

THE EFFECTS OF DIGITAL GAME RESOURCES ON EFL STUDENTS' ENGLISH VOCABULARY KNOWLEDGE

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THE EFFECTS OF DIGITAL GAME RESOURCES ON EFL STUDENTS' ENGLISH VOCABULARY KNOWLEDGE

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This research investigated the effects of digital game resources, as follows: (1) to investigate the effects of digital game resources on the vocabulary knowledge of EFL students in the Science-Mathematics program; (2) to investigate the effects of digital game resources on the vocabulary knowledge of EFL students in the Chinese-English Program; (3) to compare the effects of digital game resources on the vocabulary knowledge of Science-Math Program and Chinese-English Program students; (4) to examine the opinions of EFL students regarding learning vocabulary through digital game resources. The participants consisted of 70 EFL students selected via purposive sampling, 35 students in the Science-Math program and 35 students in the Chinese-English program. The research instruments included an English vocabulary test, six lesson plans, a questionnaire, and a semi-structured interview. The mean scores, standard deviation, and *t*-test analyses were used to analyze the quantitative data, while content analysis was used to analyze the qualitative data from semi-structured interviews. The results revealed that there were statistically significant differences in the pre-test and post-test mean scores of the Science-Math program students (t = -8.54, p < .05) and the Chinese-English program students (t = -10.93, p < .05). Moreover, there were no statistically significant differences (t = -1.94, p > .05) in the post-test mean scores of both groups. This indicated that digital game resources had positive effects on students from different backgrounds. In addition, opinions about learning vocabulary through digital game resources were at a highly positive level (M=4.38). This illustrated that they favored this method. This study points out that the digital game resources can be a useful tool to enhance the vocabulary knowledge of EFL students.

Keyword : Vocabulary Knowledge, Digital Game Resources, DGBL, Teaching Vocabulary, Motivation, EFL students

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CHAPTER I

INTRODUCTION

Background

English plays an important role in daily life. It is the medium of communication that people from different countries around the world can understand. According to Reddy (2016), English plays a vital role in the modern world and it is the most frequently used on the worldwide web (Kumar, 2009). Therefore, English is no longer a mere subject to be learned in the classroom but also emphasized social and practical use. The English language is also a key success factor for educational purposes. English is vital for success at school and for further education. As Rani (2014) stated, English has become a required course in most universities and other higher education systems.

The English language also plays an essential role for Thai students. In Thailand, English is taught as a foreign language (EFL), and it is an important subject in the curriculum from the primary level to higher education. The aim of teaching English is to develop students[,] ability to communicate effectively in all four skills of English: listening, reading, speaking, and writing. The necessity of foreign language learning is also emphasized in the Basic Education Core Curriculum of the year (OBEC, 2008) as "an important tool for communication, education, seeking knowledge, livelihood and creating an understanding of cultures and visions of the world community (p. 226). This means that Thai students are required to have a significant level of English ability in order to complete their basic education. In addition, English is even more important for Thai high school students, since they have to compete in the English entrance examination and the Ordinary National Education Test (O-NET). Moreover, after the establishment of the ASEAN Community in 2015, the English language is considered to be one of the most important keys for the development of the ASEAN community as it is the working language of ASEAN.

Unfortunately, the English proficiency of Thai people is not at satisfactory levels. The international ranking called English Proficiency Index (2012) showed that Thailand placed 53rd in English proficiency out of 54 participating countries and is ranked 6th among ASEAN member countries (NIETS, 2018). According to the test results of the Ordinary National Education Test (O-NET), the average 2015 O-NET score in English subject was 20 percent below standard (National Institute of Educational Testing Services, 2015). More importantly, Saenpakdeejit (2014) points out that Thai students commonly have difficulties in English learning caused by lacking lexical knowledge, and insufficient vocabulary causes students to struggle with enhancing their English proficiency. Therefore, Thailand needs to prepare and to improve human resources in terms of English language proficiency for the rising competition in the ASEAN community.

Vocabulary knowledge is important for every learner in order to succeed in learning a foreign language. Harmer (2001) emphasizes that in order to succeed in foreign language learning, learners need to focus on their vocabulary knowledge improvement. In addition, Schmitt (2000) stated that vocabulary learning has become one of the most essential parts of second language acquisition. Bromley (2007)stated that it is a principal contributor to comprehension, fluency, and achievement. Hence, vocabulary plays a very crucial role in learning a foreign language.

Several research studies have suggested that vocabulary is one of the big obstacles for English as a foreign language (EFL) learners. In general, learning a foreign language is always difficult since it is not their mother tongue. Also, EFL learners seldom have exposure to the target language in their daily life. Haddad (2016)observed that EFL students lack an awareness of the importance of learning vocabulary. They have a very limited experience of practicing the target language in daily life. Moreover, motivation to learn the English language and providing an environment where using higher levels of vocabulary are challenging parts of EFL education.

A lack of good vocabulary knowledge is one of the major problems of vocabulary learning for EFL students. Ahmadi, Ismail, and Abdullah (2012) stated that vocabulary knowledge deficiency is a major obstacle when attempting to communicate in a foreign language. Thai students also face vocabulary problems. Tunchalearnpanih (2013) found that Thai EFL students had limited English vocabulary knowledge, a problem that affected foreign language communication. Saengpakdeejit (2014) said that the first problem of Thai learners in their English learning was unknown words. Chawwang (2008) also provided evidence that insufficient knowledge of vocabulary was a crucial difficulty in Thai learners⁻ reading ability. According to Srimanee and Laohawiriyanon (2010), insufficient vocabulary knowledge of Thai learners resulted

from a low level of English language exposure. Therefore, it is essential to support Thai learners' English vocabulary learning.

Teaching methods play a crucial role in EFL students learning. Kapukaya (2006) proposed that the ways in which teachers teach affect students learning success. According to Thongprasert and Cross (2008) noted that learning and teaching methods in Thai schools is mainly done in a teacher-centered style. The teacher is the manager and the students are subordinates, who are required to obey and follow the manager (Gallagher, 1993, as cited in Becker & Maunsaiyat, 2004, Phungphol, 2005). Main teaching methods in Thailand are didactic discourse and direct instruction, and teachers are the dispensers of information, which they control and transmit as needed to the students, who are passive receivers of this information, and whose task is to memorize (Gallagher, 1993, as cited in Becker & Maunsaiyat, 2004, Smith & Piele, 2006, Wiriyachitra, 2002). As a result, students do not feel confident in asking questions or expressing their own ideas to their classmates. Khuankaew (2010) claimed that teacher-centered style caused most Thai students to be passive learners. In this way, the teaching method which promotes active learning is needed.

As technological applications continued to develop rapidly, digital games have been integrated as a part of learning tools in the classroom. Many studies demonstrated that digital games can be associated with the education context. First, digital or webbased games supported the learners' improvement in vocabulary learning (Ashraf, Motlagh, & Salami, 2014; Ibharim et al., 2015; Vidlund, 2012; Yip & Kwan, 2006). Digital games can help learners to memorize words because of visualizing pictures and texts on the screen of the digital games (Yip & Kwan, 2006). Recent studies have discussed more positive effects, especially on the potential of digital games to be designed for progression and repetition activities (Noor Azli Mohamed Masrop et al., 2015). In addition, Young and Wang (2014) proposed that the achievement of students' pronunciation has increased significantly through game-based methods compared to students who were taught using drilling technique. Second, digital games can be useful in learning as digital games motivate learners to learn vocabulary and achieve their learning goals. Digital games have options to interact with a variety of fun and challenging tasks (Ashraf et al., 2014; Lund, 2012). Furthermore, digital games can provide user's feedbacks, achievement and rewards, interactivity and playfulness. Those features in digital games can encourage motivation and competition through proper learning instructions. Finally, some studies also discussed on the effects of games on encouraging involvement and engagement in learners. Digital games have been proposed as one of the effective tools if they were combined in education for the student engagement and joyful learning purposes (Prensky, 2003). In sum, several new scholars supported that the effects of including digital games in learning can improve the outcomes of vocabulary learning in higher education and good learning environment (Ibharim et al., 2015; Cheong et al., 2013; Denny, 2013; Dong et al., 2012; Li et al., 2012).

In the 21st century, widely known as the information-based society, digital technology is acknowledged as having the potential to engage learners and to encourage

interaction in the target language (Reinders & Wattana, 2012). Learning vocabulary is very challenging, and it is even more so when it comes to a foreign language. It requires much effort from the learners and even more for high school learners, the digital generation. Thus, using digital games as tools might be an alternative method to help EFL learners to be interested in language learning by providing them with meaningful game-like contexts. In addition, digital games help to increase intrinsic motivation to learn due to the elements of competition and winning and also can create a good learning environment and promote user engagement. (Goehle, 2013).

The significance of English as a world language, the education reforming and advance of technology are main determinants for new developments for English language teaching and learning in Thailand in this decade. With advances in digital game resources, the aim of this quasi-experimental research was to investigate the effects of using digital game resources on EFL students[,] vocabulary knowledge in different backgrounds of students in Science-Math Program and Chinese-English Program. Moreover, this study aims to gather the opinions of the students about learning vocabulary through the digital game resources.

Purposes of the study

The purposes of this study are as follows:

1.To investigate the effects of digital game resources on vocabulary knowledge of EFL students in Science-Math program.

2. To investigate the effects of digital game resources on vocabulary knowledge of EFL students in Chinese-English Program.

3. To compare the effects of digital game resources on vocabulary knowledge of the Science-Math Program students and Chinese-English Program students.

4. To examine EFL students' opinions about learning vocabulary through the digital game resources.

Research Hypothesis

1. The vocabulary knowledge post-test mean score of Science-Math Program students will be significantly higher than the pre-test mean score.

2. The vocabulary knowledge post-test mean score of Chinese-English Program students will be significantly higher than the pre-test mean score.

3. There will be statistically significant differences in the post-test mean scores on vocabulary knowledge of Science-Math Program students and the Chinese-English Program students.

Significance of the study

The findings from this study provide alternative methods of learning vocabulary using digital resources. It can helps teachers and educators to develop learning vocabulary activities which lead students to enjoy learning vocabulary in the classroom. Moreover, this study can give new ideas to the secondary school and EFL classroom in improving students⁻ vocabulary knowledge. Finally, the findings can be a

guideline for developing language lesson which improve students, language competency and success in the digital age.

Scope of the Study

The participants were seventy 11th grade EFL students who enrolled in Fundamental English course, selected by a purposive sampling. They were studying at Phimanphitthayasan School, Satun. They were taught vocabulary using digital game resources including Kahoot, Quizizz, and Triventy.

Definition of Terms

The terms used in this investigation are defined as follows:

Digital game resources refer to digital game-based learning platforms, including Kahoot, Quizizz, and Triventy, used as educational technology in classroom which provide users an opportunity to commonly conduct and integrate online quizzes, lessons, and competitions.

Vocabulary knowledge refers to the knowledge of word meanings, word forms, and word in contexts.

English as a Foreign Language (**EFL**) **students** refer to students who study English as a Foreign Language. They learn and use English as an additional language in a non-English speaking country. Specifically, in this study, it refers to the 11th-grade students studying in Science- Math Program and Chinese- English Program at Phimanphitthayasan School, Satun. **Opinions** refer to the ideas that students view or judge about learning vocabulary through the digital game resources used in the classroom activities, which are based mainly on their feelings and beliefs.

Summary of the Chapter

This chapter presented the background of study, rationale and framework. There is an explanation of this study including the purposes of the study, the research hypothesis, the significance of the study, the scope of the study and the definition of terms used in this study



CHAPTER II

LITERATURE REVIEW

This study mainly aims at investigating the effects of using digital game resources on EFL student's vocabulary knowledge. This chapter presents the theoretical foundations and previous studies on the use of digital game resources to improve English vocabulary knowledge. It consists of three parts. Firstly, it discusses the vocabulary knowledge, and vocabulary learning and teaching. Secondly, it illustrates English as foreign language (EFL) students. Thirdly, it presents games and language learning including game-based learning (GBL) and digital game-based learning (DGBL), the advantage of DGBL for language learning, and digital game resources. Finally, it presents the related studies.

Vocabulary Knowledge

Vocabulary has been acknowledged as the main element for the students in the process of learning and using language. According to Hornby ((1995, vocabulary is defined as "the total number of words in a language; vocabulary is a list of words with their meanings." In addition, Hiebert and Kamil (2005) mentioned that vocabulary is the knowledge of the meanings of words. In learning vocabulary, students have to know the meaning of words and use vocabulary in making sentences. Furthermore, Neuman and Dwyer (2009) defined vocabulary as "words students must know to communicate effectively" (p. 385).

