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計畫名稱:使用自編英語字彙 App 對大一學生  
自主學習之學習動機與學習成效之影響  
配合課程名稱:大一英文

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## 一. Content

### 1. Research Motive and Purpose

The idea of “How to let students be prepared for advent of an era of artificial intelligence (AI)” was proposed in the article of Future Family on June 2<sup>nd</sup>, 2017 (Huang & Wang, 2017). It is important to create a new learning environment, which is not only interactive and delighted, but also applies technology in the teaching context. Then students can have real-life experience instead of just learning from the textbook. In addition, each student has his own learning path, and it is also important to promote students’ adaptive learning and self-regulated learning. Therefore, the study focuses on applying compiled English vocabulary app with the help of VoiceTube, an online English video learning platform, on college students as homework and practice in order to cultivate their English self-regulated learning ability, improve their learning motivation, and enhance the learning outcomes.

In the traditional classroom, the teaching style cannot meet the learning needs of students with middle and low learning achievement because they don’t dare to ask questions or they cannot follow the teacher-centered instructions (Lak, Soleimani & Parvaneh, 2017). In order to solve the learning problems of middle and low achievers, the researcher proposes a self-design English vocabulary app with the video clips on VoiceTube, which has Chinese and English subtitles and English-Chinese dictionaries; moreover, users can easily grasp daily conversations and understand the usage of words. By watching the video clips, they can achieve the goal of self-regulated learning and remedial teaching, and reach the aim of enhancing their learning effectiveness.

All in all, technological development enables students to have a convenient environment for learning a language; moreover, mobile devices can be used to support it. In summary, and in accordance with the purpose of this study, the research questions are presented as follows:

(1)What are the attitudes of students towards the use of the English vocabulary app?

(2)Does the English vocabulary app improve the effectiveness of college students’ English learning?

(3) Through watching VoiceTube videos for remedial teaching, does it improve students' self-regulated learning ability?

To sum up, with the popularity of computers and the development of network technology, online learning has become a new trend. Therefore, the aim of this study is to present a self-developed vocabulary app which works together with the video clips on VoiceTube that can let students study with happiness and improve their learning motivation.

## 2. Literature Review

In this section, the literature of English vocabulary learning, technology assisted language learning, and learning motivation and self-regulated learning are introduced.

### 2.1 English Vocabulary Learning

In the process of English learning, learners who have required enough vocabulary can be helpful in learning English listening, speaking, reading and writing (Jeremy, 1991; Rob & Paul, 2004; Shima, Ghazali & Roselan, 2012). Therefore, English vocabulary plays a pivotal role in learning English. However, how to memorize the vocabulary is a difficult task for learners (Diane, Maria, Cheryl & Catherine, 2005; Milton, 2009; Schmitt, 2000). Most people agree the benefit of English vocabulary to English reading, but they don't know how to enhance it. In traditional education, most Taiwanese students memorize words by rigid recitation, which also known as rote learning, to increase their vocabulary. Little by little, learners will find it tedious to learn English; moreover, they will also wonder how to use the English vocabulary which is in their memory. Therefore, if learners can recite the vocabulary by using learning strategies as early as possible, they will not only improve their effectiveness of English learning, but also be less afraid of learning vocabulary (Gu & Johnson, 1996; Hsiao & Oxford, 2002; Rebecca, 2003).

According to the actual application of strategies for learners in English vocabulary learning, Lawson & Hogben (1996) had classified the following learning strategies:

- (1) Repetition: reading of related word, reciting, cumulative rehearsal.
- (2) Word Feature Analysis: spelling, word classification.
- (3) Simple Elaboration: sentence translation, simple use of context, sound link.
- (4) Complex Elaboration: complex use of context, paraphrase, mnemonic use.

