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Boosting English Majors' Ability in Pronouncing Stressed Vowels via Blue Canoe, a Mobile-based Application: A Focus on Vietnamese EFL Learners

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Abstract

There is no doubt that teaching and learning English pronunciation is one of the major concerns facing EFL/ESL educators and experts. Specifically, stressed vowel practice instruction has been considered a massive challenge among Vietnamese teachers because these two languages possess certain distinctive features in phonetics. This new digital age indicates that mobile-based applications have actively promoted EFL/ESL learners' sound production. Thus, this paper pinpointed how digital apps affected learning vowels among English learners and discussed their attitudes towards the apps with the help of 32 first-year students majoring in English at Van Lang University, Ho Chi Minh City. A pre-test and post-test were used to see if there was a significant distinction in the participants' ability to acquire vowel sounds. In addition, a five-point Likert scale questionnaire was employed to test how content they were when they used the app. The results show that with mean scores of 6.88 and 11.177 in the pre-test and post-test, respectively, students in the experimental group improved than their counterparts in the other group (M=6.0 in the pre-test and 8.47 in the post-test). Hence, an explanation for the better performance in the intervened group is that the participants practiced pronouncing vowels with the application Blue Canoe during the course. In addition, these participants also had a favorable attitude towards the mobile-based application in their phonetics class, with a mean score of 3.96 on the questionnaire.

Keywords: mobile game-based apps/ activities, English pronunciation/ vowel sounds, oral fluency.

1. Introduction

As English has been widely used as a means of international communication, the question of how to produce its sounds intelligibly has generated deep concerns among ESL/EFL learners and educators (Nguyen & Nguyen, 2007; Vang, 2003). Dhillon (2016) and Jones (2018) stated that pronunciation is the principal element of successful oral communication. If they do not acquire good and clear pronunciation, even if they might use proper grammar and vocabulary, their speech still becomes unintelligible (Celce-Murcia, Brinton, & Goodwin, 2010). Do (2021) and Van et al. (2021) also states that pronuncitation is seen as one of the most crucial features in the area of learning english.

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However, several studies have shown that pronunciation teaching in EFL classrooms is often traditional, unplanned, and is mainly about on-spot error correction. For example, Hismanoglu and Hismanoglu's (2010) research findings indicate that most EFL teachers prefer using reading aloud, dictionaries, and dialogues in their phonetics class. Also, Foote et al. (2016) also demonstrate that when teaching pronunciation, most EFL teachers tend to apply some techniques that are mainly related to giving corrective feedback on their students' errors instead of incorporating teaching episodes into their lesson plans. Similarly, as Wahid and Sulong (2013) noted, EFL teachers at a university in Malaysia focus too much on correcting their students' pronunciation errors rather than giving explicit pronunciation instructions. Consequently, the students are quickly bored with and discouraged from learning and practicing English pronunciation.

One of the most apparent reasons why learning English pronunciation is a huge challenge for most students is related to vowel sounds. A study conducted by Pham and McLeod (2016) demonstrates that learners of English encounter several vowel-related difficulties when they study English pronunciation because its vowel system seems to be more complex than that in their mother tongue. Additionally, regardless of their ability to distinguish vowels and consonants in minimal pairs, students still find it challenging to pronounce vowel sounds in multi-syllabic words (Al-Rubaat & Alshammari, 2019; Heggie & Wade-Woolley, 2017).

Alongside the speedy development of technology, using computerized applications in teaching pronunciation is a must since they are such a powerful tool to better English learners' pronunciation and boost their interest in learning the language (McCauley, Nguyen, & McDonald, 2016). Similarly, according to Godwin-Jones (2014), digital games or mobile-based games have great potential in teaching and learning foreign languages thanks to cellphones - a major technological advancement. Candilas (2021), Tran and Nguyen (2021) confirms that with technology support, online synchronous learning, a digital teaching platform, is seen as the best use for English learning and can be an indispensable tool in education in the time of the pandemic.

In Vietnam, despite their capability of enhancing English learners' pronunciation, using mobile games in class has not gained much attention from EFL/ESL teachers. Particularly, teachers are still more likely to use traditional activities such as transcription practice and minimal pair drills, which are not easy for many L2 adult learners to improve their pronunciation (Hismanoglu & Hismanoglu, 2010). Besides, little research on integrating technology in English pronunciation instruction has been conducted (McCauley et al., 2016). According to Nguyen (2021), technology is the most effective tool to help the students acquire vocabulary and other aspects of learning a foreign language.