Linguists such as Stewick (1972), Thornbury (2002), and Nunan (2003) asserted that vocabulary learning is important because it helps to create a connection and relationship to the language with rules for understanding it. Ghadessy (1998, January) and Zimmerman (1997) stated that learning vocabulary was more significant than learning structure because vocabulary was the basis of language learning. People use vocabulary as a tool to carry knowledge and ideas between individuals in a community. It also serves as a useful tool for communicating a point of view clearly and conveying understanding. Cameron (2001) claimed that vocabulary is one of the knowledge areas in language that play a great role for learners in acquiring language skills.

Vocabulary knowledge is considered to have various dimensions of learning vocabulary. The learning of vocabulary means understanding the definition and other relevant aspects of words (Lin (2015); He (2010)). In addition, Gu (2003) argued that learning vocabulary means to gain knowledge of a word and be able to use it in appropriate contexts. Similarly, Miller (1999) proposed that knowledge of a word involves knowing the words⁻ meaning and knowing its contexts of use. Furthermore, Schmitt (2010) concluded that vocabulary knowledge is knowledge of the components of vocabulary, lexical organization, and receptive and productive mastery. Therefore; the process of learning vocabulary is more than just knowing the word. It means understanding the various aspects of the process and language constructs. It could be summarized that vocabulary knowledge is the understanding of the meanings of words

used to express ideas and information to others clearly, the forms of those words, and how those words are used in the context appropriately.

Many scholars have identified various aspects of learning vocabulary. Cronbach (1942) proposed five different aspects of learning new vocabulary: the ability to define its meaning, the ability to recognize contexts for using it, knowledge of its multiple meanings, the ability to recognize appropriate usage of the word, and the availability of the word for use in daily life. Additionally, Nation (2001) claimed that there are three main aspects of learning new vocabulary: meaning, form, and use. First, those studying a foreign language should learn the meaning of a word and understand it in their first language. Second, students should be able to speak, spell, write, and identify the word. Finally, they should learn how to use the word. They will be able to utilize the word in many correct patterns and contexts, in both spoken and written forms, if they can accomplish these three stages.

Moreover, there are two types of vocabulary, as explained by many experts. Harmer (2001) and Hatch and Brown (1995) indicated two kinds of vocabulary, namely receptive vocabulary and productive vocabulary. The first type, receptive vocabulary, refers to vocabulary that a learner cannot produce independently but can comprehend and respond to the words when they are presented in context (Webb, 2005). The second one, productive vocabulary, refers to the words that are understood and used by the learner independently, including spoken and written words. Webb (2005) claimed that expressive vocabulary can be addressed as an active process because learners can produce the words to express their thoughts to others. In summary, vocabulary learning is developing the competence to know and use words. It involves learning word meaning, word form and word usage in context. This learning process is deeper and more complex and requires a significant process of teaching and effective teaching instruction.

Vocabulary Learning and Teaching

Many researchers in the field of vocabulary instruction have identified ways to enhance students¹ vocabulary learning. Various methods have been found to be beneficial to enhance vocabulary knowledge teaching. Cross (1991) suggested a process to teach vocabulary. This procedure is divided into three stages: presentation, practice, and production. Instructors should carefully select a variety of techniques to present new words in the first stage. Then, teachers should have students practice using newly learned vocabulary items. Many types of exercises are provided for teachers to utilize in this stage, such as doing word classifications, matching, or sentence completions. In the production stage, students are required to use the new word.

Huang (1993) offered another method of vocabulary instruction. First, clearly explain the purpose of each lesson to students. The target words and the degree of difficulty should be appropriate for students¹ language skill levels. Second, present clearly the vocabulary items in a sentence, context, or real situation. Students have to know how to use words in addition to becoming familiar with and memorizing them. Teachers should then assign students to do exercises. This is a good way to encourage students to speak, read, and write the target words. Students should repeat the words' meanings and pronunciations. Last, ask students to guess the meanings of words from context.

Learning new vocabulary is more powerful and more effective when learning in rich contexts. Many scholars suggested essential ways to improve language proficiency. Schmitt and McCarthy (1997) proposed learning vocabulary techniques which are guessing from context, using word parts and mnemonic techniques to remember words, and using vocabulary cards to remember foreign language. It was supported by Murcia (2001) who also proposed that guessing meaning from context to be an effective learning vocabulary technique. A context provided for the students would be rich enough to give adequate clues to guess the word's meaning. In addition, Stahl (2005) argued that students probably have to see a word more than once in order to remember it, this can be done by presenting the word in different and multiple contexts. Alqahnati (2015) also recommended that guessing meaning from context is a good technique to help students deal with unknown words.

Moreover, Kucan (2012) presented an instructional technique for vocabulary lessons. First, the target words are presented in a story which provided contexts. Then students learn the new words¹ meanings. Third, the words are shown, such as on a board or word cards. Fourth, students repeat the words after learning pronunciations. Next, target words are presented in another context, which is different from the initial one. Sixth, students learn various forms of the word. And finally, students are encouraged to practice using words through multiple activities. Therefore, learning vocabulary could be effective by motivating guessing new vocabulary meaning and practicing .in various contexts.

In addition, Diana (2010)) presented five steps in teaching vocabulary. First, teachers should activate students¹ background knowledge. Then, they should ask students to connect new words to their background knowledge. Third, teachers need to ensure that students have opportunities to use vocabulary. Fourth, they should provide learners with many types of exposure to new vocabulary and different ways to use the new vocabulary. Finally, teachers need to concentrate on higher-level knowledge.

From the above discussion, several vocabulary teaching techniques are appropriate and useful for enhancing students¹ vocabulary knowledge. Many educators have attempted to create effective vocabulary instruction and they share some similarities. The first is activating background knowledge. Students¹ background knowledge should be activated as the teacher draws students¹ attention to the lesson. The second is presentation. The teacher clearly presents the vocabulary items in a sentence, context, or real situation. Students have to know how to use words in addition to becoming familiar with and memorizing them. The third is practice. Exercises are used to engage memorization and understanding. The fourth is production. Students should be assigned to use vocabulary items. Last, the teacher and students participate in reviewing the productivity of the lesson. These five steps was used as a framework to design lesson plans in this study.

English as a foreign language (EFL) Students

Many experts defined definition of EFL in many ways in term of learning and teaching language. EFL is regarded as English as a Foreign Language. Stern (1983) proposed that in terms of language functions, learning purposes, language environment and learning methods, foreign language means the language used outside the native country. The main purposes of learning a foreign language is for tourism, communicating with native speakers, reading foreign journals. In addition, Shu (1994) argued that EFL means learning English in non-English-speaking countries distinguished from term of language environment, language input and affective factors which influence the learning process. EFL is mainly used by non-native English students, such as Chinese students of English in China and Thai students of English in Thailand. Similarly, Iwai (2011) defined that EFL students refer to those who study English in non-English speaking countries. (E.g. Japanese people who learn English in their country are EFL students. In conclusion, EFL students refer to students who learning and using English as an additional language in a non-English speaking country.

There are a number of difficulties experienced by EFL students when learning and teaching foreign language. The first difficulty is the teaching method. According to Peng (2019), in EFL classroom, many teachers play a leading role of the class which provided passive learning for the students. This is supported by Zhao (2001) who claimed that EFL students had a low language proficiency because the focus of the class was mainly on the teacher who gave the lecture. In addition, English lessons are conducted in a teacher- centered classroom, making the students to be passive learners (Wiriyachitra, 2002). Moreover, some EFL teachers still tend to use the passive strategies that focus on textbook-based grammar and translation (Maskhao, 2002; Simpson, 2011). Therefore, teachers always play a core of the class and still conduct language classroom with teacher-centered teaching style which obstact productive language learning. The second difficulty presented in many studies is lacking of relative environment and low level of English language exposure (Wu, 1995). Peng (2019) also argued that language learning is a complex process influenced by the environment. However, foreign language learning occurs in the students' native language environment. As a result, EFL students hardly use English in a social occasion. Similarly, Sudsuang and Yuthana (2017) claimed that EFL students did not have a chance to use target language in their daily lives. This has been found to be one of main problems of language learning for EFL students. In conclusion, considering the above difficulties, it is important to employ varied teaching methods. Moreover, it is also important to create an engageing and desirable environment for the students and provide them the opportunity to freely use the English language creatively.

Games and Language Learning

Games have been defined in many aspects by researchers. Dobson (1998) defined a game as "one kind of effective activity to improve students' skills." In addition, Collier (1996) defined a game as "a kind of competition in which players had objective such as winning or succeeding by having fun and under clear rules." Hadfield (1990) remarked that a game is "an activity with rules, a goal and an element of fun." (p.15). It can be summarized that a game is an activity governed by rules based on challenges and competition to accomplish certain goals within an enjoyable environment.

Many scholars agree that games can be a good tool to improve language learning. This is because games encourage fun, relaxation, and a competitive environment that can support a high motivation to succeed in learning. According to Huyen and Nga (2003), using games in class can help motivate students. Games create relaxation and fun for students in class. Furthermore, using games in class can create a friendly learning environment (Rityothi, 1997). Games also increase intrinsic motivation, and they link the goals of winning the game and learning the material (Corpus 2005). This leads to students' high motivation to succeed in their learning (Alemi, 2010; Kumar & Lighter, 2007). In other words, games raise the efficiency of language learning. Many scholars point out that they complement classroom instruction. With regard to the nature of games, applying games in a language classroom can encourage students to learn actively and participate meaningfully in every activity.

In EFL classrooms, games provide more advantages for promoting learning foreign language. One of the advantages is decreasing the students⁻ anxiety towards language learning. According to Crookal (1990), in language classes, games could help to increase positive feelings, reduce anxiety, and improve self-confidence. In addition, in spite of exciting games, they could attract students⁻ interest more the ordinary lessons. The students can learn the language with enjoyness and fun in the classroom. According to Mei and Yu-Jing (2000), shy children react positively to games. This has effect motivation of the children.

Most importantly, games are called learner-centered because of active activities in the classroom. According to Crookall (1990) instruction of games learners⁻ and teachers⁻ roles are changed and teachers activate learners to join actively in their learning. As a result, games give more chance to learners. By using games, different contexts can be created by teachers that allow learning freely. As a result, when students⁻ focus is on a game as an activity, learners acquire the target language effectively (Cross, 2000).

Game-Based Learning (GBL) and Digital game-based learning (DGBL)

Game-Based Learning (GBL) has been defined by many researchers. Prensky (2001) and Malone, (1981) defined GBL as a set of learning principles derived from various games and gaming environments that have ultimately proven to be effective instruction. Qian and Clark (2016) described GBL as an environment where game content and gameplay enhance knowledge and skill acquisition and where game activities involve challenges that provide learners with a sense of achievement.

In recent years, the advance of technology has led to the development of games. A digital game is an electronic stimulation for educational or entertainment purposes. The term, "digital game" can be defined as a kind of game played on a digital device which system is partly or wholly implemented in a digital device such as a personal computer, a smartphone, or a tablet (Karasavvidis, 2018). Because of the expansion of digital technology in this age, learners can easily extend their development with learning tools that integrate digital games in learning. Coffey (2009) stated that the advancement of digital technology in the 21st century can develop learning tools that integrate digital games.

Digital game based learning (DGBL) is an instructional method that incorporates educational content or learning principles into digital games with the goal of engaging learners (Coffey, 2017). Prensky (2001) explained that DGBL refers to the development and use of computer games for educational purposes—not only computers but also digital music and video players, cell phones, video games, and a host of other gadgets that require technology. In addition, Prensky (2007) agreed that the advancement and popularity of digital technologies have become a stimulation for researchers to develop systems for learning and applying digital game-based learning to teach in the classroom.

Various studies have shown the potential of integrating DGBL into language learning. According to Prensky (2007), DGBL can be implemented in the form of a digital-based learning tool as it integrates education with entertainment and enhances student involvement. Hennessy et al. (2007) indicated that the interactive records of digital game-based learning could allow teachers to reflect and improve the curriculum design, as well as cultivate student capabilities of independently acquiring academic skills. Most importantly, digital technology, including interactive tasks with games applied in an educational setting, is the most interesting aspect for many fields of English learning. Consequently, digital game-based learning is a popular method among educators and researchers.

The Advantages of DGBL for Language Learning

Many scholars have proposed advantages of DGBL to help learners to acquire a language effectively. DGBL could be an effective way of providing a more interesting learning environment for acquiring knowledge, and it can enhance students¹ learning interest and motivation (Hwang, 2013). Therefore, DGBL could be introduced as an alternative way to support English learning for three main aspects: to enhance language learning, to motivate learning language and promote learner engagement, and to encourage learners to be successful in 21st-century skills.

