

CHAPTER I

INTRODUCTION

1.1. Research Background

Recently, the teaching and learning process has shifted from face-to-face to online learning due to the pandemic outbreak. With the end of the pandemic, which has hit the world, it has now shifted to a synchronous form; therefore, two real avenues for post-pandemic learning are becoming popular at the moment. Looking ahead to the decision to close face-to-face interactions, most universities in Indonesia adopted online learning to address this challenge. Online learning refers to a new format of learning delivery that uses technological tools such as computers and the internet to facilitate the transfer of learning materials (Carliner, 2004; Mauro et al., 2019). In recent years, technological development has enabled universities to deliver innovative instruction through online learning, either fully or partially. However, the COVID-19 pandemic has forced universities to adopt online learning on a massive scale to maintain instruction. Generally, online learning can be categorized into three learning environments: synchronous, asynchronous, and hybrid (Artini et al., 2022; Perveen, 2016).

During the pandemic and after it has passed, many educational institutions have adopted various online teaching modes. The shift from face-to-face to online learning requires English lecturers to adapt. At this time, these two methods can be used simultaneously because they are highly engaging and needed to support learning within a contemporary, sustainable model. They have to find any appropriate teaching methods that suit the online learning mode. One of the most

common methods is online discussion. Online discussion offers benefits such as a real-life audience, up-to-date information, and greater focus on the topic (Evans et al., 2020; Sutherland-Smith, 2002).

Despite the pandemic, online discussions are the best way to teach English. Online discussions offer many benefits, encompassing (1) demonstrating key concepts, (2) stimulating higher order critical thinking skills, (3) encouraging peer interaction and team-work, (4) promoting thoughtful reflection, (5) achieving social interaction and community building, and (6) encouraging student-generated discussion topics (Raghupathi et al., 2020). Those benefits will elevate students' English proficiency, cognitive aspect and social skills. Likewise, online discussions could boost students' learning performance (Sutherland-Smith, 2002), as they tend to better prepare by choosing appropriate vocabulary and completing reading tasks in online discussions than in face-to-face classroom discussions (Evans et al., 2020).

The development of appropriate English for Specific Purposes (ESP) teaching materials for Public Health students is important because these students require English not only for academic purposes but also for future professional communication. They are expected to understand scientific literature, interpret health reports, communicate public health information, participate in professional discussions, and respond to global health issues (Huang et al., 2024). General English materials may not adequately address these discipline-specific needs because they often lack relevant terminology, authentic professional situations, and communicative tasks associated with public health practice (Maybury et al., 2024). Therefore, teaching materials should be developed on the basis of a

systematic needs analysis and should integrate linguistic competence with the academic and occupational demands of the Public Health field.

However, technology alone does not guarantee effective learning. Digital materials must be pedagogically organized, contextually relevant, and aligned with clearly defined learning outcomes so that they improve, rather than complicate, students' understanding. These teaching materials should be appropriately designed to support a successful teaching and learning process (Chang et al., 2023). They should be based on a systematic analysis of the learners' needs (Erickson et al., 2021). These teaching materials should be appropriately designed to support a successful teaching and learning process. They should be based on a systematic analysis of the learners' needs (Erickson et al., 2021). When such materials are contextualized, they are likely to trigger favorable classroom interactions and encourage the learners to be active in practicing their language (Bucholtz & Hall, 2005; Robbins & Judge, 2013). In addition, teaching materials should also consider the form and the language function (Tomlinson, 2011). Moreover, contextualizing teaching material must be done in a way that considers the procedures of material development, which is called English for Specific Purpose (ESP).

ESP is related to or designed for specific disciplines. In this regard, Kenny et al. (2020) state that ESP can be used in specific teaching situations, a different methodology from that of General English. In addition, it is likely to be designed for adult learners, either at a tertiary-level institution or in a professional work situation, such as students in public health. The Public Health Topic Subindicator of the Learning Needs Analysis encompasses a range of subjects, including social

factors, medicine, ecosystems, pain, and environmental health. Demonstrations for educational activities are indications that should be conducted. Next, there are issues with the public health ESP courses relevant to the lectures. ESP's significance for public health is so evident. (Işık-Taş & Kenny, 2020; Kenny & Alvarez, 2020).

