

Enhancing English Vocabulary Retention Among High School Ethnic Minority Students Through Applying Space-Repetition Technique On Language Learning Platforms

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Abstract:

Space-repetition techniques and language-learning platforms have been around for a long time they have risen in recent years and become increasingly popular. The Doucards is one of the lively and attractive foreign language learning platforms. It works based on the rules of the Spaced-repetition technique. In this study, there were 24 high school ethnic minority students participated in the experimental research with the use of Doucards. Quantitative research was used to conduct the research for 6 weeks. After the research period, the results show that discourses have affected enhancing English vocabulary retention of high school ethnic minority students. The effects of Doucards on the enhancing vocabulary retention of high school ethnic minority students and students' attitudes concerning using language learning platforms in vocabulary learning are investigated in this study. Doucards were shown the effect of the data obtained. Specifically, students recognized that Doucards made their vocabulary learning process more delightful.

Keywords: *Space-repetition, Vocabulary retention, Doucards, Language learning platforms.*

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I. Introduction

Richard Barker (2023) claimed that: "English is the second or third most popular mother tongue in the world, with an estimated 350-400 million native speakers". Besides, Ramelan (1992: 2) said that: "English is the first foreign language to be taught in Indonesia". It can be seen that English is taught from elementary school up to university not only in Indonesia but also in Vietnam. It can be seen that English is a key to unlocking all fields, so it is important to learn English. The first important aspect of learning a foreign language is vocabulary. David Wilkins (1972) believed that "without grammar, little can be conveyed, without vocabulary nothing can be conveyed". Vocabulary plays an important role in communication because it helps people to connect to others. However, one of the weaknesses that the students have in learning English based on the researcher's observation is memory competence. Most of them have difficulties remembering massive amounts of data and storage time. Therefore, improving vocabulary learning is the most important task in learning English process. Morgan and Rinvoluceri (2004) said that: "There are many solutions to learning words", they described exactly 118 activities to study vocabulary. The popular technique for improving English vocabulary retention is spaced repetition. From the view of Ebbinghaus (1885), Spaced repetition is a technique that increases memorization of the piece of knowledge after many repetitions. Spaced learning requires learners to revisit the information provided in different periods. This step helps the student's brain to store the words in long-term memory. In this study, spaced repetition was used only as a teaching technique for improving the vocabulary memorization ability of intermediate EFL learners. This technique was operated in language learning platforms using flashcards.

The aims of the research are all to improve students' English vocabulary retention. Specifically, this research has the following objectives: 1) To know and understand whether the technique of using spaced repetition can boost the English vocabulary retention of the students. 2) To know the strengths and weaknesses of the spaced repetition technique when applying it to improve students' English vocabulary retention. 3) To find out what the real problems of students are.

II. Literature Review

According to Richards and Renandya (2002:255), a strong vocabulary is essential for developing speaking, listening, reading, and writing skills in learners. Without a wide range of words and the retention to learn new ones, communication can be ineffective, and language-related opportunities such as listening to the radio, conversing with native speakers, or reading can be missed.

The Spaced Repetition Technique (SRT) is a way of learning that involves studying the same information at systematic intervals but with breaks in between. This helps you remember the information better compared to studying it all at once. In language learning, SRT means showing and remembering words at different times (the system always is one hour, four hours, and one day) to help remember them better in the future. A system of spaced repetition helps you to review knowledge before it is forgotten and helps store this knowledge in long-term memory (maximize the amount of remembered information and minimize learning time).

At present, there are various language learning platforms on the market, each with its unique approach and features. Among the popular applications are Quizizz, Quizlet, Duolingo, Anki, Rosetta Stone, 4English, Kahoot, Memrise, Busuu, Nearpod, and Duocards. Each of these platforms offers a wide range of language learning methods, such as gamification, multimedia lessons, and the use of artificial intelligence to teach their users languages.

