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Using a Mobile Application to Enhance English Communication Skills of Paramedic Students in the English for Specific Purposes Classroom

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ABSTRACT

The purposes of this study were to 1) develop an English communication mobile application based on emergency medical service situations to meet efficiency criterion E1/E2 = 80/80; 2) compare the students' English communication skills before and after implementing the mobile application; and 3) examine the students' attitudes toward the use of the mobile application. The participants were 14 second-year students enrolled in an English for Specific Purposes course. The instruments were 1) a mobile application for English communication, 2) lesson plans, 3) Process E1 and Product E2 tests, 4) a role-play pretest and a posttest, and 5) an attitude questionnaire. The mobile application included videos featuring speakers with different English accents who used English as their lingua franca. Data were analyzed through

Means, Standard Deviation, and the efficiency criterion of E1/E2. The findings revealed that the efficiency of the mobile application was 82.50/82.38 higher than the standard criteria (80/80). The students' English communication skills improved significantly following the use of the mobile application. The students held positive attitudes towards all aspects of the mobile application. The mobile application could prove valuable not only to paramedics but also to other medical professionals dealing with patients from different linguistic backgrounds.

Keywords: paramedic students, English communication skills, mobile-assisted application, English for Specific Purposes, English as a Lingua Franca

Introduction

The Thai government promotes Thailand as a medical tourism hub, meaning there is a myriad of overseas tourists or investors visiting the country, particularly tourist locations. Tourists may be exposed to unexpected health hazards or traumas upon arrival in Thailand. Consequently, it is important to know how to communicate effectively and empathically with foreign injured patients in crisis or with their relatives in emergencies. This is because clear and empathic communication can reduce the patient's stress and anxiety. Empathic relationships between healthcare workers and patients can increase immune functions, reduce post-surgery hospital stays, control blood sugar levels, reduce asthma attacks, and even shorten the duration of a cold (Decety & Fotopoulou, 2015).

In the new era, mobile applications have become highly valuable educational tools for enhancing English skills among university students due to their accessibility, convenience, and interactive nature. Mobile applications allow students to practice language skills anytime, anywhere, fitting into their busy schedules. They offer multimedia content like videos, audio clips, and interactive games that make learning more engaging and enjoyable. This variety can cater to different learning preferences and keep students motivated (Demir & Akpınar, 2018). Given that students favorably embrace mobile applications as learning tools, teachers should provide guidance on how to utilize mobile applications efficiently and properly (Thedpitak & Somphong, 2021). Hence, students' English language knowledge and skills, including their communication skills, can be improved by employing mobile applications as learning tools.

In English communication, students should become aware of how English is spoken by different speakers. Given English has emerged as the official lingua franca among the Association of Southeast Asian Nations (ASEAN) community, students should be encouraged to study the concept of English as a Lingua Franca (ELF) in relation to communication in English between people who speak a different first language (Seidlhofer, 2005).

The researchers in this study teach English for Specific Purposes (ESP) courses for paramedic students at a medium-sized university in Thailand. Paramedic students are required to enhance their English language skills, particularly their speaking skills, in order to be successful in their careers. Apart from providing services to patients in English, ESP courses offer students content that is related to their professional responsibilities. Then, Content-Based Instruction (CBI) can be integrated into designing ESP courses. CBI refers to the approach to teaching a second language that emphasizes the content or knowledge the students will acquire rather than a linguistic or other type of syllabus (Richards & Rodgers, 2001). Thus, in this study, incorporating content related to students' professional fields in this ESP course is considered crucial for equipping paramedic students with proficiency in the English language alongside paramedic-specific contextual knowledge through the content used in the mobile application.

