Analyzing Needs for Redesigning an English Listening-Speaking Course for Thai Undergraduate Medical Technology Students: Connecting Academia with Practicality

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Article information	Abstract
	English proficiency is crucial for all science students, including those pursuing careers in healthcare as it significantly affects their employability and professional prospects. However, a graduate employment survey conducted by the Faculty of Medical Technology at a private university in Thailand indicated that graduates needed further improvement in their English listening and speaking skills. To address this gap, this paper presents a comprehensive needs analysis conducted to inform the redesign of an appropriate English listening-speaking course for Thai undergraduate medical technology students. Using triangulated data sources and methods to enhance the credibility of ESP course development, we collected questionnaires from 333 Thai undergraduate medical technology students at a private university, as well as 16 medical technology stakeholders. Subsequently, 18 students and 12 stakeholders were randomly selected for interviews based on their willingness to participate. We also conducted four classroom observations in an English listening-speaking course at the same university. The data were analyzed quantitatively and qualitatively using a weaving approach. The findings reveal practical implications and recommendations for course design aimed at improving students' listening and speaking skills for real-world professional settings.

INTRODUCTION

Thailand's emergence as a medical hub has emphasized the importance of English proficiency for Thai healthcare providers (Board of Investment, 2020; Otngam, 2022), indicating that students desiring careers in the healthcare field must be equipped with the necessary English knowledge and job-related skills, particularly within the healthcare context, to be qualified for their future employment.

Given these requirements, most Thai universities offer English for Specific Purposes (ESP) courses tailored to students' future occupational needs (Rachayon & Soontornwipast, 2019). One such institution is a private university whose Faculty of Medical Technology has been accredited by the Council of Medical Technology of Thailand. The university also offers a

listening-speaking course for medical technology students. However, the 2021 graduate employment survey indicated that despite this provision, graduates continue to struggle with English proficiency in the workplace, particularly in listening and speaking. Moreover, this course has been delivered without revision for an extended period, indicating a need for improvement to equip students with essential communication skills required for today's international healthcare field (Kavlu, 2020; Sukyin et al., 2023).When developing an ESP course, needs analysis is crucial as it identifies necessary data and establishes the skills to teach (Basturkmen, 2015; Hutchinson & Waters, 1987). Consequently, assessing the needs of medical technology students is necessary to facilitate course modification. However, while several studies have explored ESP needs in medical and healthcare education, there is limited research addressing the needs of undergraduate medical technology students, particularly in the Thai context.

This study seeks to bridge this gap by examining the English language needs of medical technology students, with a particular focus on their listening and speaking skills. The findings can help improve the current ESP course while also offering useful insights and serving as a blueprint for educators and researchers looking to develop ESP courses for medical technology students in other contexts. By addressing these needs, this study contributes to the broader TESOL field, highlighting ways to adapt ESP course design to better prepare students for their professional roles in the current global healthcare environment.

LITERATURE REVIEW

Needs analysis for ESP course design

ESP courses focus on language in context rather than on teaching grammar and structures (Rahman, 2015). In the ESP context, course design is for occupational purposes and involves learner-centered processes such as needs analysis, data interpretation, syllabus design, material development, classroom instruction, and evaluation (Chalikandy, 2013; Chiablaem, 2020). Needs analysis is crucial in ESP because it provides essential information about learners, including who they are, why they are learning, and where and when they will use the target language (Hutchinson & Waters, 1987). This information helps teachers and course designers create comprehensive teaching plans, including course content, instructional activities, methods and materials, assessment and evaluation, classroom management, and teacher roles (Basturkmen, 2010; Do, 2023). Thus, needs analysis is an important tool prior to course development, facilitating the identification of learners' necessities, lacks, wants and language backgrounds, which serves as a fundamental foundation for effective course design and delivery (Serafini et al., 2015).

According to Hutchinson and Waters (1987), there are two types of needs in ESP course design: target needs and learning needs, both of which emphasize not only what learners must achieve but also how they acquire those skills. Target needs are defined as what the learner needs to be able to do in the specific situations where they will use English in their target environment. They are divided into three categories: necessities, lacks, and wants. Necessities refer to what

learners must know in order to perform effectively in the target situation. Lacks mean the gap between learners' current proficiency and the required level of competency, indicating the skills they perceive as insufficient. Wants are what learners desire or feel they need, which may relate to their expectations of the course content, teaching approach, materials, or methodology.

On the other hand, learning needs, as defined by Hutchinson and Waters (1987), are the requirements for learners to effectively learn and function in the target situation, informed by several key factors including their language background (existing knowledge and skills), how they learn (including attitudes, motivation, preferred learning styles, and strategies), and the learning environment.

To determine learners' needs as a starting point for developing an ESP course, various approaches to needs analysis have been suggested and employed (Liu & Zhang, 2020). However, scholars in the ESP field (Amirouche & Bousmaha, 2022; Sujana et al., 2022) highlight that Target Situation Analysis (TSA), Learning Situation Analysis (LSA), and Present Situation Analysis (PSA) are the most crucial components for assessing learners' needs.

Target Situation Analysis (TSA)

TSA focuses on learners' goals, addressing the context of the target language, and focusing on learners' language requirements (Hutchinson & Waters, 1987; Jitpanich et al., 2022). Chambers first used the term Target Situation Analysis in his 1980 article to clarify the terminology. According to Chambers (1980), TSA is communication in the target situation. TSA specifies which language components are necessary for real communication in the target context (Hutchinson & Waters, 1987; Niemiec, 2017). Data gathered through TSA can guide instruction and syllabus design based on learners' needs or what they need to know to function effectively in the target situation (Mortazavi, 2016). However, according to Hutchinson and Waters (1987), the interpretation of these necessities may differ depending on the respondent's perspective. In this sense, TSA focuses on identifying necessities based on the requirements of the target situation, prioritizing language skills, and defining needs in situational terms. Nevertheless, TSA alone is insufficient for assessing learners' needs (Alsamadani, 2017) as essential variables concerning what learners are like at the beginning of the course, including their social and educational background, age, occupation, and the gap between their current and target competence, must also be considered (Javid et al., 2020). Therefore, if the goal that the learners need to achieve is to be determined, the starting point must first be identified, which can be done through PSA (Nasmah, 2018).

Present Situation Analysis (PSA)

PSA focuses on what learners already know at the beginning of a course (Niemiec, 2017). As a complement to TSA, PSA investigates learners' initial abilities and the gap between their current proficiency and the required competency by addressing students' current skills, language problems, attitudes towards language learning, and learning experiences (Hutchinson & Waters, 1987). Similar to learning needs, Dudley-Evans and St. John (1998) emphasize that

PSA estimates strengths and weaknesses in language, skills, and learning experiences. In addition, the learner's background information can provide the researcher with sufficient information about their present abilities.

In brief, the data obtained through PSA helps identify students' lacks as well as learners' language backgrounds (Dudley-Evans & St. John, 1998), serving as a tool to identify deficiencies in the learning process and the gap between necessities and their existing knowledge, skills, and performance that can be gained through placement tests or learner's background information (Dudley-Evans & St. John, 1998; Mortazavi, 2016; Remache & Ibrahim, 2018; Yundayani, 2018).

However, TSA and PSA are still insufficient to assess learners' needs because they have not been concerned with the learners' views of learning, which can serve as guidelines for reaching the learning goals (Octaviana et al., 2021). Thus, it is vital to determine the condition of the learning situation to help students reach their planned destination, and this can be done through LSA (Hutchinson & Water, 1987; Octaviana et al., 2021).

Learning Situation Analysis (LSA)

LSA concerns how learners want to learn rather than what they need to learn (Chaiyapoo, 2017; Dudley-Evans & St. John, 1998). LSA focuses on students' learning strategies by providing information about the conditions of their learning situation, their knowledge, strategies, and motivation (Varaporn, 2022). Therefore, LSA investigates ways to ensure that learners acquire the necessary skills, and that courses and materials can be developed to match learners' preferred learning styles (Remache & Ibrahim, 2018). The data obtained through LSA can reveal learners' wants, including learning styles, strategies, and techniques, as well as learners' language backgrounds (Hutchinson & Waters, 1987; Remache & Ibrahim, 2018).