The first aspect is DGBL's advantage in many fields of language learning. DGBL has been widely explored to support English language learning for every age level—primary school students, young learners, and adolescent learners (Yip & Kwan, 2006). One effective way to improve the quality of teaching English is multi-digital based technology education. The use of DGBL in teaching English promotes interest in the subject and supports the process with respect to the pace and depth of the course. Digital game instruction has provided an incredible language learning application, including all types of exercises for such things as vocabulary-building, listening and pronunciation exercises, grammar. Teaching with DGBL can help to develop vocabulary learning. Kocaman and Kizilkaya-Cumaoglu (2014) observed that DGBL is effective in vocabulary knowledge. According to Vidlund (2012), using digital games to encourage vocabulary learning had positive results such as acquiring unfamiliar words from using digital games. Yip and Kwan (2006) supported learning English vocabulary using digital games in that the features of digital games help improve players¹ knowledge of vocabulary. Repeated words in digital games assist players in memorizing vocabulary input as the games allow players to interact with the words repeatedly. In addition, DGBL is effective in developing the knowledge of both receptive and productive vocabulary noting that the use of modern English words reflects a certain stage of social development (Yip & Kwan, 2006; Kizilkaya-Cumaoglu, 2014).

In addition, Levy and O'Brien (2006) said that applying DGBL in teaching provided many tools to improve learners¹ general fluency, pronunciation, and reading skills in the target language. Furthermore, improving listening skills by instructing DGBL has a positive impact. The instructional advantages of DGBL materials over printed course materials have been reported in relation to improvements in learners¹ listening skills (Bernert-Rehaber & Schlemminger, 2013; Levy & O'Brien, 2006; Roy & Schlemminger, 2014). Moreover, grammar-focused activities can support language learning in the context of cognitive learning skills. These include by implementing tasks designed around the content of the game before, during and after play designed around the content of the game, writing skills (Levy & O'Brien, 2006; Neville et al., 2009) in communication, grammatical accuracy and writing skills (Berns et al., 2013)

Many current studies provided information we can study in a variety of language learning settings. There are also an important number of positive outcomes in vocabulary, listening comprehension, speech fluency, reading comprehension, grammar, and writing skills as presented before. In this aspect, digital game-based learning can promote the potential value of learning vocabulary and practicing skills.

Second, DGBL enhances students¹ learning motivation because it creates a good learning environment and promotes user engagement. Some researchers investigated the actual benefits of digital games, in terms of learning and motivation (Connolly, Boyle, MacArthur, Hainey, & Boyle, 2012; Gee, 2005; Prensky. 2001; Shaffer, 2006).

Some studies stated that game design elements, interactions, environment, and integrated technologies stimulate learners to learn and practice the language. Garris, Ahlers, and Driskell (2002) executed a literature review and found that a number of characteristics of a game are attractive to learners. These characteristics were: fantasy, goals and rules, sensory stimulation, and challenges. Griffiths (2002) contended that digital games have great diversity while attracting students of various demographic backgrounds. They also help students set and work towards the achievement of goals, provide helpful feedback, and maintain records for measurement purposes. Griffiths also suggested that the interactive nature of digital games stimulates learning and encourages learners to challenge new topics or knowledge and that the games can be applied flexibly across different contexts in the classroom. Moreover, Blackwell et al. (2015) agreed with the great benefit of digital games for teenagers¹ motivation to learn by adding instructional objectives and materials into digital games. Students¹ learning motivation would be enhanced because of the challenging and enjoyable nature of the games. It was also discovered that learners would have higher intrinsic learning motivation in digital game situations and the atmosphere of competition or cooperation in the classroom (Huang et al., 2013).

In addition, DGBL can promote user engagement (Goehle, 2013). According to Reeve (2012), engagement refers to the attentiveness and enthusiasm when a learner becomes involved in the process of learning. Many researchers recommended that games can be implemented in the form of a digital-based learning tool that integrates education with entertainment and content or learning principles with the goal of engaging learners and also enhances student involvement (Prensky, 2007; Coffee, 2009).

The third important aspect of DGBL is that it encourages learners to be successful in 21st-century skills. These include a wide range of skills such as learning and innovation skills (i. e. , critical thinking, creativity, collaboration, and communication) and information, media and technology skills (Binkley et al., 2014). DGBL has become more common in society with its capacity to deliver content through multiple forms of computer devices in a wide range of student contexts and for learners of all ages. For instance, several studies have examined the impact of playing games to

develop managerial skills (Corsi et al., 2006; Kretschmann, 2012). Griffiths (2002) also noted that digital games can help students develop computer skills that they may need in a society that continues to develop technologically. DGBL has been gaining more and more attention from researchers and practitioners. For instance, the current school curriculum in Hong Kong clearly emphasizes the importance of students⁻ creativity development. As a result, teachers are encouraged to develop or adopt innovative teaching methods to foster students⁻ creativity in the classroom (Chan & Yuen, 2014).

In recent years, many scholars have observed that DGBL has shown positive results for language learning. There are many types of digital platforms for instructors to apply in creating new methods of teaching to enhance and support students[,] learning. Digital game resources could be introduced as alternate methods to assist vocabulary learning in language learning.

Digital Game Resources

Many scholars support that games can be a good tool to improve language learning. This is because games encourage fun, relaxation, and competitive environment that can support high motivation to succeed in learning. According to Huyen and Nga (2003), using games in class can help motivate students. Games create relaxation and fun for students in class. Furthermore, using games in class can create a friendly learning environment (Rityothi, 1997). Games also increase intrinsic motivation, and link the goals of winning the game and learning the material (Lepper, Corpus, & Iyengar, 2005).
This leads to students' high motivation to succeed in their learning(Alemi, 2010; Kumar & Lightner, 2007). In other words, games raise the efficiency of learning.

In recent years, the advance of technology has led to the development of games. A digital game is an electronic stimulation for educational or entertainment purposes. With the expansion of digital technology in this age, learners can easily extend their development with learning tools that integrated digital technologies. Coffey (2009) stated that the advancement of digital technology in the 21st century can develop learning tools that integrate digital games. Prensky (2007) stated that the advancement and popularity of digital technologies also have encouraged researchers to develop systems for learning and applying digital game-based learning to teach in the classroom. According to Prensky (2001), digital game-based learning refers to the development and use of computer games for educational purposes-not only computers but also digital music and video players, cell phones, video games, and a host of other gadgets that require technology. Coffey (2009) commented that DGBL can integrate content or learning principles into digital games with the goal of engaging learners. Prensky (2007) said that DGBL can be implemented in the form of a digital-based learning tool as it integrates education with entertainment and enhances student involvement. Hennessy et al. (2007) indicated that the interactive records of digital game-based learning could allow teachers to reflect and improve the curriculum design, as well as cultivate student capabilities of independently academic skills. Most importantly, digital game-based learning is a popular method among educators and researchers.

Digital game resources are increasingly being developed for learning. Digital game resources are digital game-based learning platforms, used as educational technology in classrooms. They provide users to conduct online quizzes, surveys, and discussions (Dellos, 2015). These learning technologies are available to enhance and facilitate the teacher in education. In addition, students could be engaged in knowledge content in a competitive gameplay format.

There are an increasing number of digital game resources which aim at learning a foreign language, such as Edpuzzle, Menmrise, Socrative or Kahoot: (Montaner-Villalba, 2018). Montaner-Villalba, (2018) proposed that digital game resources are an excellent tool for teaching students at school, especially in the language learning classroom. Students are keen to use their mobile phone or tablets and implement technology gadgets into the classroom. These resources can be used to create a good environment in the classroom, increase energy and add more fun atmosphere. In the activities, students participate in friendly competition and cooperative learning, and this leads to students¹ increased motivation. (Malamed, 2012). The digital game resources frequently used in the classroom activities included Kahoot!, Quizizz, and Triventy.

1. Kahoot: is a game-based learning platform, used as educational technology in schools and other educational institutions, and it can be accessed both via computer as well as a smartphone or a tablet (Pede, 2017). Teachers can design quizzes using multiple choice questions presented in a game-based format to students. Kahoot: can be employed to review students⁻ knowledge for formative assessment or as a break from traditional classroom tasks. In addition, Kahoot! can be used to enhance social learning, because students gather around a common screen such as an interactive whiteboard, projector or computer monitor (Pede, 2017).

2. According to Basuki1 and Hidayati (2019), Quizizz is a fun multiplayer game platform or application classroom activity for quiz-games. Quizizz allows anyone to conduct student-paced formative assessments in a fun and engaging way for students of all ages (Help Center: What is Quizizz, 2017). Quizizz can be started by signing up and then creating/selecting a virtual room or games, and also picture multiple choice quizzes. Once the room is created a unique code is generated that can be given to students to join. Once the game starts an educator sees all results live and in real-time. Students can become a controller of their pace on game classroom activity. Moreover, it has some features that can provide students' answer pace, so they can answer questions at their own pace and review their answer at the end. It also helps to create class appreciation, learning effort, learning motivation, activities involvement and academic achievement (Help Center: What is Quizizz, 2017).

3.According to Byrne (2015), Triventy is a free online quiz game platform that is similar to Kahoot and Socrative. Students are able to download a history of responses to quiz questions. In addition, they can ask for a hint or to have an answer choice eliminated. They are also able to see an explanation of the answer to each question. Instructors can also download a spreadsheet of students' responses to questions in each activity; they also can invite add questions to their games to create a comprehensive learning experience.

There are some similarities and differences among these three digital game resourses which are shown in Table 1

Table 1 Comparison of Kahoot!, Quizizz and Triventy applications based on instructional quizzes (Göksün & Gürsoy, 2019)

	Kahoot:	Quizizz	Triventy		
Comparison Criteria	getkahoot.com	<u>quizizz.com</u>	triventy.com		
Questions displayed on student device.	No	Yes	Yes		
Presentation of the	Questions are asked to the whole group	Both the question and answer	Both the question and answer		
questions	using a projector or computer screen,	options are presented individually	options are presented on the large		
	where only the answer options are	on participant screen in different	screen and on the players		
	reflected on the participant screens.	order.	smartphones: the player have 3		
			"helpers". Crowd, 50/50, and Clue.		
			Each can be used once.		
Types of media in questions.	Video & images	images	images		
Progression	All participants answer the next question	Each participant can answer the	All participants answer the next		
	after all participants answer the previous	next question after she/he answers	question after all participants		
	question or when the time allowed for the	the previous question on her/his	answer the previous question or		
	question is over.	screen or the time allowed to	when the time allowed for the		
		answer that questions is over.	question is over. The correct		
			answer and the highest score will		
			be shown.		

Table 1 (continue)

	Kahoot:	Quizizz	Triventy
Comparison Criteria	getkahoot.com	<u>quizizz.com</u>	<u>triventy.com</u>
Feedback	The statistics for the answers of a	Based on the correct or incorrect	When the time is up, the correct
	particular question is presented between	answer of a particular participant,	answer will be highlighted, and
	the questions.	positive or negative messages are	each player will see one of the
		presented immediately after the	following feedback screens
		response.	
Technical requirements	Application requires a large screen where	An internet connected device such	A device such as a smartphone,
	all participants could read the questions, a	as a smartphone, tablet, laptop or	tablet, laptop or computer
	projection device, smartboard, an Internet	computer where the instructor	connected internet where the
	connected device such as smartphone,	could initiate the quiz and	instructor could initiate the quiz
	tablet, laptop or computer that the	participants could answer the	and participants could answer the
	participants could use to answer the	questions.	questions.
	questions.		
Development of	4 multiple choice answers.	The number of multiple choice	The number of multiple choice
questions and choices	Visuals could be included in the questions.	answers is flexible.	answers is flexible.
		Both question and answer options	Both question and answer options
		could include visuals	could include visuals
Unique features.	Offers a "sorting" question type. Supports	Import questions from	Lets teachers include answer hints
	use of video questions	spreadsheet	as well as 50/50

According to the comparison of the digital game resources used in this study including Kahoot!, Quizizz, and Triventy, similarities and differences are also explained below.

There are some characteristics or features of these digital game resources which are similar. Firstly, teachers can collaborate on quiz creation by accessing published quizzes and modifying them for their own classroom use. Secondly, all of these quiz game tools let teachers get results in a spreadsheet format. Thirdly, students can receive immediate feedback on their answers. Additionally, the audio and music features are available for use via these digital game resources.

On the other hand, there are some differences of characteristics or features of these resources. Kahoot: is a kind of game-like quiz designed (on purpose) to show multiple choice questions on a large screen. Students answer by clicking buttons on their devices, and this resource can be implemented competitively or as a poll. However, for Quizizz, both the questions and the answers are shown on the students⁻ devices, and students can continue to the next question without waiting for other fellow students (Chaiyo & Nokham, 2017). In other words, Quizizz is a player-paced while Kahoot: 's pace is determined by the teacher or host. In addition, the sound clip option can be uploaded or recorded to use in Quizizz games. While Triventy offers many features including collaboration and hints to questions. Instructors could have students work together to add more questions to the quiz (Byrne, 2019).

In conclusion, the advantages of the features variation included in digital game resources could help and stimulate students to learn language in cooperative and competitive ways. Applying these three digital game resources could be effective in enhancing vocabulary knowledge, and affect high motivation for EFL classroom.

