A Needs Analysis for English as a Foreign Language Instruction for Thai Senior Secondary School Students with Hearing Impairment

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Article information	Abstract
	At present, English holds a significant importance in numerous countries worldwide, including Thailand where learning English is compulsory for students. For students with hearing impairment, however, due to their physical limitations, English instruction is different from that of other students. Additionally, students with hearing impairment have different and specific needs for English as a Foreign Language (EFL) instruction. To design and develop an appropriate EFL course for them, we collected 68 questionnaires from Thai senior secondary school students at two schools for the deaf in Bangkok, Thailand, and 15 from stakeholders including Thai EFL teachers and executives at schools for the deaf in Bangkok, sign language interpreters, and Thai officers from the Special Education Bureau. Then, eight senior secondary school students with hearing impairment and six stakeholders were randomly selected for an interview, and eight structured classroom observations were made at the two schools for the deaf in Bangkok. The data were then quantitatively and qualitatively analyzed and reported using a weaving approach. The findings revealed a wealth of both implications and recommendations (i.e., in course content, schedule management, instructional activities, methods and materials, instructional languages, teacher roles, classroom setting and environment, and assessment) useful for developing a proper EFL course for Thai senior secondary school students with hearing impairment.

INTRODUCTION

Currently, English serves as a lingua franca and plays a crucial role in many countries, including Thailand. Therefore, Thai students are encouraged to learn and try to master English for communicative and academic purposes. Many factors, such as teachers, students, teaching methodologies, and instructional materials, are at play when it comes to developing the students' English proficiency. In the case of students with hearing impairment, English instruction is different from that of ordinary students, due to their physical challenges and limitations

(Subin & Chanyoo, 2019). Nevertheless, they should still have the right to attain equal opportunities in education and become global citizens in order to live their lives, get decent jobs, and build on their self-esteem.

According to the Department of Empowerment of Persons with Disabilities (2020), there are 5,179 youths with hearing-impairment, aged between 6 and 14 years old, in Thailand. These hearing-impaired children study in 21 special educational schools for the deaf across the country (Special Education Bureau, 2022). Interviews of the teachers at a special educational school for the deaf in Bangkok on 26 January 2022 revealed that students with hearing impairment had significantly lower English proficiency than ordinary students at the same age. Besides that, most of the teachers who teach English to this group of students do not hold a degree in English or English language teaching (ELT). Their classroom instruction is thus mainly based on the teacher's talk, primarily using the grammar-translation method and the audio-lingual method for teaching English. Only English vocabulary and conversations in everyday use make up the core content in the classrooms, while grammar, writing, and reading English texts are limited, and listening and speaking activities are considered unfeasible. The students are also passive learners; they learn by reciting, repeating, and memorizing, whereas the teachers have to develop the learning materials by themselves, and these materials must be visual-oriented.

However, material development for students with special needs, including hearing impairment, has not widely been addressed in the literature (Puspasari & Ashadi, 2019). In order to design and develop courses of English for Specific Purposes (ESP), as well as materials, and instructions appropriate for Thai senior secondary school students with hearing impairment, needs analysis is an indispensable component (Watanapokakul, 2022a). Therefore, this study aims to investigate the needs for EFL instruction of Thai senior secondary school students with hearing impairment from their own perspective and those of relevant stakeholders (i.e., teachers who teach English to students with hearing impairment, sign language interpreters, and specialists in special education and hearing impairment). The findings of the study will be further used to develop and, in some cases, improve learning and teaching methods as well as instructional materials, making them better suit the specific needs of Thai senior secondary school students who have hearing impairment.

LITERATURE REVIEW

Education for students with hearing impairment in Thailand: Historical development and challenges

Formal education in Thailand is generally considered to begin in the 13th century when the Thai alphabet was invented; however, it was only exclusively available amongst the royal and noble family members (Carter, 2006). It had taken years before educational opportunities started to reach commoners as boys were sent to temples to study with monks. According to Amatyakul et al. (1995), the Educational Proclamation launched in 1898 is the first official attempt of the Thai government to make education accessible to the general public. Albeit

with this proclamation, education was still mostly reserved for '*normal*' students, whilst those with disabilities and special needs had yet to be properly recognized. Only in 1951 did Thai education start to become more inclusive when the government declared the 1951 Educational Plan which initiated special education programs for the deaf and continued to develop more programs for students with other disabilities in subsequent educational policies, e.g. the 1960 Educational Plan and the 1995 Education for All (Amatyakul et al., 1995; Office of the National Education Commission, 1999).

Following the declaration of the 1951 Educational Plan, the first experimental school for students with hearing impairment was founded, but unfortunately, it failed to fulfil its duty due to the lack of support from the government (Danthanavanich, 2008). Despite this first failed attempt, more and more educational institutions for the deaf have since been established, and nowadays, there are over 20 special schools for students with hearing impairment across the country (Special Education Bureau, 2022). Nevertheless, it is no mean feat for these special schools to operate and for hearing-impaired students to learn as they have been faced with various challenges. Besides the issue of insufficient governmental subsidies (Carter, 2006; Danthanavanich, 2008), there is also a social stigma attached to deaf people, leading to them being excluded from the society, which inevitably adversely affects their overall quality of life, including education (Cheausuwantavee & Suwansomrid, 2017).

Moreover, the learning of the deaf can also be hampered by the existence of various systems of sign languages used in Thailand, such as the Original Bangkok Sign Language, the Original Chiang Mai Sign Language, and Thai Sign Language or ThSL which is the only official sign language recognized by the government in the educational context of students with hearing impairment (Woodward et al., 2015; Subin, 2022).

The final, and arguably biggest, challenge lies in the educational policies issued by the government. Several scholars of special education for the deaf (Carter, 2006; Chaiwatthanakunwanit & Rukspollmuang, 2015; Cheausuwantavee & Suwansomrid, 2017; Kongsuwan & Ruachai, 2020) have criticized the government's educational policies for being neither practical nor inclusive. The implementation of these policies has, thus, culminated in fundamental problems such as ineffective instructional materials for deaf students and the lack of qualified, specially trained teachers. Furthermore, Kongsuwan and Ruachai (2020) point out that most curricula and instructional pedagogy for the deaf today have been developed based on the 2008 Basic Education Core Curriculum which is intended for normal learners. For this reason, the resulting curricula and teaching approaches are overly generalized and inappropriate for students with hearing impairment.

In addition to the aforementioned challenges, research shows that hearing-impaired and normal students learn differently (Sterne & Goswami, 2000; Lederberg & Spencer, 2001; Gaustad et al., 2002; Subin et al., 2022). For example, the study conducted by Subin et al. (2022) suggests that deaf and normal learners acquire English morphemes in different orders. Moreover, some morphemes that are acquired relatively easily by normal students (e.g., the copula *be*) are found to be difficult for deaf participants to acquire.

To improve the quality of education for the deaf, all the challenges and learning differences discussed earlier will have to be seriously addressed. Obviously, educational curricula, teaching pedagogy, and material development approaches for students with hearing impairment should not just be slightly modified from those of their normal counterparts as they have drastically different needs. To properly address these issues and effectively identify the instructional needs of deaf students, a needs analysis should therefore be conducted.

Needs analysis

According to many experts (Hutchinson & Waters, 1987; Strevens, 1988; West, 1994; Jordan, 1997; Dudley-Evans & St. John, 1998; Dudley-Evans, 2001; Flowerdew & Peacock, 2001; Basturkmen, 2006), needs analysis is of vital importance to the development of curricula, courses, instructional methods, and teaching materials for specific learners. In fact, it is an obligatory procedure that must be carried out in order to identify a particular group's specific language learning needs. Hutchinson and Waters (1987) posit that to see a complete picture of learners' needs, two types of needs should be investigated: target needs and learning needs.

Target needs

To identify target needs is to find out "what the learner needs to do in the target situation" (Hutchinson & Waters, 1987, p. 54). This type of needs should be considered in terms of necessities, lacks, and wants.

Necessities are the demands of the target situation that students are required to satisfy. In other words, they are what students need to know or master so that they can perform effectually in the target situation. Being able to identify necessities greatly helps set objectives or end goals that both teachers and students need to pursue.

Lacks are basically what students still do not know or have yet to master that will contribute to their efficacy in the target situation. They can also be thought of as the gap between what students already know (i.e., their existing proficiency) and the target proficiency. Knowing the students' lacks allows teachers to better plan their lessons and prepare for classes since it means that they know what and how much need to be done in order for their students to meet objectives.

Wants are referred to as what students think they need and how they wish to learn. Unlike necessities and lacks which are objective views of needs, wants add a subjective perspective to needs analysis, considering that students' desire is taken into account. Once pinpointed and utilized appropriately, wants can contribute to the students' increased motivation, encouraging them to learn more willingly and effectively.

Learning needs

Hutchinson and Waters (1987) explain learning needs through the analogy of a journey in which necessity and lacks are compared to a destination and a starting point, respectively. For

them, only knowing where you want to go (destination) and where you are at present (starting point) does not necessarily mean that your journey will be pleasant and successful. There may be more than one route that you can take in order to reach the destination, and each route can differ and play a significant role in determining the pleasure and success of the journey. Some routes may take you longer; others may be less enjoyable; still others may have so many obstacles that you decide to stop your journey halfway. In Hutchinson and Waters' (1987) journey analogy, learning needs are like these different routes.

As can be seen from the analogy, analyzing the target needs to find out necessities, lacks, and wants alone does not suffice. Learning needs must also be brought into the equation because it is crucial to know how best students should be moved from their starting points to their destinations. Hutchinson and Waters (1987) exemplify this idea by explaining that an ESP reading course developed based solely on target needs analysis may require students to read boring, lengthy texts that they are likely to encounter in their future careers. In contrast, a course that takes both target and learning needs into consideration will task students with "enjoyable, fulfilling, manageable, and generative" (p. 61) activities that are directly relevant to their prospective occupations. Evidently, an analysis of learning needs should never be neglected because it helps enhance students' learning experiences, keeping them motivated throughout their learning expedition.