The teaching materials for Public Health Students should be well-designed to meet the students' needs. They should be planned and taught based on real-world situations, and they should encourage students to connect their knowledge to the work they want to acquire after the class. Thus, there should be an appropriate model for developing teaching materials that best meet students' learning needs. In other words, students learning in professional work situations, including Public Health Students, need a contextualized model to help them achieve the learning goal (Centeio et al., 2021).

However, there have been very few well-designed models of material development for Public Health Students. There are still a few well-designed material development models that meet the needs of Public Health Students. Thereby, the researcher will provide several examples of previous studies to strengthen the study and identify its gaps and novelty, based on preliminary observations. After reviewing previous studies, it can be concluded that the existing model does not provide a comprehensive analysis of student needs. For example, the first dissertation was conducted by Rahmiati (1995). She developed a set of reading comprehension materials for medical students at Brawijaya University. She designed a model of English course materials for medical students who need close teacher guidance. Her model captured the medical students'

learning needs, as both the materials and activities were appropriate. However, Rahmiati's model did not use the current technology, which is highly needed. The model did not encourage students to develop their own skills independently; instead, they relied on the teachers to improve their skills. With technological aids, students should be provided with ample opportunities to enhance their skills independently. Finally, although the model focused on reading comprehension, it also provided spoken activities in the instructional process. However, it existed only in the book and was not taught in practice.

The other research was conducted by Sismiati (2010). She developed a model for English oral instructional material for nursing school. With such rigorous instructional steps, called Language Program Development (LPD), proposed by Yalden (1987), she designed her model. She developed two main products in her model: a functional syllabus and speaking materials for the nursing department. A thorough needs analysis ensured her product best met the students' learning needs as future midwives. However, the developed model was not quite rich in the use of technological aids. In other words, this model still employed a traditional instructional paradigm. As a result, the students found it difficult to develop their English skills when they did not meet the teacher. Additionally, there was no clear learning indicator to indicate whether the students had reached the learning goals.

Moreover, Fouda's study (2025) assessed the impact of a proposed English for Specific Purposes (ESP) program, based on the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) instructional model, on enhancing Delta University students' Listening Comprehension Skills. Using a quasi-

experimental design, this research involved 40 first-year students from the Faculty of Medicine at Delta University. The instruments employed in this research included a pretest and posttest for EFL Listening Comprehension, alongside a Listening Comprehension Skills Checklist meticulously designed by the researcher. The experimental treatment was conducted during the second semester of the 2023/2024 academic year. Results demonstrated that those exposed to the experimental module exhibited superior performance post-administration. These results support the efficacy of the proposed program in sharpening students' EFL Listening Comprehension Skills. It is advocated that future ESP resources be developed in accordance with the ADDIE Instructional Model to enhance listening comprehension and other language skills.

Nastiti et al. (2023) also developed an English module for Public health students to master a large vocabulary in reading skills related to drug indications, reading medicines, and using a contextual approach. A qualitative method that is R&D; ADDIE models (Analyse, Design, Develop, Implement, Evaluate) is utilised. A list of interviews was provided to the curriculum section of the Public health Study Program and to stakeholders as part of a needs analysis to determine the availability of Pharmaceutical English teaching materials. Questionnaires were also administered to material and media experts to evaluate the module development process. The method used to analyse the data is descriptive, and the analysis is univariate. According to the results, creating context-based modules is highly suitable for English language learning to support pharmacists' work. The results indicate that the material expert's questionnaire scored 87.69%, while the media experts' score was 81.16%. The results for users (i.e., lecturers) were

89.29%, and for students, 87.39%. The percentages gained from the analysis indicate that the module is very feasible to use.

In previous research, the researcher, based on observations and interviews with English lecturers and students conducted on November 5, 2022, at the Bhakti Indonesia University (UBI) and IIK Strada Indonesia, found that students of public health sciences at both universities, whose majors in public health are both relatively new, had several issues with teaching and learning English. In another, the Bhakti Indonesia University (UBI) is a private university. IIK Strada Indonesia is a well-known health-based private university. Both have public health study programs and both still have several obstacles in the ESP English teaching and learning process specifically including the learning model digital based but still not perfect with the media "SIPEJAR" and IIK Strada even though it is advanced but the lecturers are still not able to teach English fluently, in this research to be able to help, the researcher will help by using mobile which will be most suitable for teaching language English for Current Public Health in higher education. This model facilitates EFL teacher students to learn English for Public Health without space and time limitations. Saran argues that mobile-based learning will benefit teachers of EFL students by enabling mobility, localization, and personalization, compared to computer-based learning (Saran et al., 2009).