Related Studies

There have been many previous studies on using digital game resources for increasingly developing vocabulary knowledge. The study conducted by Montaner-Villalba (2019) in a state Spanish school aimed to improve students' knowledge of the vocabulary specialized in the area of Geography. Kahoot: was used as part of the program of studies in two English courses: an elementary English course and an intermediate course. The students used the app online in mobile version. The outcomes showed that Kahoot: is a mobile app, which is easy to use in the foreign language classroom; moreover, this tool has learning potential to motivate students within the learning process and, in particular, for revising vocabulary.

In addition, Göksün and Gürsoy (2019) studied the reflections of gamification activities that are used as a formative assessment tool based on academic achievement and student engagement in learning environments. They were three research groups; two experimental groups gamified with Kahoot and Quizizz, and a control group was implemented through conventional 7E instruction method. There were six-week-long instruction activities. An academic achievement test and student engagement scale on the content instruction were implemented in this study. Furthermore, interviews of the focus group were obtained. The study findings showed that the activities gamified with Kahoot application had a more positive impact on academic achievement and student engagement when compared to the other groups. On the other hand, the positive impact of the activities gamified with Quizizz application was lower than the control group In Taiwan, a relevant study conducted by Bin-Shyan Jong et al. (2013) investigated online game use in an operating systems course using a game-based cooperative learning method to improve learning motivation in college students. The participants were 128 students enrolled in the Department of Information and Computer Engineering at a university in Taiwan. The results showed that students desire to win the game motivated them to learn from online course materials, which was believed to enable them to achieve better learning outcomes. The students had positive interactions with their peers during the activity, and it helped them learn more when compared to traditional classroom exercises.

In Thailand, Castro (2016) studied about using digital platforms such as Kahoot: and Quizizz to teach medical vocabulary. It was found that nursing students performed well when they were having fun and when they participated in using their gadgets. The researcher also employed a variety of words which nursing students often used in the hospital setting. The study suggests that nursing students should be taught medical vocabulary using digital platforms such as Kahoot: and Quizizz.

In addition, a comparable study was conducted by Dewan (2013) among 60 second-year nursing students at Prince Songkla University, Hat Yai Campus. The study was to investigate the effectiveness of a computer assisted language learning package to enhance vocabulary acquisition and retention. The treatment lasted for two months where the subjects had studied 12 target nursing vocabulary words for 10 lessons. A

pre-test and a post-test were taken by subjects in order to determine the effectiveness of a computer assisted language learning package with a questionnaire to find out their attitude towards learning vocabulary words using computer assisted language learning package. As a result, the students acquired significantly more vocabulary words based on the results of the post-test which was higher than the pre-test. The subjects⁻ attitudes towards the computer assisted language learning package were also positive providing them with essential techniques for independent learning of new vocabulary.

Another study by Castro (2016) examined the relationship between computer assisted languages learning program with vocabulary knowledge. The researcher employed a quasi-experimental research design within a group of 20 first-year students enrolled in English I class. A paired T-test statistical analysis was used to examine the results of pretest and post-test while, a 5-point Likert scale attitudinal survey was used for the opinions of the participants. After two months of intervention, results showed that there was a significant difference of 0.01 in favor of the post-test in which students had considerably improved their vocabulary knowledge; while the participants⁻ opinions of the whole program was significantly positive.

Previous studies showed that language teaching and technologies have been concentrated by many researchers. The researchers used one or two digital tools or resources to study academic performance or motivation. Many researches indicated that teaching vocabulary using Digital Game Based Learning and interesting technology materials is an effective method and can improve student's vocabulary knowledge. Consequently, it is important to examine the effectiveness of enhancing vocabulary knowledge by using digital game resources in the EFL classroom.



CHAPTER III

RESEARCH METHODOLOGY

In the previous chapters, the researcher presented the background of the study, the purposes of the study, the significance of the study, the scope of the study, the definition of terms and the literature review. This chapter illustrates the methodological design of the study including research design, participant of the study, research instruments, data collection, and data analysis.

Research Design

This study was a quasi-experimental research aiming to investigate the effects of using digital game resources to enhance English vocabulary of 11th -grade EFL students in Science-Math Program and Chinese-English Program. This study employed both quantitative and qualitative data collection. The quantitative data were collected from the pre-test, the post-test and a questionnaire about students opinions after learning English vocabulary through the digital game resources. In addition, the qualitative data were obtained from the semi-structured interview. The research design was shown in figure 1.



Figure 1 The Research Design

Participants of the Study

In order to select the participants, purposive sampling was used in this study. The participants of the study were 70 eleventh grade students who enrolled in the Fundamental English Course in the second semester of the 2019 academic year at Phimanphittayasan School in Satun province. The experimental were divided into two groups consisted of 35 Science-Math Program students and 35 Chinese-English Program students.

The reason for choosing these participants were that: (a) these students has studied the Fundamental English Course in the first semester of the academic year 2019 with a lower mean score; (b) within one academic year, they needed to take Ordinary National Education Test (O-NET), General Aptitude Test (GAT) in which English subject was one of the required subject in order to attend a university. Therefore, they were required to have English vocabulary knowledge in order to complete the fundamental course required by the basic curriculum. Moreover, they could gain better scores on the test and be able to compete with other students from other schools. For these reasons, they were appropriate to be participants in this study.

The reasons to choose Phimanphitthayasan School for this study were: (a) one of the school curriculum objectives was to develop students[.] English competency, and (b) the vision of the school emphasized the importance of English language teaching in the 21st century. Therefore, this study would support the school curriculum objectives and the vision of the school. Before the experiment, to compare the vocabulary knowledge of participants in the Science-Math Program to that of Chinese-English Program, students in both groups were asked to do the pre-test. Mean scores, standard deviations, and the t-test analysis were used to analyze the data from the pre-test. The results are presented in

Table 2

Table 2 The Comparison of Vocabulary Knowledge pre-test mean score of theScience-Math Program Students to those of the Chinese-English Program Students

	Groups	n	М	SD	t	df	p-value
Pre-test	Science-Math Program	35	16.26	3.53	97		.33
	Chinese-English Program	35	16.94	2.20		68	

As presents in Table 2, the results reveal that before the experiment, there were no statistically significant differences (t = -.97, p = .33) in the pre-test mean score of students in the Science-Math Program (M= 16.26, SD= 3.53) and that of the Chinese-English Program (M= 16.94, SD= 2.20). This suggests that before the experiment, students in the both groups had vocabulary knowledge at the same level. The result can contribute that, this research is not bias in choosing participants and suitable to be participants in case of investigating language proficiency.

Research Instruments

The research instruments used in this study included an English vocabulary test, a questionnaire, and a semi-structured interview.

The English Vocabulary Test

The English vocabulary test was developed by the researcher for pre-test and post-test to measure the students[,] English vocabulary knowledge before and after the experiment. The test consisted of 30 multiple-choice items. The test would involve the measurement in knowledge of word meanings, word forms, and word used in contexts. (see Appendix A).

The criteria for selecting the words for the English vocabulary test were:

- 1. Vocabulary item were appropriate for students' level.
- 2. Vocabulary items appeared in the lessons.
- Vocabulary items were based on the basic education core curriculum
 B.E. 2551 (Ministry of Education, 2008)

Table 3 The Details in each Part of the Vocabulary Test.

Part of Vocabulary Test	Numbers of Items	Items in the Vocabulary Test
Vocabulary Meaning	10	1,2,3,4,5,6,7,8,9,10
Vocabulary Form	10	11,12,13,14,15,16,17,18,19,20
Using Vocabulary in Context	10	21,22,23,24,25,26,27,28,29,30
Total	30	

In order to determine the validity, three specialists in teaching English were asked to determine content validity of the English vocabulary test and comment on the appropriateness of language using the evaluation form (Item-Objective Congruence Index, IOC). The specialists were two English teachers and one English native speaker. The first specialist was an instructor teaching English at a university. The second one was a teacher teaching English to the 11th-grade EFL students at a school. She also taught English to the participants of this experiment. The third specialist was a British teacher teaching secondary students at a public school. The items with the scores higher than or equal to 0.5 were considered appropriate; those with the scores less than 0.5 were revised according to the suggestions. The reliability and item facility were determined in the pilot phase study.

To determine the reliability, the English vocabulary test was tried out with 30 11th- grade EFL students at Phimanphittayasan School, Satun who enrolled in the Fundamental English Course in the second semester of 2019 academic year. The instruments were analyzed using the reliability co-efficient Cronbach's alpha. The reliability of the test was 0.75. Since Cronbach's alpha value was higher than 0.7, the English vocabulary test was strong enough to evaluate students vocabulary knowledge.

Lesson Plans Based on English Vocabulary Teaching through the Digital Game Resources

Six lesson plans were designed by the researcher to teach English vocabulary through digital game resources. Each lesson plan lasted 100 minutes. To design the lesson plans, the indicators and expected outcomes identified in the Basic Education Core Curriculum B.E. 2551 (Ministry of Education, 2008), and the school's curriculum were studied. After that, the researcher selected the contents following the school's curriculum and specified the vocabulary knowledge to teach.

In this study, the method for teaching vocabulary included five steps. The first is activating background knowledge. The teacher introduces new vocabulary and drawed students attention to the lesson. The second is presentation. The teacher clearly presents the vocabulary items in a sentence, context, or real situation. Students know how to use words and be familiar with and memorizing them. The third is practice. Exercises are used to engage memorization and understanding. The fourth is production. Students should be assigned to use vocabulary items. Last, the teacher and students participate in reviewing the productivity of the lesson. These five steps were used as a framework to design lesson plans in this study and digital game resources were integrated to each step.

In order to determine the validity, two specialists in teaching English were asked to determine content validity of the lesson plans and comment on the appropriateness of language used in the lesson plans. The specialists were the English instructor from Srinakharinwirot University and the English teacher. Table 4 shows the content of the lesson plans. (See Appendix B).

Table 4 Content of the Lesson Plans

Week	Vocabulary Content	Digital Game Resources	Time
1	Current news	Kahoot!	100 minutes

Topic: "Environmental problem & Disasters"

Table 4 (continue)

Week	Vocabulary Content	Digital Game	Time
		Resources	
2	Health and Welfare	Kahoot!	100 minutes
	Topic: "That's hurt!" & "Health Problems"		
3	Interpersonal information	Quizizz	100 minutes
	Topic: "Characteristics"		
4	Future plan and Occupations	Quizizz	100 minutes
	Topic: "Work Behaviors" & "Dream Job"		
5	Traveling and Activities	Triventy	100 minutes
	Topic "Holiday Activities" & "At the Airport"		
6	Science and Technology	Triventy	100 minutes
	Topic: "Films" & "High Tech"		

A Questionnaire on Students[,] Opinion about Learning Vocabulary through the Digital Game Resources

The questionnaire was designed to explore students¹ opinions about learning vocabulary through digital game resources. It was divided into two parts. The first part contained 10 items. It was designed as a five- point Likert Scale. The second part offered students to have the opportunity to leave comments or any further suggestions regarding learning vocabulary through digital game resources. (See Appendix C).

In order to determine the validity, three specialists were asked to determine content validity of the questionnaire and comment on the appropriateness of language using the evaluation form (Item-Objective Congruence Index, IOC). The items with the scores higher than or equal to 0.5 were considered appropriate; those with the scores less than 0.5 were revised according to the suggestions. The reliability and item facility were determined in the pilot phase study.

To determine the reliability, the questionnaire was tried out with 30 11th-grade EFL students at Phimanphittayasan School who enrolled in the Fundamental English Course in the second semester of 2019 academic year. The instruments were analyzed using the reliability co-efficient Cronbach's alpha. The reliability of the questionnaire was 0.89. Since Cronbach's alpha value was higher than 0.7, the questionnaire was strong enough to evaluate students¹ opinions about learning vocabulary through digital game resources.

A Semi-Structured Interview

A semi-structured interview was employed to investigate students[,] opinions about learning.vocabulary through digital game resources. The method of interview was chosen because it supported students to express their views in their own words, and also provided reliable, comfortable qualitative data. (Fraenkel, Wallen, & Hyun, 2015). The semi-structured interview included five open-ended questions (See Appendix D). After the experiment, the researcher asked eight students to be as volunteer for interviewing.

Data collection

This study lasted for 8 weeks. The participants in both groups were asked to sign the consent form at the beginning of the study, and then they completed the English vocabulary pre-test. After the pre-test, they were taught English vocabulary through digital game resources for six weeks. After the instruction, the participants were asked to take the post-test and completed questionnaires. Finally, four volunteers from each group were asked to be interviewed after students, completing the questionnaire.

Data analysis

The data from the English vocabulary pre-test and post-test of each group were analyzed as the following:

1. The data from the English vocabulary pre-test and post-test of each group were analyzed by using mean scores (\overline{X}) , standard deviations (SD), and *t*-test analysis. A dependent *t*-test analysis was used to investigate whether there were any differences in the pre-test and post-test mean scores of each groups. An independent *t*-test analysis was used to determine whether there were any differences in the effects of digital game resources on Chinese-English program students and Science-Math program students.