However, as explained by Chaiyapoo (2017), each approach to needs focuses on different purposes and target groups, providing various useful information. Therefore, a combination of TSA, PSA, and LSA approaches is considered beneficial because these three approaches can supplement one another (Watanapokakul, 2022) and each approach is an essential factor in the development of an ESP course designed to meet all its learners' needs (Alawiyah, 2018). Watanapokakul and Sitajalabhorn (2023) demonstrated the advantages of an eclectic approach that integrates TSA, PSA, and LSA to examine both target needs (necessities, lacks, and wants) and learning needs. TSA is used in analyzing learners' necessities, lacks, and wants, PSA helps identify learners' current proficiency, background information, and specific gaps in their English skills, while LSA focuses on students' learning needs and wants.

Adapted from the framework proposed by Watanapokakul and Sitajalabhorn (2023), this study employed an eclectic approach to needs analysis based on three needs analysis approaches: TSA. PSA, and LSA. It aimed to explore both target needs (including learners' necessities, lacks, and wants) and learning needs (including learners' language backgrounds and how they learn) to develop an English listening-speaking course for undergraduate medical technology students. Figure 1 presents the theoretical framework of the needs analysis used in this study.
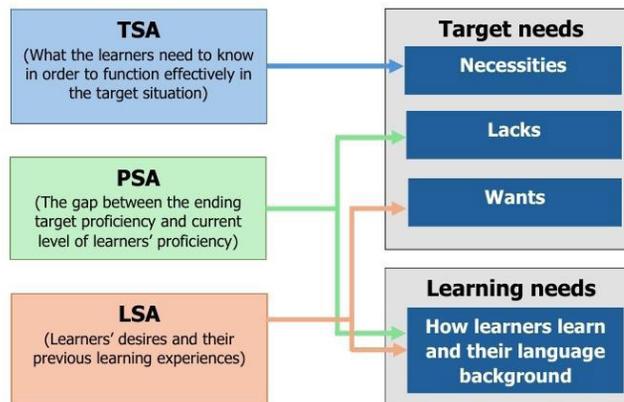
Figure 1 The theoretical framework for needs analysis

Related studies on the needs analysis for medical technology students

Proficiency in medical English is crucial for healthcare providers, especially in today's increasingly globalized healthcare environment (Taira et al., 2019). Studies on ESP highlight the importance of conducting a needs analysis to effectively prepare students for workplace communication. Among the four skills, speaking is often identified as the top priority, followed by writing, reading, and then listening (Nurhidayat & Fatmawati, 2021). For instance, Mohamed et al. (2024) investigated the ESP needs of health sciences undergraduates in the UAE from various healthcare departments who had completed an ESP course. The study revealed that 98% of respondents prioritized learning medical vocabulary. Moreover, 95% emphasized the importance of developing communicative skills for professional interactions, while 94% highlighted the need to improve general communication abilities. Similarly, Nurhidayat and Fatmawati (2021) examined the English language needs of Medical Laboratory Technology students in Indonesia. The student respondents indicated that 84% were motivated to learn English for career development, while smaller percentages cited motivations such as traveling abroad (6.3%), supporting their current education (6.3%), and pursuing further studies (3.1%). The study also indicated that difficulties with vocabulary and grammar negatively affected students' confidence and increased their fear of making mistakes. To address these challenges, the authors therefore suggested incorporating engaging and motivating activities to enhance ESP learning outcomes. In another related study, Suwanrot et al. (2017) investigated the English language needs of undergraduate medical students and residents of a hospital in Khon Kaen, Thailand. Their findings indicated that 78% of respondents felt a need to enhance their listening and speaking skills, perceiving these as both crucial and challenging for professional development. Likewise, Nuchapong and Kanokpermpoon (2023) explored the occupational English needs of final-year medical students in Thailand, and the students reported facing difficulties with grammar, vocabulary, oral presentations, English accents, and writing medical content.

However, previous research has mainly collected data from students, with limited inclusion of other key stakeholders in the field. To address this gap, the present study aimed to investigate the English listening and speaking needs of Thai medical technology students and relevant

stakeholders, including ESP teachers, medical technology teachers, employees, and employers in the medical technology field.

Research question

There is one research question in this study:

What are the learning needs and target needs for developing an English listening-speaking course for undergraduate medical technology students?

METHODOLOGY

Research design

In this study, a mixed-methods design (Creswell & Creswell, 2018) was implemented to provide a comprehensive understanding of the English language needs of Thai medical technology students. This design was chosen because it enables an in-depth analysis by integrating both quantitative and qualitative data, leading to a richer and more detailed interpretation of the findings. The study utilized quantitative data collection via questionnaires and qualitative data collection via semi-structured interviews, as well as classroom observations intended to help explain the previously obtained quantitative results (Creswell & Plano Clark, 2018).

Participants

According to the needs analysis triangle (West, 1994), which emphasizes three key sources for effective needs analysis, the participants in this study included students and stakeholders such as ESP and medical technology teachers, as well as employees and employers in the medical technology field. The participants consisted of 713 undergraduate medical technology students in a private university in Thailand. However, 333 students voluntarily responded to the questionnaire (Appendix A), exceeding the required sample size of 256.24, which was calculated using Yamane's (1967) formula with a 95% confidence level. Additionally, for semi-structured interviews, the participants were randomly selected based on their willingness to participate. Data collection continued until saturation was reached, resulting in 18 participants (Majid et al., 2018).

The stakeholders, based on purposive sampling, consisted of four ESP teachers, four medical technology teachers in various sections, and eight professionals (employees and employers) working in the medical technology fields, including clinical microbiology, immunology, and sales. The inclusion criteria were as follows:

1. Employees: Minimum of two years of laboratory or field experience in medical technology.
2. Employers: Minimum of two years of experience in managerial roles and recruitment of medical technology staff.
3. ESP and medical technology teachers:

1. At least five years of experience teaching English or medical technology content to medical technology students.
2. Medical technology teachers were required to hold a degree in medical technology.

A total of 16 stakeholders voluntarily participated in the study by completing the questionnaires. For the semi-structured interviews, 12 participants were selected based on their voluntary participation indicated in their questionnaire responses.

Furthermore, classroom observations were conducted in four sections of a three-hour English Listening-Speaking for Professional Purposes course for medical technology students, involving 162 participants during the first semester of the 2023 academic year (August 2023).

Research instruments and data collection

To enhance the reliability and validity of the findings, this study triangulated multiple sources of information and employed multiple data collection methods (Serafini et al., 2015): online questionnaires, interviews, and observations.

Online questionnaires:

The purpose of the online questionnaires was to collect quantitative data on both students' and stakeholders' perspectives regarding students' learning needs and target needs. The questionnaires were developed based on the theoretical framework for needs analysis illustrated in Figure 1. The stakeholder questionnaire was similar to the student questionnaire (as shown in Table 1). The student questionnaire comprised five parts. Parts 1 and 2 included four response-choice questions on participants' backgrounds and career preferences. Parts 3 to 5 consisted of 57 five-point Likert-scale items that addressed problems with English listening and speaking, preferences for the current course, and students' necessities and wants.

This questionnaire was designed to assess students' attitudes toward various aspects of developing an English listening-speaking course for Thai undergraduate medical technology students. The stakeholder questionnaire consisted of three parts. Part 1 included four response-choice questions concerning participants' backgrounds. Parts 2 and 3 comprised 52 five-point Likert-scale items focusing on students' problems with English listening and speaking, as well as necessities and wants. The questionnaires were administered online to the participants via Google Forms in August 2023.

Semi-structured interviews:

The purpose of the interviews was to obtain qualitative insights that complemented the questionnaire data, providing a deeper understanding of the findings. As presented in Table 1, the student interviews included nine open-ended questions aligned with the student questionnaire to explore their learning experiences, challenges, and expectations in greater detail. Likewise, the stakeholder interviews included eight open-ended questions aligned with the stakeholder questionnaire to gain further insights into their views on course development and language requirements in the medical technology field. The semi-structured interviews

were conducted to obtain in-depth information. Each participant was interviewed individually via the Zoom Meetings application for approximately 20–30 minutes. To ensure the maximum benefit from the research instruments and to minimize language barriers, data collection was conducted in Thai. Additionally, all interviews were video-recorded for further analysis.