Approaches to needs analysis

Needs analysis has a long history in the field of applied linguistics. Experts after experts have proposed ways to perform needs analysis. As a result, there exist numerous approaches to needs analysis nowadays, namely: Target Situation Analysis (Hutchinson & Waters, 1987), Present Situation Analysis (Richterich & Chancerel, 1980; Dudley-Evans, 2001; Basturkmen, 2010), Deficiency Analysis (West, 1994), Learning Situation Analysis (Dudley-Evans, 2001), Learner Factor Analysis (Basturkmen, 2010), Strategy Analysis (West, 1994; Johns & Price, 2014), Learning Needs Analysis (Hutchinson & Waters, 1987), Means Analysis (Dudley-Evans, 2001), and Teaching Context Analysis (Basturkmen, 2010).

Liu and Zhang (2020) have attempted to incorporate the above approaches altogether and proposed an overview of approaches to needs analysis, showing the connections between these various approaches and the necessary factors in conducting needs analysis, i.e. necessities, lacks, wants, learners' English level, how learners learn, and environmental constraints. Based on this proposal, they developed an English training course for bankers in China. Despite its comprehensiveness, Liu and Zhang's (2020) proposal may not be readily applicable to all needs analysis situations, unfortunately. Besides the absence of some graphical information, the visuals used to illustrate the relationships between different needs analysis principles and factors are rather complicated. Moreover, due probably to reasons of space, Liu and Zhang (2020) did not provide much explanation about their proposed overview of needs analysis approaches, especially how their combined approach might be adapted to needs analyses in different contexts.

According to Jordan (1997), there is no one best approach that can be applied to all needs analysis situations since circumstances vary from context to context. In practice, therefore, it is best to identify the purposes of your analysis and thoroughly consider all the variables involved in your context before selecting the approaches that best suit your purposes, variables, and context. For the purposes of this study, three approaches to needs analysis, i.e., Target Situation Analysis (TSA), Present Situation Analysis (PSA), and Learning Situation Analysis (LSA) will be reviewed as they complement one another in obtaining both target needs and learning needs.

Target situation analysis (TSA)

The primary focus of TSA is to uncover the requirements that students need to meet in order to use the target language effectively in the target situation (Hutchinson & Waters, 1987; West, 1994; Robinson, 1991; Songhori, 2008; Khalid, 2016). Munby's (1978) Communication Needs Processor or CNP is often cited as trailblazing and the most well-known work on TSA (Hutchinson & Waters, 1987; West, 1994; Khalid, 2016; Watanapokakul, 2022a). It outlines detailed procedures for identifying target situation needs, consisting of questions about principal variables in communication, such as interlocutors/audiences, topics, medium, etc. Ideally, after carrying out Munby's (1978) CNP model, students' profile of language needs will be identified and then can be used to design a syllabus.

Systematic and comprehensive as the model is, CNP has been criticized for its complexity, inflexibility, and time-consuming nature (Frankel, 1983; Coffey, 1984; McDonough, 1984). More problematic than these issues is the point made by Hutchinson and Waters (1987) that the end product of Munby's (1978) CNP is a mere list of linguistic and grammatical features that should be included in a course. They, then, further argue that it is inadequate to only identify the necessary language features since what students still lack and how they want to learn are also as important. In this sense, for Hutchinson and Waters (1987), TSA is closely related to the three main components of target needs: necessities, lacks, and wants. Similarly, based on Mohammed and Nur's (2018) explanation, in addition to linguistic features, TSA can also be employed to identify various aspects of a course, such as the language of instruction, language skills needed to be taught, and class activities and tasks. In brief, TSA can be used as a tool to analyze learners' necessities, lacks, and wants.

Present situation analysis (PSA)

Proposed by Richterich and Chancerel (1980), PSA, as befits its name, aims to determine students' present or existing knowledge, proficiency, and language development so that their starting point (Hutchinson & Waters, 1987) or what they already know at the beginning of the course is known. In addition to existing knowledge and proficiency, the information of students' present situation also includes their strengths, weaknesses, and background information, such as their age, level of education, years of language learning, language problems, learning experiences, attitudes towards language learning, etc., (Robinson, 1991; Dudley-Evans & St. John, 1998; Li, 2014; Niemiec, 2017). Analyzing students' present situation, consequently, helps establish their lacks (West, 1994).

As is evident from the discussion about the aim of PSA, this approach and TSA are different yet complementary to each other (Robinson, 1991). Whilst TSA reveals the destination or the target proficiency that students need to achieve, PSA discloses the starting point or the students' present proficiency. This, in turn, shows what students are still lacking in or the gap between the starting point and the destination. Knowing this information allows us to plan more effectively how the gap can and should be bridged. Therefore, PSA is used to seek out lacks, necessary background information, and the current English level of learners.

Learning situation analysis (LSA)

According to Dudley-Evans and St. John (1998), LSA serves as a tool to investigate students' felt and subjective needs or how they want to learn. It focuses more on students' desires (e.g., their favored strategies, techniques, ways of learning, resources, materials, class time and location, etc.) rather than what they need to learn in order to reach the goals set by the target situation (West, 1997; Li, 2014). In other words, LSA gives priority to learners' wants and learning needs (process-oriented needs) as opposed to necessities (goal-oriented needs).

At this point, it goes without a doubt that LSA is clearly indispensable since it takes into account students' learning preferences. This can lead to students' enhanced learning motivation and positive attitudes towards learning. Not only does analyzing students' learning situations help explore ways that will best facilitate their acquisition of the content and skills necessary in the target situation, but it also aids in designing courses and instructional materials that correspond to the students' preferred learning styles. With reference to Hutchinson and Waters's (1987) journey analogy, LSA can be utilized to chart a course or route that students should take to ensure that their journey is a pleasant and successful one. Thus, LSA is applied to examine the wants and learning needs of learners.

As demonstrated throughout the literature review, for any needs analysis to be effective and comprehensive, both target needs and learning needs must be identified and scrutinized (Hutchinson & Waters, 1987). However, despite the presence of numerous approaches to needs analysis, none of them can simultaneously address both types of needs. For instance, whereas TSA enables the identification of target needs, it fails to do the same for learning needs (Alsamadani, 2017). Likewise, PSA addresses only lacks and students' background information, while LSA explores wants and learning needs specifically. Therefore, this study will adopt an eclectic approach by combining TSA, PSA, and LSA to investigate both target needs, including necessities, lacks, and wants, and learning needs of students with hearing impairment. Figure 1 below presents a conceptual framework for needs analysis that will be used in this study.
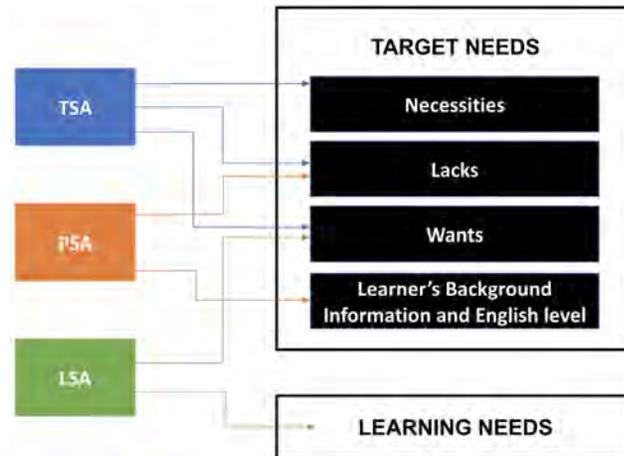
Figure 1 The needs analysis conceptual framework

Research question

There is one research question in this study: What are the needs for EFL instruction of Thai senior secondary school students with hearing impairment?

RESEARCH METHODOLOGY

The study was based on an explanatory sequential mixed methods design (Creswell & Creswell, 2018), where the quantitative data was collected using questionnaires, and the qualitative data was collected using semi-structured interviews and structured classroom observations to further explain the initial quantitative findings (Creswell & Plano Clark, 2018).

Participants

In order to achieve a practical representation of triangulation in needs analysis, senior secondary school students (Grades 10-12) with hearing impairment and stakeholders were used as the participants of the study.

Beginning with the students, two schools for the deaf in Bangkok, Thailand were visited. One school had 28 senior secondary school students (eleven Grade 10, twelve Grade 11, and five Grade 12 students), and the other had 44 senior secondary school students (eleven Grade 10, fourteen Grade 11, and nineteen Grade 12 students). All 72 students served as the participants of the study.

For the stakeholders, five Thai teachers with former experience teaching English at the senior secondary school level at schools for the deaf, five teachers currently teaching EFL at the senior secondary school level at schools for the deaf, and five specialists in special education and hearing impairment (including sign language interpreters, executives of the schools for the deaf, and officers from the Special Education Bureau) were purposefully selected and asked

to respond to the questionnaire. All stakeholder samples in this study had more than five years of experience in their fields.

Participation in the study was voluntary. Prior to conducting the study, this research proposal was sent to a university's Central Institutional Review Board for ethical approval in order to protect the rights and well-being of the researched population and participants.

Research instruments

Besides triangulating the multiple sources of information, to produce findings that would have been missed otherwise, multiple methods of data collection (Serafini et al., 2015) were used in this study: questionnaires, interviews, and observations.

Questionnaires for the students and for the stakeholders were developed in parallel based on the needs analysis conceptual framework presented in Figure 1. The questionnaires consisted of four main parts to elicit their attitudes towards English language instruction for students with hearing impairment: (1) demographic information, (2) wants, (3) necessities, and (4) current problems (or lacks). The first three parts of the questionnaires contained closed-ended questions while the other part contained five-point Likert-scale questions. The questionnaires consisted of 40 questions for the students and 38 questions for the stakeholders.

Two sets of semi-structured interview questions were later developed in line with the questionnaires for eliciting in-depth information from the students and the relevant stakeholders. There were 11 questions for both the students and the stakeholders.

Classroom observation topics were listed for structured observations of the teaching and learning process in the classroom, which allowed the researchers to observe the pedagogical practices that were being used to support learning (Lund et al., 2015). The topics focused on teaching methodology and activities, instructional materials and equipment, classroom management, teacher-student rapport, and classroom setting and atmosphere.

All of the research instruments were validated by five experts in the field of ELT, using the index of item-objective congruence (IOC) (Rovinelli & Hambleton, 1977) – a process by which content experts rate each item or question based on the extent to which it measures specific purposes listed by the instrument developer. From the five experts, the IOC indexes of the research instruments must be higher than 0.80 to show valid objectives in the research instruments (Turner & Carlson, 2003), and those of the student questionnaire, stakeholder questionnaire, student interview questions, and stakeholder interview questions were rated 0.97, 0.96, 0.98, and 0.98, respectively. After that, a pilot study of the instruments was conducted with a group of 20 hearing-impaired senior secondary school students who enrolled in the first semester of the academic year 2022 and 10 stakeholders. Using Cronbach's alpha coefficient, the internal consistency coefficients of the student questionnaire and the stakeholder one were recorded as 0.93 and 0.96, respectively, showing an excellent level of consistency (George & Mallery, 2003, as cited in Wadkar et al., 2016, p. 116).