2. The data from the questionnaire were analyzed by mean score, standard deviation and the *t*-test analysis. The level of student's opinion was scored as follows:

Opinion

Score

Strongly Agree = 5

44

Agree	=	4
Neutral	=	3
Disagree	=	2
Strongly Disagree	=	1

The level of students' opinions was determined by using the following criteria.

Score		Level
099	1185	Highly Negative
1.00-1.99		Negative
2.00-2.99		Average
3.00-3.99		Positive
4.00-4.99		Highly positive

The data of second part of the questionnaire and the semi-structured interview were analyzed by the content analysis. Then the data was discussed descriptively with the plausible explanation.

Ethical considerations

All students in the study volunteered to be involved in the study. At the beginning of the study, written informed consent from all participants were obtained. Participants were told of the nature and purposes of the research. They understood all

procedures required in the study and realized that participating in the study was not disadvantage them, but they were able to gain benefits from participation in the project. They were assured that it was their right to withdraw at any stage. Confidentiality and anonymity were assured as all data kept securely and a coding method for students[,] identification were employed.



CHAPTER IV

RESULTS OF THE STUDY

This study was conducted to examine the effects of using digital game resources to enhance English vocabulary knowledge of 11th grade EFL students in Science-Math Program and Chinese-English Program. Additionally, this study aimed to explore students¹ opinions about learning vocabulary through digital game resources. This chapter focuses on the results of analysing the data from the vocabulary knowledge test, the questionnaire, and the interview. After the statistical analysis, an explanation and interpretation of the data are also provided.

There are three sections in this chapter. The first section is about students³ English vocabulary knowledge including the effects of digital game resources on English vocabulary knowledge of EFL students in Science-Math program and in Chinese-English Program. The second part is about the comparison of the effects of digital game resources on the Science-Math Program students and Chinese-English Program students. The third part describes students³ opinions about learning vocabulary through digital game resources.

4.1 Students[,] English Vocabulary Knowledge

In order to investigate the effects of digital game resources on EFL students[,] vocabulary knowledge, mean scores, standard deviations, and the *t*-test analysis were employed. The results are presented in Table 5, figure 2, Table 6 and Table 7.

Group	Before the	Before the Experiment		xperiment
	М	SD	М	SD
Science-Math Program	16.26	3.53	21.46	3.39
Chinese-English Program	16.94	2.20	22.91	2.87

Table 5 Descriptive Statistic of Students' Vocabulary Knowledge

Table 5 presents that before the experiment, the mean score of the Science-Math Program was 16.26, and the mean score of the Chinese-English Program was 16.94. After the experiment, the mean score of the Science-Math Program was 21.46, and the mean score of the Chinese-English Program was 22.91. The mean scores are also presented in Figure 2



Figure 2 The Pre-test Mean Score and Post-test mean score of Science-Math Program Students and Chinese-English Program students

4. 1. 1 The effects of digital game resources on English vocabulary knowledge of EFL students in Science-Math Program

To investigate the effects of digital game resources on vocabulary knowledge of EFL students in Science-Math program, the data from the pretest and posttest were analyzes using mean scores, standard deviations, and a dependent *t*-test analysis. The results are presented in Table 6.

Table 6 The Comparison of the Pre-test Mean Score to Post-test Mean Score ofScience-Math Program Students

Science-Math	n	М	SD	t	df	p-value
Program						
Pre-test	35	16.26	3.53			
Post-test	35	21.46	3.39	-8.54*	34	.000

* p<0.05

According to Table 6, The results indicate that there were statistically significant differences in the pre-test and post-test mean scores of Science-Math Program students (t = -8.54, p < 0.05). The pre-test mean score was 16.26 (SD = 3.53) while the post-test mean score was 21.46 (SD = 3.39). Therefore, the post-test mean score was significantly higher than the pre-test mean score. The *t*-test analysis shows the positive effect of digital game resources on vocabulary knowledge of EFL students in Science-Math program.

4.1.2 The effects of digital game resources on English vocabulary

knowledge of EFL students in Chinese-English Program.

To investigate the effects of digital game resources on vocabulary knowledge of EFL students in Chinese-English Program, the data from the pretest and posttest were analyzes using mean scores, standard deviations, and a dependent t-test analysis. The results are presented in Table 7.

Table 7 The Comparison of the Pre-test Mean Score to Post-test Mean Score ofChinese-English Program Students

		_				
Chinese-English Program	n	М	SD	t	df	p-value
Pre-test	35	16.94	2.20	-10.93*	34	.000
Post-test	35	22.91	2.87			

*p < 0.05

According to Table 7, similar to the result of Science-Math Program students, the results indicate that there were statistically significant differences in the pre-test and post-test mean scores of Chinese-English Program students (t = -10.93, p < 0.05). The pre-test mean score was 16.94 (SD = 2.20) while the post-test mean score was 22.91 (SD = 2.87). Therefore, the post-test mean score was significantly higher than the pre-test mean score. The analysis of t-test shows the positive effect of digital game resources in enhancing vocabulary knowledge of EFL students in Chinese-English Program.

4.1.3 The comparison of the effects of digital game resources on vocabulary knowledge of the Science-Math Program students to the effects on Chinese-English Program students

To compare the effect of using the digital game resources on students in the Science-Math Program to Chinese-English Program, an independent *t*-test analysis was used. The results of this analysis are presented in Table 8.

Table 8 The Comparison of Vocabulary Knowledge of the Science-Math ProgramStudents to that of the Chinese-English Program Students

	Groups	n	М	SD	t	df	p-value
Post-test	Science-Math Program	35	21.46	3.39	1.9/	68	056
	Chinese-English Program	35	22.91	2.87	-1.74		.050

After the experiment, the results showed that there were no statistically significant differences (t=-1.94, p = .056) in the post-test mean scores of students in the Science-Math Program (M= 21.46, SD= 3.39) and that of the Chinese-English Program (M= 22.91, SD= 2.87). This means that, after the experiment, there were no statistically significant differences in the mean scores of the vocabulary knowledge post-test of the Science-Math Program students and that of the Chinese-English Program students. These results indicate that the gained vocabulary knowledge of students in both groups were at the same level.

It can be concluded that digital game resources was effective in enhancing EFL students[,] English vocabulary knowledge. The following section reports the results from the questionnaire and the semi-structured interview.

4.2 Students' Opinions about Learning Vocabulary through Digital Game

Resources

To study students[,] opinions about learning vocabulary through digital game resources after the instruction of the experiment, the data were collected and merged from the questionnaire and semi-structured interview.

4.2.1 Questionnaire.

The data from the questionnaires were scored as follows: for the positive

statements, Strongly Agree =5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree

= 1. The level of students' opinions was determined by using the criteria as 0-.99 =

Highly Negative, 1.00-1.99 = Negative, 2.00-2.99 = Average, 3.00-3.99 = Positive, 4.00-

4.99 = Highly positive. The results are revealed in Table 9, Table 10, and Table 11.

Item	Statements	n	М	SD	Level
1	Using digital game resources to	70	4.71	0.59	Highly
	learn vocabulary is more				positive
	enjoyable.				
2	Using the digital game resources	70	4.40	0.71	Highly
	to learn vocabulary is less				positive
	stressful.				
3	I can use the vocabulary learnt by	70	4.37	0.71	Highly
	the digital game resources better,				positive
	since they provide me with more				
	pictures, sound, definition,				
	examples.				

Table 9 Opinions on Learning Vocabulary through the Digital Game Resources

Table 9 (continue)

4	The digital game resources help me become more confident in using vocabulary.	70	4.17	0.83	Highly positive
5	By participating in frequent non- threatening situations/testing (with digital game resources), I am now able to face more challenging ones in real life.	70	4.24	0.94	Highly positive
6	The digital game resources allows me to interact better in the class.	70	4.43	0.73	Highly positive
7	The digital game resources help to enhance my vocabulary knowledge.	70	4.37	0.76	Highly positive
8	Learning vocabulary through the digital game resources is more practical than through textbooks.	70	4.41	0.73	Highly positive
9	The use of digital game resources in learning environments encourages me to participate in learning activities.	70	4.40	0.73	Highly positive
10	Interacting with the digital game resources help me remember vocabulary meaning, forms, and context use better.	70	4.27	0.80	Highly positive
	Average	70	4.38	0.54	Highly positive

Table 9 reveals that in general, students[•] opinions about learning vocabulary through digital game resources were highly positive (M = 4.38). This means that students favored the teaching method and enjoyed class activities. The statements of the highest agreement were: "Using digital game resources to learn vocabulary is more enjoyable," (M = 4.71) followed by the statement "The digital game resources allows me to interact better in the class." (M = 4.43). In addition, students thought that the method of teaching helped them develop vocabulary knowledge and English skills. As shown in table 8, the statement "Learning vocabulary through the digital game resources is more practical than through textbooks" (M= 4.41) was rated the third place. In addition, the statement shown preference of enjoying class activities presented "Using the digital game resources to learn vocabulary is less stressful.", and "The use of digital game resources in learning environments encourages me to participate in learning activities" (M=4.40) were rated at a highly positive level.

Although there were five statements received the lowest scores compared to other statements, the mean scores were still in a highly positive level. These statements were: "The digital game resources help me become more confident in using vocabulary" (M=4.17), "By participating in frequent non-threatening situations/ testing (with digital game resources), I am now able to face more challenging ones in real life." (M=4.24), "Interacting with the digital game resources help me remember vocabulary meaning, forms, and context use better" (M=4.27), "I can use the vocabulary learnt by the digital game resources better, since they provide me with more pictures, sound, definition, examples.", and "The digital game resources help to enhance my vocabulary knowledge" (M=4.37).

Table 10 Opinions about Learning Vocabulary through the Digital Game Resources of Science-Math Program Students

Item	Statements	n	М	SD	Level
1	Using digital game resources to learn	35	4.83	0.57	Highly
	vocabulary is more enjoyable.				positive
2	Using the digital game resources to learn	35	4.49	0.66	Highly
	vocabulary is less stressful.				positive

Table 10 (continue)

Item	Statements	n	М	SD	Level
3	I can use the vocabulary learnt by the digital game resources better, since they provide me with more pictures, sound, definition, examples.	35	4.51	0.70	Highly positive
4	The digital game resources help me become more confident in using vocabulary.	35	4.37	0.73	Highly positive
5	By participating in frequent non-threatening situations/ testing (with digital game resources), I am now able to face more challenging ones in real life.	35	4.29	0.89	Highly positive
6	The digital game resources allows me to interact better in the class.	35	4.54	0.70	Highly positive
7	The digital game resources help to enhance my vocabulary knowledge.	35	4.29	0.86	Highly positive
8	Learning vocabulary through the digital game resources is more practical than through textbooks.	35	4.49	0.78	Highly positive
9	The use of digital game resources in learning environments encourages me to participate in learning activities.	35	4.51	0.78	Highly positive
10	Interacting with the digital game resources help me remember vocabulary meaning, forms, and context use better.	35	4.43	0.74	Highly positive
	Average	35	4.47	0.54	Highly positive

Table 10 reveals that overall the value of Science-Math Program students,

opinions about learning vocabulary through digital game resources were highly positive (M=4.47). This means that students liked to learn with the teaching method and enjoyed doing class activities. The statements of the highest agreement was: "Using digital game resources to learn vocabulary is more enjoyable," (M=4.83), and followed by the statement "The digital game resources allows me to interact better in the class." (M=4.54). In addition, students expressed that they could enhance vocabulary knowledge

and English skills because of the teaching method and active classroom activities, which can be seen in the statements "I can use the vocabulary learnt by the digital game resources better, since they provide me with more pictures, sound, definition, examples" and "The use of digital game resources in learning environments encourages me to participate in learning activities." (M= 4.51). Moreover, the students felt relaxed to do class activities and thought that the method is productive which shown in the statements--"Using the digital game resources to learn vocabulary is less stressful.", and "Learning vocabulary through the digital game resources is more practical than through textbooks." (M= 4.49)-- were rated at a highly positive level.

Four statements were rated the lowest mean scores statements; however, the mean scores were still at a highly positive level. These statements were: "By participating in frequent non-threatening situations/ testing (with digital game resources), I am now able to face more challenging ones in real life" (M=4.29) ; "The digital game resources help to enhance my vocabulary knowledge" (M=4.29) ; "The digital game resources help me become more confident in using vocabulary" (M=4.37); and "Interacting with the digital game resources help me remember vocabulary meaning, forms, and context use better" (M=4.43).