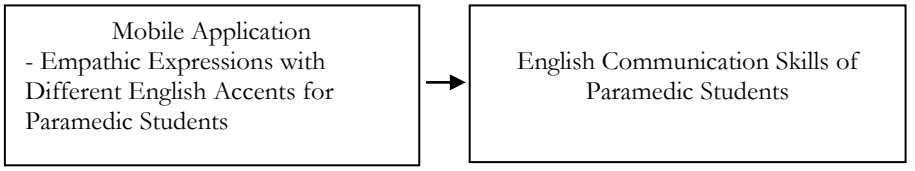
It is acknowledged that mobile applications can be employed in English classrooms. However, responding to the limited number of studies on using emergency medical service mobile applications to improve paramedic students' English communication skills, the aim of the current study was threefold: first, to develop the English communication mobile application based on emergency medical service situations to meet the efficiency criterion of E1/E2 = 80/80; second, to compare the students' English communication skills before and after implementing the mobile application; and third, to examine the students' attitudes toward the use of the mobile application.

Conceptual Framework

Figure 1 illustrates the conceptual framework. It shows that the independent variable is the mobile application, presenting English empathic expressions and conversations in contexts. The dependent variable is the English communication skills of paramedic students in the ESP classroom.

Figure 1

The Designed Mobile Application Framework



Significance of the Study

In response to the limitations of the designed mobile application providing different accents based on the notion of English as a Lingua Franca within the context of ESP for paramedic students, there is a pressing need to develop a new application aimed at enhancing students' empathic communication skills, particularly during the COVID-19 pandemic.

Literature Review

English for Specific Purposes

ESP is an approach that aims to match the needs of learners with the language delivered in a specific learning setting (Hutchinson & Waters, 1987). Classified by Hutchinson and Waters (1987), ESP needs are divided into two categories: target needs and learning needs. Students' necessities, lacks, and wants are referred to as target needs. Firstly, the term 'necessities' refers to what students should know to do their jobs properly in the target situation. Secondly, 'lacks' include what the students already know, such as their language skills, as well as what they do not know - lacks are the necessities the students require. Finally, 'wants' refers to what students seek to gain from the ESP course. Regarding learning needs, Hutchinson and Waters (1987) suggested the analogy of an ESP course as a journey. They proposed a framework for analyzing learning needs that takes into account several variables, such as the reasons why the students are taking the course, the method of how they will learn, the available resources, the students' characteristics, such as sex, age, nationality, and attitudes, the setting where the course will be held, and the time when it will be held.

Furthermore, considering that the participants of this study were students pursuing paramedic education and their work environments were within the realm of medical disciplines, the significance of English for Medical Purposes (EMP) is noteworthy for them. The area of EMP has

originated from the broader field of English for Specific Purposes, aiming to address the distinct educational and vocational needs of individuals studying medicine and its related specializations (Alqurashi, 2016). Therefore, healthcare workers and healthcare students including paramedic students must improve their English proficiency to provide medical services in their professions.

Technology in Language Learning and Teaching

Since technology has advanced rapidly, educators have greater opportunities to employ it for educational purposes (Shadiev & Yang, 2020). Technology is perceived to have positively impacted language learning in various ways. Ahmadi (2018) claimed that technology empowers educators to modify classroom activities, thereby improving the language learning process. In Thailand, technology has emerged as a pivotal concern, exerting a notable impact on the present state of education (Deerajviset, 2014). Thus, there should be an emphasis on advocating for the strengthening and utilization of technologies in Thailand.

Mobile-Assisted Language Learning

Given the pivotal role of technology in language learning, a range of technological devices have been utilized. This includes mobile devices. Mobile learning is defined as learning offered via portable technology and potentially accessible at anytime, anywhere (Kukulska-Hulme & Shield 2008). Mobile-Assisted Language Learning (MALL) represents one of its subcategories, with a particular emphasis on the language learning context (Shortt et al., 2023). MALL has gained significance as a crucial area of focus, given the extensive utilization of mobile devices among the present generation of learners (Lin et al., 2022). Considering the importance of using mobile devices, a mobile application was implemented in this study.