Data collection

Before starting the survey, all participants were provided with information on the research, and that they would have the right to opt out if they were not comfortable participating in the study. The data collection was done strictly anonymously, and the responses from the participants were kept confidential and subsequently destroyed after the study was completed.

All 72 Thai senior secondary school students with hearing impairment (courtesy of a sign language interpreter) and 15 stakeholders were asked to respond to the questionnaires. A total of 68 student and 15 stakeholder questionnaires were completed and returned. According to Yamane's (1973) sample size formula with 95% confidence level, the sample size of a population of 72 students is 61.02. Thus, 68 students (94.44%) were enough to make up the sample group of the study.

Later, the students and the stakeholders were randomly selected to participate in the semi-structured interviews, and saturated information (Hennink & Kaiser, 2022) was obtained from 8 students and 6 stakeholders (see Appendix A). The interviews were conducted in Thai to avoid a language barrier, and the audio was recorded for further analysis. A sign language interpreter also assisted when interviewing students and stakeholders who had hearing impairment. Also, two researchers took notes of the interview responses.

Moreover, structured observations of eight classrooms at two school sites serving students with hearing impairment were conducted for more reliable data. Four English classes at the four senior secondary school levels were observed. To see how English had been taught to the students from a young age, another four English classes at the primary school and junior secondary school levels were also observed. Note-taking during observations was also carried out by the two researchers.

Data analysis

The findings from the 68 student and 15 stakeholder questionnaires were quantitatively analyzed using the SPSS program (Version 26) to obtain descriptive statistics. The interpretation of the closed-ended questions was expressed through frequency and percentage to present the findings, while that of the five-point Likert-scale questions was based on the interval and description from Pimentel (2019, p. 188), shown in Table 1, and presented in mean scores (M) and standard deviations (SD). Each item was rated based on a 5-point range of scores, with 1, 2, 3, 4 and 5 meaning strongly disagree, disagree, neutral, agree, and strongly agree, respectively. For the interviews, the two researchers collaboratively coded the interview findings using thematic analysis (King et al., 2019).

Table 1
Likert scale, interval, and description of five-point Likert-scale questionnaires

Likert scale	Interval	Description	Interpretation
5	4.20-5.00	strongly agree	Very high
4	3.40-4.19	agree	High
3	2.60-3.39	neutral	Average
2	1.80-2.59	disagree	Low
1	1.00-1.79	strongly disagree	Very low

The findings from the semi-structured interviews and structured classroom observations were analyzed using thematic analysis.

FINDINGS

To report the findings of the study theme-by-theme, a weaving approach (Fetters & Freshwater, 2015) was used, beginning with quantitative data from the questionnaires, followed by qualitative information from both semi-structured interviews (translated and verified by the researchers) and structured classroom observations to help support and explain the quantitative data. Findings from the students and the stakeholders were also comparatively presented and reported based on the four aspects of the needs analysis conceptual framework of this study.

Respondents' demographic information and students' English language background

From the student questionnaires, 27 students (39.71%) were from School A, and 41 students (60.29%) were from School B. All 68 students consisted of 40 females (58.82%), 25 males (36.77%), and 3 unspecified (4.41%). For their average grades in the English subjects, seven of them (10.30%) were between 2.01 and 2.50, five (7.35%) between 2.51 and 3.00, 19 (27.94%) between 3.01 and 3.50, and 37 (54.41%) between 3.51 and 4.00. In brief, the students' English ability was in between intermediate and advanced levels.

From the stakeholder questionnaires, five (33.33%) were Thai teachers with former experience teaching English at the senior secondary school level at schools for the deaf, five (33.33%) were teachers currently teaching EFL at the senior secondary school level at schools for the deaf, and five (33.33%) were specialists in special education and hearing impairment. Altogether, they were composed of 14 females (93.33%) and 1 male (6.67%). Six (40%) of the stakeholders had worked for 5-10 years in their fields, while nine (60%) had more than 10 years of experience.

From the interviews, the students realized the importance of English and most of them admitted that they liked studying English.

Extract 1

> *"Although English is difficult, I want and like to study it. Also, English is an international language. If I am good at English, it will be a plus for me."*
>
> (Student 8)

From the stakeholder interviews, they had a consensus that the students realized the importance of English, and most of them wanted to master English, though their learning ability was limited.

Extract 2

> *"Although students with hearing impairment have limitations of studying, most of them enjoy and prefer studying English. A few of them could master English and got scholarships to study for a Master's degree in the USA."*
>
> (Stakeholder 5)

According to students' questionnaire responses, after graduating from their schools, 55 (70.51%), 15 (19.23%), and 8 (10.26%) students planned to use English for further studies, work, and everyday use, respectively. Below is an explanation from one such student.

Extract 3

> *"If I am good at English, I will have a chance to study in higher education or abroad. I want to get a scholarship to study in America like some of the seniors at my school."*
>
> (Student 6)

In summary, a total of 83 participants responded to the questionnaires and 14 were interviewed. The dominant themes from both students and stakeholders appear to align in terms of the importance of English for everyday use, academic purposes, and future careers.

Students' wants: Views from the students and the stakeholders

The second part of the questionnaires asked about students' wants with regards to English instruction and was divided into three subparts: instructional activities (Items 2.1-2.4), instructional materials (Items 2.5-2.8), and others (Items 2.9-2.14).

Table 2 (see Appendix B) shows the attitudes of the students and the stakeholders towards the instructional activities that Thai senior secondary school students with hearing impairment want. For vocabulary, the top four preferences of the students were exercises, games, Q&A, and projects in groups, while the stakeholders thought that the students mostly preferred exercises (individual or any option), Q&A, games (any option), and role-playing tasks (in groups).

For grammar, students' preferences were ranked from games (in groups and any options), exercises (individual), discussions (in groups), to lectures, while the stakeholders thought that the students preferred games (any option), exercises (any option), lectures, and Q&A.

For reading, the top four preferences of the students were exercises (individual), games (in groups), Q&A, and discussions (in groups), while those from the stakeholder views were exercises (any option), games (any option), Q&A, and role-playing tasks (any option).

For writing, the top four students' preferences were games (in groups), exercises (individual), Q&A, and discussions (in groups), while those in the views of the stakeholders were exercises (any option), games (any option), lectures, and Q&A.

It can be concluded that doing exercises and using games are the two most chosen activities by the students, and this is in line with what the stakeholders thought the students wanted. Various responses from the interviews also support these findings.

Extract 4

> *"I like playing educational games, both traditional and digital. They are fun and encourage me to study English."*
>
> (Student 5)

Extract 5

> *"Doing exercises is what the students want because they can practice the lesson learned when doing exercises. Also, games help lessen the students' stress while studying."*
>
> (Stakeholder 1)

Moreover, Q&A, discussions, and lectures are among the other activities the students preferred in English classes. From the classroom observations, every English class provided the students with Q&A as well as practices and drills, and almost all of them were game-based.

Extract 6

> *"Due to their physical limitations, lectures, discussions, and drills are basic, straightforward methods for the instruction because they help students learn the content quickly and practice repeatedly. It will be helpful if a teacher spends a few minutes at the beginning of the class reviewing the lessons learned in the previous session, and by the end of the class, the teacher reviews the lesson learned in today's session."*
>
> (Stakeholder 6)

As for modes of activities, group work is most preferred in many activities by the students, but for doing grammar, reading, and writing exercises, they preferred individual work. By contrast, the stakeholders thought that the students would prefer any mode in the activities they engage in.

Extract 7

> *"Students with hearing impairment are similar to ordinary students. They like socializing. However, depending on their preferences, some would like to work individually, but some prefer pair and group work. Moreover, the class size is small, so the teacher can encourage each student to practice individually besides pair and group work."*
>
> (Stakeholder 3)

In summary, the results support a high interest in the use of games as a primary method of choice by the students and stakeholders. As language acquisition is typically based on social interactions, it is not surprising that students' wants lean towards methods that support as such.

For instructional materials of each skill in Table 3 (see Appendix B), both students and stakeholders chose both traditional (papers and whiteboards) and electronic materials. Here are some reasons from the interviews:

Extract 8

> *"Nowadays, we cannot avoid technology, so electronic instructional materials, like e-handouts and PowerPoint presentation slides, are preferred and convenient. However, traditional materials (like paper-based worksheets as well as whiteboards and markers) are still wanted."*
>
> (Student 4)

Extract 9

> *"Teachers can use traditional materials, including whiteboards and markers, in English classrooms. Also, electronic materials can supplement the traditional ones since technology can help visualize some difficult ideas and concepts of the lesson to the students."*
>
> (Stakeholder 3)

In summary, the data collected in this study supports what research often highlights on a broader scale: blended classrooms tend to serve students more effectively.

Table 4 (see Appendix B) shows the respondents' attitudes towards the students' preferences regarding English instruction. For the number of hours in a week of an English course for Thai senior secondary school students, the option of three hours was chosen most by the students and stakeholders. For the content of lessons, English for everyday use was the most popular among the two groups of respondents. For the classroom atmosphere and rapport between students and teachers, the respondents agreed that the students preferred a fun and informal atmosphere. Based on the classroom observations, it is obvious that both students and teachers were very active. The teachers motivated and encouraged the students to partake in the activities, and the students showed an eagerness to volunteer themselves and join the activities.

Overall, the classroom atmosphere was fun, active, and engaging. Here are some explanations from the interviews:

Extract 10

> *"I want fun English classes and kind teachers, so I will not get bored and stressed."*
>
> (Student 1)

Extract 11

> *"I want the teacher to insert American and English cultures (e.g., Christmas, Valentine's Day, and Halloween) in the lesson. I like it when the teacher shows us animated cartoons, video clips, and movies about foreign cultures."*
>
> (Student 7)

Extract 12

> *"Now we have only 2 hours a week for an English class. It is not enough for us. We should learn English at least three hours a week."*
>
> (Student 6)

Extract 13

> *"The content of the English class (e.g., vocabulary, reading texts, and writing) should be relevant to the students' daily lives and interests in order to connect their lives to the lessons. When students have good basic English for communication and English for everyday use, they will apply their English knowledge to studying and work."*
>
> (Stakeholder 5)

Regarding instructional equipment in the English classroom, computers or laptops for students, whiteboards and markers, iPads for students, and stationery were the top four preferred in-class equipment listed by the respondents, though in different ranks. However, screens and projectors were least chosen by the students, while the stakeholders ranked them fourth. From the classroom observations of younger learners, teachers typically used whiteboards, markers, and traditional materials, like (colored) papers, while online materials, like slides and video clips, were highly integrated in the instruction of older learners' classrooms.