Table 11 Opinions about Learning Vocabulary through the Digital Game Resources of Chinese-English Program Students

Item	Statements	n	М	SD	Level
1	Using digital game resources to learn	35	4.60	0.60	Highly
	vocabulary is more enjoyable.				positive
2	Using the digital game resources to learn vocabulary is less stressful.	35	4.31	0.76	Highly positive

Table 11 (continue)

Item	Statements	n	М	SD	Level
3	I can use the vocabulary learnt by the digital game resources better, since they provide me with more pictures, sound, definition, examples.	35	4.23	0.69	Highly positive
4	The digital game resources help me become more confident in using vocabulary.	35	3.97	0.89	positive
5	By participating in frequent non-threatening situations/ testing (with digital game resources), I am now able to face more challenging ones in real life.	35	4.20	0.99	Highly positive
6	The digital game resources allows me to interact better in the class.	35	4.31	0.76	Highly positive
7	The digital game resources help to enhance my vocabulary knowledge.	35	4.46	0.66	Highly positive
8	Learning vocabulary through the digital game resources is more practical than through textbooks.	35	4.34	0.68	Highly positive
9	The use of digital game resources in learning environments encourages me to participate in learning activities.	35	4.29	0.67	Highly positive
10	Interacting with the digital game resources help me remember vocabulary meaning, forms, and context use better.	35	4.11	0.83	Highly positive
	Average	35	4.28	0.53	Highly positive

Table 11 reveals that on average, the value of Chinese-English Program students opinions about learning vocabulary through digital game resources was highly positive (M = 4.28). This means that the students had positive opinions on classroom activities and liked the teaching method. Based on the mean scores of students opinions, the statement which received the highest mean score was: "Using digital game resources to learn vocabulary is more enjoyable," (M = 4.60). Students also thought that this

teaching method could support them to improve vocabulary knowledge, as shown in the statements "The digital game resources help to enhance my vocabulary knowledge" (M=4.46); and "Learning vocabulary through the digital game resources is more practical than through textbooks." (M= 4.34). In addition, the statements shown preference of enjoying class activities presented "The digital game resources allows me to interact better in the class" (M=4.31); and "Using the digital game resources to learn vocabulary is less stressful."(M= 4.31).

The statement received the lowest scores compared to other statements was "The digital game resources help me become more confident in using vocabulary" (M=3.97); it is worth to note that although It was rated the lowest mean score statement, the mean score was still at a positive level.

In order to compare opinions about learning vocabulary through digital game resources of the Science-Math Program students to those of the Chinese-English Program students, an independent *t*-test analysis was employed. The results are presented in Table 12.

Table 12 Comparisons of Students' Opinion of Science Math Program Students to those of Chinese-English Program Students

Groups	n	М	SD	t	df	p-value
Science-Math Program Students	35	4.47	0.54	1.51	68	.137
Chinese-English Program Students	35	4.28	0.53		00	

According to Table 12, the results revealed that there were no statistically significant differences (t = 1.51, p = .137) in the opinion mean score of students in the Science-Math Program (M = 4.47, SD = 0.54), and that of the Chinese-English Program (M = 4.28, SD = 0.53). This suggests that students opinions about learning vocabulary through digital game resources of both groups were similar. It can be pointed out that learning vocabulary through digital game resources had a positive effect on students in both groups.

4.2.2 The Semi-structured Interview

In this study, the researcher asked students in the experimental groups to volunteer for an interview. There were 8 students, four students from the Science-Math Program and four students from Chinese English Program. The data from the interview were analyzed by using content analysis. The results from the interviewing supported the results of the questionnaire. That is, students favored learning vocabulary by using digital game resources.

Students agreed that digital game resources helped them to learn and improved their vocabulary knowledge. All students (100%) showed the same idea that using digital game resources was a good method for learning vocabulary. For example, one student expressed that learning vocabulary by using digital game resources made the lesson more interesting because the words were presented in many modes of presentations and quizzes. Another student said that using digital game resources helped her concentrate on the content because a combination of many features; images, sounds, and competitive quizzes. Six students (75%) stated that using digital game resources always challenges them to learn new English words in class activity, and the activities they did in class encouraged them to practice English vocabulary actively. For instance, one student said, "I felt that using digital game resources helped me to be more active to do vocabulary activity." Three students commented that learning vocabulary by using digital game resources helped decrease their anxiety in learning English, and it also helped them to cope with vocabulary limitation in learning. Other students confirmed that repetition of words in vocabulary activities As well as competition quizzes helped them to remember and understand vocabulary; they did not have to look up the meaning of every word in the dictionary because they could guess the vocabulary meaning from the pictures, contexts, and quizzes. Furthermore, three students emphasized, "I wanted to know more words relating to the theme and content of vocabulary. Moreover, I could easily recall the words from the situations and contexts." These opinions can be interpreted that digital game resources helped enhances students, vocabulary knowledge.

In addition, it was found that using digital game resources motivated students to learn vocabulary. All eight students (100%) said that they had fun using digital game resources and they enjoyed learning the vocabulary more than learning from texts only. Most of students (87.5%) also felt that learning vocabulary by using digital game resources increased their motivation to participate in classroom activities. They responded that they enjoyed and felt relaxed when they learned vocabulary presented in many modes of digital game resources. For instance, four students responded that they were willing to participate in classroom activities when many modes of digital game resources were presented. Two students stated, "I feel more relaxed and excited to learn English vocabulary when the vocabulary are presented along with images, audio, flashcards." Another students commented, "I am not very good at English; however, I feel relaxed and enjoyed learning vocabulary when it is accompanied with images, sounds, and quizzes."

Furthermore, all interviewees said that they had more confidence to use vocabulary. Three students (37.5%) said that they were more confident to use English vocabulary in daily life after learning vocabulary by using digital game resources. In addition, all of them (100%) confirmed that they were confident to do classroom activities with their friends. One student said "I felt more confident to answer the questions and quizzes when they learned through digital game resources." One student confirmed, "I also like learning through digital game resources, because they supported us to be confident when we used vocabulary." Most of them were more interested in and confident to join learning through the digital game resources. In sum, all students thought that activities in class helped them to be confident in learning and using English vocabulary.

These results shows that students had positive opinions on the learning vocabulary by using digital game resources. From students¹ opinions above, they enjoyed learning vocabulary through digital game resources and felt confident in
participating classroom activities, and this motivated them to learn vocabulary and developed their vocabulary knowledge.

Summary of the Chapter

This chapter presented the results of the research questions related to the effects of using digital game resources to enhance English vocabulary knowledge on 11th grade EFL students. The results of this study showed that vocabulary knowledge of the students taught by digital game resources was significantly improved. The mean scores of the English vocabulary knowledge post-test of both groups were higher than pre-test mean scores. The results strongly support that learning vocabulary by using digital game resources has positive effects on EFL students⁻⁻ vocabulary knowledge. Moreover, the students⁻⁻ opinions about learning vocabulary through digital game resources were at a highly positive level. In addition, the results from the interviewing also supported the results from the questionnaire.

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CHAPTER V

CONCLUSION AND DISCUSSION

The main purpose of this study was to investigate the effects of using digital game resources on English vocabulary knowledge of 11th grade EFL students in Science-Math Program and Chinese-English Programs. Furthermore, the study explored the students¹ opinions about learning vocabulary through digital game resources. This chapter presents the conclusion that describes the the purposes of the study, research methodology, and the findings of the study. In addition, it presents a discussion of the study. The implications of the study, limitations, and recommendations for further studies are also discussed in this chapter.

Conclusion

This study was conducted for the following purposes:

- To investigate the effects of digital game resources on vocabulary knowledge of EFL students in Science-Math program.
- To investigate the effects of digital game resources on vocabulary knowledge of EFL students in Chinese-English Program.
- 3. To compare the effects of digital game resources on vocabulary knowledge of the Science-Math Program students and Chinese-English Program students.
- To examine EFL students[,] opinions about learning vocabulary through the digital game resources.

The participants of the study were 70 eleventh grade students who enrolled in the Fundamental English Course in the second semester of the 2019 academic year at Phimanphittayasan School in Satun province. The experimental were divided into two groups consisted of 35 Science- Math Program students and 35 Chinese- English Program students. Both groups studied English vocabulary through digital game resources. The research instruments in this study included the English vocabulary test, six lesson plans based on English vocabulary teaching through the digital game resources, questionnaire, and semi- structured interview. Mean scores, standard deviations, and the *t*-test analysis were employed to analyze the quantitative data while content analysis was used to analyze the qualitative data.

The findings of the study were :

First, the results revealed the effectiveness of digital game resources in enhancing vocabulary knowledge of EFL students. That is, post-test mean scores of Science-Math Program students were significantly higher than the pre-test mean scores (t = -8.54, p < 0.05).

Second, the results revealed the effectiveness of digital game resources in enhancing vocabulary knowledge of EFL students. That is, post-test mean scores of Chinese-English Program students were significantly higher than the pre-test mean scores (t=-10.93, p < 0.05).

Third, the results revealed that the gained vocabulary knowledge of students in both groups were at the same level. That is, there were no statistically significant differences (t= -.1.94, p = .056) in the post-test mean scores of students in the Science-Math Program (M= 21.46, SD= 3.39) and that of the Chinese-English Program (M= 22.91, SD= 2.87). This means that digital game resources had effects on different background students.

Fourth, the results reveal that in general, students' opinions about learning vocabulary through digital game resources were highly positive (M = 4.38). It can be pointed out that learning vocabulary through digital game resources had a positive effect on students' opinions of the Science-Math Program students and Chinese-English Program students. Additionally, the results of the interviews supported the questionnaire responses, revealing that students favored and enjoyed learning vocabulary through digital game resources.

Discussion

According to the results of this study, this method of teaching helped students gain vocabulary knowledge. The digital game resources instruction was effective in developing EFL students¹ vocabulary knowledge for many reasons. Firstly, the attractive features presented in the resources helped students to learn vocabulary. Students learned word meaning and functions from the images, example sentences and game-like features. These features include pictures, audio, and repetition. They helped students to be able to elicit the meaning, remember forms, and practice using the target words in various contexts. This can be seen in the results of questionnaires that students strongly agreed with the statement, "I can use the vocabulary learnt by the digital game resources better, since they provide me with more pictures, sound, definition, examples[•] (M=4.37). Furthermore, repeated words in digital games helped students to memorize vocabulary. Like the ideas of Schmidt (2010), frequent word input in the games in the study allowed students to interact with each word repeatedly. In this way, students remembered meaning and functions of words and gained vocabulary knowledge. More importantly, both groups gained vocabulary knowledge. Like the idea of Griffiths (2002), digital games in this study had great diversity, which attract students of various demographic backgrounds, and helped students work towards achievement of goals.

Secondly, this method of teaching helped students gain vocabulary knowledge and learn to use words in real life situation. The digital game resources were designed to combine learning and game playing, so the learner improved language competence and applied them to the real world. From the study, students were instructed to do activities related to word contents and encouraged to use those words in real life situations. The vocabulary activities in digital game resources instruction showed students various examples of vocabulary usage to see how words could be used in sentences in many situations. Digital game resources provided various contexts and examples or sentences which related to situations that encouraged students to use target words correctly. For example; the lesson were instructed content about "Health and Welfare" and "Current news". Students participated in using the words through digital game resource activity in various context. After that they applied the words to use for describing their friends' illness or related situations appropriately. They could understand the word from the real world in the example situations. Therefore, instead of only remembering words and its meaning, students also understood how to use it in sentences. These findings are in line with Yip & Kwan (2006), that using digital games resources are effective in developing the vocabulary knowledge, both receptive and productive vocabulary, by inferring vocabulary meanings and using in context. This also supported students[,] retention of newly learned words.

Furthermore, using digital game resources offered a good learning environment which supported vocabulary knowledge. This statement is supported by Clark (2016) who found that students acquired knowledge and skill from game content and gameplay which were the good challenging environment for students. In addition, this is in line with Sanusi (2019) who emphasized that if EFL students are encouraged to study in challenging environment, it would help them to learn vocabulary.

With regard to the context of this study, using digital game-based learning had a good effect on students. They learned vocabulary through the attractive creatures in game-like quiz. In addition, they were encouraged to apply the target words in several context of the real life situation. Moreover, they learned in a good learning environment that supports vocabulary learning of the various background of the EFL students.

This study found that, learning vocabulary by using digital game resources increased students[,] motivation to participate in classroom activities. They responded that they enjoyed and relaxed when they learn vocabulary presented in many modes of digital game resources as reported in the survey and interview, digital game resources

created learning motivation in language learning. This is shown in the results of the questionnaire. The statement which received the highest agreement of both groups was: "Using digital game resources to learn vocabulary is more enjoyable." This means that students favored the teaching method and enjoyed class activities. The experimental groups learned through digital game resources included Kahoot!, Quizizz, and Triventy. These resources provided fun multiplayer game-based learning platform. Students enjoyed learning with the sensory stimulation of the platforms which are sounds, pictures, and symbols. This can be proved by students' opinions about learning vocabulary through digital game resources in which students expressed that the elements of sound, visual, and contents in games positively motivated them learning new words. It is reported that they were stimulated by voiceover sounds during using the digital game resources. The element of sound made the students feel more active during the vocabulary learning.