Additionally, mobile phones outnumber personal computers worldwide (Pal & Roy, 2019a). The fact shows that most learners, especially EFL teacher students, have equipment that can serve as a learning medium for English for Public Health, thanks to its small size and light weight. More importantly, mobile devices provide a variety of English for Public Health websites that EFL teaching

students can access to learn English for Public Health anytime and anywhere. Understanding the above facts, the researcher proposed a new mobile-based model of autonomous English learning materials for public health students, addressing the missing components identified in previous studies. While most models exist for medical and health students, a mobile-based model of autonomous English-teaching materials for public health students improves their English skills (Padmadewi et al., 2020). A mobile-based, autonomous online learning model is used to develop English learning materials for public health Students. It will be developed based on a thorough needs analysis, ensuring that both learning materials and activities best meet students' future career needs. It emphasizes enhancing students' speaking skills, which is rarely taught in existing models.

As the Formulation Model of this research, a mobile-based autonomous English-teaching model for public health students provides students with independent learning activities and is supported by technological learning aids such as mobile phones, websites, and laptops. The teacher primarily functions as a facilitator in the learning process, and the students are the subjects of learning who can explore and develop their own English skills both inside and outside the classroom. Therefore, this model will produce three main products: the instructional prototype, the E-learning guidebook, and students' learning materials. The research above exploring the use of synchronous online discussions for teaching English in higher education remains limited. This study aims to examine EFL students' perceptions and challenges in using synchronous online

discussions primarily in ESP learning for public health.

1.2. Problem Identification

Based on the previous research, the researcher observed the practice of teaching ESP in Public Health in higher education. The researchers identified several obstacles to teaching the four main skills in the classroom and the needs that must be met in ESP learning, both online and offline. There were several obstacles related to learning English among Public Health students. (1) aligning students' perceptions in developing English Learning Materials for Special Purposes (ESP), (2) exploring terms in compiling English learning teaching materials for special purposes, namely ESP For Public Health, the study conducted by researchers revealed a noteworthy decrease in student enthusiasm towards the acquisition of English language skills, with a particular emphasis on English for Specific Purposes (ESP) in the field of Public Health. The aforementioned observations are evident in the noticeable lack of student attendance and the many instances of assignment submission delays in this course.

The individuals expressed a lack of enthusiasm for acquiring proficiency in English, citing the tedious and challenging nature of English courses as the primary reason for their disinterest. In addition, it might be argued that teaching and learning procedures tend to be repetitive due to their heavy reliance on tedious instructional methods. A lack of motivation is a significant contributing factor to the subpar academic performance observed among a majority of students in English disciplines. This phenomenon is evident in students' English scores and in instructors' feedback on their academic progress. Furthermore, it is worth noting

that contemporary media and literature rely heavily on digitalization, which exacerbates the decline in individuals' oral communication skills and contributes to difficulties in understanding. The researcher categorized these aspects into three: inputs, processes, and outputs.

Inputs

Based on the results of the observation and interviews with the teachers, the Public Health Students are not motivated to learn English from the textbook. The researcher observed the class activities during the lecture on reading comprehension. The researcher found a significant decrease in students' motivation to learn English, especially during the first and second semesters. It could be seen from the students' low attendance rates and the late submission of assignments in the English subject. This low learning motivation had a significant impact on students' English competence. The lecturers of the first and second semesters said that students' English competence is decreasing each year. Their score showed 5.7. It was worsened by their poor ability to translate the prescriptions written in English.

Next, the researcher found that the lecturers did not use online learning but instead used the English textbook, specifically designed for the Public Health Study program of Vocational diploma departments, because they found it difficult to find appropriate Public Health English materials suitable for students. This traditional learning model will not help students develop their English skills independently. (Li et al., 2021; Tian et al., 2022).

Process

The researcher also interviewed some Public Health Students from two semesters regarding their motivation to learn English. They stated that they have little interest in learning English. They also stated that the English subject is boring and difficult. Additionally, the teaching and learning strategy was monotonous. These made them feel bored with English, and it is not an interesting subject to learn. (Alsoufi et al., 2020; Nasif, 2021).