Extract 14

> *"PowerPoint presentation slides provide the students with colorful texts and pictures, but whiteboards give students the opportunity to conveniently write their answer right away. I prefer both."*
>
> (Student 5)

Extract 15

> *"A variety of equipment should be used in the classroom. Traditional and electronic tools can supplement each other. Our school also has iPads for students' academic use."*
> (Stakeholder 4)

For assessment methods for the English course, classroom attendance, classroom participation, and mid-term and final examinations were the top three listed by both students and stakeholders. The students preferred quizzes least, while the stakeholders ranked them the same as mid-term and final exams. For other assessment methods, both the students and stakeholders shared similar rankings, i.e., role-playing tasks, presentations, and projects. One of the stakeholders talked about assessment methods in the interview as follows:

Extract 16

> *"The students like hands-on activities. Besides examinations, role-plays, and presentations are assessment tasks that the students like. Also, they like creating video clips as well. The teacher may ask the students to create a group presentation through a video clip using their ThSL and insert English subtitles. The teacher can share the clip to the class or ask the students to post it to their social media platforms."*
> (Stakeholder 4)

In summary, both students and stakeholders showed a consensus on many aspects regarding instructional equipment in the classroom. Technology has its place when working with students who are deaf or hard of hearing as they learn English. Again, a blended classroom approach is best as it supports a multi-modality approach.

Students' necessities: Views from the students and the stakeholders

The third part of the questionnaires asked the respondents to show their attitudes towards students' necessities which focused on instructional activities (Items 3.1-3.4) and instructional materials (Items 3.5-3.8).

Table 5 (see Appendix B) shows the respondents' ideas regarding instructional activities that they think the students need for learning English. For vocabulary and reading, the students listed games, exercises, Q&A, and presentations as their top four necessities, while the stakeholders chose exercises, games, Q&A, and discussions for vocabulary, and exercises, games, Q&A, and presentations for reading. Regarding grammar and writing, exercises and games ranked first and second for both students and stakeholders. Q&A and lectures were ranked third and fourth for students' attitudes towards grammar instruction and for stakeholders' attitudes towards writing instruction, while lectures and Q&A were ranked third and fourth for stakeholders' attitudes towards grammar instruction and for students' attitudes towards writing instruction. Here are some reasons from the students and the stakeholders.

Extract 17

> "I like playing educational games in English classes, like Kahoot. They motivate me to learn and make me enjoy the lesson. Games really help me learn English."
>
> (Student 3)

Extract 18

> "Lecture is needed especially for grammar and writing sessions, but it must not be too long. It helps explain grammar rules or concepts to the students before asking them to do some tasks. The students do not like sitting still and only listening to a lecture, so the lecture must be short, clear, and easy to understand."
>
> (Stakeholder 4)

From the classroom observations, most teachers used games (typically chalk-and-board) in the English language classrooms. They encouraged every student to do an activity one-by-one and rewarded the students when they completed the activity. For example, an English language teacher who had hearing impairment taught four primary school students to create English sentences using the present simple tense. The teacher drew eight pictures on the board and asked each student to create a sentence based on one of the pictures on the board. Most students could grammatically do it. Some students might need some guidance from the teacher and their classmates, but the classroom vibe was constructive and fun. She rewarded the students with compliments and scores written on the board. Compared to senior secondary school EFL classes, online materials (like PowerPoint slides) and online activities were more heavily used. However, positive reinforcement was regularly provided to the students. Here are some suggestions from the stakeholders.

Extract 19

> "Many teachers of the deaf always think that students with hearing impairment cannot learn complicated lessons like grammar or writing. This is not 100% correct. If a teacher uses appropriate teaching methods and well communicates with clear ThSL, the students can finally achieve. The teachers sometimes need to try out new teaching methods and conduct action research."
>
> (Stakeholder 2)

Extract 20

> "The students like being recognized and rewarded when they finish or achieve a task. Rewards need not always be prizes or tokens; only compliments or scores (stars or drawings of smiley faces) written on the board next to their names can encourage and motivate the students."
>
> (Stakeholder 1)

Moreover, regarding EFL instruction, two stakeholders made suggestions on the teachers' use of ThSL and ASL as follows:

Extract 21

"For Thai students with hearing impairment, English is their third language while first and second are Thai sign language (ThSL) and Thai language, respectively. American sign language (ASL) is their fourth language. This is a main reason why the students have difficulty in learning English and cannot use English fluently."

(Stakeholder 6)

Extract 22

"Teachers should use ThSL as a medium of communication in an EFL class. This can make the students fully understand the content well. Since ASL is their fourth language, deaf students, especially very young children, should not be much exposed to ASL in the classroom as it can confuse them. They should learn the ASL alphabets (a-z) and some ASL vocabulary words while using ThSL for explanations and instruction. When the students get older, the teachers can little by little offer more ASL to them."

(Stakeholder 5)

In summary, for EFL instruction, exercises, games, Q&A, presentations, and lectures are top-listed for teaching English skills; however, feedback and positive reinforcement should be also given to the students to motivate them. Furthermore, students' L1 (ThSL) should be used as the medium of instruction so that students can clearly understand the instructions.

Table 6 (see Appendix B) shows that both traditional and electronic instructional materials were needed by students with hearing impairment, regardless of the English language skills being taught. The students and the stakeholders shared a consensus with the following reasons:

Extract 23

"Instructional materials must be authentic and up to date so that they can motivate students. Both traditional printed and electronic instructional materials are needed. It depends on the level of the students and the lesson. Primary school students may learn better with traditional hands-on materials than electronic or online ones. Senior secondary school students may prefer the latter. Flashcards with pictures can help students learn vocabulary faster, while PowerPoint presentation slides may help students learn grammar rules more easily."

(Stakeholder 6)

Extract 24

"I like watching video clips and animations the teacher showed us in the classroom. They helped us understand some difficult concepts with clear visual explanations.

> *However, paper-based materials are still needed since we can write and draw on them."*
>
> (Student 6)

Based on the classroom observations, the teachers' familiarity and preferences were highly relevant to the selection of instructional material modes. For example, some teachers teaching at the senior secondary school levels used only PowerPoint presentation slides, while some primary school teachers used only hands-on materials. Some teachers used both.

To sum up, as most research focusing on effective educational practices shows, when working with deaf and hard of hearing students, a visual approach is key. The data presented here also supports that. Both students and stakeholders highlighted the need for a visual approach that includes both traditional and electronic instructional materials in teaching English to deaf and hard of hearing students.

Furthermore, the stakeholders provided the following suggestions deemed necessary for students with hearing impairment in their English learning, which could be regarded as learning needs.

Extract 25

> *"To master English, students must primarily have good Thai language proficiency, which will help them learn English well. Self-motivation, determination, and endeavor are the key to learning success."*
>
> (Stakeholder 5)

Extract 26

> *"Some schools for the deaf exploit hearing teachers to teach English by signing to the students. This can exhaust the teacher. It is more effective to have a fluent (hearing or deaf) sign language interpreter as a teaching assistant or to hire an experienced English language deaf teacher."*
>
> (Stakeholder 2)

From the classroom observations, some topics, like colors and kinship terms, were taught to the students again and again at both primary and secondary school levels, even in senior secondary school classrooms. Here is a perspective from a stakeholder who has hearing impairment.

Extract 27

> *"Generally, some English language hearing teachers at schools for the deaf cannot use sign language to profoundly communicate with students with hearing impairment. This can considerably affect the students' learning achievement. Besides, it can also make the teachers feel insecure when having to teach complex lessons like grammar rules and writing to the students, so the teachers tend to select the topics that they*

are comfortable to teach and sign."

(Stakeholder 5)

Apart from the above suggestions, some stakeholders further recommended the following learning needs for teaching students with hearing impairment.

Extract 28

"The wall in front of the classroom must not be messy, and the color of the wall should not be white as it is too bright for the students and can exhaust their eyesight and vision. Also, when using PowerPoint presentations, avoid white fonts and background. Pastel colors are recommended for the students' comfort."

(Stakeholder 6)

Extract 29

"Colors and patterns of the teacher' outfits affect students' learning. Outfits with bright colors and checkerboard or dot patterns can exhaust students' eyesight. Also, the reflection-surfaced materials can distract and hurt students' visions."

(Stakeholder 6)

Extract 30

"Facial expressions of teachers can help students while learning. The students interpret the meaning of sign languages from teachers' facial expressions and reading their lips. Thus, the teachers should vividly express their facial expressions and gestures."

(Stakeholder 1)

Extract 31

"During studying in the classroom, the students rely heavily on their eyes. After 60 minutes of learning, a break of at least 15 minutes is a must for them to relax their eyesight."

(Stakeholder 6)

In summary, traditional and online modes of both instructional activities and materials should be used in EFL classrooms for students with hearing impairment to enhance their English abilities for their studies at a higher level. In addition, students' competencies in L1 (ThSL), the presence of a sign language interpreter (or teachers' ability to use sign language effectively), classroom environment, and considerations regarding students' eyesight are learning needs that should not be overlooked.

Students' lacks: Views from the students and the stakeholders

Table 7 (see Appendix B) shows the respondents' views of lacks and problems in relation to

English instruction for Thai senior secondary school students with hearing impairment. For the English language skills (Items 4.1-4.5), the students reported that their English proficiency in grammar and writing abilities were at average levels, while their vocabulary and reading were at high levels. Interestingly, from the stakeholders' point of view, the students' grammar and writing abilities were low, while their vocabulary and reading abilities were average. Also, the students thought that their overall English proficiency was high, while the stakeholders' attitudes showed that it was average.