Table 1
The details of the questionnaires and interview questions

Questionnaire for the students	Questionnaire for the stakeholders
Part 1: Background information	Part 1: Background information
Part 2: Preferences for career sectors	Part 2: Problems with English listening and speaking skills
Part 3: Problems with English listening and speaking skills	Part 3: Necessities and wants
Part 4: Preferences for the current course	
Part 5: Necessities and wants	
Interview questions for the students	**Interview questions for the stakeholders**
1. Do you like studying English? Why or why not?	1. Can I have your name, phone number, and email address?
2. Which English skills (listening or speaking) do you like to study, and why?	2. Where do you work and what is your position?
3. Which English skills (listening or speaking) do you dislike, and why?	3. How long have you been working in this field?
4. What are your problems in listening and speaking English and studying English in the classroom?	4. What are your problems in listening and speaking English when performing tasks?
5. How good are your English listening and speaking skills, both in general and for medical technology purposes?	5. How good are the listening and speaking skills of medical technology students or employees, both in general and for medical technology purposes?
6. How effective are the teaching method, materials, course content, classroom atmosphere, and course evaluation in the current course?	6. What topics need to be taught in the English listening-speaking course for medical technology students to help them work effectively in the workplace?
7. What topics need to be taught in the English listening-speaking course for medical technology students?	7. What language functions need to be taught in the English listening-speaking course for medical technology students to help them work effectively in the workplace?
8. What language functions need to be taught in the English listening-speaking course for medical technology students?	8. What are your suggestions for the English listening-speaking course for medical technology students regarding course content and activities, materials, language used, classroom atmosphere, and evaluation?
9. What are your suggestions for the English listening-speaking course for medical technology students regarding course content and activities, materials, language used, classroom atmosphere, and evaluation?	

Classroom observations:

The purpose of classroom observations was to gather qualitative data on the actual classroom environment, supporting the findings from the questionnaires and interviews. The observation protocol was adapted from Creswell's (2007) field-note format and included both descriptive and reflective components (Appendix B). Section A included nine open-ended questions designed to capture information about the lecturer and class structure, while Section B comprised eight closed-ended items, along with space for additional comments on target language use, instructional methods, learning materials, student participation, classroom atmosphere, and assessment. Four classroom observations were carried out in the three-hour English Listening-Speaking for Professional Purposes course for medical technology students during August–September 2023, with the researcher acting as a non-participant observer.

All of the research instruments were validated for content validity by five experts in the ESP and medical technology fields using the Index of Item Objective Congruence (IOC), as proposed

by Rovinelli and Hambleton (1977). According to Turner and Carlson (2003), when employing five experts, the qualified items should have an IOC value equal to or greater than 0.80 to show valid objectives in the research instruments, and those of the student questionnaire, stakeholder questionnaire, student interview questions, stakeholder interview questions, and the classroom observation protocol were rated 0.98, 0.99, 0.98, 0.90, and 0.97, respectively. Revisions were made based on the experts' comments regarding word usage and redundant questions. For the interview questions, additional examples were provided to enhance the interviewer's understanding. Following validation, a pilot study was conducted in July 2023 to assess the clarity, reliability, and feasibility of the instruments before full implementation. The pilot study involved 30 students and 10 stakeholders for the questionnaires and 5 students and 5 stakeholders for the interviews. Using Cronbach's alpha coefficient, the overall reliability of the student and stakeholder questionnaires was measured at 0.91 and 0.93, respectively, indicating a high level of internal consistency (Siswaningsih et al., 2017).

Data analysis

The data obtained from the questionnaires of 333 students and 16 stakeholders were quantitatively analyzed using the SPSS program to obtain descriptive statistics. The interpretation of closed-ended questions was expressed through frequency and percentage to present the findings. The interpretation of the five-point Likert-scale questions was based on the mean ranges, and each item was rated on a scale from 1 to 5. The meaning of the scale varied depending on the section of the questionnaire, as presented in Table 2. The results were presented using mean scores (*M*) and standard deviations (*SD*).

The following formula illustrates the class intervals used to interpret the levels of problems, necessities, and wants, as described by Franzese and Iuliano (2019, p. 674). The interpretation of the data determined the level of agreement with the statement or question items based on mean ranges and descriptions, as illustrated in Table 2.

$$\text{Interval} \ = \ \frac{\text{Maximum score} - \text{Minimum score}}{\text{Number of classes}} \ = \ \frac{5-1}{5} \ = \ 0.8$$

Table 2

Mean range, description, and interpretation

| Likert scale | Interval | Description | | | Interpretation (Agreement with the statements) |
		Student questionnaire part 3 Stakeholder questionnaire part 2	Student questionnaire part 4 -	Student questionnaire part 5 Stakeholder questionnaire part 3	
5	4.21–5.00	Most problematic	Totally agree	Most needed/wanted	Very high
4	3.41–4.20	Very problematic	Agree	Very needed/wanted	High
3	2.61–3.40	Moderately problematic	Moderately agree	Moderately needed/wanted	Moderate
2	1.81–2.60	Slightly problematic	Disagree	Slightly needed/wanted	Low
1	1.00–1.80	Not at all problematic	Totally disagree	Not at all needed/wanted	Very low

Data from the interviews and classroom observations were analyzed using thematic analysis, following Braun and Clarke's (2006) method. The interview recordings were transcribed and

then categorized through a process of repeated listening and reading (Syed & Nelson, 2015). To enhance reliability, the analysis applied the Code-Recode process (Anfara et al., 2002), ensuring systematic refinement of coding through multiple iterations. Similarities and differences in responses were identified, grouped, and reported (Bailey, 2008). Similarly, data from the four classroom observations were categorized into themes (Seers, 2012).

Ethical considerations

To protect participant rights and well-being, this research proposal was submitted to and approved by the University's Central Institutional Review Board (COA: MU-CIRB 2023/088.2405). All participants were over 18 years old and participated voluntarily. Before starting the survey, the participants were informed about the research and given the right to opt out. Data collection was conducted anonymously, and the participants' responses were kept confidential and destroyed after the study was completed.

FINDINGS

To report the study's findings theme by theme, a weaving approach (Fetters & Freshwater, 2015) was employed, starting with quantitative data from questionnaires, followed by qualitative data from semi-structured interviews and classroom observations to support and explain the quantitative data. The findings are organized according to the four aspects of the theoretical framework for needs analysis used in this study (see Figure 1), focusing on students' learning needs and target needs.

1. Learning needs

This section presents the findings on students' learning needs, focusing on their English language backgrounds and prior learning experiences.

In terms of grades in English for Communication 2, the prerequisite course for English Listening-Speaking for Professional Purposes course for medical technology students, 105 students (31.53%) have not taken this course, while 228 students (68.47%) have passed it. Table 3 presents the distribution of students' grades in English for Communication 2.

Table 3
Grades of the students in English for Communication 2 course

Grade	Frequency	Percentage (%)
A	92	27.6%
B+	31	9.3%
B	36	10.8%
C+	40	12.0%
C	22	6.6%
D+	6	1.8%
D	1	0.3%
Have not taken	105	31.5%
Total (N)	333	100%

According to the interviews, some students mentioned that they did not enjoy learning English because of their poor language skills.

Extract 1

> *I am not very proficient in English, so I do not like it. Moreover, I received poor grades in English, which really ruined my confidence.* (Student 12)

Extract 2

> *Students had varying levels of English communication abilities. While some could communicate effectively, others faced challenges due to their poor English backgrounds.* (Stakeholder 4 – Medical technology teacher)

Classroom observations revealed a range of English abilities among students. Although some actively engaged with teachers by asking and responding to questions in English, the majority remained silent during lectures.

To summarize, the students' English language backgrounds were diverse, reflecting variations in their prior knowledge. Furthermore, the perception that they are not proficient in English has a negative impact on their attitudes towards learning English.

2. Target needs

This section presents the findings on students' target needs, focusing on their lacks, necessities, and wants, which are essential for designing an effective English listening-speaking course.

2.1 Students' lacks: Views from the students and stakeholders

Findings related to students' lacks describe their perceptions of English listening and speaking abilities and their opinions about the current course.