Hence, the current study is carried out with two primary objectives: (1) to investigate if Blue Canoe can assist EFL students at the faculty of foreign languages in Van Lang University in improving their vowel production of English multi-syllabic words and (2) to ascertain their attitudes towards such application.

For the purposes set out above, the study addresses the following research questions:

1. What are the effects of using Blue Canoe on learning stressed vowels among first-year English majors?
2. Do students have positive attitudes towards using mobile apps on learning vowels?

The research has significantly contributed to EFL/ESL teaching and learning in Vietnam's context. Indeed, it has pointed out how digital games affect English majors' vowel sound production and their positive feedback on applying computerized applications in pronunciation class. Thus, the findings have supported using handy technological devices to foster learning outcomes in English language teaching. These two inputs from the study have also enabled teachers of English to have a clear point of choosing appropriate games and activities that can enhance their students' vowel pronunciation and minimize their negative feelings in the age of technological advancement.

2. Literature review

What are vowel sounds?

According to Celce-Murcia et al. (2010), there are 14 vowel sounds in American English, including simple phonemes with a glide movement (/iy/, /ey/, /ow/, /uw/) and without it (/ɪ/, /ɛ/, /æ/, /ɑ/, /ɔ/, /ʊ/ and /ʌ/) and three diphthongs (complex vowels) (/ay/, /aw/ and /ɔy/) (p. 114-125). Their classification depends on the height of the body of the tongue (high, mid, and low); how forward or backward the tongue is in the oral cavity (front, central, or back); the degree of muscular tension (tense or lax); and the position of the lips (rounded or unrounded) (Lane, 2010, pp. 163-164). Roach (2009) says that the main distinction between vowel sounds and consonant sounds is that vowels do not obstruct the airflow when it passes from the larynx to the lips (p.10). He also reports that phonetically, such sounds are always found at the center of a syllable.

Intelligibility and Vowel Quality in Stressed Syllables

Zielinski (2006) defines intelligibility as how well a speech is understood by listeners or how much a listener can recognize words, phrases. It should also focus on English pronunciation teaching and learning (Lane, 2010, p. 2). That means as English has become a globally spoken language, EFL teachers need to attempt to help their learners to achieve mutual intelligibility instead of forcing them to achieve native-like pronunciation (Jenkins, 2002).

If pronunciation teaching aims to obtain intelligibility, identifying which speech feature is the leading contributor to the overall intelligibility is a must. According to Lesner, Sandridge, and Kricos (1987), incorrect vowel production has a negative effect on speakers' intelligibility. In other words, in oral communication, a speech is likely to be misinterpreted if the speakers do not produce accurate vowel sounds. Several studies then support this viewpoint. Research by Rogers and Dalby (2005) shows a positive correlation between vowel production accuracy of Mandarin speakers of English and their overall intelligibility. Similarly, Bent, Bradlow, and Smith (2007) investigated the relationship between the intelligibility of Chinese speakers of

English and accurate segment production in different word positions. Native English speakers are then asked to listen to the participants and write these sentences down. The findings demonstrate that vowel sounds contributed more information to overall auditory speech intelligibility than their counterpart.

Another aspect of intelligible pronunciation is stress placement. Valcke and Pavón (2015) noted that this element is crucial to interpreting messages in statements. They believe that native English speakers generally attach great importance to the quality of the vowel in a stressed syllable than other features that constitute stress when they listen to non-native English speakers. This could be explained that correct stressed syllables help them identify a word much more easily. In other words, misplaced stress leads to intelligibility loss and vowel quality change (Richards, 2016)

Pronunciation teaching approaches

One of the most popular approaches used in teaching L2 pronunciation and is still prior is the audio-lingual approach. The primary purpose of this approach is to help adult students to memorize grammatical sentence patterns by drilling (Larsen-Freeman, 2000). With the approach, teachers emphasize dialogues, minimal pair drills, and morphemes (Celce-Murcia, Brinton, & Goodwin, 1991). In fact, the more learners repeat the whole or part of a dialogue in L1, the more the learners can emphasize the importance of proper pronunciation, intonation, stress, etc.