According to a study by Göksün, D. O., & Gürsoy, G. (2019), Quizizz has become a popular platform for language learners due to its gamified learning approach. Quizizz uses a spaced repetition algorithm called "Smart Learning" to help students memorize vocabulary. This algorithm calculates the number of flashcard repetitions based on an analysis of the student's learning style. Similarly, Quizlet, founded in 2005, has been praised for its user-friendly interface and diverse learning tools (Hans, 2018).

Rosetta Stone is a language learning software established in 1992 and has been renowned for its interactive and immersive learning method (Pouranshirvani, M., 2015). Recently, a new platform has been garnering attention for its focus on business English and personalized lessons, named 4English. Additionally, Babbel, widely used by foreigners, offers a variety of languages and particularly emphasizes the development of communication skills (Nushi and Eqbali, 2018). Founded in 2010, Memrise uses mnemonic devices and spaced repetition to help learners memorize new vocabulary (Stephanie and Caroline, 2021). With over 100 million users, Busuu provides a community-based language learning approach (Naoya Shibata, 2020). Nearpod, combining interactive lessons with real-time feedback, has been praised for its effectiveness in classroom settings (M. Sanmugam et al., 2019)

Doucards

Doucards are a versatile and effective digital learning tool used in various contexts. They not only help students and learners to review and practice effectively but also support educators in creating interactive and engaging learning materials. By using Doucards, users can easily memorize information through repetition and practice, ranging from text to images and even audio files. Moreover, Doucards can be applied in diverse fields such as healthcare, business, arts, and design, providing flexibility and diversity in the learning and research process. Doucards have many advantages for both teachers and students

Quizzes

Quizizz is an online learning platform that allows teachers to create and share interactive quizzes and games for their students. It is designed to make learning fun and engaging by incorporating game-like elements and allowing students to compete with their classmates. Teachers can use Quizizz to assess student understanding, track progress, and provide immediate feedback. Quizizz offers a wide variety of customization options, such as adding images and videos, to make quizzes more engaging and interactive. The advantages of Quizizz include its accessibility and convenience, as it can be accessed through various devices and at any time

III. Methodology

This research was conducted using quantitative research methods with the help of tests and questionnaires. The subjects of this research were 24 ethnic minority students in grade 10 at Ngo Quyen High School. In this study, 24 ethnic minority students in grade 10 were asked to complete a pre-questionnaire to calibrate students' attitudes toward the importance of vocabulary in subsequent language acquisition work. A pre-test was also administered in the first week of the study to test students' overall vocabulary learning and first-level proficiency. Then, the students were divided into 2 groups. Group 1 was guided to learn vocabulary with the Spaced-repetition technique, while Group 2 learned vocabulary in the student's ways. From the second week through the fifth week, students took all students in both groups a practice test on Quizizz every Saturday. In week 6, students took a post-test with 20 multiple-choice questions to record their vocabulary level, and a post-questionnaire was also sent to them to collect their attitudes towards using Quizizz and Duocards throughout the experiment. Finally, the researchers collected data and analyzed it to produce results and conclusions.

IV. Findings And Discussion

Findings from the questionnaires

According to the following chart, 71% of the students indicated that they believed vocabulary was very important when learning a language. This suggests that students place significant importance on vocabulary. 25%

of students chose important, while only 4% picked slightly important. These results highlight the importance of teaching and learning vocabulary effectively in language education.