Language learning strategies need to be guided by teachers and integrated into teaching curriculum with English vocabulary's memory strategies to instruct learners and teach them the way to use the strategies. It can help learners

understand the importance of learning strategies and be able to find their own learning strategies. Scholars have also concluded student's learning effects of using app to learn English vocabulary, and the characteristics are as follows (Basoglu & Akdemir, 2010; Cavus & Ibrahim, 2009; Levy & Kennedy, 2005):

- (1) Using app to learn English vocabulary is unlimited by time and environment.
- (2) Using app to learn English vocabulary can stimulate students' learning motivation and promote self-regulated learning.
- (3) Using app to learn English vocabulary can reduce students' learning pressure.

The result has showed that when teachers can systematically design the content of English vocabulary learning, students are better to master the learning skills. Thus, this study applies the "Scaffolding Theory" to design the vocabulary related sentences and find the video clips which are connected with students' daily life. The scaffolding theory is pointed out by Bruner (Valsiner, 1984). It emphasizes the process which students should learn a new concept or skill through adequate teaching. While teachers are doing instructional design, they should evaluate students' potential ability of development in advance, and then improve students' learning skills through appropriate teaching guidance (Wilson & Devereux, 2014).

## 2.2 Technology Assisted Language Learning

During the recent years, it has seen increased attention being given to technology assisted language learning. The related researches include computer-assisted language learning, mobile-assisted language learning, and ubiquitous language learning (Huang, Wu & Chen, 2012). Computer-assisted language learning is a kind of learning that uses computer technology to learn languages (Chen & Chen, 2019; Chen, Chen & Yang, 2019). Later, with the development of personal computers and communication technology, the tools for computer-assisted language learning have been developed widely, which allows students having an English conversation with people on screen and enable them to fit in with the environment of multimedia learning (Warschauer & Healey, 1998; Chen & Chen, 2019). As for mobile-assisted language learning, it uses mobile technology to learn language, which has the advantages of flexibility, low cost and small size (Chen, Chen & Yang, 2019). Therefore, the researchers are trying to explore how to use mobile technology to support language learning. Related researches include vocabulary learning, listening comprehension, etc (Chen & Chen, 2019; Chen, Chen & Yang, 2019; Wang, 2017). "Ubiquitous learning" is considered that learning is no longer confined to the classroom (Chang, Sheu & Chan, 2003). On the contrary, with the development of science and technology, learning environment will be ubiquitous, anytime, and anywhere. In addition, it

has the development of mobility and adaptability.

In recent information society, technological learning is a trend. "Mobile Device" has provided personalized self-regulated learning, which students can manage their own learning courses accordingly (Albarg & Lipschultz, 1998). However, educators must understand students' abilities, preferences, behavioral patterns and learning styles before providing the personalized learning mechanism (Schunk, 1989).

If teachers make good use of information technology to help students learn abstract concepts, it is indeed easy to achieve teaching objectives (Ghavifekr & Rosdy, 2015). However, if there is no teacher's instructions, students are likely to misuse information technology (Ugur & Koc, 2015). While applying technology in teaching, teacher's teaching guidelines are important to students' learning; therefore, teachers must not only use the teaching methods, but also use the venue and equipment to transform the media display methods anytime and anywhere, so that information technology can be integrated into teaching to achieve its maximum benefits (Liu, Wang, Liang, Chan, Ko & Yang, 2003).

### 2.3 English Learning Motivation and Self-Regulated Learning

English learning motivation is defined as a state that can provoke students to learn and to participate in learning activities enthusiastically. Therefore, effective teaching methods can enhance students' learning motivation and achieve teaching goals (Hung, Hwang & Huang, 2012; Shih, 2018). Gardner & Lambert divided language learning motivation into two types: instrumental motivation and integrative motivation (Rifai, 2010). Learners with an instrumental motivation learn a language because they want to pass the tests or get a better position. As for integrative motivated learners, they want to learn the language because of the attraction of society and culture. As a result, learners with the integrative motivation are more likely to have a successful language learning. The purpose of the vocabulary app designed in this study is to improve students' integrative motivation and to arouse students' participative motivation by using the built-in function of the mobile device. The characteristics of this design can solve the shortcoming of traditional learning which cannot attract students to participate in the curriculum.