However, according to Odisho (2007), teaching L2 pronunciation through memorization in the form of 'repeat-after-me activities appears more effective for children than for adults. In his book, Odisho (2014) believes that since the human brain tends to control all senses to gather more information to make decisions, it does not rely on one sensory source. EFL teachers generally fail to teach adult learners English pronunciation since pronunciation is also conveyed via the visual sensory modality and kinesthetic sensory modality. They apply the traditional pronunciation approach relying heavily on the auditory sensory modality (model, hear and pronounce) solely. Consequently, a new pronunciation teaching approach, the Multisensory, Multicognitive Approach (MMA), is proposed. Odisho (2007) notes that teaching L2 pronunciation with a multisensory approach means EFL learners are required not only to hear and make sounds but also to see and feel them in the context of natural speech. Similarly, in L2 classes, the metacognitive approach gives students more encouragement to do more than one simple task. For instance, they have to listen to the sounds carefully and store them in short-term memory. After that, the L2 learners need to compare those sounds with ones already part of their psycholinguistic inventory using all cognitive processes.

Game-based learning

According to Qian and Clark (2016), game-based learning refers to an environment in which game activities help students acquire better knowledge and skill acquisition. These games could be divided into two different kinds, including entertaining games and educational games. Although they are both employed in the learning environment, their purposes are slightly

different. The first is mainly designed for fun, while the latter is used for educational purposes (Connolly et al., 2012).

However, choosing appropriate games in language learning is a consideration for many English teachers. Shanahan, Hermans, and Haytko (2006) stated that effective-in-class games must have five fundamental characteristics. First, the games must be related to the learning outcomes. Their rules also are easy to understand by players, but they must less important than the learning. Such games then provide more motivation for the students to perform better. Finally, these students can give feedback on the games to their teachers. Corno and Snow (1986) also believe that educators can achieve educational purposes successfully if they can satisfy the needs of students with different learning styles (visual, auditory, and kinesthetic styles). In that case, games are the optimum choice because they can offer teachers and educators countless opportunities to implement that task.

Benefits of games in language learning

Educational games are regarded as one of the most effective tools for teachers and students because they can support traditional teaching methods (Lujan & DiCarlo, 2006). For teachers, games can help them teach their students complex content (Cardona et al., 2007) and allow them to have discussions with their peers about the target concepts (Odenweller, Hsu, & DiCarlo, 1998). For students, games add more enjoyment to their learning environment (Wang, 2010). Zhu (2012) adds that for learners of foreign languages, games, especially language games, will become their preference if those games are used effectively in classrooms. Therefore, the students can enjoy learning the target language with high motivation (Reese & Wells, 2007) while their anxiety is lowered.

Benefits of mobile devices in pronunciation learning

The widespread use of mobile phones to develop language skills in education is not a new concept. In fact, integrating these devices has had several considerable merits for language learners (Murphy, 2011). One of these advantages is to improve students' foreign language pronunciation. Wilson (2008) discovers that by utilizing interactive English pronunciation apps, EFL students are likely to enhance their pronunciation skills because they offer numerous practical exercises and native speakers' instant feedback to users (Agusalim, Assidiqi, & Muhammad, 2014). Similar findings found in research by Xiao and Luo (2017) indicate that students who learned phonetics with the Liulishu app outperformed those who did not.

The second merit of using mobile devices for learning is that they are more accessible and user-friendly than desktop computers (Stockwell, 2007). That means students do not need to stay in any set location but still get access to learning materials without attending a face-to-face class.

Another plus point of this practice is that teachers can facilitate their students' studies with fun mobile games in an interactive and fascinating environment by using portable devices such as smartphones or tablets. Thus, not only do the students become autonomous (Ertmer, 2005), but their learning motivation also increases (Ebrahimzadeh & Alavi, 2016).