Extract 32

> *"We have frequently learned English vocabulary in our English classes. This helped our reading skills. However, grammar is difficult for us, so we cannot master English grammar, negatively affecting our writing skill."*
>
> (Student 2)

Extract 33

> *"Due to their hearing impairment, they always forget what they have learned; thus, repetition is needed in the classroom. This impedes the pace of their learning. Among these four skills (vocabulary, grammar, reading, and writing), vocabulary is the easiest for them to learn."*
>
> (Stakeholder 3)

Extract 34

> *"Using the same English curriculum as hearing students, the students with hearing impairment have difficulties in learning since some topics and instructional materials are too complicated and not applicable for them, due to their physical limitations."*
>
> (Stakeholder 2)

Regarding instructional activities and materials (Items 4.6 and 4.7), although the students' attitudes were at a high level, the stakeholders showed an average one.

Extract 35

> *"We have tried our best to create and adapt instructional materials under the limited time and budget we have. To aid the learners, more instructional materials, both hands-on and electronic, are needed. We need more time and money."*
>
> (Stakeholder 3)

For the number of English class hours per week (Item 4.8), both respondents showed their attitudes at an average level. They showed their attitudes in the interviews as follows:

Extract 36

"English is vital at present. The more hours we learn, the more fluency we can achieve."
(Student 6)

Extract 37

"At present, the curriculum provides a 2-hour English class per week for senior secondary school students with hearing impairment. That is not enough. They need at least 3 hours per week. However, if one more hour is added in the curriculum, it means English teachers have more classes to teach. Now, we have very few English language teachers. The staff resource is one of our major problems as well."
(Stakeholder 4)

Regarding the classroom atmosphere (Item 4.10), the students' attitudes were at an average level, while the stakeholders' were at a high level. Here is a reason from a student.

Extract 38

"During the summer, it is very hot. If we get air-conditioned classrooms, it will create a more comfortable classroom atmosphere."
(Student 8)

For instructional equipment (Item 4.12), the students were highly satisfied, while the stakeholders' attitudes were at an average level. From the observations, the screens and projectors in some classrooms were obsolete, and this affected the displays. The following are some reasons from the stakeholders.

Extract 39

"Students with hearing impairment heavily use their eyesight while learning, so the screen and projector in the classroom must be very effective in order to facilitate their learning. A wide-screen television is recommended due to its picture quality display."
(Stakeholder 6)

Extract 40

"Some teachers use technology in the classroom. For example, they integrate online games into lessons; however, the teacher must be sure that every student has a smart phone or a device to participate in the games. Otherwise, some students may be left out. Also, the Internet access is important when integrating technology into the classroom. We don't have a stable, strong Internet connection."
(Stakeholder 1)

In conclusion, although most students' responses were in line with the stakeholders', the

students showed higher satisfaction with their English instruction than the stakeholders. As the data presented here illustrates, there are many factors affecting the students' learning of English. A careful analysis of these findings will support future pedagogical efforts.

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

Based on the findings of the study, the participants all agreed that English was important for Thai students with hearing impairment, and they needed to learn English. This study revealed both target needs and learning needs from the viewpoints of both students and stakeholders, which will be discussed as follows:

Content

As grammar and vocabulary form the foundation for learning English (Mironova et al., 2019), teachers should emphasize these two fundamental skills to help students learn other English skills more effectively.

Also, the content of an EFL course should relate to the students' lives and interests. It should also be trendy and up-to-date, touching on contemporary topics such as movies, songs, and superstars. Topics relating to international cultures and traditions (e.g., Christmas and Halloween) are also preferable. Additionally, as some students reported in the questionnaires that they planned to work after graduation, the content about jobs that the students are interested in (e.g., baristas, organic farmers, and bakers) should be incorporated as well. Theme- or topic-based lessons are recommended. Although it is mandatory to use the same curricula as hearing students (Kongsuwan & Ruachai, 2020), the teachers should select content that best fits students with hearing impairment. Asking students to choose the topics that they prefer is an option that the school administrators should consider, and this information can be used to design a curriculum for the students at each level.

Schedule management

A three-hour EFL class is recommended by students, teachers, and specialists in hearing impairment since it is more convenient and provides enough time for instruction. However, a 10-to-15-minute break every 40–50-minute instructional period should be given to the students since they heavily rely on their eyes in the classroom.

Instructional activities, methods, and materials

Due to the students' physical limitations, repetitions are required (Hussein, 2015). Thus, at the beginning of each class, the teacher should provide the students with an activity that helps review the lessons of the previous class. Also, there should be an activity/task for the students to review the lessons they just learned before the class finishes.

During the instruction, the students should be encouraged to practice integrated skills, starting

with a warm-up activity to lead them into the lesson, followed by vocabulary (drawn from the reading text they are being exposed to), reading, grammar (drawn from the reading text they have just learned), and writing, and finally, before the end of the class, a review of the lesson covered on that day.

Explicit and direct instruction (Strassman et al., 2019) and scaffolding (Becker, 2017) are also important for students with hearing impairment, so PPP (presentation, practice, and production) (Byrne, 1976) should be applied in the classroom for teaching each skill as it provides the students with a clear top-down scaffolding model of instruction that includes both drills and practices (Astria, 2016), and equips the teacher with step-by-step instructional paces for the lesson (Lasmiatun & Munir, 2018).
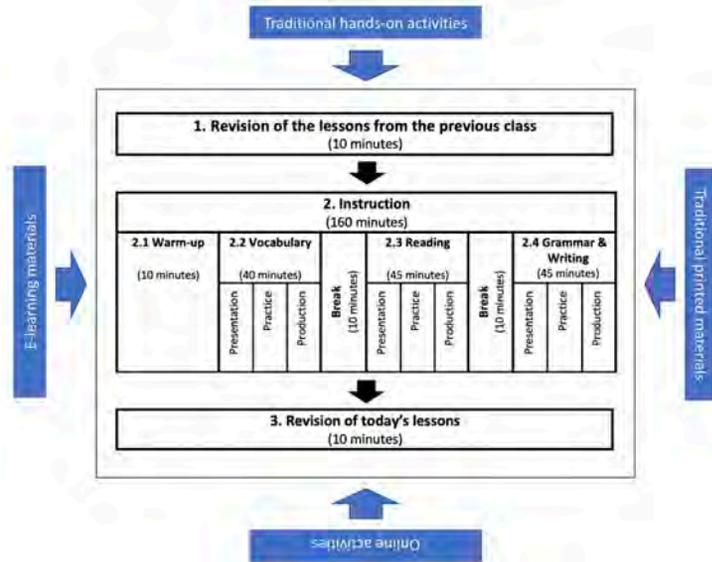
As students with hearing impairment rely on vision and touch when learning, throughout the PPP instruction process, both traditional hands-on and online instructional activities should be given to the students to promote active learning, i.e., learning by doing and experiencing (Fink, 2003), because it can lead to the success of their learning. For example, in a vocabulary session, the target words would be introduced by the teacher (*Presentation*), and then drills and practices would be provided to the students through classroom activities (*Practice*). Finally, the students might be asked to draw pictures of the learned target words and ask their friends to write the words or match the pictures with the words (*Production*). This can be applied to reading, grammar, and writing skills as well.

Moreover, since the students like playing games in the classroom, traditional hands-on and online games are recommended for engaging the students and creating a positive, yet competitive learning atmosphere (Watanapokakul, 2018). Online game applications (e.g., *Wordwall, Quizlet*, and *Kahoot*) can be used to facilitate the teacher in creating games for the students in the Practice stage. Also, the concept of gamification – "the use of game design elements in non-game context" (Deterding et al., 2011, p. 10) – can be applied in the classroom as well to motivate students towards learning and improving their learning (Chan et al., 2022). To illustrate, a scoreboard could be attached to a wall. When a student could correctly answer a question or finish a task, he/she would get points. The points of each student would be collected and recorded each time on the scoreboard so that they can see their performance and progress. By the end of a month or a semester, the students may be rewarded based on their scores.

A variety of activities should be considered as well. The teacher should balance individual, pair, and group work and make sure that every student takes part in the work. Every student should endeavor the task when doing individual work or collaboratively partaking in pair and group work.

Moreover, traditional learning materials (e.g., chalk & board and paper-based materials) and electronic instructional materials can supplement each other. However, for electronic materials and online activities, access to the Internet with a decent speed is highly necessary for effective instruction (Watanapokakul, 2022b). Also, every student would require a tool to join online activities; otherwise, this could cause educational inequality in the classroom, adversely affecting the students' learning (Korkmaz et al., 2022).

Drawing upon the aforementioned discussion, Figure 2 suggests an instructional model for teaching English to Thai senior secondary school students with hearing impairment.

Figure 2 Instructional model for teaching English to Thai senior secondary school students with hearing impairment

Instructional languages

In Thailand, ThSL is deaf students' first language (L1). Their L2 is Thai, the widely spoken language used in the country. Aside from working with two languages, they are coping with two different language modes: ThSL in a visual/spatial mode and Thai in a linear/spoken/written mode (González-Reyes et al., 2021). Additionally, when Thai deaf children attend schools, they have to learn English as part of the school curriculum, encountering a trilingual situation. If the teacher uses ASL as a medium of instruction, it means the students have to learn another language in order to learn their L3. This can confuse and burden students who have hearing impairment. Thus, to facilitate the students, L1 (ThSL) should be used as a main medium of instruction, supplemented by written Thai and written English. ASL can then be initially and gradually used for fingerspelling (Nunn et al., 2022). Visual means and L1 sign language serve as vital elements that significantly strengthen the skills of deaf students when learning EFL (Di Bella et al., 2017). Therefore, when a student can master his/her ThSL, Thai, English, and ASL fingerspelling, he/she will then be ready to learn ASL.

Teacher roles

In the classroom, apart from teaching, the teacher must take on other roles as well. As the students with hearing impairment have many limitations and challenges, the teachers must be understanding, patient, and kind. To assist the students, the teacher will have to repeat the explanations and directions of an activity and exaggerate their facial expressions and body gestures while teaching (Agustina & Prabowo, 2021). Giving positive reinforcement (e.g.,

compliments or small tokens) to the students when they can complete a task, even a small one, is recommended to motivate the students to learn and bolster their morale. Most importantly, the sign language proficiency of EFL teachers plays a significant role in students' successful learning because a teacher with low sign language proficiency cannot profoundly explain the lesson and clearly communicate with the students (Sibanda, 2015). Therefore, EFL teachers need ThSL training for these students. Alternatively, to assist the teacher, a proficient sign language interpreter should at least be present in the classroom to assist with signing (Antia & Kreimeyer, 2001).

