume of narration covered by each excerpt.

TABLE 3
Excerpt of Coding References: Teachers' Use of Technology in Teaching

Reference	Coverage	Excerpt
Reference 1	2,17%	I do rely on my laptop very much and, of course, supported by a good internet connection and some useful teaching applications like Google classroom, Quizizz, and screencast-Omatic that help me to create screen-sharing videos to present the language to students
Reference 2	0.80%	I usually present my material using PPT, but sometimes the LCD gets stuck or errors; then I share the material in WAG so the students can read and follow my explanation using their phones.

The third tentative theme is the procedure for learning English pharmacy. The teacher stated that they adapted the Presentation, Practice, Production (PPP) method in teaching the English Pharmacy course. Each stage of this procedure was integrated with the use of technology. The teachers used the LCD projector to present the lesson, relied on certain applications in practicing the language, and used camera smartphones to record their performance in the production stage. The procedure carried out by the teacher can be seen in the coding excerpt in Table 4. Each reference is supported by the percentage of coverage which indicates the volume of narration covered by each excerpt.

TABLE 4
Excerpt of Coding References: Technology Integrated Teaching Procedure

Reference	Coverage	Excerpt
Reference 1	2.57%	In the presentation stage, I explain the language point and the example of how to use it. In this stage, the students do the exercises in the form of an online live quiz via the Quizizz application
Reference 2	0.30%	In the practice stage, the students practice the language through reading activities. The reading topic related to pharmacy fields as well as all the examples and exercises in the presentation stage.

Teaching materials and topics are the fourth tentative theme related to technology integration in the English Pharmacy course. The materials provided by the teacher is teacher-made materials adapted from sources obtained on the Internet. The topics discussed are topics related to the pharmaceutical field. The material and topics discussed can be seen in the following excerpt. Each reference is supported by the percentage of coverage which indicates the volume of narration covered by each excerpt.

TABLE 5
Excerpt of Coding References: Electronic Adaptive Teaching Materials/Topics

Reference	Coverage	Excerpt
Reference 1	1.24%	I modified the materials; eliminated some chapters that I considered not suitable for the level of my students or not relevant to pharmacy students in Indonesia
Reference 2	1.15%	The topics are different for every meeting. The topics are related to the pharmacy field, such as chemist shops, prescriptions, drugs, medication, etc.

The fifth tentative theme is preparation before teaching. The teachers stated that they adopted and adapted the textbooks that they downloaded from the Internet according to the needs of the students they taught. In

addition, the teacher looked for authentic materials such as prescriptions, drug labels, and so on to teach the English Pharmacy course, as revealed by the teacher in the following excerpt. Each reference is supported by the percentage of coverage which indicates the volume of narration covered by each excerpt.

TABLE 6
Excerpt of Coding References: Preparing Authentic Materials from the Internet

Reference	Coverage	Excerpt
Reference 1	1.74%	I try to find the most relevant material for teaching pharmacy students English. I found one very nice textbook, and I adapted it to be used in teaching English to pharmacy students. I learn a lot from this book before teaching the students using it. Besides that, I tried to find authentic materials like prescriptions, drug labels, etc., and used them in teaching.

The last tentative theme is assessment. According to the teachers, they assessed the students in two ways: test and non-test. Assessment in the form of tests is carried out through the quiz application, and non-test assessments are carried out through the active participation of students in learning. Each reference is supported by the percentage of coverage which indicates the volume of narration covered by each excerpt.

Table 7
Excerpt of Coding References: Application-Based Assessment

Reference	Coverage	Excerpt
Reference 1	0.44%	I evaluated the students from their participation in the class.
Reference 1	0.79%	At the end of the class students have to complete the quiz about the language point for every meeting.

The lecturers evaluate students on their active participation during the class. The more the students participated in the class activities, the higher their scores. Another assessment was done through the live quiz. After explaining the materials, usually, the teachers give a quiz consisting of some questions. According to Braun and Clarke (2006), the next stage of thematic analysis is to look for motifs or themes relevant to the research objectives. This theme highlights a key finding in the data about implementing ICT-based instruction in the English Pharmacy course. The result of data analysis in this study indicated two primary themes: teaching activities and teaching procedures. The map of primary themes is presented in Figure 1.