Benefits of mobile games in pronunciation

According to Gee (2007) and Prensky (2006), playing mobile games has become extremely popular recently and offered promising benefits when used in language classrooms. Apart from the benefits mentioned above of games in L2 learning, mobile games will assist students in improving their language acquisition (Chiu, Kao, & Reynolds, 2012). Suppose EFL learners are engaged in mobile game-based activities. In that case, they are likely to gradually level up their language proficiency, such as writing development (Allen, Crossley, Snow, & McNamara, 2012) and better oral proficiency (Lan, 2014). Moreover, a study conducted by Young and Wang (2014) demonstrates a remarkable improvement in students' pronunciation performance after they use mobile games in their EFL class. This conclusion is strengthened by the research findings of Berry (2021). In his study, a video game called Spaceteam ESL was used as the main treatment for Korean speakers of English with the ages of 18 and 22 in 3 experimental groups (EG). After a 15-week semester, he found out those students improved more significantly than those who utilized paper-based pronunciation exercises.

Related studies

The use of games in language teaching and learning, especially in teaching pronunciation, has received considerable attention in recent years. Nguyen (2015) gets the most out of Bingo, Noughts, and Crosses and other games to enhance second-year non-English major students' pronunciation at Ha Noi University. Her study findings show that students at different English levels can make huge progress in their pronunciation after receiving the treatment. The results also reveal that her students have a positive attitude towards the game usage in their pronunciation class.

Another study conducted by Nguyen (2016) has the same results in her English class at Khanh Hoa University. In her study, minimal pairs are chosen as a key solution to her freshmen's pronunciation problem. After six-week treatment, not only do the students make enormous improvements, but they also take a favorable attitude to learning pronunciation. A similar result is found in Suhaili's and Kurniawan's research (2019) when they employ BINGO games in their classroom setting to improve their students' pronunciation.

After reviewing the studies, the researchers conclude that while pronunciation games can help students improve their segmental features such as vowel and consonant production and boost their motivation to learn the subject, such games focus too much on monosyllabic words. Hence, the researchers wonder if any game might help them enhance their vowel sound production in multi-syllabic words.

3. Methods

Pedagogical Setting & Participants

The study was carried out with the help of 32 English- majored freshmen at Van Lang University. They were randomly chosen and belonged to two different Phonetics classes scheduled by the Faculty of Foreign Languages. Therefore, one class was the control group,

and the other was the experimental group in this study.

Design of the Study

The current paper was conducted using a mixed-method. Particularly, a pre-test, a post-test, and a questionnaire were employed to investigate the effects of the apps on students' vowel pronunciation and their attitudes towards the apps.

Tests

To ensure the same level of difficulty, the pre-test and post-test resemble and consist of 14 multi-syllabic words, as listed in Table 1. Each of the words was manipulated to determine the participants' ability to pronounce one specific vowel. These words in the tests were selected from books for teaching English to L2 adult learners such as 'American Accent Training' by Cook (2017), 'Clear Speech: Pronunciation and Listening Comprehension in North American English' by Gilbert (2012), and 'Master Mastering the American Accent' by Mojsin (2009), and were stated to be the most commonly mispronounced words in Norman's paper (2000).

Additionally, these words were taught to the students during the course. The tests were administered for both groups in the class during school time. Each participant was asked to read aloud the words in 1 to 2 minutes. All of the students' performance in the test was recorded and marked manually by two experienced teachers who are experts in teaching and researching English phonetics features.

Table 1. List of words in the pre-test and post-test

vowels	words	vowels	words
/i/	police	/ɑ/	photographer
/ɪ/	interesting	/u/	canoeing
/eɪ/	maintain	/ʊ/	understood
/ɛ/	vegetable	/oʊ/	pronouns
/æ/	Titanic	/aʊ/	allow
/ər/	purchase	/ɔɪ/	annoying
/ʌ/	comfortable	/aɪ/	childhood

Questionnaire

The questionnaire applied only for the experimental group was designed based on Parreno and Eamoraphan (2017) and Berry (2021). The reason for choosing these two sources lies in that their questions were made to figure out subjects' perceptions of digital games in EFL learning. To fit the purpose of the current study, the authors selected and modified these questions into

statements in the questionnaire consisting of two separated parts. In the first part, subjects' personal information (e.g., course, class) was included. The information in this part was confidential and only served to ensure that students were in the experimental group. The second part presented six statements about students' attitudes towards the mobile apps, and a five-point Likert scale (1- strongly disagree, 2- disagree, 3- no idea, 4- agree, 5- strongly agree) was used. Additionally, the reliability of the questionnaire was .825, which was an acceptable rate.