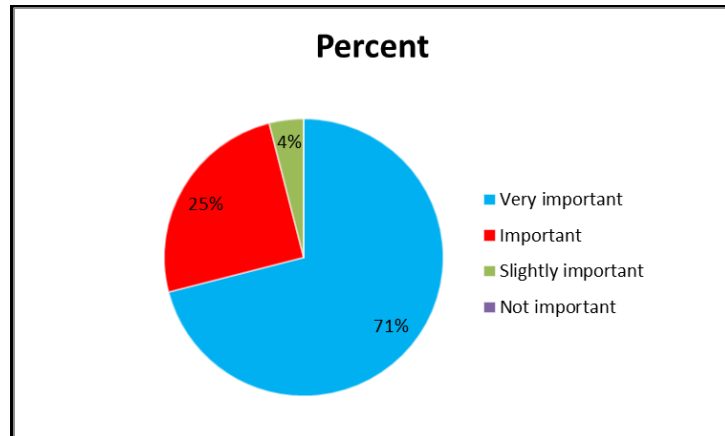


Figure 1 Students' interest in learning vocabulary lessons

Figure 1 demonstrates students' interest in learning vocabulary lessons. Overall, it appears that a majority of students hold some level of interest in learning vocabulary lessons. However, it is noteworthy that only 27% of students expressed a strong interest, while 50% stated they were simply interested. This suggests that while a significant percentage of students may find vocabulary lessons engaging, there is still room for improvement in terms of capturing their attention and motivation. On the other hand, a minor portion of students (14%) expressed only a small level of interest in expanding their vocabulary. Although the percentage may seem small, it is important to recognize and understand the reasons for this lack of interest. It is concerning that 7% of students showed no interest in learning vocabulary. This implies a potential lack of interest in or connection to the subjects, which could hurt their performance in school and the learning process as a whole.

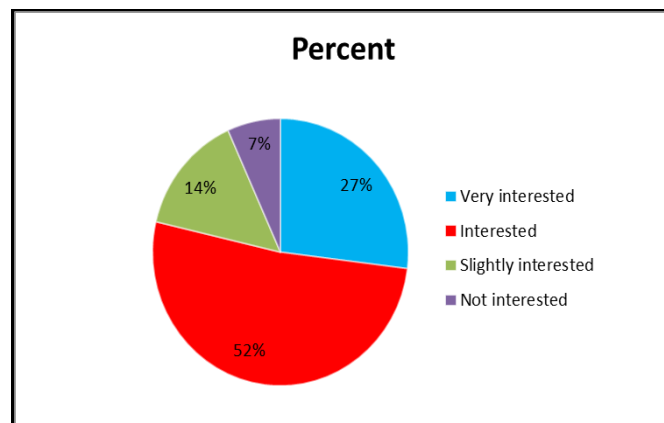


Figure 2. Students' frequencies of practice English vocabulary outside of the classroom

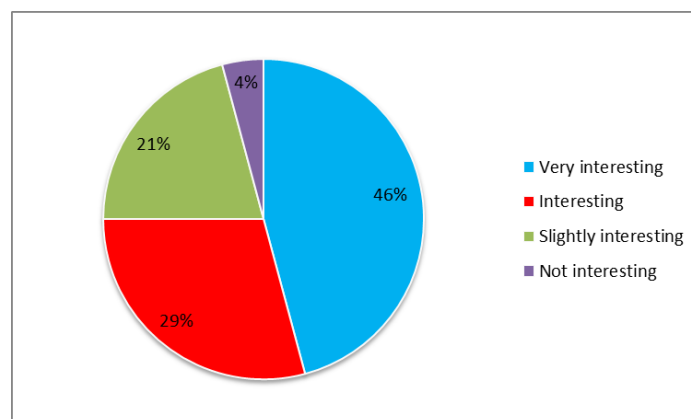


Figure 3. Students' interest in learning Spaced-repetition techniques

It is evident that after six weeks of using the spaced-repetition technique on Quizziz and Duocards for language learning, the students' attitudes toward acquiring new vocabulary have risen significantly. In more detail, over 70% of students found spaced repetition techniques to be interesting (29%) and very interesting (46%) over the period. In the meantime, it is important to mention that the percentage of students who seem slightly interested in the application of spacing techniques on language learning platforms increased from 14% to 21% after the experiment. For students, the number of people who showed that they weren't interested went down by 3%, from 7% to 4%.

According to the survey results, 24 participants expressed their agreement with the notion that spaced repetition has had positive effects on their vocabulary learning. Furthermore, 100% of the participants expressed their desire for their teacher to continue incorporating these applications into their vocabulary lessons.