In addition to learning motivation, the attitude toward self-regulated learning is also very important. Self-regulated learning refers that learners can set their own goals and maintain or modify cognitive activities, including focusing on learning, integrating knowledge, reciting memory, etc (Schunk, 1989; Albarg & Lipschultz, 1998). Cognition, comprehensive cognition, behavior, motivation, and emotional learning are also included.

The process of self-regulated learning contains many factors which may affect learning such as self-efficacy, will, and cognitive strategies (Cazan, 2013; Broadbent & Poon, 2015). Self-regulated learning usually plays an important role in classroom learning. The research has shown that learners who can display self-regulated learning are typically highly successful students (Albarg & Lipschultz, 1998). On the contrary, students who have low learning achievement are weak in self-regulated learning (Albarg & Lipschultz, 1998). Their concrete phenomenon includes having low motivation, being lack of systematic learning strategies, being incapable of setting learning goals, failing to check their learning schedule, being unable to evaluate their learning effectiveness, and being deficient in correcting their learning outcomes. All of them belongs to lower-level thinking. Self-regulated learning refers to the learning that contains students' willingness, attitude, method and ability. It also includes students' enthusiastic learning willingness or motivation, active learning attitude, effective learning methods and basic learning ability (Cazan, 2013). So, in order to promote students' self-regulated learning, there are some ways for teachers to follow through four aspects (Cazan, 2013; Broadbent & Poon, 2015):

(1) Stimulate students' enthusiastic learning willingness. Teachers can let students decide their own research topics according to the scope of the subject. Teachers can also ask some questions that suit students' needs, current situation and abilities.

(2) Develop students' active learning attitudes, such as self-supervision, self-learning, persistence, and cooperation.

(3) Train students to learn effectively. For example, instructors can train students to have good study skills, develop their learning plans, allocate learning time and content, and learn the methods of attention and concentration to improve their learning efficiency.

(4) Develop students' basic learning abilities. There are three major abilities, which include "self-discovery of topics," "self-regulated learning, independent thinking, and independent reasoning," and "acting autonomously and problem solving." Other abilities are "expressing and communicating the knowledge and abilities that are currently being learned," "developing the methods of discussion, debate, and agreement," "writing the paper report," "high-level of cognitive thinking and judgement" and "improving the literacy of computer learning."

In short, self-regulated learning can be defined as "an individual who shows initiative in learning in terms of cognition (monitoring one's own learning), affection (learning attitude), and behavior (learning methods)."

### 3. Research Methodology

#### 3.1 Participants

The research's subjects were first-year non-English major students (N=68) who took the course "Freshman English" from a private university of central Taiwan. , The students were taught by the same teacher, and they were divided into two classes. According to English level testing, the research subjects were students from the Business Department with beginner level, which is equivalent to CEF A2 level. The study applied the NGSL (New General Service List) app that provided a list of vocabulary for learning for the Freshman English course. The app has 12 units of vocabulary per semester with an after-learning test for each unit (presuming to have 24 tests for the whole school year).

#### 3.2 Instruments

In this study, the students completed the 5-point Likert motivation and self-regulated questionnaire, which is consisted of 20 items. The questionnaire intended to measure 2 dimensions: motivation (items 1-13) and self-regulated learning (items 14-20). In addition, the students also used the English vocabulary app for one academic year (total 36 weeks). The frequency of usage of the app was measured by the database, Firebase. During the implementation of this study, in order to enable students to have a better understanding of the content of the vocabulary in app and arouse their interest in learning, the researcher found out various films on VoiceTube which were related to the content of English vocabulary. The films on Voicetube are multiple, the genres of them include education, entertainment, sports, etc. At the same time, according to TOEIC score level, the films have been divided into basic, intermediate, and advanced. Besides, the tone of the films is quite diverse, including British accents, American accents, etc. In addition to the videos, all the students' NGSL tests (see Appendix 1) scores were collected and analyzed by ANOVA. In addition, the interviewed data were explained in the qualitative descriptions, and the interview questions were shown in Appendix 2.