Treatment

A mobile application for pronunciation practice, namely Blue Canoe, served as the treatment for the current experiment. There are several reasons why this application was chosen for the research. First, it uses the proven 20-year-old brain-based methodology called Color Vowel System, which is based on Finger's model (1985) and has been used in several renowned international education organizations such as the Peace Corps, the U.S. Department of State, Harvard, and Yale University. Another reason is that the multisensory and metacognitive approach (Odisho, 2007, 2014) is applied to Blue Canoe, which means learning vowels with the app is suitable for all different learning styles, including visual, auditory, and auditory kinesthetic styles.

The free version of the mobile application was made to help activate our brain to learn sounds through images, music, and movement. More specifically, when L2 learners use the app, they are first trained to identify and memorize 14 English vowels by looking at the color vowel chart and listening to vowels which rhyme with different colors. For example, long I sound, and the phrase 'white tie' is in rhyme, while short I sound rhymes with the phrase 'silver pin.' After that, several quizzes with audios included in the app are used to teach the learners how important it is for the stressed syllable and stressed vowel quality to be in intelligible pronunciation. Finally, the learners can experience a fascinating and fun game called Color it Out to show how intelligible their pronunciation is with native English speakers' feedback included in the game.

Data collection & analysis

The tests and the questionnaire were delivered to the participants during school time. The procedure of the experiment lasted for five weeks (from week 3 to week 8, based on the school syllabus) and was summarised as follows:

Week 1:	Introducing the features of English pronunciation
Week 2:	Giving pre-test
Week 3, 4, 5, 7, 8:	Applying the treatment (Week 6: Mid-term test)
Week 9:	Giving post-test
Week 10:	Delivering the questionnaire via Google forms

From week 3 to week 8 (except week 6 when students had to attend a midterm test), the intervened class learned and practiced vowel sounds with Blue Canoe during two-hour lessons chorally, individually, and in pairs. At the end of each lesson, the students are asked to play the game Color It Out in the application with their friends in about 15 minutes, either in pairs or in small groups, so as to consolidate their knowledge about the vowel sounds. However, students in the control groups were instructed through the audio-lingual method. That is to say, the participants only listened and repeated after the models provided by the teacher right from the beginning of the lesson, and then they practiced with minimal pair drills and dialogues.

Data collected were analyzed using SPSS 26.0. Before administering the treatment for the experimental group, independent samples t-tests were used to figure out whether there were any differences in the pre-test and post-test results in both groups. Then, after five weeks of applying the treatment for the experimental group, a paired sample t-test comparing the results of the tests was calculated for each of the groups. Data from the questionnaire was also computed right after the test analysis.

4. Results/Findings and discussion

The results from the pre-test and post-test in both groups indicated the significance of the treatment applied to the intervened class. A more detailed look at the figures for the test result analysis revealed that the students in the experimental group gained more improvement than the control group.

Following the authors' earlier discussion, with the intention of examining to identify whether there were any marked discrepancies in participated students' pronunciation, independent samples t-tests and reliability were operated. The statistics clearly signified the consistency of the pre-test in both classes. Particularly, Cronbach's Alpha of the pre-test was 0.702 for the control group and 0.78 for the intervened group, as shown in Table 2, Table 3, and Table 4 below.

Table 2. Reliability of pre-test in the control group

Cronbach's Alpha	N of Items
.702	14

Table 3. Reliability of pre-test in intervened group

Cronbach's Alpha	N of Items
.78	14

Students' accurate stressed vowels before the intervention

Table 4. Results of independent t-test between the pre-tests in the two groups

Variable	M	SD	t	df	p
Vowel production					
Control group	6.0	2.55	-.986	32	.331
Experimental group	6.88	2.67			

Note. * The t and df were not adjusted because variances were equal.

* Independent Samples t-test

As can be seen from Table 4, the mean score of the students in the control group was slightly lower than that in the experimental group, at 6.0 and 6.88, respectively. However, the result of the independent samples t-test with the p-value, $p = .331 > .05$, illustrated no significant difference in the ability to produce accurate stressed vowel sounds of the students in the two groups. This means that before the treatment was applied, the two groups' vowel production was similar. Therefore, the experiment fulfilled the criteria and was approved.