Classroom setting and environment

A well-equipped classroom can contribute to students' enhanced learning effectiveness (Raeve, 2015). It should have an air-conditioner, a large television that can connect to the Internet and a computer, a blackboard, colored papers, and colored pens and pencils among other stationery. Teachers should exploit the benefits of both traditional and online equipment. A TV can be used to present animations and movements as well as easily explain abstract ideas or concepts to the students, while students can simultaneously write and draw on a blackboard to demonstrate their comprehension. However, a whiteboard or presentation slides with a white (or metallic) background and letters should be avoided as white and metallic surfaces can exhaust their eyes.

Students with hearing impairment rely on visual information when learning, so another way of enriching their learning environment would be to post vocabulary words and their meanings on the walls around the students' classroom. Seeing the words every day may contribute to their incidental vocabulary learning. The words should be changed every week or month so that they are exposed to new words periodically. Apart from vocabulary, a short story in English (which is funny or relevant to their interests, such as the topic of superstars) with some pictures or a short explanation of a grammar rule can also be presented to the students in the same fashion as well.

Assessment

Apart from the summative assessment (e.g., mid-term and final examinations), other types of alternative assessment (e.g., role-playing tasks and presentations in front of the class or via video clips) can be assigned to the students. Explicit instruction and clear rubrics should be given to the students when these tasks are assigned. Class attendance and classroom participation should also be part of the assessment.

Last but not least, after an EFL course is developed based on the aforementioned pedagogical implications and recommendations, research on the course's effectiveness and students' attitudes towards it should be conducted in order to fulfil the process of an ESP course development (Dudley-Evans & St. John, 1998). The results from such research can reveal how well the needs are met and help evaluate the effectiveness of the course as well as the students' attitudes towards the course (Hijuelos-Cruz et al., 2020). Moreover, the findings from such research can be used to refine and improve the course further, allowing it to meet the needs of the learners better.

Limitations of the study

Since the student participants of the study were Thai senior secondary school students with hearing impairment at two schools for the deaf in Bangkok, Thailand, the findings may not be fully generalized for students with hearing impairment in other contexts.

CONCLUSION

There is no one-size-fits-all in ELT, especially for students with special needs. It is dangerous to assume that a curriculum that works for ordinary students should also work as well for students with hearing impairment. Therefore, in order to develop a course or a curriculum that suits these students, needs analysis is the first and foremost step that needs to be taken. Then, the findings from a needs analysis can reveal the students' specific target needs and learning needs (i.e., their information and learning background along with what they need, want, and lack). In this study, in order to attain richer and fuller data, triangulation and mixed methods research were employed to collect data from different sources (i.e., students and stakeholders) through various research instruments (i.e., questionnaires, semi-structured interviews, and structured classroom observations) so as to gain both quantitative and qualitative information for effectively planning and developing an EFL course for Thai senior secondary school students who have hearing impairment; the ultimate aim of which is to improve their English proficiency and nurture their positive attitudes towards the course and English learning in general.

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Appendix A

Interviewees

Students

Informant	Status	School	Gender	Hearing ability
Student 1	Grade 10	School A	Female	Deaf
Student 2	Grade 11	School A	Male	Hard of hearing
Student 3	Grade 12	School A	Female	Deaf
Student 4	Grade 11	School A	Female	Deaf
Student 5	Grade 10	School B	Female	Deaf
Student 6	Grade 11	School B	Female	Deaf
Student 7	Grade 12	School B	Female	Deaf
Student 8	Grade 11	School B	Female	Deaf

Stakeholders

Informant	Status	Workplace	Gender	Hearing ability
Stakeholder 1	EFL Teacher (with former experience in teaching senior secondary school students with hearing impairment)	School for the Deaf	Female	Deaf
Stakeholder 2	EFL Teacher (with former experience in teaching senior secondary school students with hearing impairment)	School for the Deaf	Female	Hearing
Stakeholder 3	EFL Teacher (currently teaching senior secondary school students with hearing impairment)	School for the Deaf	Female	Hearing
Stakeholder 4	EFL Teacher (currently teaching senior secondary school students with hearing impairment)	School for the Deaf	Female	Hearing
Stakeholder 5	Educational Academic Officer	Special Education Bureau	Male	Deaf
Stakeholder 6	Sign Language Interpreter	Educational Institute	Female	Hearing

Appendix B

Questionnaire results

Table 2
Instructional activities

Questions & Options	Students' responses					Stakeholders' responses				
	Total	Individual	Pairs	Groups	Any of these	Total	Individual	Pairs	Groups	Any of these
2.1 Which of the following vocabulary instructional activities are preferred in the English class of Thai senior secondary school students with hearing impairment? (Choose 4 options.)	272 100%					60 100%				
Lectures	12 4.41%	-	-	-	-	3 5%	-	-	-	-
Q&A	46 16.91%	-	-	-	-	12 20%	-	-	-	-
Exercises	53 19.49%	13 4.78%	5 1.84%	24 8.82%	11 4.04%	15 25%	7 11.67%	0 0%	1 1.67%	7 11.67%
Discussions	22 8.09%	-	3 1.1%	12 4.41%	7 2.57%	4 6.67%	-	0 0%	3 5%	1 1.67%
Role plays	10 3.68%	0 0%	2 0.74%	5 1.84%	3 1.1%	8 13.33%	0 0%	1 1.67%	4 6.67%	3 5%
Presentations	26 9.56%	4 1.47%	2 0.74%	16 5.88%	4 1.47%	2 3.33%	1 1.67%	0 0%	0 0%	1 1.67%
Projects	33 12.13%	5 1.84%	4 1.47%	15 5.51%	9 3.31%	4 6.67%	0 0%	0 0%	4 6.67%	0 0%
Self-studying	18 6.62%	5 1.84%	2 0.74%	9 3.31%	2 0.74%	1 1.67%	1 1.67%	0 0%	0 0%	0 0%
Games	52 19.12%	6 2.21%	3 1.1%	28 10.29%	15 5.51%	11 18.33%	0 0%	0 0%	2 3.33%	9 15%
2.2 Which of the following grammar instructional activities are preferred in the English class of Thai senior secondary school students with hearing impairment? (Choose 4 options.)	272 100%					60 100%				
Lectures	31 11.40%	-	-	-	-	8 13.33%	-	-	-	-
Q&A	25 9.19%	-	-	-	-	7 11.67%	-	-	-	-
Exercises	46 16.91%	16 5.88%	5 1.84%	16 5.88%	9 3.31%	13 21.67%	5 8.33%	1 1.67%	0 0%	7 11.67%
Discussions	32 11.76%	-	12 4.41%	15 5.51%	5 1.84%	2 3.33%	-	0 0%	2 3.33%	0 0%
Role plays	11 4.04%	1 0.37%	2 0.74%	6 2.21%	2 0.74%	4 6.67%	0 0%	1 1.67%	2 3.33%	1 1.67%
Presentations	27 9.93%	4 1.47%	3 1.1%	10 3.68%	10 3.68%	4 6.67%	0 0%	1 1.67%	1 1.67%	2 3.33%
Projects	26 9.56%	5 1.84%	5 1.84%	9 3.31%	7 2.57%	6 10%	0 0%	0 0%	4 6.67%	2 3.33%
Self-studying	25 9.19%	3 1.1%	3 1.1%	15 5.51%	4 1.47%	1 1.67%	0 0%	0 0%	0 0%	1 1.67%
Games	49 18.01%	5 1.84%	2 0.74%	21 7.72%	21 7.72%	15 25%	1 1.67%	0 0%	3 5%	11 18.33%

Questions & Options	Students' responses					Stakeholders' responses				
	Total	Individual	Pairs	Groups	Any of these	Total	Individual	Pairs	Groups	Any of these
2.3 Which of the following reading instructional activities are preferred in the English class of Thai senior secondary school students with hearing impairment? (Choose 4 options.)	272 100%					60 100%				
Lectures	15 5.51%	-	-	-	-	4 6.67%	-	-	-	-
Q&A	35 12.87%	-	-	-	-	10 16.67%	-	-	-	-
Exercises	51 18.75%	16 5.88%	13 4.78%	14 5.15%	8 2.94%	14 23.33%	5 8.33%	1 1.67%	1 1.67%	7 11.67%
Discussions	33 12.13%	-	5 1.84%	16 5.88%	12 4.41%	4 6.67%	-	1 1.67%	2 3.33%	1 1.67%
Role plays	4 1.47%	0 0%	0 0%	2 0.74%	2 0.74%	7 11.67%	0 0%	1 1.67%	2 3.33%	4 6.67%
Presentations	32 11.76%	4 1.47%	7 2.57%	12 4.41%	9 3.31%	4 6.67%	2 3.33%	1 1.67%	0 0%	1 1.67%
Projects	26 9.56%	5 1.84%	4 1.47%	11 4.04%	6 2.21%	5 8.33%	0 0%	1 1.67%	4 6.67%	0 0%
Self-studying	27 9.93%	4 1.47%	3 1.1%	17 6.25%	3 1.1%	2 3.33%	1 1.67%	0 0%	1 1.67%	0 0%
Games	49 18.01%	3 1.1%	4 1.47%	28 10.29%	14 5.15%	10 16.67%	2 3.33%	0 0%	0 0%	8 13.33%
2.4 Which of the following writing instructional activities are preferred in the English class of Thai senior secondary school students with hearing impairment? (Choose 4 options.)	272 100%					60 100%				
Lectures	28 10.29%	-	-	-	-	9 15%	-	-	-	-
Q&A	35 12.87%	-	-	-	-	7 11.67%	-	-	-	-
Exercises	46 16.91%	16 5.88%	6 2.21%	15 5.51%	9 3.31%	14 23.33%	6 10%	0 0%	1 1.67%	7 11.67%
Discussions	33 12.13%	-	10 3.68%	17 6.25%	6 2.21%	2 3.33%	-	0 0%	1 1.67%	1 1.67%
Role plays	5 1.84%	0 0%	1 0.37%	3 1.1%	1 0.37%	3 5%	0 0%	0 0%	1 1.67%	2 3.33%
Presentations	31 11.40%	3 1.1%	5 1.84%	17 6.25%	6 2.21%	5 8.33%	2 3.33%	2 3.33%	0 0%	1 1.67%
Projects	30 11.03%	4 1.47%	5 1.84%	14 5.15%	7 2.57%	5 8.33%	0 0%	0 0%	5 8.33%	0 0%
Self-studying	14 5.15%	1 0.37%	2 0.74%	9 3.31%	2 0.74%	3 5%	0 0%	1 1.67%	1 1.67%	1 1.67%
Games	50 18.38%	3 1.1%	6 2.21%	24 8.82%	17 6.25%	12 20%	2 3.33%	0 0%	0 0%	10 16.67%

Notes: The symbol "-" indicates that the respondents were not asked to express their attitudes.

