

การใช้เว็บแอปพลิเคชันเพื่อส่งเสริมองค์ความรู้ด้านคำศัพท์
ของนิสิตและกระตุ้นทักษะการเรียนรู้ด้วยตนเอง*

USING THE WEB-APPLICATION TO PROMOTE STUDENTS' VOCABULARY
KNOWLEDGE AND ACTIVATE THEIR AUTONOMOUS LEARNING SKILLS

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บทคัดย่อ

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อ 1) พัฒนาเว็บแอปพลิเคชันสำหรับสอนคำศัพท์ภาษาอังกฤษ 2) เปรียบเทียบผลสัมฤทธิ์ด้านคำศัพท์ภาษาอังกฤษของนิสิต ก่อนและหลังการเรียนรู้ด้วยเว็บแอปพลิเคชัน และ 3) ศึกษาทักษะการเรียนรู้แบบพึ่งพาตนเองของนิสิต กลุ่มตัวอย่างแบบเจาะจงประกอบด้วยนิสิตระดับปริญญาตรี ชั้นปีที่ 1 มหาวิทยาลัยพะเยา จำนวน 62 คน ที่เรียนในรายวิชาศึกษาทั่วไป หมวดภาษาอังกฤษ วิชา 0011103 ภาษาอังกฤษสำหรับชีวิตประจำวัน ปีการศึกษา 2565 เครื่องมือที่ใช้ในการวิจัย ได้แก่ เว็บแอปพลิเคชันสำหรับสอนคำศัพท์ภาษาอังกฤษ แบบทดสอบก่อนและหลังเรียน แบบทดสอบระหว่างเรียน และแบบประเมินทักษะการเรียนรู้ด้วยตัวเองของนิสิต โดยใช้สถิติค่าเฉลี่ย (\bar{x}) และส่วนเบี่ยงเบนมาตรฐาน (S.D.) และหาประสิทธิภาพของเว็บแอปพลิเคชัน โดยใช้สูตร E_1/E_2 ตามเกณฑ์ที่กำหนด 80/80 ผลการวิจัยพบว่าเว็บแอปพลิเคชันสำหรับสอนคำศัพท์ภาษาอังกฤษมีประสิทธิภาพเท่ากับ 82.85 /88.17 ซึ่งสูงกว่าเกณฑ์ที่กำหนด และผลสัมฤทธิ์ทางการเรียนคำศัพท์ของนิสิตหลังเรียนสูงกว่าก่อนเรียนอย่างมีนัยสำคัญทางสถิติที่ระดับ .01 นอกจากนี้ นิสิตยังมีแรงจูงใจทั้งภายในและภายนอกในระดับสูง ซึ่งสามารถชี้ให้เห็นถึงทักษะการเรียนรู้แบบพึ่งพาตนเองของนิสิตเมื่อเรียนผ่านเว็บแอปพลิเคชัน

คำสำคัญ: เว็บแอปพลิเคชัน, การเรียนรู้คำศัพท์ภาษาอังกฤษ, การเรียนรู้แบบพึ่งพาตนเอง

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ABSTRACT

This study aimed 1) to develop a web-based application, 2) to enhance students' vocabulary knowledge, and 3) to investigate the students' autonomous learning skill. To serve those purposes, the present study was employed quasi-experimental research in the form of one group pre/posttest design with quantitative data analyses. The participants were 62 first-year of 2022 academic year students at University of Phayao who enrolled a general education course on "001103 English for Daily Life". The research instruments were the developed web-based application, the pre/posttest, the formative tests, and the questionnaire. The gained data were statistically analyzed through Means (\bar{x}), Standard Deviation (S.D.), and the efficiency criteria $E_1 / E_2 = 80/80$

The result revealed that the developed web-based application was efficient at 82.85 / 88.17. It was found that the students being taught by using the web app gained higher posttest mean scores than the pretest mean scores with statistical significance at the .01 level. It was also found that the students learned English vocabulary through developed web-based application with a high level of intrinsic and extrinsic motivation which can indicate the students' autonomous learning behavior.