The researcher also asked the lecturers whether students enjoy the English class more when given interesting media/aids, such as videos and animations from online programs. They answered that the Public Health Students are mostly bored when the materials are given in paper or on slides, just as before. The Public Health Students are interested when the lecturers provide them with materials in the form of videos and animations through online programs (Utami et al., 2020). However, the lecturer rarely used online programs due to limited proficiency with the existing technological aids (Muthuprasad et al., 2021).

Outputs

Due to a lack of motivation, most students performed poorly in English, as inferred from their English scores and lecturers' reports on their learning achievement. They had even worse speaking ability. It could be proven when they were asked to perform a simulation of a dialog between a patient and a Public Health Student; their dialog was hardly comprehensible, particularly in terms of learning content. This incomprehensibility might occur because they have never received any materials related to a public health role in English class. Therefore,

there should be appropriate English teaching materials and an interesting instructional process. (Faux et al., 2021; Jeong, 2022).

Outcome

Given such a long period of learning English, Indonesian students should be able to understand ESP in public health. They will learn all the English skills over the years. However, despite the number of years allotted, their English skills do not significantly enhance their ability to understand ESP in public health, as can be seen in the large number of university graduates majoring in English, or even many language graduates with higher education, who do not master English well in ESP terms for Public Health. (Nutbeam & Lloyd, 2021; Sopory et al., 2019).

1.3. Research Limitation

Based on the identified problems, the issues occurred during the learning process. However, the researcher cannot solve all the mentioned problems. The researcher decided to focus on developing a model of English learning materials for public health Students in tertiary institutions, based on the national curriculum framework. This model was based on a thorough analysis of the students' learning needs. Additionally, it is a mobile-based model, complemented by learning materials in the form of videos and animations from online programs. Moreover, the autonomous learning activities were implemented with hybrid learning. If the students cannot come into the class they joint via online by using their own Mobil phone. However, if they can come to the class they can participate in the MALL Activities. Researchers conducted research at two private universities, involving a

total of 120 students: 60 in the first semester of 2022 taking English for Public Health courses at IIK Strada Kediri, and 60 in the first semester of 2022 at Bhakti Indonesia University (UBI).

1.4. Research Questions

In reference to the delimitation of the problem, the problems in this research are formulated as follows:

1. What are the learning needs for developing English learning materials for EFL students and teachers teaching English in the Public Health Department?
2. What is an appropriate mobile-based autonomous learning model for developing English teaching materials for teachers teaching English in the Public Health Department?
3. What is the quality and validity of the developed autonomous learning model content for English learning materials for public health students?
4. To what extent does the developed autonomous learning model effectively improve the development of English learning materials for public health students?

1.5. Research Objectives

1. To identify the learning needs of material development for EFL students and teachers teaching English in the Public Health department.
2. To develop an appropriate autonomous mobile-based model for English teaching materials for teachers teaching English in the Public Health department.

3. To determine the quality and validity of the developed autonomous learning model content in developing English learning materials for public health Students.
4. To examine the model effectiveness in English teaching material development for Public Health Students.

1.6. Research Significance

This research makes significant contributions to both theory and practice.

1. Theoretical significance

Theoretically, the result of this study contributes to the development of heutagogy in language teaching, particularly in teaching English for specific purposes (ESP) courses conducted in higher education. These theories made a significant contribution to EFL instructional development, particularly to the self-determined and autonomous learning model. It meant this research would be of great importance for both lecturers and EFL student teachers during the instructional process.

2. Practical Significance

a. For university

It is hoped that this research will provide solutions in this modern era, enabling the provision of university education that meets the quality standards set by the Ministry of Education and Culture, the Ministry of Research, Technology, and Higher Education, and the Ministry of Higher Education. The model developed will address the university's challenges and opportunities in improving students' English language competency in the Public Health study program.

b. For lectures and students

The lecturers might use theories to encourage students to become more self-determined and highly autonomous learners, which, in turn, would foster their intrinsic motivation and sustain their learning, particularly in the ESP course. Consequently, the students would become lifelong learners, which was so needed in this ubiquitous era.