Table 3
Instructional materials

Questions & Options	Students' responses					Stakeholders' responses				
	Total	Papers and whiteboards	Electronic or online	Any of these	Both of them	Total	Papers and whiteboards	Electronic or online	Any of these	Both of them
2.5 For vocabulary, which format of the following instructional materials would Thai senior secondary school students with hearing impairment prefer? (Choose 1 format for each instructional material.)										
Coursebooks & handouts	68 100%	17 25%	16 23.53%	11 16.18%	24 35.29%	15 100%	0 0%	0 0%	1 6.67%	14 93.33%
Games	68 100%	3 4.41%	28 41.18%	11 16.18%	26 38.24%	15 100%	0 0%	2 13.33%	1 6.67%	12 80%
Authentic materials	68 100%	9 13.24%	21 30.88%	8 11.76%	30 44.12%	15 100%	0 0%	3 20%	1 6.67%	11 73.33%
Instructional presentations	68 100%	13 19.12%	18 26.47%	12 17.65%	25 36.76%	15 100%	0 0%	3 20%	1 6.67%	11 73.33%
2.6 For grammar, which format of the following instructional materials would Thai senior secondary school students with hearing impairment prefer? (Choose 1 format for each instructional material.)										
Coursebooks & handouts	68 100%	16 23.53%	10 14.71%	13 19.12%	29 42.65%	15 100%	1 6.67%	1 6.67%	0 0%	13 86.67%
Games	68 100%	5 7.35%	24 35.29%	15 22.06%	24 35.29%	15 100%	0 0%	3 20%	0 0%	12 80%
Authentic materials	68 100%	12 17.65%	20 29.41%	8 11.76%	28 41.18%	15 100%	0 0%	3 20%	1 6.67%	11 73.33%
Instructional presentations	68 100%	6 8.82%	18 26.47%	14 20.59%	30 44.12%	15 100%	0 0%	2 13.33%	2 13.33%	11 73.33%
2.7 For reading, which format of the following instructional materials would Thai senior secondary school students with hearing impairment prefer? (Choose 1 format for each instructional material.)										
Coursebooks & handouts	68 100%	16 23.53%	14 20.59%	10 14.71%	28 41.18%	15 100%	0 0%	0 0%	1 6.67%	14 93.33%
Games	68 100%	6 8.82%	23 33.82%	8 11.76%	31 45.59%	15 100%	0 0%	1 6.67%	1 6.67%	13 86.67%
Authentic materials	68 100%	7 10.29%	23 33.82%	9 13.24%	29 42.65%	15 100%	0 0%	1 6.67%	1 6.67%	13 86.67%
Instructional presentations	68 100%	11 16.18%	18 26.47%	13 19.12%	26 38.24%	15 100%	0 0%	2 13.33%	1 6.67%	12 80%
2.8 For writing, which format of the following instructional materials would Thai senior secondary school students with hearing impairment prefer? (Choose 1 format for each instructional material.)										
Coursebooks & handouts	68 100%	17 25%	16 23.53%	10 14.71%	25 36.76%	15 100%	0 0%	0 0%	1 6.67%	14 93.33%
Games	68 100%	9 13.24%	25 36.76%	9 13.24%	25 36.76%	15 100%	0 0%	0 0%	1 6.67%	14 93.33%
Authentic materials	68 100%	11 16.18%	20 29.41%	8 11.76%	29 42.65%	15 100%	0 0%	1 6.67%	1 6.67%	13 86.67%
Instructional presentations	68 100%	11 16.18%	23 33.82%	6 8.82%	28 41.18%	15 100%	0 0%	2 13.33%	1 6.67%	12 80%

Table 4

Others

Questions & Options	Students' responses				Stakeholders' responses				
2.9 How many hours in a week would Thai senior secondary school students with hearing impairment prefer to study English?	Total	1	2	3	More than 3	Total	1	2	3	More than 3
	68 100%	18 26.47%	10 14.71%	31 45.59%	9 13.24%	15 100%	0 0%	1 6.67%	9 60%	5 33.33%
2.10 Which area of content would Thai senior secondary school students with hearing impairment prefer to study in the English class? (You can choose more than 1 answer.)	Total	English for everyday use	English for social sciences and humanities	English for science and technology	English for business	Total	English for everyday use	English for social sciences and humanities	English for science and technology	English for business
	91 100%	50 54.95%	12 13.19%	22 24.18%	7 7.69%	27 100%	15 55.56%	3 11.11%	6 22.22%	3 11.11%
2.11 How would Thai senior secondary school students with hearing impairment like the English classroom atmosphere? (Choose only 1 answer.)	Total	Serious or formal	Fun or informal	Any of these	Both of them	Total	Serious or formal	Fun or informal	Any of these	Both of them
	68 100%	9 13.24%	31 45.59%	16 23.53%	12 17.65%	15 100%	0 0%	10 66.67%	1 6.67%	4 26.67%
2.12 How would Thai senior secondary school students with hearing impairment like the rapport between students and teachers in the English classroom? (Choose only 1 answer.)	Total	Serious or formal	Fun or informal	Any of these	Both of them	Total	Serious or formal	Fun or informal	Any of these	Both of them
	68 100%	13 19.12%	27 39.71%	13 19.12%	15 22.06%	15 100%	0 0%	11 73.33%	0 0%	4 26.67%
2.13 Which of the following equipment would Thai senior secondary school students with hearing impairment like in the English classroom? (Choose 4 answers.)	Total 272 100%	-	-	-	-	Total 60 100%	-	-	-	-
Whiteboards and markers	51 18.75%	-	-	-	-	10 16.67%	-	-	-	-
Computers/Laptops for students	59 21.69%	-	-	-	-	12 20%	-	-	-	-
Screens and projectors	22 8.09%	-	-	-	-	10 16.67%	-	-	-	-
iPads for students	38 13.97%	-	-	-	-	13 21.67%	-	-	-	-
Colored papers	31 11.4%	-	-	-	-	3 5%	-	-	-	-
Stationery	36 13.24%	-	-	-	-	8 13.33%	-	-	-	-
Colored pencils/pens	35 12.87%	-	-	-	-	4 6.67%	-	-	-	-
2.14 Which assessment methods would Thai senior secondary school students with hearing impairment like to have for an English course? (Choose 4 options.)	Total 272 100%	Individual	Pairs	Groups	Any of these	Total 60 100%	Individual	Pairs	Groups	Any of these
Class attendance	63 23.16%	-	-	-	-	11 18.33%	-	-	-	-
Class participation	48 17.65%	-	-	-	-	10 16.67%	-	-	-	-

Questions & Options	Students' responses					Stakeholders' responses				
Quizzes	25 9.19%	-	-	-	-	9 15%	-	-	-	-
Mid-term and final examinations	37 13.6%	-	-	-	-	9 15%	-	-	-	-
Role plays	36 13.24%	5 1.84%	3 1.1%	24 8.82%	4 1.47%	9 15%	0%	0%	4 6.67%	5 8.33%
Presentations	35 12.87%	7 2.57%	4 1.47%	20 7.35%	4 1.47%	6 10%	0%	0%	1 1.67%	5 8.33%
Projects	28 10.29%	3 1.1%	2 0.74%	19 6.99%	4 1.47%	6 10%	0%	0%	3 5%	3 5%

Table 5

Instructional activities

Questions & Options	Students' responses					Stakeholders' responses				
3.1 Which of the following vocabulary instructional activities are necessary in the English class of Thai senior secondary school students with hearing impairment? (Choose 4 options.)	Total 272 100%	Individual	Pairs	Groups	Any of these	Total 60 100%	Individual	Pairs	Groups	Any of these
Lectures	18 6.62%	-	-	-	-	2 3.33%	-	-	-	-
Q&A	36 13.24%	-	-	-	-	8 13.33%	-	-	-	-
Exercises	49 18.01%	18 6.62%	4 1.47%	15 5.51%	12 4.41%	14 23.33%	7 11.67%	1 1.67%	0 0%	6 10%
Discussions	26 9.56%		7 2.57%	14 5.15%	5 1.84%	8 13.33%	-	0 0%	1 1.67%	7 11.67%
Role plays	14 5.15%	5 1.84%	1 0.37%	6 2.21%	2 0.74%	7 11.67%	0 0%	0 0%	2 3.33%	5 8.33%
Presentations	30 11.03%	10 3.68%	5 1.84%	9 3.31%	6 2.21%	3 5%	0 0%	0 0%	0 0%	3 5%
Projects	28 10.29%	4 1.47%	5 1.84%	12 4.41%	7 2.57%	3 5%	0 0%	0 0%	2 3.33%	1 1.67%
Self-studying	17 6.25%	2 0.74%	1 0.37%	10 3.68%	4 1.47%	4 6.67%	0 0%	0 0%	0 0%	4 6.67%
Games	54 19.85%	7 2.57%	4 1.47%	25 9.19%	18 6.62%	11 18.33%	0 0%	0 0%	0 0%	11 18.33%
3.2 Which of the following grammar instructional activities are necessary in the English class of Thai senior secondary school students with hearing impairment? (Choose 4 options.)	Total 272 100%	Individual	Pairs	Groups	Any of these	Total 60 100%	Individual	Pairs	Groups	Any of these
Lectures	27 9.93%	-	-	-	-	10 16.67%	-	-	-	-
Q&A	32 11.76%	-	-	-	-	9 15%	-	-	-	-
Exercises	49 18.01%	18 6.62%	3 1.1%	21 7.72%	7 2.57%	14 23.33%	6 10%	1 1.67%	0 0%	7 11.67%
Discussions	23 8.46%	-	8 2.94%	11 4.04%	4 1.47%	2 3.33%	-	0 0%	0 0%	2 3.33%