#### 3.3 System Overview

Figure 1 presents the proposed English app. First, students log in to the app with their mobile phones and student ID numbers. Then there are 12 units of English vocabulary lists each semester. After students choose one unit, they can see the words. Moreover, if they click on each word, the system will bring up a model sentence. Then students can click on game start to do the exercise and check their learning progress. If they get correct

answers, the system will direct them to next question. However, if they get wrong answers, the system will pop out a link to VoiceTube, in which students can watch the remedial video of the target word. After they watch the video, they can go back to the app again and do the exercise in “game start” to check their understanding of the target word.

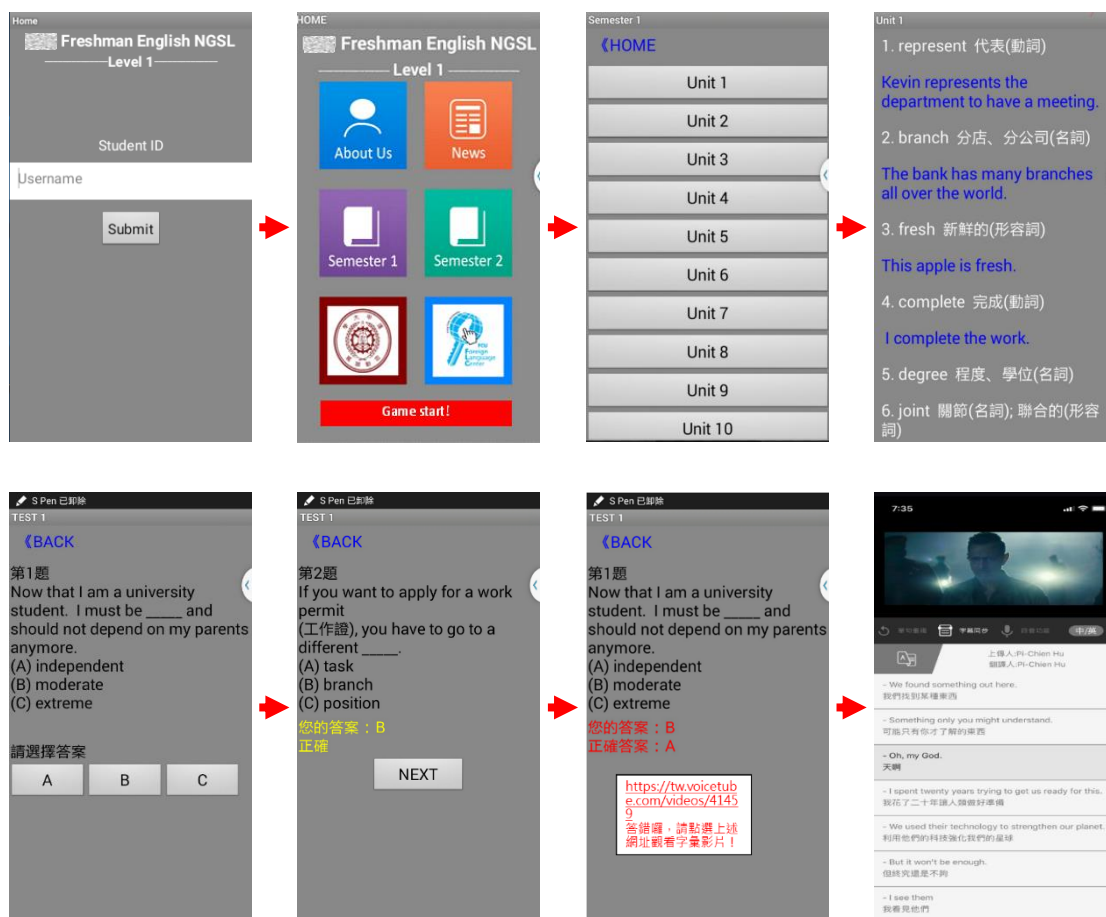


Figure 1 The English vocabulary app

#### 4. Teaching and Research Outcomes

##### (1) Research Outcomes

In this study, the English Learning Motivation and self-regulated learning questionnaire is adapted from the Attitude/Motivation Test Battery by Gardner (2004), and the Cronbach's alpha of the questionnaire is .835. There are two dimensions and twenty questions in it, and students in the experimental group (N=34) took the questionnaire at the end of the academic year. The results of students' learning motivation are shown in Appendix 3 and Appendix 4.