Research question 1: What are the effects of using mobile games on learning stressed vowels among first-year English majors at Van Lang University (VLU)?

Table 5. Results of pre-test and post-test paired samples t-test in the control group (CG)

Variable	M	SD	Correlation	Mean difference	t	df	p
Vowel production of CG							
Pre-test	6.0	2.065	.510	-2.47	-4.388	16	.000
Post-test	8.47	2.549					

Note. Paired Samples t-test

Table 6. Results of pre-test and post-test paired samples t-test in the experimental group (EG)

Variable	M	SD	Correlation	Mean difference	t	df	p
Vowel production of EG							
Pre-test	6.88	2.214	.713	-4.29	-9.337	16	.000
Post-test	11.177	2.667					

Note. Paired Samples t-test

Tables 5 and 6 show the results of a paired samples t-test between the pre-test and the post-test in the control and experimental groups, respectively. Regarding to the former, the mean score of the pre-test was 6.0 (M = 6.0, SD = 2.065) while that of the post-test was slightly higher, at 8.47 (M = 8.47, SD = 2.549). The mean difference between the tests was -2.47 and the results of the paired-samples t-test (t = -4.388) was .000 (p = .000 < .05). These statistics illustrate that the distinction in the tests of the control group was statistically significant. Hence, it can be concluded that the participants gained improvement during the course without the treatment.

For the control group, the mean difference between the mean score of the pre-test (M = 6.88) and that of the post-test (M = 11.177) was -4.29. In addition, the paired samples t-test had a p-value of .000 (p = .000 < .05). Thus, there was a statistically significant difference in the test scores.

The findings are consistent with those in Wilson's study (2008), in which students made great progress in their English consonant and vowel pronunciation after they used mobile applications. The outstanding achievement in the student's score in the present study can be explained by the fact that the mobile application used includes practical activities and games and immediate feedback to users, as well as by the fact that it boosted student's learning ability with the combination of different senses such as hearing, feeling, and sight. With the application of the multisensory and multicognitive approach mentioned earlier, the pronunciation learning process of the experimental group took place in different stages, from listening to the vowels, storing them, comparing them with the ones in their psycholinguistic inventory to articulating the desired sounds.

Table 7. Results of independent t-test between the post-tests in the two groups

Variable	M	SD	Correlation	t	df	p
Vowel production						
Post-test (EG)	11.177	2.214	2.706	3.684	32	.001
Post-test (CG)	8.47	2.065				

Note. Independent Samples t-test

Another independent samples t-test was made between the data collected from the post-test in both groups to make the point clearer. In Table 7, statistics from t-test analysis ($t = 3.684$, $p = .001 < .05$) reveal a statistically significant divergence in the post-test scores between these two groups. Also, the mean difference of the group using Blue Canoe appeared higher than that of the other group. These figures indicate that using mobile pronunciation applications had a positive effect on participants' vowel pronunciation.

The result of this study supports Xiao and Luo (2017), who found that when students made use of mobile apps, they outperformed those who studied in a traditional phonetics class where students are taught with the audio-lingual approach in order to memorize patterns by drilling. However, such an approach seems to be more effective with children than adult learners (Odisho, 2007, 2014). Therefore, students in the experimental group experience the new approach in which they can control many senses to get information and produce the target sounds. This explains why there is a remarkable difference in the mean score of the post-test in the two groups, which means the treatment group with the use of the mobile application performs better than the control group learning with the traditional approach. Accordingly, students would improve their stressed vowel production more considerably if they learned pronunciation with a mobile application like Blue Canoe.

Research question 2: Do students have positive attitudes towards using mobile games on learning vowels?

A survey was delivered to intervened samples right after the post-test to examine students' viewpoints on mobile apps in learning phonetics. Data from the questionnaire were collected and analyzed via SPSS program 26.0. The reliability stood at 0.825, which was highly accepted (Table 8). Statistics from this survey (Table 9) indicate that most students had positive attitudes towards Blue Canoe, with a mean score of 3.956. Remarkably, most of the students strongly agreed that they would continue to use it in class (M=4.467), followed by the idea that they could hear the vowel sounds more clearly (M=4.267). Although they were generally on the side of that digital application use in class, not many students are for the points that the app could assist them in pronouncing words or getting feedback easily with the lowest mean scores of 3.6 and 3.667, respectively. Regarding the two statements investigating whether they felt confident or were interested in manipulating the digital apps, the participants tended to reach *agree*ment

on level (M= 3.8 and 3.93, correspondingly).