Questions & Options	Students' responses					Stakeholders' responses				
Role plays	25 9.19%	6 2.21%	4 1.47%	8 2.94%	7 2.57%	3 5%	0 0%	0 0%	0 0%	3 5%
Presentations	25 9.19%	4 1.47%	5 1.84%	9 3.31%	7 2.57%	7 11.67%	2 3.33%	0 0%	1 1.67%	4 6.67%
Projects	23 8.46%	3 1.1%	1 0.37%	12 4.41%	7 2.57%	1 1.67%	0 0%	0 0%	0 0%	1 1.67%
Self-studying	21 7.72%	5 1.84%	3 1.1%	9 3.31%	4 1.47%	2 3.33%	0 0%	0 0%	0 0%	2 3.33%
Games	47 17.28%	3 1.1%	3 1.1%	21 7.72%	20 7.35%	12 20%	0 0%	0 0%	1 1.67%	11 18.33%
3.3 Which of the following reading instructional activities are necessary in the English class of Thai senior secondary school students with hearing impairment? (Choose 4 options.)	Total 272 100%	Individual	Pairs	Groups	Any of these	Total 60 100%	Individual	Pairs	Groups	Any of these
Lectures	27 9.93%	-	-	-	-	4 6.67%	-	-	-	-
Q&A	36 13.24%	-	-	-	-	9 15%	-	-	-	-
Exercises	49 18.01%	20 7.35%	5 1.84%	17 6.25%	7 2.57%	10 16.67%	2 3.33%	1 1.67%	0 0%	7 11.67%
Discussions	24 8.82%	-	5 1.84%	14 5.15%	5 1.84%	3 5%	-	0 0%	2 3.33%	1 1.67%
Role plays	22 8.09%	5 1.84%	3 1.1%	8 2.94%	6 2.21%	7 11.67%	0 0%	0 0%	1 1.67%	6 10%
Presentations	30 11.03%	7 2.57%	4 1.47%	15 5.51%	4 1.47%	8 13.33%	0 0%	0 0%	2 3.33%	6 10%
Projects	23 8.46%	7 2.57%	3 1.1%	9 3.31%	4 1.47%	4 6.67%	0 0%	0 0%	3 5%	1 1.67%
Self-studying	18 6.62%	2 0.74%	3 1.1%	7 2.57%	6 2.21%	5 8.33%	0 0%	0 0%	0 0%	5 8.33%
Games	43 15.81%	8 2.94%	4 1.47%	19 6.99%	12 4.41%	10 16.67%	0 0%	0 0%	1 1.67%	9 15%
3.4 Which of the following writing instructional activities are necessary in the English class of Thai senior secondary school students with hearing impairment? (Choose 4 options.)	Total 272 100%	Individual	Pairs	Groups	Any of these	Total 60 100%	Individual	Pairs	Groups	Any of these
Lectures	36 13.24%	-	-	-	-	6 10%	-	-	-	-
Q&A	34 12.50%	-	-	-	-	9 15%	-	-	-	-
Exercises	52 19.12%	17 6.25%	9 3.31%	14 5.15%	12 4.41%	14 23.33%	7 11.67%	1 1.67%	0 0%	6 10%
Discussions	32 11.76%	-	10 3.68%	12 4.41%	10 3.68%	5 8.33%	-	2 3.33%	1 1.67%	2 3.33%

Questions & Options	Students' responses					Stakeholders' responses				
Role plays	16 5.88%	3 1.1%	3 1.1%	5 1.84%	5 1.84%	3 5%	0 0%	1 1.67%	0 0%	2 3.33%
Presentations	20 7.35%	5 1.84%	5 1.84%	7 2.57%	3 1.1%	5 8.33%	0 0%	0 0%	0 0%	5 8.33%
Projects	16 5.88%	0 0%	1 0.37%	7 2.57%	28 .94%	3 5%	0 0%	0 0%	3 5%	0 0%
Self-studying	25 9.19%	6 2.21%	1 0.37%	9 3.31%	9 3.31%	2 3.33%	0 0%	0 0%	1 1.67%	1 1.67%
Games	41 15.07%	2 0.74%	4 1.47%	19 6.99%	16 5.88%	13 21.67%	2 3.33%	0 0%	1 1.67%	10 16.67%

Notes: The symbol "-" indicates that the respondents were not asked to express their attitudes.

Table 6
Instructional materials

Questions & Options	Students' responses					Stakeholders' responses				
3.5 For vocabulary, which format of the following instructional materials is necessary for the English class of Thai senior secondary school students with hearing impairment? (Choose 1 format for each instructional material.)	Total	Papers and whiteboards	Electronic or online	Any of these	Both of them	Total	Papers and whiteboards	Electronic or online	Any of these	Both of them
Coursebooks & handouts	68 100%	13 19.12%	22 32.35%	7 10.29%	26 38.24%	15 100%	0 0%	0 0%	1 6.67%	14 93.33%
Games	68 100%	5 7.35%	26 38.24%	9 13.24%	28 41.18%	15 100%	0 0%	1 6.67%	1 6.67%	13 86.67%
Authentic materials	68 100%	11 16.18%	24 35.29%	10 14.71%	23 33.82%	15 100%	0 0%	1 6.67%	2 13.33%	12 80%
Instructional presentations	68 100%	9 13.24%	21 30.88%	8 11.76%	30 44.12%	15 100%	0 0%	1 6.67%	2 13.33%	12 80%
3.6 For grammar, which format of the following instructional materials is necessary for the English class of Thai senior secondary school students with hearing impairment? (Choose 1 format for each instructional material.)	Total	Papers and whiteboards	Electronic or online	Any of these	Both of them	Total	Papers and whiteboards	Electronic or online	Any of these	Both of them
Coursebooks & handouts	68 100%	12 17.65%	18 26.47%	9 13.24%	29 42.65%	15 100%	0 0%	1 6.67%	1 6.67%	13 86.67%
Games	68 100%	9 13.24%	21 30.88%	10 14.71%	28 41.18%	15 100%	0 0%	2 13.33%	1 6.67%	12 80%
Authentic materials	68 100%	4 5.88%	26 38.24%	9 13.24%	29 42.65%	15 100%	0 0%	1 6.67%	2 13.33%	12 80%
Instructional presentations	68 100%	8 11.76%	21 30.88%	8 11.76%	31 45.59%	15 100%	0 0%	2 13.33%	1 6.67%	12 80%
3.7 For reading, which format of the following instructional materials is necessary for the English class of Thai senior secondary school students with hearing impairment? (Choose 1 format for each instructional material.)	Total	Papers and whiteboards	Electronic or online	Any of these	Both of them	Total	Papers and whiteboards	Electronic or online	Any of these	Both of them
Coursebooks & handouts	68 100%	15 22.06%	17 25%	9 13.24%	27 39.71%	15 100%	0 0%	0 0%	1 6.67%	14 93.33%
Games	68 100%	10 14.71%	18 26.47%	13 19.12%	27 39.71%	15 100%	0 0%	1 6.67%	1 6.67%	13 86.67%

Questions & Options	Students' responses					Stakeholders' responses				
Authentic materials	68 100%	5 7.35%	23 33.82%	11 16.18%	29 42.65%	15 100%	0 0%	1 6.67%	1 6.67%	13 86.67%
Instructional presentations	68 100%	11 16.18%	13 19.12%	13 19.12%	31 45.59%	15 100%	0 0%	2 13.33%	2 13.33%	11 73.33%
3.8 For writing, which format of the following instructional materials is necessary for the English class of Thai senior secondary school students with hearing impairment? (Choose 1 format for each instructional material.)	Total	Papers and whiteboards	Electronic or online	Any of these	Both of them	Total	Papers and whiteboards	Electronic or online	Any of these	Both of them
Coursebooks & handouts	68 100%	15 22.06%	18 26.47%	8 11.76%	27 39.71%	15 100%	1 6.67%	0 0%	1 6.67%	13 86.67%
Games	68 100%	7 10.29%	18 26.47%	13 19.12%	30 44.12%	15 100%	1 6.67%	1 6.67%	1 6.67%	12 80%
Authentic materials	68 100%	5 7.35%	22 32.35%	11 16.18%	30 44.12%	15 100%	0 0%	0 0%	1 6.67%	14 93.33%
Instructional presentations	68 100%	10 14.71%	12 17.65%	11 16.18%	35 51.47%	15 100%	0 0%	2 13.33%	2 13.33%	11 73.33%

Table 7
Students' lacks

Statements	Students' responses			Stakeholders' responses*		
	M	SD	Interpretation	M	SD	Interpretation
4.1 Thai senior secondary school deaf students can use English vocabulary effectively.	3.47	1.05	High	3.21	0.94	Average
4.2 Thai senior secondary school deaf students can use English grammar effectively.	3.21	0.96	Average	2.56	1.04	Low
4.3 Thai senior secondary school deaf students can use their English reading skills effectively.	3.47	0.88	High	2.79	1.08	Average
4.4 Thai senior secondary school deaf students can use their English writing skills effectively.	3.38	1.03	Average	2.58	1.04	Low
4.5 Overall, Thai senior secondary school deaf students can use English effectively.	3.54	1.17	High	3.07	1.10	Average
4.6 The instructional activities in the English class of Thai senior secondary school deaf students are appropriate.	3.56	1.02	High	3.29	0.88	Average
4.7 The instructional materials in the English class of Thai senior secondary school deaf students are appropriate.	3.49	1.12	High	3.14	1.06	Average
4.8 The number of hours per week for the English class of Thai senior secondary school students is appropriate.	3.25	1.06	Average	3.39	1.01	Average
4.9 The areas of content of the English class for Thai senior secondary school students are appropriate.	3.53	1.16	High	3.5	0.82	High
4.10 The learning atmosphere of the English class of Thai senior secondary school students is appropriate.	3.24	1.18	Average	3.75	0.92	High
4.11 The student-teacher roles in the English class of Thai senior secondary school students are appropriate.	3.54	1.12	High	3.69	0.82	High
4.12 The instructional equipment in the English class of Thai senior secondary school students is appropriate.	3.6	1.03	High	3.38	0.62	Average
4.13 The assessment methods in the English class of Thai senior secondary school students are appropriate.	3.57	1.10	High	3.46	0.63	High
Total (Average)	3.45	1.08	High	3.22	1.00	Average

Notes: *Some stakeholders responded "N/A" to some statements as they did not have relevant experience on those issues. The "N/A" responses were not used in the calculation.