English Empathic Communication

The ability to communicate in English is essential in today's competitive world. There is an increasing demand from students to be able to communicate in English. Importantly, English empathic communication is also important for paramedics and other emergency medical service professionals. According to Coulehan et al. (2001), empathic communication includes 1) active listening (e.g., hmmm ..., uh-huh.), 2) framing or signposting (e.g., It sounds like what you're telling me is ...), 3) reflecting the content (e.g., So, if I'm hearing you correctly, what you really

enjoy is …), 4) identifying and calibrating the emotion (e.g., Tell me how you're feeling about this.), and 5) requesting and accepting correction (e.g., Did I miss anything?). Empathic communication is a tool to facilitate understanding of the patient's experiences, feelings, and needs (Lundqvist-Persson, 2017). Therefore, English empathic communication refers to communication that uses English as a tool to help a speaker in a conversation to understand his or her interlocutor's experiences, feelings, and needs. In the current study, English communication focuses on empathic communication between paramedics and patients in emergency medical service situations.

Content-Based Instruction (CBI)

Developing an ESP mobile application also focuses on content relevant to the students' field of study or career. Content-Based Instruction (CBI) is then considered which refers to the approach to teaching a second language that emphasizes the content or knowledge the students will acquire rather than a linguistic or other type of syllabus (Richards & Rodgers, 2001). With this, CBI is a method that promotes teaching content and language simultaneously. In this study, the content and language were integrated whereby empathic communication expressions were presented with different English accents on the content-based mobile application.

English as a Lingua Franca

English as a Lingua Franca (ELF) refers to English communication between speakers with different first languages or non-native English users (Seidlhofer, 2005). Indeed, English is regarded as a critical lingua franca that connects Thailand culturally, academically, and commercially with other ASEAN members and other countries in the world (Baker, 2012). As a result, there is a higher demand for English as a Foreign Language (ELF) studies in Thailand.

In this study, the ELF context focused only on asking for clarification when paramedics experienced difficulties understanding their patients. Different English accents were available on the English empathic communication mobile application, including Japanese, Chinese, Cambodian, and Filipino. These accents were chosen by the sample group as they were familiar with international students studying at their university who came from Japan, China, and Cambodia. Also, some students had enrolled in English courses with Filipino teachers. The selected accents contributed to the decision as to which accents to include on the mobile application.

The reasons outlined next also support why these accents were selected. Thailand's policy of encouraging long-stay tourism attracts Japanese retirees to the country (Miyashita et al., 2017). Moreover, Thailand's promotion of its tourism sector has also seen an increase in the number of Chinese visitors - almost 8 million Chinese visited the country in 2015 (Poengtrummarong, 2018). As of March 2018, the number of Cambodian workers registered to work in Thailand had increased to 390,840 (Sakulsri et al., 2020). Lastly, the number of Filipino teachers increased from approximately 7,000 in 2016 to 12,000 in 2019 (Wattananukij & Crabtree, 2020). Due to the increasing number of Filipino teachers in Thailand, students need to explore different accents including Filipino.

These statistics show that a significant number of Japanese, Chinese, Cambodian, and Filipino people either live in Thailand or visit the country. Consequently, these workers and travelers are permitted access to medical services, with studies showing that this is indeed the case. Thus, students may encounter these accents in their future studies and careers.

Research Methodology

Participants

The participants in this study were fourteen second-year paramedic EFL students who enrolled an English for Specific Purposes course. They were selected via purposive sampling method because there was only one section in ESP for the paramedic course. The participants shared a common background in English experience, having enrolled in three General English courses (CEFR A1 to B1) as part of their curriculum, which gave them a foundational understanding of the language.

Research Design

The quantitative and qualitative data was collected in response to the research objectives 1) to develop and assess the effectiveness of mobile application, 2) to implement the mobile application lessons and compare the students' English communication skills before and after implementation, 3) examine the students' attitudes toward the use of the mobile application. Hence, this study employed a quasi-experimental design. A single-group pretest and posttest study was conducted to compare students' English communication abilities before and after using the English empathic communication mobile application based on emergency medical service

situations. The mobile application contents provided the videos with two different accents from the ASEAN member countries: Filipino and Cambodian. Another two accents from Japanese, and Chinese speakers. Four different accent speakers employ English as their lingua franca. The sample group selected these accents because they were familiar with international students from Japan, China, and Cambodia who attended their university. Additionally, some students had taken English courses taught by Filipino teachers. These factors influenced the choice of accents to be included in the mobile application.