Moreover, the researcher set up a Firebase database to collect the students' usage of the proposed English vocabulary app, and the results are explained as follows. While using the app, if students in the experimental



group have the wrong answer of a certain question, they can watch the VoiceTube's video clip of the researcher's choice as a self-regulated learning phase.

According to Figure 2 & Figure 3, in terms of app usage, when the mid-term and final exam were approaching, the higher the frequency with which students used the app. It is concluded that the motivation of Taiwanese students is still greatly influenced by the test factors, and students were used to apply the app as a review tool.

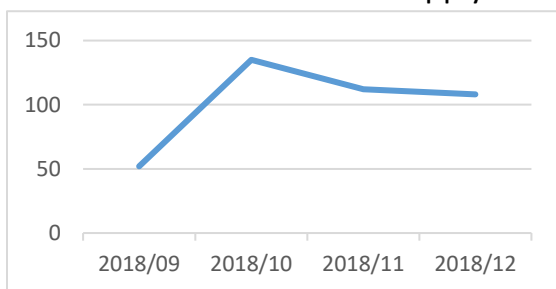


Figure 2 Frequency of Usage (1st semester)

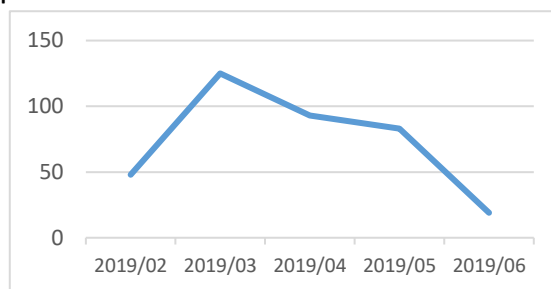


Figure 3 Frequency of usage (2nd semester)

Figure 4 and Figure 5 show the number of views of each unit in the 1st semester and 2nd semester, respectively. In the number of views of the app unit, during the first semester, the number of views in the first and seventh units got the highest number. The teacher can notice students' problems in advance, and she only needed to explain those units in class, which saved a lot of class time. The progress of the first semester was targeted units 1-12, and even the second semester had not yet begun, there were students logged into the app to preview units 13 to 24. Hence, it showed that students' motivation in learning English is improved.