2.1.1 Problems with English listening and speaking skills

Table 4
Lacks regarding problems with English listening and speaking skills

Listening problems	Students			Stakeholders		
	M	*SD*	Interpretation	*M*	*SD*	Interpretation
1. Understand English vocabulary and expressions related to medical technology from listening	3.29	0.91	Moderate	2.56	0.63	Low
2. Identify details from listening	3.03	0.93	Moderate	3.25	0.78	Moderate
3. Capture key words or the main idea from listening	2.95	0.94	Moderate	3.00	0.73	Moderate
Overall	**3.09**	**0.77**	**Moderate**	**2.94**	**0.64**	**Moderate**

Speaking problems	Students			Stakeholders		
	M	*SD*	Interpretation	*M*	*SD*	Interpretation
1. Communicate in English fluently, naturally, and without hesitation	3.74	0.97	High	3.81	1.05	High
2. Communicate in English grammatically correctly	3.51	0.92	High	3.75	0.78	High
3. Choose English vocabulary correctly and appropriately for the context	3.32	0.86	Moderate	3.56	0.89	High
4. Order information to be spoken correctly	3.30	0.88	Moderate	3.19	0.54	Moderate
5. Pronounce English words correctly	2.93	0.88	Moderate	3.00	0.82	Moderate
Overall	**3.36**	**0.73**	**Moderate**	**3.46**	**0.54**	**High**

Table 4 shows the attitudes of both groups toward the students' English listening and speaking abilities. On average, the students' and stakeholders' agreement with the statements regarding problems in English listening skills was at a moderate level ($M = 3.09$, $M = 2.94$). Both groups identified difficulties in understanding medical technology vocabulary and expressions ($M = 3.29$, $M = 2.56$), identifying details ($M = 3.03$, $M = 3.25$), and capturing keywords or the main idea ($M = 2.95$, $M = 3.00$). For speaking skills, on average, their agreement with the statements regarding problems in English speaking skills was at a moderate and a high level ($M = 3.36$, $M = 3.46$). Both groups noted challenges in speaking fluently, naturally, and without hesitation ($M = 3.74$, $M = 3.81$), communicating in English grammatically correctly ($M = 3.51$, $M = 3.75$), choosing vocabulary correctly and appropriately for the context ($M = 3.32$, $M = 3.56$), ordering information to be spoken correctly ($M = 3.30$, $M = 3.19$), and pronouncing English words correctly ($M = 2.93$, $M = 3.00$). Here are some suggestions from the interviews:

Extract 3

When listening, I struggled to catch words, and when speaking, I was worried about my grammar and took a long time to form sentences. (Student 7)

Extract 4

Students could not get the main ideas from listening. In speaking, since the students did not know vocabulary and grammar, they could not make sentences. (Stakeholder 3 – ESP teacher)

Furthermore, the findings from the interviews indicated that the students lacked practice and opportunities to use English in real life, as well as confidence, which caused them to struggle with speaking English.

Extract 5

I think I do not practice speaking English much and rarely use English in my daily life, so I have no confidence in speaking. In class, I am afraid that when the teacher asks me to answer questions, I will feel embarrassed in front of my friends if I cannot respond. (Student 12)

Classroom observations revealed that during activities, the teacher asked students to repeat words and sentences. Some students pronounced words softly and lacked confidence, while others struggled to keep pace with the teacher. Some students seemed nervous when the teacher asked a question, and some wanted to communicate in English but faced delays as they carefully considered vocabulary and sentence structure. Eventually, they communicated with the teacher in Thai.

2.1.2 Preferences for the current course

Table 5
Lacks regarding preferences for the current course

Preferences for the current course	Students		
	M	*SD*	Interpretation
1. Teaching method	4.04	0.82	High
2. Teaching materials	3.96	0.71	High
3. Course content	3.96	0.72	High
4. Classroom atmosphere	3.94	0.74	High
5. Course assessment	3.94	0.78	High
Overall	**3.96**	**0.63**	**High**

In terms of students' preferences for the current course, based on Table 5, on average, students agreed at a high level with the statements regarding their satisfaction with the course (M = 3.96). They reported high satisfaction with the teaching method (M = 4.04), teaching materials (M = 3.96), course content (M = 3.96), classroom atmosphere (M = 3.94), and course assessment (M = 3.94). However, from the interviews, some students expressed concerns regarding the course materials, content, and class activities. They mentioned a lack of sufficient practice activities and noted that some content in the coursebook focused excessively on basic grammar, unrelated to medical technology. Here are some suggestions from the interviews:

Extract 6

> *I think the current course is okay, but I want to have more activities in the class to motivate me to speak English.* (Student 1)

Extract 7

> *Some content, such as verbs to be and verbs to do, was too easy, and students already had the background from their prerequisite course, so students should not have to spend too much time in the ESP course studying basic grammar parts.* (Stakeholder 6 – ESP teacher)

From classroom observations, the audio files played in the classroom were of low quality. Consequently, students encountered difficulties in comprehending the spoken content, and some were observed asking peers for clarification during listening activities. This finding was corroborated by interview data, in which one student stated:

Extract 8

> *The audio files used for listening in class were unclear, so I could not catch the content well.* (Student 7)

In conclusion, students faced difficulties in listening and speaking due to limited vocabulary and grammar knowledge, lack of practice, and few opportunities to use English in daily life. Most students felt that the classroom atmosphere was relaxed and that the teachers were friendly. However, they suggested that the course content, teaching materials, and class activities should be improved.

2.2 Students' necessities: Views from the students and stakeholders

This section presents the findings on students' necessities, focusing on the required topics, language functions, and additional important skills relevant to professional work in the medical technology field.

2.2.1 Required topics

Table 6
Necessities regarding required topics

Required topics	Students			Stakeholders		
	M	*SD*	Interpretation	*M*	*SD*	Interpretation
1. Infectious diseases and laboratory tests	4.53	0.63	Very high	4.38	0.72	Very high
2. Equipment used in the laboratory and specimen collection	4.46	0.67	Very high	4.44	0.96	Very high
3. Specimen collections such as blood, urine, stool, mucus, and sputum	4.44	0.65	Very high	4.38	0.96	Very high
4. Universal precautions	4.42	0.71	Very high	4.00	0.82	High
5. Safety in the laboratory	4.42	0.76	Very high	4.31	0.87	Very high
6. Blood and body fluid	4.41	0.65	Very high	3.94	1.00	High
7. Infectious waste and disposal	4.39	0.71	Very high	3.94	1.00	High
8. English for presentation	4.20	0.90	Very high	4.13	0.81	High
9. English for a job interview	4.16	0.94	High	4.25	0.68	Very high

Based on Table 6, on average, the top five statements most agreed with by students regarding the required topics were infectious diseases and laboratory tests (*M* = 4.53), equipment used in the laboratory and specimen collection (*M* = 4.46), specimen collections (*M* = 4.44), universal precautions (*M* = 4.42), and safety in the laboratory (*M* = 4.42), respectively. Meanwhile, the top five statements most agreed with by stakeholders were equipment used in the laboratory and specimen collection (*M* = 4.44), infectious diseases and laboratory tests (*M* = 4.38), specimen collections (*M* = 4.38), safety in the laboratory (*M* = 4.31), and English for a job interview (*M* = 4.25), respectively. Additionally, both groups showed very high levels of agreement with the top five statements. Here are some reasons from the interviews:

Extract 9

> *We should learn about laboratory equipment and various symptoms that we can describe to patients. It's crucial to learn how to properly instruct patients on collecting specimens for lab tests.* (Student 18)

Extract 10

> *Due to the increasing number of foreign patients, students should study topics related to specimens and blood collection because this knowledge will help equip them to communicate effectively with foreign patients. Moreover, studying terminologies in the medical technology field is essential for enhancing communication with foreigners and better understanding classroom content.* (Stakeholder 4 – Employer)

Interestingly, responses from stakeholders in the questionnaire revealed that English for job interviews emerged as the fifth most agreed with statement (M = 4.25), consistent with the stakeholder interviews, in which it was acknowledged as a crucial subject to study. In contrast, students ranked this topic as the least needed (M = 4.16). Here are some suggestions from the interviews:

Extract 11

> *Studying English for job interviews is necessary because sometimes students may have to work and communicate with foreigners.* (Stakeholder 10 – Employee)

Extract 12

> *The course content should be useful in the near future. While we studied this course in our second year, some topics, such as job interviews, would be useful for our future work. However, considering the time until we use this knowledge, there's a possibility that we may forget it.* (Student 17)

From the interviews, both groups agreed on the importance of studying English for daily life and English for presentations because medical technologists need English to communicate effectively with patients before sample collection to ensure patient comfort. Additionally, proficiency in English is crucial for conducting research and presenting findings at international conferences in the future.

Extract 13

> *Studying to give presentations in English is essential, as it may be required for our work. Additionally, topics such as small talk about daily life are essential for communicating with patients and creating a relaxed environment during sample collection.* (Student 14)

Extract 14

> *Students should study presentation skills in English because giving presentations, such as those at conferences, significantly impacts their career paths.* (Stakeholder 7 – ESP teacher)

Based on classroom observations, students were given the opportunity to deliver presentations as part of group work activities. They completed group assignments and presented them to the class without receiving any guidance from the teachers on presentation techniques. Consequently, students struggled to deliver their presentations effectively and made limited or ineffective use of natural gestures and body language during their delivery.