Overall, this finding is similar to the one by Nguyen (2015) and by Ghounane (2019), where it was found that students had a positive attitude to the use of mobile games or mobile applications. With the use of Blue Canoe, students felt more confident and would continue to use it in the future, which shows that the application has provided them with both satisfaction and interest. Obviously, the application is easy to install on a mobile phone, which they can carry anywhere and do some practice at any time. The fact that the students wanted to keep using them with a mean score of 4.47, which is remarkably high, shows the possibility of continuous use for pronunciation improvement. One of the reasons for the interest in the application is that they could get helpful feedback from the application when they produced the sounds. Instant feedback is one of the essential features of a mobile application game (Agusalim et al., 2014); therefore, in this study context, the feedback students got immediately made them feel happy and keep track of their study progress. Moreover, students found the sound of the app clear to hear, with the second-highest mean score of 4.27, which indicates that the sound system's quality in the app gets students involved in the activities they do with it and creates a sense of satisfaction. Ultimately, they felt they pronounced the words more easily.

Table 8. Reliability of the questionnaire

Cronbach's Alpha	N of Items
.825	6

Table 9. Descriptive statistics on students' attitudes towards the mobile apps

	N	Range	Minimum	Maximum	Mean
feel confident	16	3	2	5	3.80
want to continue using the apps	16	2	3	5	4.47
can hear the sound more clearly	16	2	3	5	4.27
can pronoun words more easily	16	4	1	5	3.60
be interested in the game	16	3	2	5	3.93
can get useful feedback	16	4	1	5	3.67
Valid N (listwise)	16				

5. Conclusion

In conclusion, the current research was conducted to investigate the effects of using mobile apps in enhancing English vowel pronunciation among EFL majors at Van Lang University and their attitudes towards using the apps in Phonetics class. The results showed that there was a considerable difference in the post-test results between the control group (M=8.47) and the experimental group (M=11.177). In addition, the independent samples t-tests (p= .331 and .001) and paired samples t-tests (p=0) in the pre-test and the post-test indicated that the subjects were treated fairly during the experiment. Particularly, students in the intervened class could pronounce better at difficult sounds with more accurate stresses (e.g., Titanic, purchase) than those in the other class. Therefore, it was concluded that using a mobile app like Blue Canoe has enabled students to perform better in pronouncing English vowels. This is because it facilitates the combination of different senses in learning from students.

For this reason, English teachers should apply the multisensory and multicognitive approach in their teaching pronunciation to reach a better possibility of success. More specifically, the implementation of a mobile application like Blue Canoe can be recommended in the classroom, especially in the pronunciation class. Instead of using traditional games or activities that only adopt an audio-lingual approach, teachers should take the above-mentioned approach into account to get the best from students' learning practice. For students, the use of this application is highly suggested for its easy accessibility and effectiveness. It is suitable for varied kinds of learners, for it activates different senses in a learner. Besides, based on the result of the questionnaire (M=3.956), it was stated that the participants had positive attitudes towards using the mobile app in practicing vowel sounds. This finding confirms the potential for utilizing the app in a long-term period, which can even result in better performance in students' vowel articulation.

Although the paper has shown some significance in the field, limitations could not be avoided. Firstly, the time for the treatment only lasted for five weeks, and there were only 16 participants, so the results could not be generalized. Secondly, the test was focused on American vowels; thus, the results were not applicable for other English language varieties' sounds. Finally, only a questionnaire was administered in the research, which was not enough to investigate all of the students' attitudes in depth.

In connection with suggestions for further research, the following issues should be taken into consideration. First, there should be a larger number of participants so that the results can be more generalized. Furthermore, it is highly recommended that other features of English pronunciation should be included in future investigations. Regarding tools for measuring learners' attitudes towards the treatment, questionnaires, interviews, and observations should be used for gaining more students' detailed opinions about manipulating mobile applications in ESL/EFL classrooms.

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