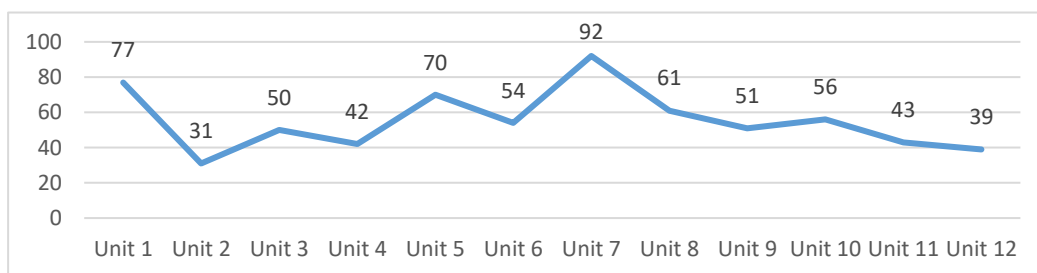


Figure 4 The numbers of views of each unit in the 1st semester

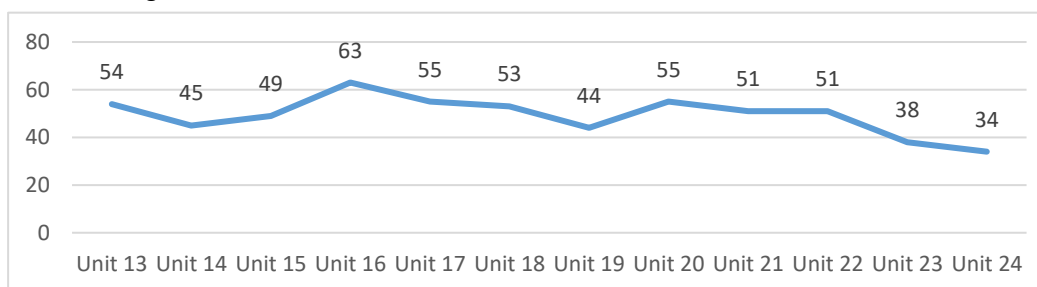


Figure 5 The numbers of views of each unit in the 2nd semester

Figure 6 and Figure 7 present the most clicked words in the first and second semesters. The words in the middle are the most clicked words in both semesters. It is very important for the researcher to notice the most clicked words before the class because the researcher assumes that those words are the most confusing ones, and the researcher can only explain the words in class instead of explaining all of the NGSL words in the unit. As a result, the researcher can save time and provide additional teaching materials in the classroom.



Figure 6 The most clicked words in the 1st semester



Figure 7 The most clicked words in the 2nd semester

## (2) Reflective Teaching

(a) The proposed English vocabulary learning app emphasizes that student can participate in learning actively. Consequently, they can have fun from using the mobile device. Moreover, it will influence students' self-regulated learning goals, and ultimately forms their own English learning style.

(b) Learning languages through the app can interest learners and simplify the learning process. Cellphone is a device that can make good use of time, because it is unlimited by time when using.

(c) The proposed vocabulary app provides a variety of learning styles through instant and interactive ways. It is foreseeable that the whole learning environment will be under a single trend of mobile learning soon.

(d) With the development of AI, the students can't avoid using the mobile phones; therefore, the design of the app helps the users' learning ubiquitously. In addition, under the teacher's guidance, students can make good use of mobile technology in learning (Ugur & Koc, 2015).

## (3) Students' Feedback

The researcher also interviewed nine students from the high-performance group, the medium-performance group and the low-performance group in the experimental group. The detailed interview questions are listed in Appendix 2. According to the interview results, the

students' opinions toward the app can be summarized as follows.

(a) Most students like to watch Youtube video clips, especially Ray Du English, to learn English. They are more attracted to the funny video clips.

(b) Students think the app's user interface is very ugly, and they strongly suggest the researcher to change the color and the design. However, they all agree that the app is very helpful and convenient for them to learn English. Plus, they suggest the researcher to add the pronunciation function.

(c) Students all agree that the link to VoiceTube video is good for remedial learning; however, they suggest the researcher to make the remedial videos on her own, just like the videos provided by the cram schools.

The limitations of the study are: 1) the proposed app is only available for Android and not on IOS; however, both systems have supporters and if the two systems can be integrated and learning is more convenient; 2) if there are more participants, the study can collect more feedbacks and make the app to be more user-friendly. Besides, the findings of this study provide some implications for future research. For example, the calculus class or physics class can also use app as a remedial tool to enhance students' learning motivation and self-regulated learning ability.