KEYWORDS: Web-based Application, Vocabulary Learning, Autonomous Learning Skill



Introduction

In the era of disruption and our evolvement of digital world, the emergence of English as a world language is now indisputable because English language is most used by all walks of life owing to the fact that it is the most well-known language and regarded indispensable as a crucial tool for communication, business, careers, politics, tourism, and particularly education around the globe. Sneddon, (2003, cited in Parupalli, 2019, p. 71) stated that English is as a global language, it is apparent that English is important for the international interaction both in trading and education.

With this, the School of Liberal Arts, the University of Phayao, situated in the northern part of Thailand, has been providing the on-line English general education course for all the first-year students, in the first semester in order that they will realize the significance of English language in their further education and working and enable them to improve English ability. This course puts an emphasis on basic skills of English which are fundamental grammar, daily vocabulary, authentic conversation, and reading. And due to the disruption of COVID-19 pandemic, teaching and learning of this course must be completely transferred to an online mode which means any learning experience or environment relying on the Internet as the primary delivery mode of communication and presentation. With this, online learning can increase access, improve quality of learning, better preparation of students for a knowledge-based society, "lifelong" learning chance, profit making, and many more (Appanna, 2008, p. 5)

Nevertheless, instruction through online could contribute to numerous problems such as the unstable internet connection of those have limited technology at home, lack of communication between teachers and learners or learners' participation or asking and answering opportunity. With the aforementioned

problems, learners cannot understand what are taught clearly resulting in poor learning success or learners' low academic performance. Widayanti and Suarnajaya (2021, p. 77) said that the problems of online learning are that not all teachers can operate computers or gadgets in online learning activities, it is difficult to control every activity and students' responses to the material due to the absence of learning discussions and the absence of students.

From the interviews with former students both who passed the English for Daily Life course and did not pass, they replied that they had less understanding of the contents than the classroom instructional management because there were large groups with varied English background knowledge and less opportunity to ask questions or communication with teachers. Besides that, another problem of this course is the contents, examples, explanations, or even exercises of the course are limited, not varied, and enough for them.

With the rapid progress of information technology, computer and networks have been widely used in English language instruction. At the same time, English language teaching models through web-based teaching theory and practice have been being reformed. And online and hybrid learning approaches are quickly growing in popularity. For this reason, the researchers, thus, have a curiosity of developing the supplementary teaching materials based on the web application or so-call web app which refers to application software that runs on a web server and is accessed by the user through a web browser with an active network connection. The designed web application mainly emphasizes only the vocabulary knowledge in the units 1-3 of the English for Daily Life course with the reasons that vocabulary is critical to a student's language development and communication skills and obviously, mastering vocabulary enables learners to study further skills

efficiently which is in an accordance Susanto (2017, p. 182) that the learning of vocabulary is an important part in foreign language learning and considered as the central in language teaching.

Research Objectives

The objectives of the study sought to develop and find out the efficiency of the web application supplementary teaching material to meet the criterion 80/80, to examine whether use of the web application supplementary teaching material improves EFL students' vocabulary knowledge, and to investigate students' autonomous learning skills in studying an online-English general education course.

Research Hypothesis

1. The efficiency of web application will meet criterion 80/80.

2. After being implemented through web application, participants' vocabulary knowledge will be higher than that before being implemented.

3. Participants will learn English vocabulary through developed web-based application with a high level of intrinsic and extrinsic motivation.

Research Methodology

The study was employed quasi-experimental research in the form of one group pre-test and posttest design with quantitative data analyses.

Participants

The participants were 62 first-year undergraduate students who studied 001112 English for Daily Life which was the first compulsory English course in University of Phayao. They were selected via purposive sampling method. All of them were Thai and had some background in English language. Due to the situation of Coronavirus outbreak (COVID-19), all of them were from the online-English general education course in the first semester

of 2022 academic year. The participants were asked to read and sign the consent form before the experiment to confirm their willingness to participate in the research.

Scope of Research

The content presented on the web application focused on the knowledge of vocabulary in unit 1-3 of 001112 English for Daily Life course, consisting of 2 main parts which were 1) the content on how to use vocabulary in context, and 2) related exercises to practice. The content was at level A1 of English in the Common European Framework of Reference (CEFR).

The study followed three stages to gather the information. First, the students were measured in their vocabulary knowledge by using pretest before the experiment. During implementing, the students were assigned to do the formative tests after finishing each unit. The post-test was given to each participant after using the web application for 6 weeks. Lastly, the survey questionnaire of learner autonomy was distributed to 62 students who took part in this study.