In addition, challenging quiz-game activities encouraged students to learn in order to achieve the goals. The competition in the quiz games made students to learn in order to win the game in time limit. Like the ideas of Griffiths (2002), digital games in this studies attracted students and help students work towards achievement of goal winning the games.

In this study, the use of digital game resources both motivated students to learn vocabulary, and improved their performance in class. In this study, it can be seen clearly in the questionnaires, results, which showed that students had highly positive opinions

about learning vocabulary through the digital game resources. They agreed that activities in class allowed them to learn to use English vocabulary actively in sentences and enjoy learning competitive way. As Hwang (2013) stated that the game-based learning has been used as a best practice to engage students for class activities. Creating an atmosphere where students are motivated and engaged is essential for student s learning. These findings were consistent with the studies of Alemi, (2010); Kumar and Lightner (2007) which found that digital games resources created relaxation and fun for students in class, and this led to students high motivation to succeed in their learning. Similarly, Lepper, Corpus and Iyengar (2005) found that digital game resources raised the efficiency of learning because they increased intrinsic motivation, and linked the goals of winning the game and learning the materials.

Importantly, these digital game resources could encourage students to engage in language learning interaction. Like the ideas of Reinders (2012), digital games have potential to engage learners and to encourage interaction in their target language learning. These resources encouraged interaction in language learning included sensory stimulation, provided helpful feedbacks. Therefore, they find the student positively appreciate the online quizzes' feedback; the students are motivated and encouraged. In addition, like the ideas of Reinders & Wattana (2011), playing digital games had a positive impact on increasing the quantity of learning language interaction between players. In this study, students participated in the activity that they could interact to the digital game resources and get feedback immediately. In addition, vocabulary activity encouraged students interact to their friends, and also the instructor. In digital game situations and the atmosphere of competition or cooperation in the classroom lead to a positive opinion and motivated student and engaged them to enjoy class activity.

It can be concluded that this study confirms the advantages of using digital game resources in English vocabulary learning. That is, digital game resources provided several advantages for EFL students. Firstly, it supported active learning and studentcentered learning styles in a diverse of the students' demographic background. Secondly, it helped students retained knowledge by practicing their newly acquired vocabulary in active learning environments. Furthermore, it offers greater opportunities for students to use words in real life situations. Thirdly, it also increased students' motivation and engagement for learning. Vocabulary instruction will be more effective if students have a high degree of interest in learning (Mei and Yu-Jing (2000). Therefore, teachers should manage classrooms with challenging tasks and motivate students to learn. Finally, students are encouraged to develop their learning and innovation skill. This methodology could support students to be successful in 21st century. As discussed above, digital game resources could be introduced as alternative methods to assist vocabulary learning in EFL classroom, and improve English teaching of EFL instructors.

Implications of the Study

This study proved that using digital game resources was a good tool to enhance students[,] vocabulary knowledge. Moreover, digital game resources made vocabulary

learning process easier, and more enjoyable. This study points out that digital game resources are valuable for not only academic purposes, but also motivational purposes by creating interesting vocabulary activities, motivation, engaging and fun environment. Hence, the result of this study will be helpful for teachers or educators to apply this effective method for teaching vocabulary in EFL classroom. Furthermore, the findings can be useful for developing a curriculum in order to encourage students⁻ language competency and 21st century skills.

Limitations of the Study

This study was limited to the 11th-grade students at a government secondary school, which was a very particular group of students. As a result, the finding might not be representative of students in other grade levels and might not generalize to other groups of students in different context. Furthermore, this study aimed to compare the effectiveness of teaching English vocabulary through digital game resources method in enhancing students¹ vocabulary knowledge of Science-Math program and Chinese-English Program. Therefore, the results in this study might not be generalizable for teaching English vocabulary regarding other aspects.

Recommendations for Further Studies

Although the findings of this study confirmed the positive effects of teaching English vocabulary through digital game resources on the EFL students⁻ vocabulary knowledge, further studies need to be conducted to expand knowledge in the field of EFL learning. Firstly, this study aimed to investigate the effects of teaching English vocabulary through digital game resources on students. English vocabulary knowledge. It would be interesting to use digital game resources to teach other language skills, e.g. reading, writing, speaking, and listening. Secondly, this study was conducted to investigate the effects of teaching English vocabulary through digital game resources in the 11th grade students. English vocabulary learning. Therefore, it will be interesting to investigate the effects of this teaching method with students in other level. Finally, the experiment in this study covered only six weeks with three digital game resources. It will be interesting to increase the experiment over a longer period of time and more variety of digital game resources. Using varied materials in classrooms will improve students¹ learning. For this reason, it also will be interesting to investigate the effects of variety of digital game resources integrated in enhancing vocabulary knowledge and language skills for EFL students.

5.5



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APPENDICES

APPENDIX A The English Voca' The English Vocabulary Test

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English Vocabulary Test

Eleventh-grade	30 items						
Part 1 Vocabulary Meaning							
Direction: Choose the l	oest answers (item 1-10)						
1. Pets can help children	cope with family probl	ems, such as illn	ess or death of the				
relative. Select the word that is most similar in meaning to the bold .							
a. To deal with so	omething effectively	b. To hurt so	meone emotionally				
c. To discover so	mething	d. To show l	ove for something				
2. I was furious when I	found out my friend had	In't told me the tr	ruth.				
Select the word that i	s most similar in meanin	ng to the bold we	ord.				
a. afraid	b. extra happy	c. very angry	d. brave				
3. The <u>university</u> is <u>saving</u>	g \$300,000 <u>per year</u> by <u>it</u>	<u>s energy</u> conserv	ation plans.				
Select the word that is	most similar in meaning	g to the bold wor	rd.				
a. The protection	of something	b. the studyin	b. the studying of something				
c. The understand	ling of something	d. the act of	d. the act of destroying something				
4. Of course, I'm not say	ing that your plan is no	good. I tend to be	e optimistic, so I				
won't be surprised when	you succeed. Select the	word that is mos	st similar in meaning				
to the bold word.							
a expecting the b	best to happen	b. needing gl	lasses to see				
c. hoping everyth	ing is done	d. trusting G	d. trusting God in difficult times				
5. The first inhabitants of	of Easter Island called it	Papa Nui.					
Select the word that is most similar in meaning to the bold word.							
a. settlers	b. ancients	c. figures	d. creatures				
6. You are brave when you deal with danger, pain, or difficult situations with courage.							
Select the word that is	most similar in meaning	g to the bold wor	d.				
a. calm	b. useful	c. fear	d. courageous				

7. Perhaps givers believe that more expensive gifts **convey** stronger signals of thoughtfulness and consideration. Select the word that is most similar in meaning to the **bold** word.

a. transport b. counteract c. exchange d. communicate 8. The blue whale is an **enormous** animal, the biggest animal ever to have lived on our planet. Select the word that is most similar in meaning to the **bold** word.

a. giganticb. ancientc. heavyd. healthy9. Prominent cheekbones show strength of character, while a pointed nose revealscuriosity. Select the word that is most similar in meaning to the **bold** word.

a. healthyb. thinc. noticeabled. flat10. The audience watches the films with special 3-D glasses that make the imagesappear to leap out of the screen. Select the word that is most similar in meaning to the**bold** word.

a. come out b. black out c. go out d. roll out

Part 2 Vocabulary Form (item 11-20)

Direction: Choose the best answers to complete the sentences.

11. Because he is an ______ to many people, he's going to receive an award at UN.

a. inspiredb. inspirationalc. inspirationd. inspiring12. It is believed by some people that a person's face_________ a lot about their12. It is believed by some people that a person's face_________ a lot about theircharacter.________ b. revealingc. to reveala. revelationb. revealingc. to reveal13. The Greyhound family_______ came from Canada.a. originb. originalc. originated. originally_______.

a. ambition b. ambitious c. ambitiously d. ambitioned

15. My neighbor has his ______ habit of banging his door.

a. annoy
b. annoying
c. annoyance
d. annoyed

16. If deforestation _______ at the current rate, the rainforests will disappear.

a. continues
b. continuous
c. Continuously
d. Continuous

17. Unless we help to save environment, many endangered species will become

b. extinction c. distinction d. extinct a. extinctive _____ experience. I strongly 18. Visiting Easter Island was a (an) recommend a trip to this amazing land c. memorize b. memory a memorable d memoir 19. Nobody likes a(n) person – someone who thinks that they are clearly better than everyone else. a. arrogant b. arrogantly c. arrogance d. ina rrogant 20. James looks a lot than you.

a. elder b. oldest c. old d. older

Part 3: Using Vocabulary in Context (item 21-30)

Item 21 – 22: Choose the choice which has the same meaning as the bold word in the given sentence.

21. A remote area is far away and apart from other cities.

a. A TV remote control is under the sofa.

b. Her <u>manner</u> was **remote** and <u>cool</u>; she is not very friendly.

c. I use a sunscreen whenever there is even a **remote** possibility that I will be in the sun.

d. The mission is to transport medical supplies to **remote** mountain village far from the town where most people live.

22. Natiya who was once **forced** to marry at 13 is now dreaming of becoming a teacher.

a. Forced entry! 3 years or \$5,000 in fines!

b. He wants to join the police **force** and fights the enemy.

c. I can't **force** you to do something you don't want to do.

d. If you are standing on the floor, perfectly still, the **force** of gravity is still pulling you down.

Directions: Choose the best answer to complete the passages.

PASSAGE - I

23. a. nature	b. naturalistic	c. natural	d. native
24. a. hit	b. strike	c. fall	d. attack
25. a. result	b. effect	c. lead	d. cause
26. a. fact	b.certainly	c. honesty	d. truth

27. a. potential	b. conceivable	c. capable	d. possible
28. a. wide	b. broad	c. full	d. vast
29. a. tell	b. come	c. lay	d. make
30. a. beat	b. jumble	c. destroy	d. Collapse



APPENDIX B

Samples of Lesson Plans

Lesson Plan 1

Current News

Level: 11th grade

Time: 100 minutes

Topic:Environmental Problems & Disaster

Lesson Overview

In this lesson, students will learn vocabulary about environmental problems and disasters, then practice to give reaction to the news in the latest situations from reading passage.

Objectives:

- Students will be able to identify vocabulary about environmental problems and disasters.
- 2. Students will be able to use words related to environmental problems and disasters to make correct sentence.

Language Features and Functions

Vocabulary:	environmental problems (smog, deforestation, rubbish,
	animal extinction, erosion, population growth); verbs
	(destroy, provide, lose, pollute, recycle, dump, feed,
	increase, act); nouns (area, species, smoke, acid rain,
	landfill site, production); phrases (under threat, global
	population, go hungry); phrasal verbs (throw away)
Functions:	giving and reacting news

Materials: Power point Presentation, Mobile phone, Worksheets

Teaching procedures

Teaching	Classroom Activity	Material	Assessment
method			and
			Evaluation
		D' /	01
Activating	- Encourages students to be	Pictures	Observe
background	interested in the lesson with the		students [,]
knowledge	current news by		participation
	showing pictures about	Power Point	in class.
	environmental problems and	Presentation	
	disasters.		
	- Ask questions and discuss		
	about the topic		
Presentation	- Present vocabulary through the	Pictures	
	variety of materials such as		
	ristures posters or situations	Power Point	
	pictures, posters of situations.	Presentation	
	- Give students a list of new		
	vocabulary		
	- Teach meaning, forms, and		
	language function		
	- Ask students to read passage		
	shout oncine to rout public.	Short	
	about environmental problem and	Passage	
	give examples of word before		
	reading.		
	- Discuss with the class about the	Assignment	
	main idea of each nere streph		
	main idea of each paragraph.		

	- Ask students to guess the		
	meaning of the words?		
Practice	- Check comprehension and	Kahoot!	- Students
	vocabulary knowledge by asking		are able to
	some questions.		give correct
	Dractice using vecebulary		answer
	- Fractice using vocabulary		about word
	through digital game resources		meaning,
	(Kahoot!)		and
	- Review and check		language
			function
	comprehension after the activity.		
Production	- Ask student to work in pair to	Assignment	Create
	create sentences from studied		correct
	words related to the theme of		sentences
	environmental problems and	8 - 1	
	disasters situations		
	- Each pair present to the class.		
Conclusion	- Ask students to review the	Kahoot!	
	lesson they have learnt.		
	- Review vocabulary related to		
	pictures and situations by using		
	digital game resources (Kahoot!)		
1			

Example of digital games resources used in class activities

Kahoot:

Example of quiz[,] features



	▲ habitat		◆ environment							
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ka	hoot.it Game PIN: 4776641									
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Lesson Plan 2

Health and Welfare

Level: 11th -grade

Time: 100 minutes

Topic: "That's hurt!" & "Health Problems

Lesson Overview

In this lesson, students will learn vocabulary about Health problems, then

practice to give suggestion to the health problems from reading passage.