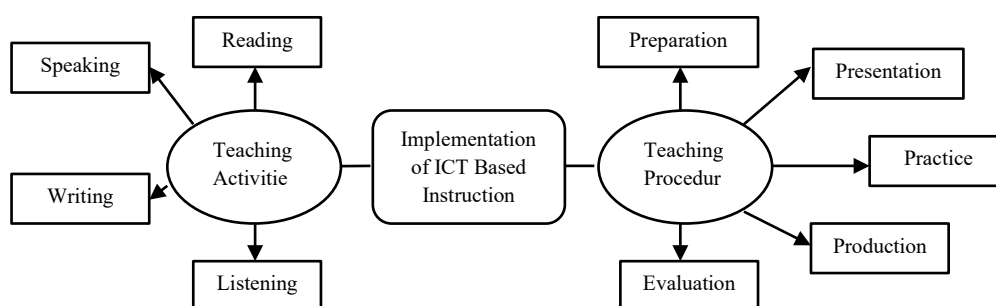


Figure 1. Thematic Map of Implementation of ICT-based Instruction.

After reviewing the previous tentative themes, the researchers highlighted two primary themes related to implementing ICT-based instruction: teaching activities and teaching procedures. The theme of teaching activities consists of four sub-themes: reading, writing, speaking, and listening. The theme of teaching procedure consists of five subthemes: preparation, presentation, practice, production, and evaluation. A discussion of each theme is presented in the following session.

Discussion

The result of this research was expected to fill the gap offered by Constantinou & Papadima-Sophocleous (2020), who revealed that ESP practitioners utilize technologies in their teaching; more research is required to identify how widely technology is used in ESP. In this session, the researchers reviewed the primary themes that were discovered after examining the six tentative themes mentioned in the previous subchapter related to the implementation of ICT-based instruction in English Pharmacy. According to Braun and Clarke (2006), the fourth stage of thematic analysis is to look for motifs or themes relevant to the research objectives. This theme highlighted a key finding in the data about implementing ICT-based instruction in the English Pharmacy course. The researchers highlighted two themes: Teaching procedures and teaching activities.

Teaching Procedures

This session revealed the teaching procedures teachers conducted in teaching English Pharmacy courses, starting from preparation, action, and evaluation. One of the biggest weaknesses of ESP teachers was the lack of technical or subject content knowledge (Sari et al., 2021). For that reason, many ESP teachers struggle to solve the problems by putting a great effort into their teaching preparation and investing time and money to improve their knowledge and skills in teaching ESP according to their field. One of the teachers' efforts is to utilize information and communication technology (Sari et al., 2021). ICT provides teachers with numerous teaching materials like websites, personal blogs, social media, and video-sharing platforms rich with authentic communication samples. In preparing to teach, the teachers rely on internet access. The teachers of English Pharmacy adopted textbooks and other materials from the Internet, and the textbook is modified based on the students' needs. To support the teaching, teachers downloaded some authentic materials to engage students' communication. YouTube videos, for example, enabled teachers and students to learn and observe the communication practices in the pharmacy field.

The researchers applied the Presentation, Practice, and Production (PPP) method in teaching. Since students' proficiency is not advanced, the teacher inserted Basic English for communication into teaching materials. ESP is mostly constructed for the advanced level, but it can be used for beginners if some basic knowledge of the language system is instructed (Dudley-Evans & St. John, 1998). In the presentation stage, the lecturer showed the PPT using an LCD projector to deliver the materials. In the practice stage, the teachers provided students with pharmacy-related academic texts. Reading those texts allowed students to explore the content and familiarize them with their discipline's terminologies (Sari et al., 2021). To practice writing skills, the teachers instructed students to make a script for reviewing drugs or introducing herbal plants. Since writing for ESP is a barrier for the students to organize ideas logically and connect them in their writings (Sari et al., 2021), the teachers provided the structure and pattern or organization of writing. For speaking and listening, the teachers allowed students to practice with pharmacy content material like reading and writing as McDonough and Shaw (2003) suggested that ESP materials should allow students to see how the four skills (listening, speaking, reading, and writing) can be employed effectively in an appropriate context. In the production stage, the students can produce language in the Pharmacy context by making reviews, tutorials, etc.