Research Instruments

The instruments used in this study were 1) a mobile application for English communication, 2) four lesson plans, 3) Process E1 and Product E2 tests, 4) a role-play pretest and a posttest, and 5) an attitude questionnaire.

A Mobile Application for English Communication

The mobile application was designed based on the stages of developing materials for specific purposes and E1/E2 Model for Process and Product-Based Developmental Testing of Media and Instructional Packages. The stages of developing the mobile application were 1) determining the needs and preferences of the students through interviews including studying the course description, 2) deciding on the language contexts the course will focus on, 3) deciding on the categories for presenting the language in the course, 4) deciding what language skills and sub-skills the course will focus on, 5) determining the types of activities that will be used in the course, 6) designing the materials, 7) assessing the mobile application by two ESP lecturers and a paramedic lecturer to validate in terms of language use and appropriateness of its contents 8) revising the materials 9) piloting the materials, collecting feedback, revising the materials, and 10) using the mobile application to measure its efficiency (Barnard & Zemach, 2003; Brahmawong, 2013).

The mobile application contents comprised four units: Traumas, Chest-pain, Allergies and Animal Bites. Each unit presented four emergency medical service situations; namely, the emergency call service (1669), at the accident site, in the ambulance, and in the emergency room. For each situation, the software users could choose from four different accents. All situations were presented in animation videos available on the mobile application. In the animations, users were exposed to situations that involved asking for clarification, especially when the paramedics were unable to understand their patients (e.g., I'm sorry, I don't understand.

Please, could you tell me again?). The mobile application also focused on English empathic communication adapted from Coulehan et al. (2001). This introduces the empathic communication areas of active listening, framing or signposting, identifying, and calibrating the emotion, and requesting and accepting correction, as presented in Table 1:

Table 1

Scope of the Mobile Application Contents

Units	Topics	Scenes	Empathic communication	Accents
1 2 3 4	Traumas Chest-pain Allergies Animal Bites	- Emergency call service (1669) - At the accident site - In the ambulance - In the emergency room (ER)	- Active listening (e.g., Hmmm . . ., Uh-huh) - Framing or signposting (e.g., Sounds like what you're telling me is ...) - Reflecting on the content (e.g., So, if I'm hearing you correctly, …) - Identifying and calibrating the emotion (e.g., Tell me how you're feeling about this.) - Requesting and accepting correction (e.g., Did I miss anything?)	- Chinese - Cambodian - Filipino - Japanese

Four lesson plans

Four lesson plans using the mobile application were implemented by the researchers. The lesson plans were approved by three experts: one who has been working in the field of ESP for more than 10 years, one who has been working in the field of ELF and World Englishes, and one who has been working in the field of paramedics and emergency medical services. The four lesson plans were implemented according to the units on the mobile application comprising five teaching procedures: namely, warm-up, presentation, practice, production, and wrap-up. The mobile application was used primarily during the classroom presentation and practice procedures. Together with the mobile application, the lesson plans included discussion, group work and role-playing activities. Consequently, implementation of the lesson plans enabled the paramedic students to engage with real examples of vocabulary, grammatical structures, empathic expressions, and requests for clarification delivered in different accents they may encounter in their career field.

Process E1 and Product E2 Tests

As the first research objective was to develop an English communication mobile application based on emergency medical service situations to meet efficiency criterion E1/E2 = 80/80, the Process E1 and Product E2 tests were employed during the period from January to March 2021. This study adapted the developmental testing using the Process E1 and Product E2 Tests introduced by Brahmawong (2013). This study set the criterion for E1/E2 at 80/80.

Process E1

To investigate the efficiency criterion, 4 process tests (E1) were constructed which aimed to evaluate the students' progress at the end of each unit. Based on the language used and the mobile application contents, the tests also aimed to investigate the students' knowledge and use of empathic communication language for each unit. The process tests consisted of multiple-choice questions, true-false options, and cloze passages. Each unit comprised 5 items (also 5 points). Then, the total score was 20. The tests primarily assessed the students' knowledge of English vocabulary and emphatic expressions.