2.2.2 Required language functions

Table 7

Necessities regarding required language functions

Required language functions	Students			Stakeholders		
	M	SD	Interpretation	M	SD	Interpretation
1. Ask and answer for the required information from patients	4.43	0.64	Very high	4.50	0.73	Very high
2. Identify details from listening	4.42	0.62	Very high	4.13	0.72	High
3. Capture key words or the main idea from listening	4.42	0.64	Very high	4.38	0.72	Very high
4. Use English in telephone conversations (e.g., answering the phone politely, transferring calls, leaving messages)	4.38	0.71	Very high	4.06	0.77	High
5. Make an appointment for the laboratory analysis	4.37	0.70	Very high	4.13	0.81	High
6. Use English for a job interview	4.36	0.77	Very high	4.25	0.78	Very high
7. Give advice and safe lab practices in the laboratory	4.32	0.70	Very high	4.13	0.81	High
8. Describe the process in laboratory analysis such as collecting and delivering specimens	4.32	0.73	Very high	4.31	0.79	Very high
9. Explain and make a request for laboratory equipment	4.26	0.73	Very high	3.75	0.78	High
10. Pronounce English words correctly	4.25	0.72	Very high	3.75	0.68	High
11. Give a presentation in English	4.24	0.82	Very high	4.19	0.75	High

Based on Table 7, on average, the top five statements the students most highly agreed with were: asking and answering for required information from patients ($M = 4.43$), capturing keywords or the main idea from listening ($M = 4.42$), identifying details ($M = 4.42$), using English in telephone conversations ($M = 4.38$), and making an appointment for laboratory analysis ($M = 4.37$). For the stakeholders, the top five statements most highly agreed with were: asking and answering for required information from patients ($M = 4.50$), capturing keywords or the main idea from listening ($M = 4.38$), describing the process in laboratory analysis ($M = 4.31$), using English for a job interview ($M = 4.25$), and giving a presentation in English ($M = 4.19$). Here are some explanations.

Extract 15

> *Students should learn how to ask basic questions for patient identification, such as their names and the type of test required, before conducting blood tests or engaging in communication during specimen collection.* (Student 13)

Extract 16

> *Students should learn about general communication related to how to make patients feel relaxed while drawing blood, explaining the steps for collecting specimens, giving advice before patients come to the lab, and explaining lab results.* (Stakeholder 12 – Medical technology teacher)

2.2.3 Additional important skills

Table 8

Necessities regarding additional important skills

Additional important skills	Students			Stakeholders		
	M	*SD*	Interpretation	*M*	*SD*	Interpretation
1. Digital literacy	4.31	0.70	Very high	4.25	0.86	Very high
2. Soft Skills: The 21st century learning skills, or 4 C's, include critical thinking, creative thinking, communicating, and collaborating.	4.24	0.70	Very high	4.19	0.75	High
3. Intercultural communication	4.18	0.73	High	4.25	0.86	Very high

Based on Table 8, the top three additional important skills identified by students were digital literacy (*M* = 4.31), soft skills (*M* = 4.24), and intercultural communication (*M* = 4.18). Similarly, stakeholders prioritized digital literacy (*M* = 4.25), intercultural communication (*M* = 4.25), and soft skills (*M* = 4.19). Notably, digital literacy was the top-rated skill among both students and stakeholders, and all skills received high to very high levels of agreement. This finding is supported by the following interview extract:

Extract 17

> *Soft skills, such as teamwork and emotional intelligence, are essential because medical technologists frequently interact with patients and collaborate with other team members. Effective communication skills are necessary, as they can significantly impact patient satisfaction.* (Stakeholder 6 – Employee)

In summary, concerning necessities, there are different views among students and stakeholders regarding the topic of job interviews. However, both groups reached a high and a very high level of agreement on the required topics, language functions, and additional important skills.

2.3 Students' wants: Views from the students and stakeholders

This section presents the findings on students' wants, focusing on teaching and learning activities, instructional materials, and assessment related to the developed course.

2.3.1 Teaching and learning activities

Table 9

Wants regarding teaching and learning activities

Teaching and learning activities	Students			Stakeholders		
	M	*SD*	Interpretation	*M*	*SD*	Interpretation
1. Game activities for learning	4.00	0.93	High	3.94	0.86	High
2. Lecture	3.91	0.82	High	3.81	0.75	High
3. Simulations	3.89	1.02	High	4.50	0.82	Very high
4. Sharing ideas	3.83	0.92	High	4.13	0.72	High
5. Inquiry-based learning activities	3.65	0.98	High	3.88	0.89	High
6. Roleplay	3.63	1.10	High	4.25	0.86	Very high
7. Analyzing videos	3.50	1.04	High	4.06	0.85	High
8. Give a presentation	3.31	1.10	Moderate	4.13	0.81	High

As shown in Table 9, on average, the top five statements most agreed with by the students were game activities for learning (*M* = 4.00), lectures (*M* = 3.91), simulations (*M* = 3.89), sharing ideas (*M* = 3.83), and inquiry-based learning activities (*M* = 3.65). In contrast, stakeholders prioritized simulations (*M* = 4.50), followed by roleplay (*M* = 4.25), giving presentations (*M* = 4.13), sharing ideas (*M* = 4.13), and analyzing videos (*M* = 4.06), respectively.

Interview findings indicated that students favored classroom activities as opportunities to practice listening and speaking skills and to check their understanding. Moreover, they emphasized that a combination of learning activities should align with the course content, with a particular focus on learning by doing and hands-on practice of speaking and listening skills. Their attitudes in the interviews were as follows:

Extract 18

> *I want teachers to give a brief lecture and then let me do some activities to reduce feeling tired. I also enjoy playing games and engaging in activities related to practicing English conversation with friends.* (Student 2)

Extract 19

> *Learning activities should focus on learning by doing so that the students can remember better.* (Stakeholder 7 – ESP teacher)

Surprisingly, according to the questionnaires, lectures were the second most agreed-upon teaching and learning activity by students (*M* = 3.91), whereas it was the least agreed-upon by stakeholders (*M* = 3.81). However, the interviews revealed that some students expressed a preference for teachers to give lectures to provide them with knowledge before engaging in activities. Below is an explanation from one student's interview.

Extract 20

> *I enjoy activities like games, but I prefer teachers to provide a lecture on the subject matter beforehand. For me, understanding the lesson before engaging in activities was crucial. However, listening to a whole class lecture tends to stress me out, affecting my focus and understanding of the subject matter.* (Student 10)

During classroom observations, the teacher used the audio-lingual method, teaching vocabulary in context and using drills to reinforce structural patterns. Students then listened to audio conversations twice and practiced the dialogues with peers. While some students continued speaking practice, others asked their peers for help with pronunciation and meaning. However, the atmosphere was not focused, and it became quite noisy, as some students practiced speaking while others chatted about unrelated topics.

2.3.2 Modes of activities

Table 10

Wants regarding modes of activities

Modes of activities	Students			Stakeholders		
	M	*SD*	Interpretation	*M*	*SD*	Interpretation
1. Group activities	3.44	1.27	High	4.25	0.68	Very high
2. Pair activities	3.43	1.04	High	3.81	0.75	High
3. Individual activities	3.27	1.15	Moderate	3.56	0.96	High

Based on Table 10, on average, group activities (*M* = 3.44, *M* = 4.25) were the most agreed upon by both students and stakeholders, followed by pair activities (*M* = 3.43, *M* = 3.81), and individual activities (*M* = 3.27, *M* = 3.56), respectively. Also, the findings from the interviews suggested activities should be varied depending on the learning contents and tasks. Here is an explanation from the interviews:

Extract 21

> *I think assignments and activities can be done in pairs or groups, depending on the tasks. If there is a big task, the group should be large enough to complete it.* (Student 5)

However, one student made suggestions for the group activity as follows:

Extract 22

> *If there is group work, it should be done with a small number of people since the problem with working in a large group is that not everyone takes responsibility for their duties.* (Student 7)

Classroom observations revealed pair and group work. In pairs, students practiced speaking using provided conversations. In groups, they collaborated on assignments, with a representative presenting to the class. While many students enjoyed group activities, some were distracted, working on other assignments or chatting with friends, which distracted some members while they were working on assigned tasks in the classroom.