Practically, this research resulted in an effective instructional model for an actional mode, Specific Purpose for Specific, which would be very beneficial for both EFL student teachers and the lecturer. The EFL student teachers could benefit from the instructional model in this study. First, they could practice their English skills anytime, anywhere. It meant they did not encounter any space or time constraints in learning English for public health. Second, as the instruction model was a mobile-based model, the students could access it even though they did not have a laptop or a computer. Third, the students did not have to download the software, which could potentially free up space on their smartphones. It meant this mobile-based model of autonomy was developed to avoid. Moreover, the model was developed based on students' learning needs, particularly those of Indonesian EFL student teachers.

The mobile-based English learning materials model in this study was complemented by a manual, a syllabus, and a learning book, which the lecturer can use during the instructional process. The lecturer could use

the model's stages to encourage students to be self-directed learners and more autonomous in an English for Specific Purpose (ESP) course. The model led the EFL student teachers to learn an English for specific purpose (ESP) course, especially ESP for public health, anytime and anywhere. They will be actively involved in the learning process from start to finish.

c. For the society

The learning and the model's impact will yield societal benefits. Specifically, the general public will benefit from automatic updates while learning English, and the health-focused public will be assisted by the online learning model and gain a comprehensive understanding of public health terminology. Moreover, this research model will contribute to advancing society toward the 5.0 sustainable era.

d. For other researchers

The theoretical contributions would also help future researchers conducting research in the same area of interest. They might use the theories in this study for further development. Further researchers might develop the theories used in this study with different subjects.

1.7. Product Specification

Based on the research objectives and their significance mentioned earlier, the product specification and definitions of the key terms are elaborated. The researcher would develop an ESP for public health learning model, accompanied

by a syllabus and a prototype of the materials to be used and implemented. The model would provide autonomous support for learners in English for specific purposes (ESP) concepts. Another product is E-learning, developed as an English for Specific Purposes (ESP) learning website. This website would be designed to help students learn ESP for public health through a cyclical process. The stages are exploring, creating, collaborating, connecting, sharing, and reflecting. The other product is the guidance book, which helps EFL students learn ESP for public health independently. The book also provided students with explanations of how to operate the product. Finally, the product provided several definitions in the public health context to help students understand the specific terms in the English "Specific Purposes of Public Health" course.

1.8. The Importance of Development

The Mobile-based English learning material model is very important to develop to improve students' English language competence in tertiary institutions. The development of this model is necessary because the importance of the link between the curriculum and the material, and its authenticity, implies that the material must be contextualized and digitized, leading to interesting and meaningful English learning and practice for students. In this case, they can apply what they learn in English lessons to situations that require English use and are not limited by time or distance. Therefore, developing a mobile-based model for autonomous English teaching materials for teachers in the Public Health department is very important to provide explicit guidance that is easy to implement. This model is very new and important to develop through ongoing research.

The Research Impact and Implications of development of a mobile-based autonomous English teaching materials model for Public Health students is expected to make significant theoretical, pedagogical, and practical contributions to English for Specific Purposes (ESP) education. Theoretically, this study extends the existing literature on English for Specific Purposes (ESP), Mobile-Assisted Language Learning (MALL), and autonomous learning by integrating authentic, curriculum-aligned, and mobile-supported learning into a comprehensive instructional model tailored to the needs of Public Health students. Pedagogically, the proposed model provides lecturers with practical guidance for designing and implementing technology-enhanced ESP instruction that promotes learner autonomy, continuous learning, and meaningful language use beyond classroom boundaries. Through mobile technology, students are able to access learning materials anytime and anywhere, thereby increasing learning flexibility, engagement, and opportunities for authentic English practice in public health contexts. Practically, the model offers a scalable and adaptable framework that can be implemented across higher education institutions offering ESP courses in health-related disciplines, while also informing curriculum developers and policymakers in integrating mobile learning and autonomous learning principles into ESP curricula. Ultimately, this study contributes to the digital transformation of ESP instruction by providing an evidence-based instructional model that enhances students' English language competence, fosters lifelong autonomous learning, and better prepares future public health professionals to communicate effectively in global academic and professional settings.

1.9. Assumption and Limitation of Development

This study conducted several assumptions. First, communication in today's era is a holistic process that often requires the use of multiple skills or language modalities. Second, students develop their own paths in language learning, progress at different rates, and have different needs and motivations. Third, lecturers as facilitators must be able to create a classroom climate conducive to language learning, especially in ESP, and provide opportunities for students to use and practice language, and to reflect on their language use and language learning.