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### 三. Appendix

#### Appendix 1

##### Level 1

- 1 **offer**: She will not **offer** a lot.
  - a. try to give
  - b. make
  - c. talk
  - d. change
- 2 **variety**: I like the **variety** here.
  - a. good points
  - b. things which people buy and sell
  - c. different types of things
  - d. ways people think
- 3 **operation**: This is a large **operation**.
  - a. part of a book
  - b. thing to show the way
  - c. planned activity
  - d. piece of land
- 4 **bank**: I like this **bank**.
  - a. time in history
  - b. group of workers in a place
  - c. place to keep money
  - d. part of something
- 5 **link**: We have a **link** with them.
  - a. travel plan
  - b. thing we must do
  - c. serious fight
  - d. relation
- 6 **debate**: We had a **debate**.
  - a. test
  - b. person who we wanted to be the leader
  - c. bad result
  - d. serious talk with different opinions
- 7 **write**: I **wrote** on it.
  - a. used money
  - b. put words
  - c. walked
  - d. made food
- 8 **almost**: I **almost** did it.
  - a. sometimes
  - b. finally
  - c. easily
  - d. very nearly
- 9 **case**: This is a good **case**.
  - a. place to study
  - b. way something works
  - c. example of something
  - d. plan for the future
- 16 **move**: Could you **move** this?
  - a. take this to a different place
  - b. make this
  - c. think about this
  - d. remember this
- 17 **prepare**: They are **prepared**.
  - a. surprised
  - b. alone
  - c. ready
  - d. needed
- 18 **result**: We had the same **results**.
  - a. questions
  - b. thoughts
  - c. rules for doing something
  - d. things that happened at the end
- 19 **pressure**: Put **pressure** on this.
  - a. water
  - b. force
  - c. a cold thing
  - d. a cover
- 20 **pause**: We **paused**.
  - a. prepared for travel
  - b. stopped for a short time
  - c. were not the same
  - d. moved quickly
- 21 **previous**: That was my **previous** job.
  - a. earlier
  - b. most important
  - c. normal
  - d. favorite
- 22 **couple**: I saw the **couple** yesterday.
  - a. place to grow plants
  - b. small town
  - c. two people
  - d. song or dance
- 23 **rise**: They will **rise** next week.
  - a. become higher
  - b. change
  - c. become better
  - d. finish
- 24 **average**: It was **average**.
  - a. high
  - b. normal
  - c. different
  - d. first

- 10 event:** These are big **events**.
- a. planned activities
  - b. parts of a company
  - c. rooms for people to sing and dance
  - d. places where people study
- 11 health:** **Health** is important.
- a. learning in a school or college
  - b. having no problems with your body
  - c. learning by doing something a lot
  - d. having help from other people
- 12 solution:** This is one **solution**.
- a. answer to a problem
  - b. idea to think about
  - c. plan for spending money
  - d. part of a bigger thing
- 13 benefit:** These are the **benefits**.
- a. costs
  - b. problems
  - c. examples
  - d. good results
- 14 policy:** That is a good **policy**.
- a. kind of school
  - b. story
  - c. place to visit
  - d. way to act
- 15 show:** Did you **show** her?
- a. let her see
  - b. ask her
  - c. say something to her
  - d. follow her
- 25 report:** This is the **report**.
- a. written record
  - b. market
  - c. rule
  - d. member
- 26 class:** This is my **class**.
- a. important thing to say
  - b. person with health problems
  - c. power to decide something
  - d. group of people learning together
- 27 teacher:** They are **teachers**.
- a. people with children
  - b. workers in schools
  - c. leaders in a company
  - d. young people
- 28 problem:** This is a **problem**.
- a. plan for the future
  - b. group of things working together
  - c. service
  - d. difficult situation
- 29 try:** I am **trying**.
- a. making an effort
  - b. going to another place
  - c. giving something to someone
  - d. doing something fun
- 30 despite:** **Despite** the beginning, the speech was good.
- a. in addition to
  - b. because of
  - c. according to
  - d. even with