The results of the pre-test

Table 1. The results of the pre-test 1

Experimental group		Control group	
Students' code	Number of correct answers	Students' code	Number of correct answers
S1	15	S13	8
S2	9	S14	14
S3	5	S15	5
S4	10	S16	10
S5	8	S17	7
S6	3	S18	8
S7	13	S19	10
S8	7	S20	6
S9	4	S21	9
S10	6	S22	5
S11	12	S23	7
S12	9	S24	3
Total: 20		Total: 20	

It can be seen from Table 1 that before using language learning platforms, the student's vocabulary level was under 10 correct answers in general. Specifically, there are only seven students had above-average scores on the pre-test, whereas others received below-average scores.

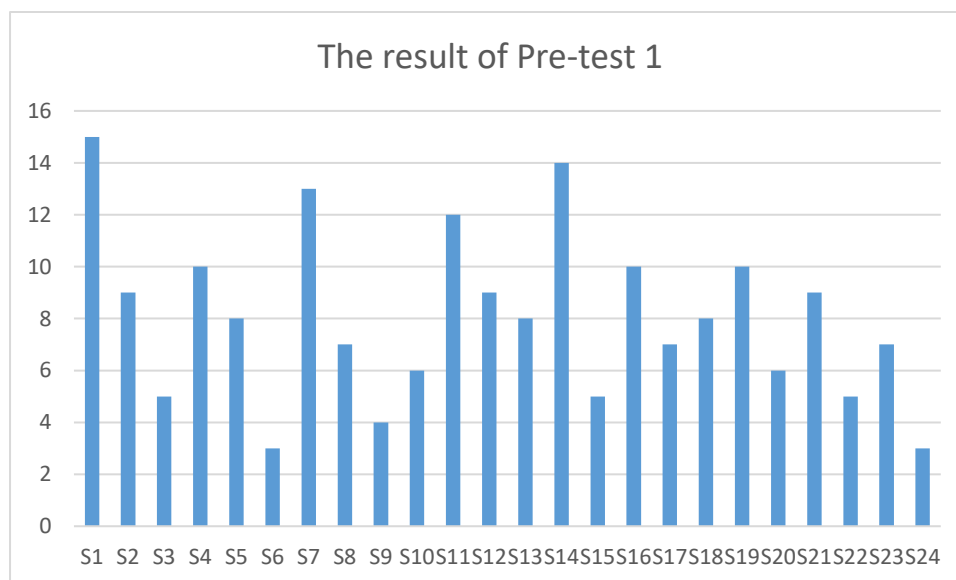


Figure 4. The result of pre-test 1

Before using the Doucards platform in learning vocabulary, only two of twenty-four students received 14 correct answers and 15 correct answers, as seen in the bar chart above. The correct answers of the other twenty students witnessed fluctuation from 13 to 3. The result of this test implied that the majority of students struggled with vocabulary and the research needed to be given an effective solution to improve this situation.

V. Pre-Test And Post-Test Results

Table 2. Changes in vocabulary retention of individual students before and after 6 weeks (Pre-test 1 & Post-test)

Experimental group				Control group			
Student code	Before (%)	After (%)	Deviation (%)	Student code	Before (%)	After (%)	Deviation (%)
S1	75	85	-10	S13	40	35	-5
S2	45	75	30	S14	70	50	-20
S3	25	60	35	S15	25	45	-20
S4	50	80	30	S16	50	30	-20
S5	40	50	10	S17	35	20	-15
S6	15	70	55	S18	40	30	-10
S7	65	60	-5	S19	50	30	-20
S8	35	90	55	S20	30	35	5
S9	20	70	50	S21	45	40	-5
S10	30	55	25	S22	25	25	0
S11	60	50	-10	S23	35	25	-10
S12	45	40	-5	S24	15	15	0
Average	42%	65%		Average	38%	32%	

From the table above, it can be seen that learners in the experimental group have made significant progress. The experimental group's average memory ability saw a strong upward trend that increased from 42% before the experiment to 65% after 6 weeks. Meanwhile, the control group witnessed a significant decrease from 38% to 32%. People in the experimental group had a huge change in their ability to remember vocabulary, their memory ability was 2% higher than the memory ability of people in the control group. Therefore, the spaced repetition technique had a strong impact on the memory ability of learners in the experimental group.