Product E2

Regarding E2, the post-test evaluated the students' achievement after implementing the designed mobile application. The test included multiple-choice questions (15 items with four choices) related to the English vocabulary and empathic expressions in the emergency medical service contexts on the application.

The three experts approved the Process and Product tests to confirm the content validity by using the item-objective congruence index (IOC). All scores for the items were higher than or equal to 0.5, and consequently, they were considered reserved. After implementing the Process and Product tests with the pilot group (10 paramedic students) from November to December 2020, the efficiency of the English communication mobile application was 81.50/80.67 higher than the standard criteria (80/80).

Role-Play Pretest and Posttest

As the second research objective was to compare the students' English communication skills before and after implementing the mobile application, the role-play pretest and posttest were implemented. The pre- and posttests involved role-plays in which the paramedic students performed all four emergency medical service situations according to the mobile application contents. The criteria for evaluating empathic

communication skills focused on four areas: grammatical accuracy, preparedness and presentation, pronunciation, and English empathic communication. The experts also approved the criteria. Applying the role-play tests also helped support the findings from the Process E1 and Product E2 Tests, indicating that vocabulary and emphatic expressions assessed in both Process E1 and Product E2 Tests could be effectively employed in paramedic conversations.

Attitude Questionnaire

A questionnaire was created to examine the students' favorable attitudes toward the designed mobile application. It comprised four sections: contents and language, mobile application design, mobile application benefits, and additional comments or suggestions. There were four, five, and three items, respectively for the first three sections. Participants were asked to indicate their response to the statements by selecting from four options: disagree (1), neutral (2), agree (3), and strongly agree (4) (Todd, 2018). The 4-point Likert scale was employed since it was simple to gather basic responses for quick and straightforward assessments. Following a review of the questionnaire by the three experts using the IOC index, some statements were modified to make them easier for the students to comprehend.

Procedure

The fieldwork for this study took place from January to March 2021. All students were required to provide consent to participate in the study and approval for the study was granted by the human research ethics committee at the university where the study took place. All students were provided with information regarding the course outline and the objectives of the study. Following this, the paramedic students were asked to participate in a role-play as part of the English empathic communication pre-test. Specifically, they were asked to work in groups of three to perform the emergency medical service process including emergency call service (1669), at the accident site, in the ambulance, and in the emergency room. The four-hour lesson plans together with the mobile application were then implemented in the ESP classroom over eight weeks; two hours per week for a total of 16 hours. After each unit or lesson plan, one formative test was employed. At the end of the course, after using the mobile application, the students were asked to complete the posttest focusing on their gained knowledge of empathic communication skills related to the language used and the context of the mobile application. Furthermore, the role-play

posttest was performed. Lastly, the questionnaire was administered to the students to investigate their attitudes toward the designed mobile application.

Data Analysis

The efficiency of the English animated empathic communication mobile application was measured by using the criteria 80/80 standard. This compared the participants' mean scores on the formative tests and the post-test. Data obtained from the role-play pretest and post-test were then calculated for mean scores and standard deviations and compared using a paired t-test. Finally, participants' attitudes toward the designed mobile application were analyzed using mean and standard deviation results. Participants' responses for each item were scored from one to four based on the four-point Likert-scale response choices. The mean values were then interpreted; namely, 1.00 to 1.75 as disagree, 1.76 to 2.50 as neutral, 2.51 to 3.25 as agree, and 3.26 to 4.00 as strongly agree (Todd, 2018).

Results

Efficiency of the English Communication Mobile Application

The first research objective of this study was to develop an English communication mobile application based on emergency medical service situations to meet the efficiency criterion of E1/E2 = 80/80. The efficiency of the mobile application was assessed using 4 Process tests as the application consisted of 4 units and a Product test, with the results presented in Table 2:

Table 2

Efficiency of the Designed Mobile Application

Formative tests			**Post-test**			**Efficiency values**
Total score	Mean	E1	Total score	Mean	E2	E1/E2
20	15.07	82.50	15	11.29	82.38	82.50/82.38

Table 2 shows that the mean score for the formative tests was 15.07 and for the post-test, the mean score was 11.29. Furthermore, the efficiency values were at 82.50/82.38, higher than the set standard criterion (80/80).