2.3.3 Language usage and classroom atmosphere

Table 11

Wants regarding language usage and classroom atmosphere

Language usage	Students			Stakeholders		
	M	*SD*	Interpretation	*M*	*SD*	Interpretation
1. Use both English and Thai in class	4.46	0.77	Very high	4.50	0.73	Very high
2. Use only English in class	3.49	0.89	High	4.06	0.57	High
Classroom atmosphere	Students			Stakeholders		
	M	*SD*	Interpretation	*M*	*SD*	Interpretation
1. Both serious/formal and fun/informal	4.35	0.86	Very high	4.19	0.83	High
2. Fun/informal	4.14	0.85	High	3.75	0.68	High
3. Serious/formal	2.55	0.94	Low	3.25	0.78	Moderate

As shown in Table 11, both students and stakeholders, on average, expressed very high agreement with the use of a combination of English and Thai in class (M = 4.46, M = 4.50). Regarding classroom atmosphere, both groups showed very high and high levels of agreement with statements favoring a combination of formal and fun (M = 4.35, M = 4.19). Conversely, the agreement for both groups was lower in more serious or formal classroom settings (M = 2.55, M = 3.25). Here are some explanations from the interviews:

Extract 23

> *Sometimes, I could not catch up with the English content in class, but the teacher gave me an explanation in Thai. It helped me understand the content better.* (Student 7)

Extract 24

> *It is necessary to use both Thai and English in class. When presenting terminology, teachers should use English to help students pronounce it correctly. However, it is beneficial to use Thai when explaining concepts of subject content to ensure better understanding among students.* (Stakeholder 5 – ESP teacher)

Extract 25

> *The classroom atmosphere should be a combination of fun and seriousness, depending on the content. For example, when teaching difficult concepts, the classroom atmosphere can be serious.* (Stakeholder 7 – ESP teacher)

From the classroom observations, there were both Thai and Filipino teachers. The Thai teacher employed both Thai and English: Thai for instructional explanations and English for conversation activities. Students asked questions in Thai but communicated with the teacher using both languages. In contrast, the Filipino teacher conducted classes entirely in English. While some students, particularly those in the front rows, appeared attentive, others seemed to have difficulty understanding and frequently turned to peers to speak Thai, which sometimes led to off-topic conversations. Furthermore, the classroom atmosphere was neither stressful nor very enjoyable. Although teachers posed questions to encourage English speaking and enhance interaction, many students remained silent and were hesitant to share opinions when called upon for discussion or answer questions. Overall, the classroom lacked liveliness.

2.3.4 Teaching and learning materials

Table 12

Wants regarding teaching and learning materials

Teaching and learning materials	Students			Stakeholders		
	M	*SD*	Interpretation	*M*	*SD*	Interpretation
1. Electronic/online	4.57	0.69	Very high	4.06	1.12	High
2. Both paper-based and electronic/online	3.09	1.33	Moderate	4.00	0.97	High
3. Paper-based	2.17	1.10	Low	2.94	0.57	Moderate

Table 12 reveals that both students and stakeholders, on average, favored electronic or online materials the most and showed their agreement with the statements regarding teaching and learning materials at a very high level (*M* = 4.57) and a high level (*M* = 4.06). However, paper-based materials received low (*M* = 2.17) and moderate (*M* = 2.94) levels of agreement from both groups. Additionally, insights from interviews highlighted that both groups found pictures and video clips interesting and helpful for learning. Here is a suggestion from a student interview.

Extract 26

> *I prefer an electronic file because I used my iPad in the classroom, and so did my classmates.* (Student 5)

Based on classroom observations, it was evident that all students used iPads and PDF files for their studies. They took notes using note-taking applications such as GoodNotes, which allowed them to write, highlight, and customize their notes. Additionally, group assignments required students to brainstorm and create presentations. To accomplish this, they employed digital online applications such as Canva for designing their presentations and completing assignments. It seemed that the students enjoyed designing presentation slides using presentation applications and were able to complete the tasks quickly.

2.3.5 Assessment

Table 13

Wants regarding assessment

Assessment	Students			Stakeholders		
	M	*SD*	Interpretation	*M*	*SD*	Interpretation
1. Attending class	4.01	0.90	High	3.88	0.86	High
2. Group presentation	3.77	1.21	High	4.06	0.86	High
3. Simulation (group)	3.53	1.30	High	4.31	0.79	Very high
4. Creating a video clip (group)	3.44	1.33	High	4.06	1.00	High
5. Role play (group)	3.43	1.41	High	4.19	0.83	High
6. Group assignments	3.40	1.28	Moderate	4.19	0.98	High
7. Pair assignments	3.36	1.06	Moderate	4.00	0.89	High
8. Mid-term examination	3.33	0.98	Moderate	3.81	0.66	High
9. Final examination	3.33	0.98	Moderate	3.94	0.68	High
10. Individual assignments	3.19	1.20	Moderate	3.88	0.89	High
11. Quizzes	3.11	1.01	Moderate	3.75	0.58	High
12. Giving a presentation (pair)	2.98	1.22	Moderate	3.75	0.78	High
13. Simulation (pair)	2.86	1.26	Moderate	4.13	0.72	High
14. Creating a video clip (pair)	2.85	1.20	Moderate	3.81	0.91	High
15. Role play (pair)	2.64	1.23	Moderate	3.94	0.85	High
16. Creating a video clip (individual)	2.21	1.19	Low	3.50	0.89	High
17. Giving a presentation (individual)	2.12	1.07	Low	3.75	1.00	High

As shown in Table 13, the top five statements most agreed upon by students were attending class (*M* = 4.01), group presentations (*M* = 3.77), group simulations (*M* = 3.53), creating video clips in groups (*M* = 3.44), and group role-play (*M* = 3.43). Similarly, stakeholders identified group simulations (*M* = 4.31), group role-play (*M* = 4.19), group assignments (*M* = 4.19), pair

simulations (*M* = 4.13), and group presentations (*M* = 4.06) as their top five preferences. According to the interviews, both groups preferred that teachers provide scores through in-class activities and conduct frequent assessments to practice speaking skills. Here are some explanations.

Extract 27

I prefer to have midterm and final exams, and I think frequent testing can help me improve my abilities because it allows me to practice and review lessons regularly. (Student 18)

Extract 28

Exams should be practical tests that focus on speaking and listening skills. Regarding point allocation, there should be a mix of individual and group work. (Stakeholder 4 – Medical technology teacher)

Apart from the above suggestions, one stakeholder further recommended that both summative and formative assessments are necessary for students as follows:

Extract 29

Midterm and final exams are necessary, but assessment during the course is also essential. Students will know how successful they are in what they have learned. Teachers can also notice the students' problems and advise them in time for their midterm and final examinations. (Stakeholder 5 – ESP teacher)

Nevertheless, classroom observations revealed that students missed the instructor's feedback on speaking practice in class due to the large number of students. Additionally, during interviews, students expressed a desire for teachers to provide immediate feedback after an activity or speaking task, highlighting both their strengths and weaknesses, which could potentially improve their learning. Here are some reasons from the students and the stakeholders.

Extract 30

After a speaking test, I would like teachers to give feedback on which areas should be improved and which areas I am good at so that I can use the teacher's feedback to boost my improvement in speaking English. (Student 11)

Extract 31

Teachers need to provide comments or feedback to students after speaking tests to let them know what they are good at and where they need to improve. This helps students develop better skills. (Stakeholder 12 – Medical technology teacher)

In conclusion, regarding wants, the students and the stakeholders preferred learning through activities, both individually and in pairs or groups, within a blend of serious and enjoyable classroom atmospheres. Additionally, using a combination of Thai and English is recommended to enhance student comprehension. Providing background knowledge before engaging in activities proves beneficial. Crucially, feedback plays a pivotal role in helping students enhance their skills. Regarding assessment, midterm and final examinations are significant, and grades should incorporate scores from in-class activities that emphasize speaking and listening practice.

DISCUSSION, IMPLICATION, AND RECOMMENDATIONS

According to the principles of language course design suggested by Nation and Macalister (2010), several components need to be considered, including content and sequencing, assessment, format and presentation such as the materials, learning activities, and instructional methods (Sheppard, 2014). Hence, based on the study's findings, pedagogical implications are discussed and recommended for developing an English listening and speaking course for Thai undergraduate medical technology students as follows:

1. Content and sequencing

The findings suggested the necessary topics, language functions, and additional skills required for developing an English listening-speaking course for Thai undergraduate medical technology students.