## Appendix 2: Interview questions

	<b>Questions about English</b>
1	When did you start to learn English?
2	How long do you study English per week?
3	How do you usually learn English? Magazines? Youtube?
4	How do you learn a new vocabulary?
	<b>Questions about the app</b>
5	How do you think of the app's user interface?
6	What do you think of the design of each unit? Is it helpful to learn English vocabulary?
7	What do you think of the design of the Game start? Is it helpful to review the unit vocabulary?
8	Do you think that in "Game start," when you make a mistake, there will be a link to the video, and the remedial learning that provides the correct answer will help you understand the vocabulary?
9	Do you think the exercises in the app and watch the videos can help you learn new words?
10	Do you have any suggestions for this app?

### Appendix 3

Table 1 Experimental Group's Students' Learning Motivation

Survey Questions	Numbers					N	Mean	SD
	Totally Disagree	Disagree	Uncertain	Agree	Totally Agree			
1. Learning English is for passing exams.	0 0%	5 15%	4 12%	10 29%	15 44%	34	4.03	1.09
2. I wish to speak fluent English.	0 0%	0 0%	0 0%	14 41%	20 59%	34	4.59	.50
3. Learning English is for traveling abroad.	0 0%	0 0%	0 0%	18 53%	16 47%	34	4.47	.51
4. Learning English benefits to finding jobs.	0 0%	0 0%	0 0%	9 26%	25 74%	34	4.74	.45
5. The reason for not learning English well enough is due to the lack of effort.	2 6%	2 6%	5 15%	13 38%	12 35%	34	3.91	1.14
6. I feel like a wise person when I'm studying English.	2 6%	5 15%	5 15%	12 35%	10 29%	34	3.68	1.22
7. Learning English is a waste of time.	15 44%	8 24%	3 8%	4 12%	4 12%	34	2.24	1.44
8. Learning English helps me understand English books.	2 6%	10 29%	4 12%	12 35%	6 18%	34	3.29	1.24
9. Learning English helps me understand foreigner's life.	8 23%	6 18%	2 6%	12 35%	6 18%	34	3.06	1.50
10. Learning English helps me make friends from other countries.	0 0%	2 6%	0 0%	14 41%	18 53%	34	4.41	.78
11. Learning English helps me communicate with foreigners.	0 0%	0 0%	0 0%	14 41%	20 59%	34	4.59	.50
12. Learning English helps me understand foreign cultures.	0 0%	0 0%	3 9%	16 47%	15 44%	34	4.35	.65
13. The reason for learning English well is due to the right way of studying.	1 3%	2 6%	2 6%	14 41%	15 44%	34	4.18	.99

#### Appendix 4: Self-regulated Learning Attitudes

Survey Questions	Numbers					N	Mean	SD
	Totally Disagree	Disagree	Uncertain	Agree	Totally Agree			
14. If there's a chance, I will try to learn English through smartphone's applications, like the videos.	0 0%	0 0%	0 0%	16 47%	18 53%	34	4.53	.50
15. It is easy to learn English through smartphone's applications.	0 0%	6 18%	6 18%	12 35%	10 29%	34	3.76	1.07
16. Even without a teacher, I still have the ability to learn English through smartphone's applications.	4 12%	6 18%	2 6%	12 35%	10 29%	34	3.53	1.39
17. Smartphone's application is a trend of learning English.	0 0%	0 0%	0 0%	5 15%	29 85%	34	4.85	.36
18. If needed, I am willing to learn English through smartphone's applications.	0 0%	1 3%	1 3%	9 26%	23 68%	34	4.59	.70
19. If there's a chance, I am willing to recommend others to learn English through smartphones' applications.	0 0%	1 3%	1 3%	2 6%	30 88%	34	4.79	.64
20. I wish to improve English with specific learning techniques.	0 0%	0 0%	0 0%	2 6%	32 94%	34	4.94	.24