Effects of the Mobile Application on English Communication Skills

The second objective of this study was to compare English empathic communication skills before and after being implemented through the mobile application. Students' scores obtained from the pre-and post-tests requiring the students to perform role-plays were analyzed using descriptive statistics. The means and standard deviations of the analysis results are shown in Table 3:

Table 3

Comparison of the Overall Mean Scores on the Role-play Pretest and Posttest

N	Total score	Pretest scores		Posttest scores		t	p-value
		Mean	S.D.	Mean	S.D.		
14	15	7.86	1.2924	12.93	1.5915	-9.587	0.000*

*Significant at the 0.01 level ($p<0.01$)

As shown in Table 3, statistical analysis of the pre-and post-test mean scores reveals the students' scores increased by 33.8%. There was a significant difference between the mean scores of the pretest and posttest at the 0.01 level ($t=-9.587$, $p<.01$). The pretest mean score was 7.86 with a standard deviation of 1.2924 ($M= 7.86$, $SD=1.2924$), whereas the posttest mean score was 12.93 with a standard deviation of 1.5915 ($M=12.93$, $SD=1.5915$).

Students' Attitudes toward the English Communication Mobile application

Regarding the questionnaire, there were four sections. The first three sections were rating scale sections, and the last section was the additional comments or suggestions section. For the first three sections, to examine the students' attitudes toward the use of the mobile application (the third research objective), they were asked to carefully select the ranking rates in three aspects: contents and language, mobile application design, and mobile application benefits.

Table 4

Students' Attitudes Toward the Contents and Language

Item	Description	Mean	S.D.	Interpretation
1.	**In this section, "students' attitudes" indicates the "favorable attitudes" of**			

Item	Description	Mean	S.D.	Interpretation
	students towards the contents which refer to the learning materials for paramedics and incorporate career-specific vocabulary and English empathic communication structures.			
1.1	The contents related to the professional contexts of paramedics are clear and comprehensive.	3.07	0.92	Agree
1.2	The contents which are divided into four units are suitable for paramedic contexts. Each unit consists of four subunits which involve the professional contexts of paramedics.	3.43	0.51	Strongly agree
1.3	The English language, vocabulary and grammatical structures used in the contents are suitable for the contexts in which paramedics operate.	3.64	0.50	Strongly agree
1.4	English empathic communication used in the contents is suitable for the contexts in which paramedics operate.	3.36	0.50	Strongly agree
	Total	**3.38**	**0.63**	**Strongly agree**

According to the data shown in Table 4, the total mean score was 3.38 which indicates the participants had positive attitudes toward the mobile application's contents. Concerning each aspect, the highest mean scores were for the language, vocabulary and grammatical structures of English used in the contents (M=3.64, S.D. 0.50). In contrast, the lowest mean score was for the clarity and comprehensibility of the contents related to paramedic contexts (M=3.07, S.D.= 0.92); however, the score is considered at the agree level.

Table 5

Students' Attitudes Toward the Design of Mobile Application

Item	Description	Mean	S.D.	Interpretation
2.	**In this section, "students' attitudes" indicates the "favorable attitudes" of students towards the design which refers to the use of animated characters in each scene, the correct pronunciation of vocabulary, and empathic communication expressions of the animated characters.**			
2.1	The 2D animated English characters performing the emergency medical service conversations with empathy such as movements, gestures, and facial expressions are appropriate.	3.86	0.36	Strongly agree

Item	Description	Mean	S.D.	Interpretation
2.2	Moving images in each scene are comprehensible.	3.64	0.63	Strongly agree
2.3	The characters speak different English accents (Chinese, Cambodian, Filipino, and Japanese) which meet my interests.	4.00	0.00	Strongly agree
2.4	English vocabulary which is presented along with the correct pronunciation is useful.	3.93	0.27	Strongly agree
2.5	Downloading the mobile application on both Google Play and an accessible online link offers convenience and usability.	4.00	0.00	Strongly agree
	Total	**3.89**	**0.36**	**Strongly agree**

In Table 5, the total mean score was 3.89. The variety of English accents in the designed mobile application and running the mobile application on Google Play and an accessible online link achieved the highest mean scores (M= 4.00, S.D. = 0.00). Conversely, comprehensibility of the moving images in each scene achieved the lowest mean score (M= 3.64, S.D. = 0.63) – although this remained at the 'strongly agree' level.