The last procedure of teaching was evaluation. The teachers of English Pharmacy assessed students in two ways: test and non-test. The test aimed to measure the student's abilities, knowledge, and performance (Brown, 2004). The test assessment was conducted in the mid and final of the course using a quiz application. The non-test was conducted during the English pharmacy course as Gultom (2016) suggested that in addition to the mid-semester and final semester scores, the teacher should also pay attention to the students' participation, motivation, presentation, performance, paper, portfolio, presence, homework, etc. Teachers can interact with students, ask them questions, provide comments, and scaffold in many ways to help them get a deeper understanding (Domsy et al., 2022). In an English pharmacy course, the teachers

give students' scores based not only on their test results but also on their presentation and participation in learning.

Teaching Activities

Based on the previous session's findings, English pharmacy teachers relied on ICT in most teaching activities. Information technologies might not automatically bring positive changes to the instruction process but may increase its effectiveness under some conditions (Simonova, 2014). If only technologies are offered to teachers, the situation will not alter significantly, but new activities, approaches, and the quality of content can be initiated and improved. In teaching reading, the teachers relied on internet access to find appropriate texts, which is the topic of the pharmaceutical field. The Internet has provided teachers access to myriad authentic resources to facilitate more effective ESP learning. For speaking activities, the students need to use a video recorder and video editor to accomplish the speaking task. By adopting video-making activities, the learners not only study grammatical issues but also stimulate their creativity and foster a greater understanding of the content (Asfihana & Yansyah, 2022). For listening activities, the teachers need to distribute the materials with the help of technology.

Moreover, for writing activities, the students need to access the Internet to translate and find ideas. The teaching activity conducted by teachers is in line with Lili (2019), who has proposed five principles of integrating technology in ESP learning, such as 1) Realizing the advantages and roles; 2) Linking technology to the needs of learners; 3) Incorporating rather than adding teaching technology; 4) Considering the teacher's role; 5) Improving the authenticity of both language and task. Finally, the researchers claimed that implementing ICT-based instruction in English pharmacy classes is under the purpose and the principle of ESP teaching with technology.

Integrating technology into ESP instruction has helped teachers promote effective learning and removed time and space constraints in the learning environment. It also enabled the teachers to address students' demand for ESP in pharmacy. Technology provides teachers with access to unlimited resources of authentic materials or real-life experiences for students that cannot be taken over by instructors who also do not have the basic expertise in the subject of pharmacy to teach. More importantly, positive views concerning the importance of digital technology among instructors are more likely to impact students' positive attitudes (Park & Donald, 2022).

Conclusion and Implications

This study explored the implementation of technology integration in the English for Pharmacy class. The data obtained from this study were analyzed qualitatively using thematic analysis with Nvivo software. The findings of this study highlighted two primary themes related to integrating technology into ESP instruction: teaching activities and teaching procedures. The theme of teaching activities consists of four sub-themes: reading, writing, speaking, and listening. The theme of teaching procedure consists of five subthemes: preparation, presentation, practice, production, and assessment. The teachers of English Pharmacy used technology in their teaching activities like reading, writing, listening, and speaking activities in the classroom. The teachers also used technology in their teaching procedure, starting from preparation, presentation, practice, production, and assessment.

This study provided practical implications for teaching ESP in higher education, especially in teaching English to pharmacy students. Firstly, it encouraged English Pharmacy teachers to be technology literate to deliver more qualified learning by providing students with more real-life experiences in the class. Technology helped teachers facilitate English teachers in addressing the students' need for specific English in their field of study by accessing unlimited resources provided on the Internet. Secondly, integrating technology into teaching has removed the time and space constraints in the learning environment. For that

reason, using technology in learning enabled students to study independently and develop their learning autonomy, leading them to be autonomous learners. Technology allows students to find information by themselves, practice their language, adjust their learning based on their phase, and evaluate what they have achieved by themselves. Furthermore, the Internet positively contributed to scientific development and encouraged academic honesty (Patak et al., 2020). Thirdly, this study can motivate Universitas Megarezky to provide more structured e-learning services in the university academic system by developing its own Learning Management System for lecturers to employ.

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