Research Instruments

The instruments used in this study were the web application-based vocabulary instruction, formative tests, pre/posttest, and the survey questionnaire of students' learning autonomy. They were discussed in detail as the following sections.

The stages of creating research instruments consist of six steps: 1) study the course description, 2) analyze topics, 3) design and create the instruments, 4) assess the designed instruments by three experts in the field of language and web application, 5) revise the designed instruments, 6) try out the designed instruments.

Data Collection Procedure

The quantitative data were collected in response to the research hypotheses (1) the developed web application-based vocabulary instruction was

efficient in accordance with the efficiency criteria 80/80, (2) the web application had a significant effect on the undergraduate students' vocabulary knowledge, and (3) the web application had a significant effect on the students' learning autonomy. To determine whether the hypothesis is true or false, the data were collected as in the following procedures.

In the first week, the researchers held an orientation session. All students were informed about the purpose of the study and were asked to read and sign the consent form before the experiment. The students, then, were assigned to access the web application

to take the pretest. Subsequently, the students received regular online instruction of unit 1 for 2 weeks, and they were assigned to study the supplementary for unit 1 at their own pace through the web application. In week 4 and 6, they were assigned to complete unit 2 and 3 in the web application. At the end of the course, the students were assessed their knowledge achievement by taking a posttest, and the questionnaires were handed out.

The duration of this study was presented in Table 1.

Table 1 Teaching and Learning Duration Week Topics Duration

Week	Topics	Duration
1 st	<ul style="list-style-type: none"> • An orientation session • Pretest • Unit 1 Hello 	4 hours/ week
2 nd	<ul style="list-style-type: none"> • Unit 1 (Cont.) • The Web App (Unit 1) 	4 hours/ week
3 rd	<ul style="list-style-type: none"> • Unit 2 My family 	4 hours/ week
4 th	<ul style="list-style-type: none"> • Unit 2 (Cont.) • The Web App (Unit 2) 	4 hours/ week
5 th	<ul style="list-style-type: none"> • Unit 3 Hobbies 	4 hours/ week
6 th	<ul style="list-style-type: none"> • Unit 3 (Cont.) • The Web App (Unit 3) 	4 hours/ week

Data Analysis

The data were analyzed quantitatively yielded from the research purposes. First, to investigate the efficiency of vocabulary learning web application, the students' mean scores on the three formative tests were compared to the mean scores in the posttest. Then, the average mean scores and standard deviations of the pretest and posttest were calculated and were compared using the paired t-test to determine the effectiveness of web application on fostering undergraduate students' vocabulary knowledge. In closing, the data from the questionnaire was analyzed

by using mean and standard deviation and statistically described to examine the effects of web application on promoting the students' learning autonomy.

Results of the Study

1. According to the first objective of the study which aimed at developing and finding out the efficiency of the web application supplementary teaching material to meet the criterion 80/80, the results revealed that the web application had efficiency at 82.85 /88.17 which was higher than the expected criteria 80/80. See table 2.

Table 2 The students' score on the three formative tests and on the posttest

	E ₁			E ₂
	Unit 1 (10 points)	Unit2 (10 points)	Unit 3 (10 points)	Posttest (15 points)
Mean	8.15	8.27	8.44	13.23
E ₁ /E ₂	81.45	82.74	84.35	88.17
Mean of E ₁ /E ₂	82.85			88.17

2. With regard to the second objective to investigate the effectiveness of using the developed web application to improve students' vocabulary knowledge, it manifested that participants' vocabulary knowledge

was higher significantly at .01 level after the developed web application as supplementary teaching material was implemented.

Table 3 Comparison of the overall mean scores on pretest and posttest

Students	N	Pre-test Scores		Post-test Scores		t	p-value
		\bar{x}	S.D.	\bar{x}	S.D.		
Experimental group	62	11.37	2.7712	14.23	1.2469	-5.636	0.00*

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

3. Table 3 was shown a significant difference among the mean scores of the pretest and the posttest at the .01 level ($t = -5.636$, $p < .01$). Based upon the third objective of the study which surveyed students' autonomous learning skills, it showed that in terms of intrinsic motivation most students agree with the aspect of their aim to learn new vocabulary. And the extrinsic motivation, it revealed that most students strongly agree with the aspects of leaning English for better career and getting a good grade which showed that the students have external motivation to learn.