Table 6

Students' Attitudes Toward the Mobile Application's Benefits

Item	Description	Mean	S.D.	Interpretation
3.	**In this section, "students' attitudes" indicates the "favorable attitudes" of students towards the benefits of the designed mobile application which refer to applying the contents, vocabulary, listening skills with different English-speaking accents, and English empathic communication structures to real-life situations.**			
3.1	Learners or mobile application users can apply vocabulary and English sentence structures to real-life situations.	3.71	0.47	Strongly agree
3.2	Learners or mobile application users can apply listening skills with different English-speaking accents to real-life situations.	4.00	0.00	Strongly agree
3.3	Learners or mobile application users can communicate in English with empathy and can apply it to real-life situations.	3.50	0.76	Strongly agree
	Total	**3.74**	**0.54**	**Strongly agree**

Table 6 indicates that 3.74 was the total mean score of the students' attitudes toward the benefits of the designed mobile application. The highest mean score was for the benefits related to listening skills with different English-speaking accents (M= 4.00, S.D. 0.00). In contrast, the lowest mean score was for communicating in English with empathy and applying it to real-life situations (M=3.50, S.D.= 0.76).

Additional Comments or Suggestions from Students

According to the fourth section of the attitude questionnaire, allowing students to add additional comments or suggestions, the responses were revealed in the section. The majority of the students (57%) provided positive comments and suggestions on the contents and language used in the mobile application. They believed that they could benefit from empathic expressions, vocabulary, and grammatical structures. They also held the belief that they enjoy watching animations on the application.
As three students commented:

> "I gained a lot of expressions and vocabulary from the mobile application (student 3)."
>
> "The mobile application provides useful grammatical structures (student 5)."
>
> "I like cartoon animations because I can see sample situations on the application (student 8)."

Conclusion and Discussion

The research findings shed light on the potential to develop an emergency medical service mobile application and integrate it into the ESP classroom for paramedic students to improve their English communication abilities. Specifically, this study found that the efficiency of the mobile application was 82.50/82.38, which is higher than the set standard efficiency criterion (E1/E2=80/80); use of the mobile application significantly improved the students' English empathic communication skills; and students held positive attitudes toward the mobile application.

Considering the efficiency criterion using the Process E1 and Product E2 tests, it indicates that the designed mobile application was effective for paramedic students. The emphasis of the tests was placed on English vocabulary and empathic expressions presented in the animated empathic application. The students were able to use the expressions and

vocabulary in the correct contexts. Ponglungkha et al. (2016) claimed that animations can be utilized as a teaching aid since they draw students' attention and make it easier for them to understand the animated characters' speech tones, facial expressions, and moods. Also, to support this finding, the English empathic expressions were found in the students' role-plays.

According to the role play pretest and posttest, the students' English communication skills were at a higher level after the implementation of the mobile application than before its implementation. Two main factors contributed to the improvement in the students' skills: namely, the designed mobile application and the teaching methodology. To clarify, the mobile application displayed animations of situational conversations used in or aligned with real-life paramedic contexts. It presented sentences, phrases, expressions, or questions related to empathy communication; for example, "How can I help you?", "I understand how you are feeling", "I understand your point", and "I am here for you". This helped the students, or mobile application users, to understand empathic communication more easily.

Moreover, the comprehensibility of the images, sounds, body language of the animations, and provided accents exposed the students to paramedic situations and uses of empathic communication expressions. Previous studies have shown that animated teaching materials can help students to learn English more effectively. For example, the results of a study by Abdo and Al-Awabdeh (2017) demonstrated that using animated video presentations for teaching English grammar to students helped them retain the rules more easily. The students in the study also responded favorably to the use of animation videos for learning English grammar, implying that they indeed retained much more when learning in this way.