According to the results, students started the course in their second year with varying levels of English proficiency and limited background knowledge in medical technology. Therefore, content should be introduced to the learners, beginning with easier lessons and gradually progressing to more difficult ones. Additionally, presenting vocabulary related to medical equipment used in the laboratory before introducing the specimen collection process will help them understand the subject matter. Incorporating presentation skills relevant to their fieldwork is also essential. However, English for a job interview is too early for second-year students, it may be considered for inclusion if sufficient time is available. Regarding time allocation, the current course spans 15 weeks in total, comprising 10 weeks of instruction and 5 weeks allocated for assessment and other academic activities, with three hours per session. It is noteworthy that although other topics did not rank among the top five choices, both students and stakeholders highly perceived them. Therefore, these topics should be considered essential content, aligning with the five main topics. Consequently, the content of this 10-session course, with each session lasting 3 hours, addresses essential topics aligned with the required language functions for the medical technology field, as presented in the proposed course outlines (Appendix C).

In terms of content for English listening and speaking for undergraduate medical technology students, speaking skills should focus on clinical lab and hospital conversations, emphasizing communication among medical technologists, multidisciplinary teams, and patients. This

includes scenarios from test preparation to post-specimen collection advice. Listening skills should involve capturing keywords, main ideas, and details relevant to each study session. Incorporating English for daily life is recommended to help put patients at ease during specimen collection.

2. Assessment

The findings indicated that both groups prefer diverse forms of assessment, such as simulations, group presentations, and exams. Therefore, students should receive formative assessments (quizzes, assignments, in-class activities) and summative assessments (midterm and final exams), alongside class attendance and participation, which significantly impact academic achievement (Kauffman, 2018). Additionally, as noted by Mohamed et al. (2024) in their study on health sciences students in the UAE, feedback is vital for enhancing language skills, where assessments serve as feedback tools to assess comprehension. Thus, course assessments should provide immediate feedback in various formats to stimulate learning and assist students in preparing for exams (Sliogerien, 2018). Moreover, as emphasized by Chowdhury (2019) and Jönsson (2022), clear instructions and scoring rubrics are crucial during assessments, as they help students track progress and support performance.

3. Format and presentation

3.1 Classroom management and teacher roles

The findings indicated that both groups prefer a classroom atmosphere that balances seriousness with enjoyment to encourage participation. This aligns with Mauludin's (2021) study, which found that a pleasant environment and instructional guidance boosted motivation and self-confidence among university students in Indonesia. Therefore, classrooms should be both fun and serious. Furthermore, teachers should also act as facilitators (Higgs & McCarthy, 2008), providing scaffolding for content and language learning, and offering constructive feedback to highlight strengths and areas for improvement (Ugli, 2023). Most importantly, teachers should encourage and motivate the students to speak English, engage in conversation, and exchange ideas (Watanapokakul, 2022). This will encourage students to invest more effort, enjoy their studies, and consequently enhance their understanding of the subject content, which contributes to improvements in their English language skills (Usmanovna & Oybekovna, 2018).

3.2 Instructional activities, methods, and materials

Based on the findings, students prefer lectures to provide essential background knowledge, as highlighted by Sterns (1994), who emphasized lectures' role in introducing topics, explaining definitions, and offering learning techniques. Although observations revealed student passivity during lectures, the study found that incorporating games and activities during lectures reduces sleepiness and stress and helps maintain focus. Also, questionnaires and interviews showed a strong preference for learning through various activities, including individual, pair, and group work such as role play and simulation. Observations noted energetic student

participation in these activities. This aligns with Nurhidayat and Fatmawati's (2021) study, which recommended a mix of group, pair, and individual activities to boost motivation among medical laboratory technology students in Indonesia.

In light of the above considerations, this course should emphasize learning by doing through individual, pair, and group activities (Fink, 2013; Sterns, 1994). Moreover, students may not be familiar with topics in the proposed course and may have varying degrees of prior knowledge; thus, incorporating a warm-up activity at the beginning of the class is beneficial in order to guide them into the lesson (Watanapokakul & Sitajalabhorn, 2023). Hence, the instructional method employed in this course was designed based on the active learning instructional model complemented by engaging lectures (Metz & Metz, 2022), which allows students to actively engage with the content through activities. The instruction consists of three main stages: **Warm-up**, followed by **Instruction**, and **Reflecting** which are grounded in three essential steps of Fink's holistic view of active learning including **Getting Information and Ideas, Experiencing by Doing and Observing**, and **Reflecting**.

The first stage, **Warm-up**, involves lead-in activities that activate previous background knowledge and terminologies useful for the class (Watanapokakul, 2022). The second stage, **Instruction**, follows two main steps of Fink's holistic view of active learning: **Getting Information and Ideas**, and **Experiencing by Doing and Observing**. In the first step, students receive two parts of a 25-minute **Lecture**, considering the length of the student's attention span (Bock et al., 2021) and allowing for more manageable content. This is followed by a **Lecture Break**, which is a step in integrating activities that promote active participation (Rice, 2023), such as think-pair-share, games, or short quizzes that allow students to incorporate the new lecture information into their knowledge on the topic. After this, students proceed to **Experiencing by Doing and Observing**, engaging them in learning experiences via tasks and activities such as role-playing, simulations, and discussions that involve applying the lecture content covered in the previous stage. However, it is advisable to allocate a time range of 20–40 minutes for engaging in learning activities (Patil, 2016). The final stage, **Reflecting**, focuses on what and how they learn and get feedback via end-of-class activities such as exit tickets, games, and reflection paragraphs (Fink, 2013; Watanapokakul, 2022). All activities in each step can be done onsite and online, including individual, pair, and group work (Watanapokakul, 2022). Moreover, the findings of this study showed that 21st century learning skills such as communication and collaboration skills, as well as digital literacy, were essential and should therefore be integrated into the teaching and learning process through tasks and activities (Diachkova et al., 2021).

For teaching and learning materials, both groups preferred electronic materials, such as PDFs and video clips, accessible via iPads and classroom Wi-Fi. This preference aligns with Mohamed et al. (2024), who found that health sciences students preferred online materials over paper-based ones. Video clips, in particular, enhance engagement, aid vocabulary acquisition, stimulate interest and participation, and provide visual context for real-life situations (Ban et al., 2022).

Moreover, the interviews revealed that using both Thai and English in the classroom enhances student comprehension and pronunciation. Translanguaging, as Rasmin and Nur (2023)

suggested, is effective in EFL classrooms because it helps students understand content better than using only the target language. Additionally, using the first language (L1) helps to clarify instruction (Zulfikar, 2019), while using the second language (L2) assists in developing sentence structures and proficiency (Anthony, 2008; Paskalis, 2020; Shibasaki, 2023). Thus, combining Thai (L1) for explanations and English (L2) for terminology and conversational practice improves comprehension, reduces learning anxiety (Sahan et al., 2022; Tang, 2020), and keeps students engaged (Licorish et al., 2018).

Drawing upon the aforementioned discussion, Figure 2 proposes an instructional model to be used in the course of a 180-minute session.
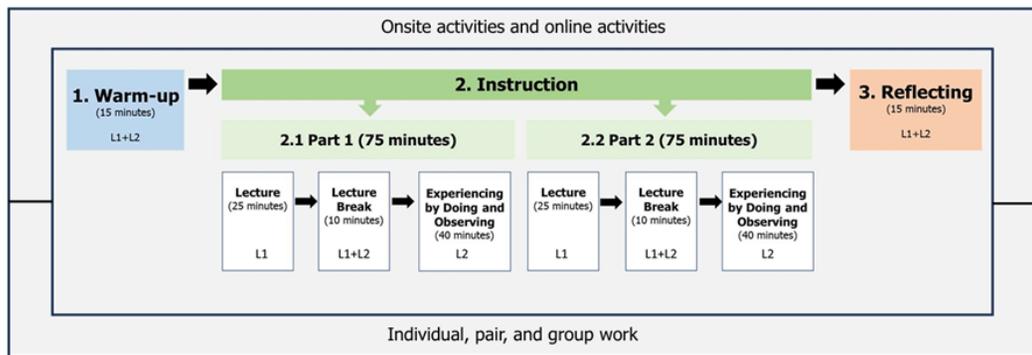
Figure 2 The active learning instructional model for teaching English listening and speaking
for undergraduate medical technology students

In summary, the findings suggest that students should engage in a variety of activities, including individual, pair, and group work, as well as engaging lectures. This aligns with the concept of active learning instruction, which offers students the chance to actively engage in the learning process rather than passively receiving instruction. It promotes engagement and participation (Fink, 2013). Therefore, this course's instructional method follows the Active Learning Instruction model, which includes a warm-up and three key components: getting information, experiencing by doing and observing, and reflecting. Teachers act as facilitators, supporting and guiding students as they engage in tasks and activities in the classroom atmosphere where they enjoy learning. After developing the course based on the pedagogical implications and recommendations mentioned above, it is important to conduct research on the course's effectiveness. This research should consider both actual learning to assess knowledge gain and perceived learning to measure attitudes towards the course. Moreover, the findings can be used to identify areas for improvement and make modifications to better meet the needs of students (Aldoobie, 2015; Inayah & Mulyati, 2021).