1.10. Definition of Key Terms

To clarify this research, the researcher will explain a little of the definition of key terms:

1. Conceptual Definitions

a. English for Specific Purposes (ESP)

ESP is a particular case within the general category of special-purpose language training. The same principles apply no matter which language is being learnt and taught". Ten years later, Dudley-Evan (2002) provided a similar definition of ESP, and both authors identified its absolute and variable characteristics. Most researchers seem to agree on two characteristics: a) ESP is based on a particular context; b) ESP is based on the learners' specific needs.

b. Teaching Materials

The material focuses on the ESP context. It is based on the specific

needs analysis of public health students generated in the current study (Broeckelman-Post et al., 2023). The curriculum is based on the KKNI (Indonesian National Qualification Framework) and the government's new policy, MBKM (Merdeka Belajar Kampus Merdeka).

c. An autonomous learning model

Autonomous learning in this context is implemented in line with the current online model's development. The developed model implements a student-centered learning process through exploration, practice, collaboration, and reflection. Online media enables students' hybrid learning without being constrained by space or time (Bülow, 2022). The condition could help students learn English.

d. Heutagogy

Heutagogy is a new instructional paradigm emphasizing self-determined learning that has emerged in educational fields, particularly in higher education, as the prevailing paradigms do not fit learners' needs (Blaschke, 2023). As is well known, today's learners are different from those of old. They live in an era of rapidly advancing technology. They are facilitated by existing devices, such as smartphones, laptops, and tablets, for accessing information for learning.

e. Design-Based Research

Design-Based Research (DBR) is an appropriate research method for developing or improving existing instructional practices (Abdallah, 2011; Abdallah & Wegerif, 2014).

2. Operational Definitions

a. English for Specific Purposes (ESP)

In this study, ESP is a particular case within the general category of special-purpose language training. In operational terms, this research

will include needs, deficiencies, and desires. The current study describes the English for Specific Purpose as the teaching and learning process conducted in the public health setting, relying on the tenet of ESP (need analysis) (Huang et al., 2024).

b. Teaching Materials

In this study, a teaching material is defined as something used by teachers or students to facilitate language learning. Materials can take the form of videos, dictionaries, grammar books, photos, newspapers, live lectures by native speakers, and even student discussions (Ghafar et al., 2023). However, during this research, it will produce suitable, digitally based material that aligns with current theory and is combined with the autonomous learning model and Heutagogy to meet student needs.

c. An autonomous learning model

Autonomous learning in this context is implemented in relation to the development of the current online model. The mobile-based model implements a student-centered learning process through exploration, practice, collaboration, and reflection (Figueiredo, 2023). Online media enables students' hybrid learning without constraints on space or time.

d. Heutagogy

The hauntological concept in this study reflects students' desire to learn independently after being provided with online ESP materials in the Public Health Department. The application of mobile-based media is significant within the hauntological concept (Keyes & Skinner, 2023). The online media conducts its activities through exploration, practice, collaboration, and reflection.

e. Design-Based Research

In this Study, Design-Based Research (DBR) is an appropriate research method for developing or improving existing instructional practices,

carried out in the Public Health Department at private universities in East Java, specifically at Bhakti Indonesia University and IIK Strada Kediri.

1.11. Novelty of the Research

The originality of this research lies in the researcher's proposal of a new model, called the “A Mobile-based model of autonomous English Teaching ESP,” which addresses the missing components in previous studies. This study will offer insights into the development of a mobile-based model of autonomous English for a specific purpose (ESP) for Public Health learning for EFL student teachers, grounded in several principles of heutagogy to increase the novelty of the developed product. First, this research will develop a mobile-based model of autonomous English for a specific purpose (ESP) for Public Health learning, aiming to drive EFL student teachers to be self-determined and highly autonomous.