The bar chart below illustrates the students' average vocabulary retention before and after the research period which implied the students' vocabulary retention after learning 1 hour based on the data collected above.

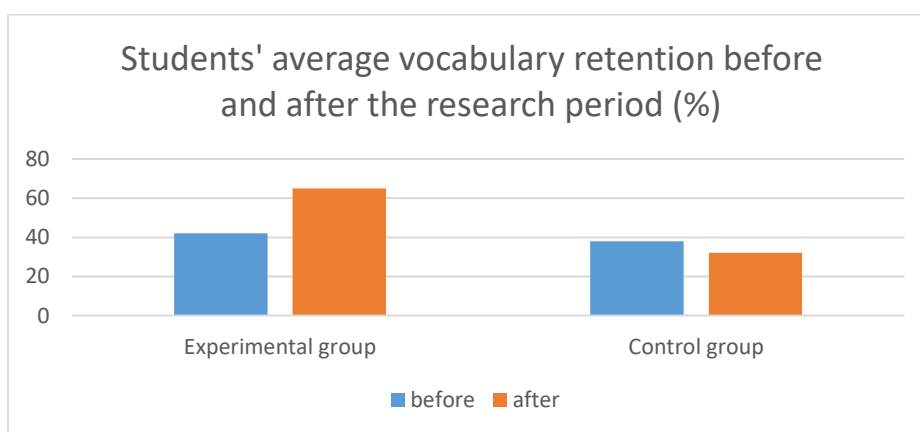


Figure 5. Students' average vocabulary retention before and after the research period

The comparison of the pre and post-test results

Table 3. Changes in students' vocabulary knowledge levels after the research period (Pre-test 1 & Post-test)

Vocabulary knowledge levels	Level	Control group (N=12)		Experimental group (N=12)	
		Before	After	Before	After
No misunderstanding	= 100%	0	0	0	0
Great understanding	< 100%	0	0	0	1
Good understanding	≤ 85%	0	0	1	3
Moderate understanding	≤ 70%	1	0	2	4
Some understanding	≤ 55%	7	5	5	4

Little to no understanding	≤ 30%	4	7	4	0
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This table showed a huge change in the number of some understanding groups and little to no understanding group of the control group. Although there was a decrease of two students in the knowledgeable group, there was an increase of 3 students in the group with little or no understanding. Besides, there was only 1 student in the moderate understanding group, but after that, there were no more students left in this group. In addition, the control group did not have students in the no misunderstanding group, a great understanding group, and a good understanding group both before and after the experiment.

As for the experimental group, initially, there were no students in the great understanding group, but after 6 weeks of experiment, there was a student in this group. The good understanding and moderate understanding groups both increased by two students compared to the original number of students in each group. In addition, the number of students in the little to no understanding group has decreased sharply (from 4 to 0), and the understanding group has also decreased by one student compared to the original.

VI. Conclusion

In this study, the focus was on investigating the impact of spaced repetition techniques in language learning platforms on the vocabulary development of ethnic minority high school students. The research employed the quasi-experimental research method with a total of 24 students in grade 10 at Ngo Quyen High School, forming a control group and an experimental group. Data is collected both before and after the research period through pre-and post-tests to enable comparison of students' test results. Moreover, the pre-questionnaire and post-questionnaire were conducted to gather detailed feedback from students regarding their learning experiences as well as to assess their attitudes toward the effectiveness of the spaced repetition technique on language learning platforms.

The main goal of the study is to determine whether implementing the spaced repetition method on language learning platforms leads to significant changes in students' test results, while also examining whether this method supports the improvement of their vocabulary. The researchers have proposed the hypothesis that this method is likely to have a positive impact on enhancing students' vocabulary skills.

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