Given ESP and CBI were initially considered in this current study and that this led to the creation of the content-based app, the mobile application then focused on the students' needs and interests in both English and empathic communication. Consequently, the content was presented on this animation mobile application. Delivering content via mobile applications is supported by Rezaei et al. (2014) who argued they can motivate and encourage student learning because they provide fun platforms for delivering content and enhancing communication ability.

Regarding the mobile application's contents, the students' generally positive attitudes. For each aspect specifically, the highest mean score was for the English language, vocabulary, and grammatical structures used. The students further expressed their positive attitudes towards using the mobile application in the additional comments section of the questionnaire. They indicated that they particularly enjoyed, and benefited from, engaging with the animations of real-life paramedic contexts to learn the language,

especially vocabulary and grammatical structures. Thus, students' speaking abilities and vocabulary knowledge may increase as a result of this.

Regarding the students' attitudes toward the mobile application's design, it indicates the students' highly positive attitudes in this regard. The variety of English accents in the designed mobile application and running the mobile application on Google Play and an accessible online link achieved the highest mean score. This outcome might be because it was easy for the students to access the mobile application. Huttayavilaiphan (2021) reported that Thai professional training students who were exposed to a range of accents of tourists from different countries initially experienced difficulties in communication – they were stunned and unable to do anything when they encountered unfamiliar accents. The author subsequently asserted that Thai students should be taught and equipped with communication skills, including knowledge of strategies for communicating with tourists who speak English with a variety of accents. Likewise, when the study participants practised giving medical services to overseas patients. Due to issues connecting with varied English dialects, they frequently battled with communication, particularly listening abilities. As a result, they preferred the inclusion of English accents in the mobile application.

In terms of the benefits of the mobile application, the highest mean score achieved was the benefits to their listening skills from engaging with different English-speaking accents. This outcome may be because Thailand promotes itself as a tourism hub, attracting a large number of visitors from Asian countries particularly who speak English with varying accents. This may increase the difficulties paramedics experience around their listening abilities. Generally, British, and American accents are favored in English classrooms in Thailand. As a result, students in the present study were not often exposed to other accents in English classrooms. Therefore, the provision of varied English accents was advantageous for them. In contrast, the lowest mean score was for communicating in English with empathy and applying it to real-life situations. This may be due to the rapid nature of providing medical services. In real-life emergency medical service situations, paramedics have to provide medical help exceedingly rapidly to save people's lives. In turn, they believe there is not enough time to communicate with the patients in an empathic way. Therefore, this study revealed that the designed mobile application significantly helped to enhance users' English empathic communication and that users held positive attitudes toward its use.

Regarding the implications that might be inferred from this study's findings, emergency medical service providers must communicate with their patients in an empathic way. Therefore, the mobile application developed

for this study can be utilized by other emergency medical service providers and emergency medical service educational institutes. Moreover, further research is recommended to explore the incorporation of mobile applications across various English accents within diverse ESP classrooms. It is recommended that the researchers or developers of mobile applications should add more accents such as American, British, and Indian. The researchers or developers can design mobile applications for other ESP disciplines such as English for Tourism and English for Engineering. The researchers or developers should also expand its contents to include real-life situations related to the impacts and effects of the Coronavirus Disease (COVID-19); and include more emergency medical service situations such as traumas caused by accidents, natural disasters, or machine accidents. In addition, this mobile application can be a mobile application model for developing other online educational mobile applications. This study's findings imply that the use of this mobile application helped paramedic students to learn English. Hence, other appropriate learning mobile applications might be employed as teaching materials in ESP classrooms to help ESP students achieve their 'lacks', 'wants', and 'necessities' related to learning English for use in their professional fields. In EFL contexts, particularly in Thailand, students studying English should be exposed to a variety of accents. They should also be aware of intercultural issues when utilizing English as a communication medium. Lastly, some language functions such as asking for clarification should be emphasized in English classes.

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