Conclusion

With regard to the objective to investigate the effectiveness of using the developed web application to improve students' vocabulary knowledge, it manifested that participants' vocabulary knowledge was higher after the developed web application as supplementary teaching material was implemented.

In addition, based upon the second objective of the study which surveyed students' autonomous learning skills, it showed that in terms of intrinsic motivation most students agree with the aspect of their aim to learn new vocabulary. And the extrinsic motivation, it revealed that most students strongly agree with the aspects of leaning English for better career and getting a good grade which showed that the students have external motivation to learn.

Discussion

Regarding the finding on the effectiveness of implementing the developed web application to improve students' vocabulary knowledge. It was found that participants' vocabulary knowledge was higher than that after learning through the developed web application as a supplementary teaching material. There are varied factors resulting in higher scores in vocabulary knowledge after implementing

the developed web application. Regarding an aspect on the platform of the designed web application, it has been designed with both IOS and Android platforms to easily access for learners to the web, the instruction manual of how to sign in is clearly provided, and the structures of the web application are uncomplicated. With this, learners can access to study by using any devices they have because the web application supports both IOS and Android platforms and they can sign in to study at any time they are free and convenient without teachers' enforcement. Also, learners can access to study many times they desire according with Fatemeh and Abbas (2020, p. 96) who described that one specific advantage of using CALL vocabulary instruction is providing systematic repetition of words, ensuring that learned words are not forgotten. Obviously, this kind of learning process permits learners to have more freedom to monitor their learning without the limitations of considering by instructors, time and space. Additionally, the learners can specify time to take part in the activities (Reza and Fereshteh, 2014, p. 57). In summary, learners' academic performances in vocabulary knowledge were higher after the implementation of the designed web application thanks to the fact that the facilities or functions are orderly provided in the web application, and they have freedom and feel convenient to study.

Regarding the aspect on the content of vocabulary, the lists of vocabulary in each unit have been selected based on the textbook of English in Daily Life course and then approved by the experts in order to be used to teach in clips in the web application as a supplementary teaching material. Of course, these processes could enable learners to better understand and get meanings easily. Furthermore, the vocabulary instruction is provided in short clips with the interesting stories and lifestyles of 3 characters of cartoons running from the first unit to the last one. That is, learners

can study the vocabularies on nationalities, family members, and hobbies through these main characters' stories.

In terms of the aspect on teaching procedures in clips, each vocabulary is consequently and clearly presented beginning with the words, related pictures, how to pronounce and stress, parts of speeches, and particularly sentence examples used in correct contexts. Obviously, video clips could help learners vividly visualize and have a better understanding of vocabulary meanings. Furthermore, the clip of the unit consists of 10 words, and it does not take a long time which does not make learners feel bored to learn. To support this, the findings of the study of Raniah and Tariq (2018, p. 72) showed that the group who were given the YouTube clips outperformed the group who did not get exposed to YouTube videos in the posttest.

And for the aspect of related exercises and sources of knowledge, there are provisions of exercises in the online form of each unit to check their understanding as soon as they finish studying. Besides, the documents of vocabulary contents are also given in order that learners can download to catch up with what were taught.

The findings of this study are in line with Hajebi, Taheri, Fahandezh, and Salari. (2018, p. 372) that web-based learning instruction enhanced EFL learners' vocabulary knowledge. To support this, Ghabanchi and Anbarestani (2008, cited in Hajebi and et al., p. 376) stated that EFL Iranian intermediate learners' lexical knowledge was higher after using a CALL program on expanding lexical knowledge which is in accordance with Naraghizadeh and Barimani (2013, p. 1) who explained that the effectiveness of CALL on Iranian EFL learners' vocabulary learning and his findings indicated a significant difference between experimental and control group with regard to their vocabulary knowledge.

Supported by Wang, Teng, and Chen (2015, p. 100) who studied the impact of iPad on learners' vocabulary knowledge, it was found that participants who used this software had better improvement in their vocabulary knowledge over those who did not get exposed to it.