LIMITATIONS OF THE STUDY

Since the student participants of the study were Thai undergraduate medical technology students at a private university in Thailand, the findings may not be fully generalized to students in other contexts, such as those in public universities, different medical fields, or international

settings. Additionally, individual motivation and attitudes towards learning English might have affected how they responded to the questionnaire and interview questions. Thus, future research should consider a larger and more diverse sample, including students from various institutions and stakeholders with different professional backgrounds to gain a more comprehensive understanding of the needs of medical technology students.

CONCLUSION

As we know, "if there is no needs analysis, there is no ESP" (Brown, 2016, p. 5). This emphasizes the significance of addressing needs analysis as the foundational step in ESP course development (Basturkmen, 2015), ensuring that students acquire the skills and knowledge necessary to participate in their societies and make a better life for themselves (Kaliraj et al., 2022). This study employed an eclectic approach to needs analysis, integrating three needs analysis approaches: TSA, PSA, and LSA to investigate both students' learning and target needs. These included learners' language backgrounds, lacks, necessities, and wants of Thai undergraduate medical technology students. Since the current course has been taught for many years without any modification, the findings of this study will contribute to the course's redesign and redevelopment. It is to ensure that the course aligns with current trends and market demands as well as incorporates content and skills that are relevant for both today and the future, leading to an increased potential for employment in higher education (Kaliraj et al., 2022). The redesigned course, focused on students' actual needs, will provide a more personalized learning experience, boosting engagement, motivation, and confidence. This will enhance language proficiency and prepare students for real-world medical technology contexts, leading to better learning outcomes and improved communication skills.

Declaration of AI use:

During the preparation of this manuscript, AI-based tools including ChatGPT, Paperpal and QuillBot were used to improve grammar, refine sentence structure, and enhance readability. The authors take full responsibility for the content and ensure that all the AI-assisted texts have been thoroughly reviewed and edited by human authors.

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Appendix A
Demographic information of the participants

Students		Frequency	Percentage (%)
Gender	Females	277	83.2%
	Males	50	15%
	Unspecified	6	1.8%
Preferences in career sector	A laboratory in private hospitals	234	70.3%
	A laboratory in government hospitals	37	11.1%
	A private laboratory	27	8.1%
	A government laboratory	6	1.8%
	A business owner	13	3.9%
	Field of sales	7	2.1%
	Have not yet decided	9	2.7%
Preference in the fields of medical technology	Clinical chemistry	38	11.4%
	Hematology	67	20.1%
	Clinical microbiology	22	6.6%
	Immunology section	13	3.9%
	Clinical microscopy and parasitology	20	6.0%
	Blood bank	53	15.9%
	Embryology and fertility	3	0.9%
	Not yet decided	117	35.1%
Total participants		333	100%
Stakeholders			
Gender	Males	11	68.8%
	Females	5	31.3%
Years of work experiences	more than 1 year to 5 years	1	6.3%
	more than 5 years to 10 years	3	18.8%
	more than 10 years to 15 years	3	18.8%
	more than 15 years	9	56.3%
Total participants		16	100%

Appendix B
The details of the classroom observation protocol for the development of an English listening-speaking course based on the active learning instructional model for undergraduate medical technology students

Section 1: Demographic Information		
1.1 Lecturer:		
1.2 Gender:		
1.3 Date:		
1.4 Time: from _____ to _____ Total duration: _____		
1.5 Academic Year:		
1.6 Class:		
1.7 Section:		
1.8 No. of students:		
1.9 Composition of student group	Male: ____	Female: ____
Section 2: Components for Classroom Observation Note-taking		
2.1. Target language use		
2.1.1 Language form Descriptive notes: Reflective notes:	☐ Present	☐ Not present
2.1.2 Language function Descriptive notes: Reflective notes:	☐ Present	☐ Not present
2.1.3 Specific language content Descriptive notes: Reflective notes:	☐ Present	☐ Not present
2.2 Instruction		
2.2.1 Teacher-direct instruction Descriptive notes: Reflective notes:	☐ Present	☐ Not present
2.2.2 Student-focused learning Descriptive notes: Reflective notes:	☐ Present	☐ Not present
2.2.3 Independent learning Descriptive notes: Reflective notes:	☐ Present	☐ Not present
2.2.4 Guided practice Descriptive notes: Reflective notes:	☐ Present	☐ Not present
2.2.5 Use of language and instructions (L1 and L2) Descriptive notes: Reflective notes:	☐ Present	☐ Not present
2.2.6 Technology used for class Descriptive notes: Reflective notes:	☐ Present	☐ Not present
2.2.7 Engaging students in learning Descriptive notes: Reflective notes:	☐ Present	☐ Not present
2.3 Materials		
2.3.1 Course book, handouts or other teaching materials Descriptive notes: Reflective notes:	☐ Present	☐ Not present

2.4 Opportunities for students' participation		
2.4.1 Students' activities, practices, and others	☐ Present	☐ Not present
Descriptive notes:		
Reflective notes:		
2.5 Teachers' and students' roles		
2.5.1 Interactions between the lecturer and students	☐ Present	☐ Not present
Descriptive notes:		
Reflective notes:		
2.5.2 Interactions among students	☐ Present	☐ Not present
Descriptive notes:		
Reflective notes:		
2.5.3 Student responses (active vs. passive participation)	☐ Present	☐ Not present
Descriptive notes:		
Reflective notes:		
2.6 classroom environment and settings		
2.6.1 Holds interest of students, provides feedback, encourages participation, interacts with students, shows enthusiasm)	☐ Present	☐ Not present
Descriptive notes:		
Reflective notes:		
2.7 Students learning		
2.7.1 Students' strengths	☐ Present	☐ Not present
Descriptive notes:		
Reflective notes:		
2.7.2 Students' weaknesses	☐ Present	☐ Not present
Descriptive notes:		
Reflective notes:		
2.7.3 Other learning difficulties	☐ Present	☐ Not present
Descriptive notes:		
Reflective notes:		
2.8 Assessment		
2.8.1 Formative or summative assessment, quiz, test and others	☐ Present	☐ Not present
Descriptive notes:		
Reflective notes:		

Appendix C
The proposed course outlines for English listening-speaking for
undergraduate medical technology students

Topics	Language functions
Unit 1: Laboratory safety	**Session 1**
- Making self-introductions	Part 1: Making self-introductions
- Safety in the lab	Part 2: Asking for and giving personal information
- Universal Precaution	**Session 2**
- Infectious waste and disposal	Part 1: Giving advice about safety rules and safe lab practices
	Part 2: Giving advice and describing the process of disposing of waste in
Time allocation: 180 minutes/session	the lab
Unit 2: Laboratory supplies	**Session 3**
- Equipment used in the laboratory	Part 1: Explaining and making requests for lab equipment
and specimen collections	Part 2: Accepting and refusing requests for lab equipment
- Making appointment for the	**Session 4**
laboratory analysis	Part 1: Making an appointment for the laboratory analysis Part 2: Using
Time allocation: 180 minutes/session	English in telephone conversations
Unit 3: Laboratory analysis	**Session 5**
- Blood and body fluid	Part 1: Giving instructions for venipuncture procedures
- Laboratory Analysis	Part 2: Giving advice to the patients before and after the blood drawing
	Session 6
	Part 1: Describing the specimen labeling procedure
	Part 2: Explaining lab results to patients and giving advice after
Time allocation: 180 minutes/session	receiving the result
Unit 4: Specimen collections	**Session 7**
- Specimen collections such as blood,	Part 1: Describing the process in collecting and delivering specimens
urine, stool, mucus, and sputum	(Urinalysis)
	Part 2: Giving instructions and advice to the patient before and after the
	specimen collection (Urinalysis)
	Session 8
	Part 1: Describing the process in collecting and delivering specimens
	(stool, mucus, and sputum)
	Part 2: Giving instructions and advice to the patient before and after the
Time allocation: 180 minutes/session	specimen collection (stool, mucus, and sputum)
Unit 5: English for presentation	**Session 9**
- Components of presentations skills	Part 1: The components of presentation skills
- Instructional and informative	Part 2: Phrases and keywords for delivering a presentation
presentations	**Session 10**
	Part 1: Giving a presentation in English (Instructional presentation)
Time allocation: 180 minutes/session	Part 2: Giving a presentation in English (Informative presentation)