Objectives:

- 1. Students will be able to identify vocabulary about health problems
- 2. Students will be able to use vocabulary to describe health problems and giving suitable suggestion.

Language Features and Functions

Vocabulary:	aches & pains (a headache, hay fever, an earache, a black			
	eye, a stomach ache, a backache, a cut, a bad cough, a sore			
	throat, a cold/the flu, a cramp);			
	verbs (hurt, chew, stand, stretch, rub);			
	nouns (aches, pains, treatment, hay fever, muscle, steam,			
	slice, toast); adjectives (raw, dry); phrases (blow your nose,			
	hold your breath, suffer from); phrasal verbs (turn off, put			
	ON)			
Functions:	giving advice; talking about health			

Materials: Power point Presentation, Mobile phone, Worksheets

Teaching procedures

Teaching	Classroom Activity	Material	Assessment
method			and
			Evaluation
Activating	Encourages students to be interested in		
Activating	- Encourages students to be interested in		
background	the lesson	Pictures	Guess the
knowledge	- Show pictures about Health problem.	Kabooti	words'
	- Practice using vocabulary through digital	ixanoot:	meaning
	game resources (Kahoot!)	Quiz	
	- Ask questions and discuss about the		
	topic		
Presentation	- Present vocabulary through the variety of	Pictures	Know the
Elicit	materials such as pictures and situations.	Power Point	words'
	- Give students a list of new vocabulary	Presentation	Meaning and
	with pictures	Example	Words [,] form
	- aches & pains (a headache, hay feyer, an	sentences	
	earache a black ave a stomach ache a		
	backache, a black eye, a stollach ache, a	17.1	
	a cold the flue a cramp	Kahoot!	
	a cold/life fid, a crainp)		
	- Students learn words' meaning and		
	words use by matching word to the health		
	problem and treatment.		
			~
Practice	- Check comprehension and vocabulary	Worksheet	- Students are
	knowledge by asking some questions		able to give
	about the treatment for health problems.		correct answer

	- Read the passage "How to be healthy for		about word
	teenagers"		meaning in
	treatment (n)		correct context
	suffer (from) (V)		
	rub (v)		
	bruise (n)		
	- Review and check comprehension after		
	the activity.		
Production	- Ask student to work in pair to create	Assignment	Can use word
	conversation from studied words and		to create
	present to the class.		conversation
			appropriately.
	a headache, hay fever, an earache, a black		
	eye, a stomach ache, a backache, a cut, a		
	bad cough, a sore throat, a cold/the flu, a		
	cramp)		
	S1 : I get an earache. What should I do?		
	S2 : Chew some gum, please.		
	S1 : I suffer from hay fever. What		
	should I do?		
	S2 : Wash your face often, please.		
	S1 : I often wake up in the night with a		
	cramp. What should I do?		
	S2 : Stretch the muscle, please.		
	etc.		

Conclusion	- Ask students to review the lesson they	Kahoot!	
	have learnt.	Quiz	
	- Review vocabulary by using digital		
	game resources (Kahoot!)		
	- Matching the treatment to the health		
	protein		



Example of digital games resources used in class activities

Kahoot:

Example of quiz[,] features

Questions (15)	Show answers
1 - Quiz What does the Picture Show?	30 sec
2 - Quiz What does the picture show?	20 sec
3 - Quiz Which one is NOT a Health Problem?	ingt blood supar lines
4 - Quiz What does the picture show?	20 sec
5 - Quiz You have a toothache, you go to the	STOP THE PAIN 30 sec
6 - Quiz What does the picture show?	

What does the picture show?



kahoot.it Game PIN: 771980

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0

Example of feedback, award, and score report.



kahoot.it Game PIN: 771980



S

ahoot! © ноте @ Di	iscover 📃 Ka	ahoots Re;	ports					Upg	rade now	rade now Create 🗧	rade now Create 😥				
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	3 🏠			1	O 93%	_	17 661								
	KONO DIO DA	λ.		2	O 93%	-	17 326								
	Jupiter/15			3	O 93%	_	16 933								
	Jotaro/7			4	O 86%	-	15 864								
	ນລເດົະ/14			5	O 86%	-	15 721								
	20 29			6	0 86%	-	15 618								
	Fruit(16)			7	0 80%	-	14 676								
	Hitsuyonai12			8	O 86%	-	14 255								
	บัดสีบัดเกลิง			9	0 80%	_	14 010								
	Oranan/27			10	0 80%	_	13 913								
	fern28 ya32			11	0 80%	_	13 899								


Lesson Plan 3

Interpersonal information

Level: 11th -grade

Topic: "Characteristics"

Time: 100 minutes

Lesson Overview

In this lesson, students will learn vocabulary about people characteristics, then practice to give explanation for each people about their characters.

Objectives:

1. Students will be able to identify vocabulary about people[,] characteristics.

.....

2. Students will be able to use vocabulary to describe people character.

Language Features and Functions

character adjectives (lazy, creative, intelligent, patient,					
noisy, hardworking, sociable, rude, shy, funny, generous,					
honest, ambitious, stubborn, aggressive, reliable, sensitive,					
outgoing, greedy, polite); (suggest, trust, behave, respect,					
succeed);					
nouns (scientist, mechanic, engineer, labourer, journalist,					
politician, peers, finance, catering, sales, banking);					
describing people					

Materials: Power point Presentation, Mobile phone, Worksheets

Teaching procedures

Teaching	Classroom Activity	Material	Assessment
method			and
			Evaluation
Activating	- Encourages students to be interested in the	pictures	
background	lesson	Example	Observe
knowledge	- Show pictures about Character adjective for	sentences	students,
	asking student to guess the word		participation
	- Groups of student write the adjective word to	Quizizz	in class
	describe each picture or situation (guessing)		III Class.
	- Using vocabulary through digital game		
	resources (Quizizz)		
	- Ask questions and discuss about the topic		
Presentation	- Present vocabulary through the variety of	Pictures	Know the
Elicit	materials such as pictures and situations.	Power Point	words'
	- Give students a list of new vocabulary with	Presentation	Meaning
	pictures	Short Passage	Words [,] form
	- Using vocabulary through digital game	Quizizz	
	resources (Flashcard via Quizizz)		
	Character adjectives: lazy, creative,		
	intelligent, patient, noisy, hardworking,		
	sociable, rude, shy, funny, generous, honest,		
	ambitious, stubborn, aggressive, reliable,		
	sensitive, outgoing, greedy, polite);		
	verbs (suggest, trust, behave, respect, succeed)		

	- Class discussion and ask students to		
	distinguish between the negative and positive		
	character.		
	Ask students to guess the meaning of the new words?		
	- Ask students to read passage about Negative		
	and Positive characteristics and discuss about		
	main idea of each paragraph		
Practice	- Check comprehension and vocabulary	Worksheet	- Students
	knowledge by asking some questions from the		are able to
	reading passage		give correct
	Read the passage again and matching the		answer
	- Read the passage again and matching the		about word
	words to the people from the reading passage		meaning in
	- Matching the word with the correct situation.		correct
	- Review and check comprehension after the		context
	activity.		
Production	- Ask student to work in group to use the word	Assignment	Create
	to describe people in their group or family then		correct
	present to the class.		sentences
	- Check and discuss about the words they used		
	in the sentence		
Conclusion	A dr students to review the lesson they have	Ovisias	
Conclusion	- Ask students to review the lesson they have	Quizizz	
	- Review vocabulary by using digital game		
	resources (Quizizz)		

Example of Digital Games Resource

Quizizz

Example of Quizizz[,] features

Learning vocabulary from flashcard







Quizizz			×
	Question 1 of 10	VIEW QUES	STION
	technician	hotel porter	
	tailor	optician	
		Flip	
(2) ความช่วยเหลือ	ori	hit space to flip	Activate Windows Go to Settings to activate Windows.

How to join the quiz



An Interesting Memes



Screen on mobile and on screen



7 /20			×		
Which of the following would be diffracted the most when incident on a slit of width 1 cm?					
X-rays	microwaves	ultraviolet	red light		

Score report and winner board

Quizizz	Q Search reports 🕒 Create a new qui	z		Join a game
Sirikarn Rakangth View profile				Sort By: Question Order 👻
Create a new quiz	1. She likes being with people ar	nd is fun.		🔀 Expand
Q Find a quiz				
My quizzes	a sociable	8 players	62 %	
dil Reports	b spoilt	1 players	8 %	
Classes	c optimistic	1 players	8 %	
Collections	d generous	1 players	8 %	
🖾 Memes	Unattempted	2 players	15 %	
A cur				

IZIZZ	Q. Search reports O Create a new quiz	a ga
Sirikarn Rakangtho View profile	LIVE	
reate a new quiz	Personality Adjectives 🕼 Edit	
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APPENDIX C

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The Questionnaire on Students[,] Opinions about Learning Vocabulary through the Digital Game Resources

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The Questionnaire on Students' Opinions about

Learning Vocabulary through the Digital Game Resources

แบบสอบถามความคิดเห็นของนักเรียนเกี่ยวกับการเรียนคำศัพท์ภาษาอังกฤษโดยใช้เกมออนไลน์ Name: Class:

This questionnaire has been designed to identify your opinion about learning vocabulary through the digital game resources. Please read the statements below carefully and tick the appropriate choices that reflect your opinion about learning vocabulary through the digital game resources.

Directions: Use the scale below to answer the questionnaire items.

1 (Strongly Disagree), 2	(Disagree), 3	(Neutral), 4	4 (Agree), 5	(Strongly Ag	ree)

No	Items	1	2	3	4	5
1	Using digital game resources to learn vocabulary is	2 ° •				
	more enjoyable.	C.				
	การใช้เกมออนไลน์เพื่อเรียนคำศัพท์มีความสนุกสนาน					
2	Using the digital game resources to learn	1				
	vocabulary is less stressful.					
	การใช้เกมออนไลน์เพื่อเรียนคำศัพท์ไม่มีความกดดัน	1. 5	•			
3	I can use the vocabulary learnt by the digital game	5				
	resources better, since they provide me with more	S .				
	pictures, sound, definition, examples.					
	ข้าพเจ้าสามารถเรียนคำศัพท์โดยใช้เกมออนไลน์ได้ดี เมื่อมีการใข้					
	ภาพ เสียง ความหมาย และการยกตัวอย่าง					
4	The digital game resources help me become more					
	confident in using vocabulary.					
	เกมออนไลน์ช่วยให้ข้าพเจ้ามีความมั่นใจในการใช้คำศัพท์					
5	By participating in frequent non-threatening					
	situations/ testing (with digital game resources), I					
	am now able to face more challenging ones in real					
	life.					
	การมีส่วนร่วมในการใช้เกมออนไลน์เพื่อเรียนคำศัพท์สม่ำเสมอ ทำ					
	ให้ข้าพเจ้ามีความมั่นใจยิ่งขึ้นในการใช้ในชีวิตจริง					
6	The digital game resources allows me to interact					
	better in the class.					

	การใช้เกมออนไลน์เพื่อเรียนคำศัพท์ช่วยให้ข้าพเจ้ามีปฏิสัมพันธ์ใน				
	ชั้นเรียนมากยิ่งขึ้น				
7	The digital game resources help to enhance my				
	vocabulary knowledge.				
	การใช้เกมออนไลน์ช่วยส่งเสริมให้ข้าพเจ้ามีความรู้ด้านคำศัพท์มาก				
	ยิ่งขึ้น				
8	Learning vocabulary through the digital game				
	resources is more practical than through textbooks.				
	การใช้เกมออนไลน์เพื่อเรียนคำศัพท์มีประสิทธิภาพมากกว่าการ				
	เรียนรู้จากหนังสือเรียนเพียงอย่างเดียว				
9	The use of digital game resources in learning				
	environments encourages me to participate in				
	learning activities.				
	การใช้เกมออนไลน์เพื่อเรียนคำศัพท์ช่วยสร้างสภาพแวดล้อมเพื่อ				
	กระตุ้นให้ข้าพเจ้ามีส่วนร่วมในกิจกรรมการเรียนมากยิ่งขึ้น	0.			
10	Interacting with the digital game resources help	~	- 1		
	me remember vocabulary meaning, forms, and	1 8			
	context use better.				
	การใช้เกมออนไลน์ช่วยให้ข้าพเจ้ามีความรู้ความเข้าใจด้านคำศัพท์				
	มากยิ่งขึ้น ทั้งความหมาย โครงสร้าง และการนำไปใช้		5		
			577	•	-
	Additional opinions				
	1 5				

Additional opinions

APPENDIX D

Interview Questions

Interview Questions

- 1. What are your thoughts on using digital game resources to learn vocabulary in the classroom? How was your experience?
- 2. How did digital game resources features help you to learn vocabulary?
- 3. Could digital game resources help you become more confident in using vocabulary? How?
- 4. Could Learning vocabulary through the digital game resources is more practical than through textbooks?
- 5. Could digital game resources created environments encourages you to

participate in learning activities.



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