According to the finding on how web-based application motivates students develop their autonomous learning skill. The result was also supported by the studies conducted by Wang, Cheng, Chen, Mercer, and Kirschner (2017, p. 28). They stated that web-based education could bring enjoyment and a relaxing environment which lowers students' anxiety, boosts motivation. The developed web-based application allows the students to be able to manage the leaning process to achieve their own learning goal with their inner force. According to Ushioda (1996), the inner force process as mentioned showed the relationship between autonomy and motivation. The level of students' intrinsic and extrinsic motivation can indicate the students' autonomous learning skill.

With their own desires and willingness, the developed web-based application used as a supplementary teaching material, furthermore, it also allowed students to learn new vocabulary apart from the in-class lesson. The desire and willingness

to do something can develop autonomous learning skill. Gonzalez & St Louis (2008, p. 28); Şenyuva & Kaya (2014, p. 386) stated that the usage of web-based education is one such method that has been proved to promote learner autonomy which reflected by their willingness to learn.

Suggestion

Suggestion for teachers

When implementing the web application, teachers should have an orientation section to inform the study objectives and the instructional processes. The web application can be used in the teaching procedures of warm up activity for vocabulary, presentation, and for outside class activities or self-study.

Suggestion for further research

This study can be repeated to find out whether the same results would be obtained or not. While the study focused on vocabulary knowledge as the predicted variable, it is suggested to take other skills or dependent variables into account in other studies. Furthermore, in terms of the content, there should be more units of vocabulary contents to have varied words in each topic.

References

- Appanna, S. (2008). A review of benefits and limitations of online learning in the context of the student, the instructor and the Tenured Faculty. *International Journal on E-Learning*, 7(1), 5-22.
- Fatemeh, E., & Abbas, P, G. (2020). The impact of computer assisted language learning (CALL) on improving intermediate EFL learners' vocabulary learning. *International Journal of Language Education*, 4(1), 96-112.
- Ghabanchi, Z, and Anbarestani, M. (2008). The effects of call program on expanding lexical knowledge of EFL Iranian intermediate learners. *The Reading Matrix*, 8(2), 86- 95
- Gonzalez, D., & St. Louis, R. (2008). The use of web 2.0 tools to promote learner autonomy. *Independence*, 43(1), 28-32.
- Hajebi, M., Taheri, S., Fahandezh, F., & Salari, H. (2018). The role of web-based language teaching on vocabulary retention of adult pre-intermediate EFL learners. *Journal of Language Teaching Research in English Language Pedagogy*, 9(2), 372-378.

- Naraghizadeh, M., & Barimani, S. (2013). The effect of call on the vocabulary learning of Iranian EFL learners. *Journal of Academic and Applied Studies*, 3(8), 1–12.
- Parupalli, S. R. (2019). The role of English as a global language. *Research Journal of English*, 4(1), 65–79.
- Raniah, K., & Tariq, E. (2018). The effects of YouTube in multimedia instruction for vocabulary learning: Perceptions of EFL students and teachers. *English Language Teaching, Canadian Center of Science and Education*, 11(2), 72–81.
- Reza, K., & Fereshteh, K. (2014). Iranian EFL learners' vocabulary development through Wikipedia. *English Language Teaching, Canadian Center of Science and Education*, 7(7), 57–67.
- Şenyuva, E., & Kaya, H. (2014). Effect self directed learning readiness of nursing students of the web based learning. *Procedia–Social and Behavioral Sciences*, 152, 386–392.
- Sneddon, J. N. (2003). *The Indonesian language, Its history and role in modern society*. Sydney: NSW Press.
- Susanto, A. (2017). The teaching of vocabulary: A perspective. *Journal KATA*, 1, 182–191.
- Ushioda, E. (1996). *Learner autonomy 5: The role of motivation*. Dublin: Authentik.
- Wang, B., Teng, C., & Chen, H. (2015). Using iPad to facilitate English vocabulary learning. *International Journal of Information and Education Technology*, 5(2), 100–104.
- Wang, M., Cheng, B., Chen, J., Mercer, N., & Kirschner, P. A. (2017). The use of web-based collaborative concept mapping to support group learning and interaction in an online environment. *The Internet and Higher Education*, 34, 28–40.
- Widayanti, N. K. A., & Suarnajaya, I. W. (2021). Students challenges in learning English online classes. *Jurnal Pendidikan Bahasa Inggris undiksha*, 9(1), 77–84.