Based on the fifteen research as Rahmiati (1995) developed reading-comprehension materials for medical students at Brawijaya University, but the product remained teacher-dependent, print-based, and limited in promoting independent learning. Sismiati (2010) developed a functional syllabus and oral English materials for nursing students using Yalden's Language Program Development framework; however, the model relied heavily on classroom instruction, made little use of technology, and lacked clear indicators of learning achievement. Fouda (2025) applied the ADDIE model to develop an ESP program that improved medical students' listening-comprehension skills, although the study involved only 40 students from one institution and focused on a single

language skill. Nastiti et al. (2023) developed a contextual English module for pharmacy students that was positively evaluated by experts, lecturers, and students, but the evaluation mainly addressed product feasibility rather than learning motivation, autonomy, or problem-solving competence. Subiyanto (2023) developed a taxation-based ESP module for accounting students and found that it was considered interesting, practical, and useful, although it was tested in only one higher education institution. Oprista (2024) developed speaking materials for accounting students at a vocational high school, but the product remained predominantly book-based and required further digital integration, additional exercises, and stronger alignment with students' needs. Handayani et al. (2025) developed an Intensive English Bridging Module through Canvas LMS that successfully supported self-directed learning, learner autonomy, and ESP readiness among accounting students; nevertheless, it did not explicitly examine structured problem-solving competence or test the product across different spatial and temporal contexts.

Moreover, Firmanda et al. (2021) developed a problem-based supplementary ESP book for mechanical-engineering students, but the printed product was tested with only 20 students from one institution and offered limited support for flexible digital learning. Ningsih et al. (2025) developed a multimedia ESP e-module for automotive-engineering students that integrated authentic technical content and task-based learning, although the study primarily evaluated validity, relevance, accuracy, and usability rather than motivation, learner autonomy, and problem-solving as integrated outcomes. Inayah and Priagung (2026) developed an ADDIE-based English textbook for Physical Education,

Health, and Recreation students containing sports terminology, integrated language skills, contextual tasks, and visual support, but it was implemented only through a limited trial. Burhan et al. (2025) developed contextual ESP materials for Sport Coaching Education students by integrating four language skills with authentic coaching situations, although the product did not incorporate an online learning platform. Saswandi and Melyati (2025) developed adaptive ESP materials for hospitality students through the 4D model, incorporating professional contexts, role-play, and proposed AI-supported interaction; however, the materials were evaluated only through a limited trial. Wicaksono (2023) developed an ADDIE-based ESP curriculum and textbook for hotel and cruise-ship students and revised the materials across three student cohorts, although the product remained textbook-oriented and was not tested across different institutions. Datu et al. (2020) identified the English-speaking and writing requirements of hotel front-office employees and developed a proposed ESP assessment, but the study focused on occupational language testing rather than the development of an instructional model. Finally, Givenci and Fauzan (2024) developed hospitality-speaking materials through the ADDIE and TPACK frameworks, including dialogues, listening practice, vocabulary, pronunciation, and role-play activities; nevertheless, speaking remained the principal outcome, and the researchers recommended broader implementation, long-term trials, and further multimodal development.

The majority of previous studies were conducted through limited trials in one institution or during one implementation period. The previous studies have also independently incorporated needs-based materials, disciplinary contexts,

ADDIE development procedures, digital technology, problem-based learning, and authentic professional activities. However, limited research has integrated these components into a purpose-built online ESP learning model that systematically facilitates autonomous, discipline-related problem-solving, enhances students' motivation to learn English, and is iteratively evaluated across different spatial and temporal contexts. Thus, to fill the paucity, the present study develops a mobile-based English learning material model to support autonomous learning and structured problem-solving activities, supported by the application of DBR and ADDIE to enhance their motivation in learning. Exploiting two universities as a space and time triangulation also becomes a powerful boost to the study to ensure the validity and reliability of the data. In addition, the data also showed a data novelty in the term of the class activities. The students requested to exclude the application of connection and sharing instead of six applications of MALL (exploration, practice, collaboration, connection, sharing, and reflection) into 4 steps of MALL (exploration, practice, collaboration, and reflection).

To end this section, the researcher strongly believes that a new model of teaching English for specific purposes to EFL student teachers will be necessary to ensure the implementation of learners' autonomy for lifelong learning. Autonomous learning can be achieved through a mobile-based learning model with a heutagogy approach, which could drive students to become self-determined learners. Students needed to keep learning due to their own motivation to master English for a specific purpose (ESP) in Public Health learning. As a result, they became lifelong learners who are always curious to learn about ESP features, master these concepts, and implement them in their performance.