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PROMOTING MIDDLE SCHOOL STUDENTS' ENGLISH VOCABULARY RETENTION VIA QUIZLET

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Abstract. Teaching for students' vocabulary retention is always a matter of concern for many English teachers, because vocabulary development is critical for learners to enhance their language proficiency. Nowadays, learning vocabulary has become easier than ever thanks to the use of digital flashcard tools, among which Quizlet is a very popular choice. The effectiveness of Quizlet in students' vocabulary acquisition has been explored in a number of studies for high school and university students; however, only a few of them focused on lower secondary school students. To address this gap, this study was conducted as action research in a grade-7 class in which the teacher used Quizlet in teaching the "Looking back" section of English 7, with the aim to enhance students' vocabulary retention under SAMR model. The action research took place during 12 weeks of 2020-2021 academic year in a lower secondary school in Ha Noi. The participants were 15 students with the majority of A1 level. Their vocabulary retention in terms of form and meaning was compared between the Vocabulary quizzes and the teacher's observation. Additionally, questionnaires were designed to find out the influence of Quizlet on students' retention of vocabulary. The study contributed to the literature review of the beneficial effects that Quizlet had on students' vocabulary retention, specifically in terms of form and meaning for secondary students.

Keywords: SAMR model, Quizlet, vocabulary retention, seventh graders, English.

1. Introduction

Teaching vocabulary is crucial for EFL students as stated by Wilkins in 1972 (p.111) [1] "Without grammar very little can be conveyed, without vocabulary, nothing can be conveyed." Nation (2013) [2] states that language-focused learning, which includes deliberate vocabulary instruction and learning, should play a significant role in any foreign language course because students are unable to understand and communicate their own ideas without adequate vocabulary. According to Nation (2001) [3], three significant aspects that take the spotlight in vocabulary teaching and learning are form (spoken, written, word parts), meaning (form and meaning, concepts and referents, associations), and use (grammatical function, collocations, constraints on use). As vocabulary learning is critical for students' language learning, teachers should assist them not only in recognizing the words but recycling the newly learned words in different contexts and through different means, so that the words could be well retained. The use

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of many vocabulary teaching tools, in which flashcards are popular ones, are therefore more and more welcomed by foreign language teachers in their teaching. This study was conducted to answer the question: "How could Quizlet promote 7th graders' English vocabulary retention in "Looking back" in English 7?" However, due to time limit and the constraints related to teaching schedule and administration factors in the research context, the focus of the study was on students' retention of only vocabulary form and meaning only. The paper starts with the review of related literature, followed by the methodological details including participants, research design and procedure. The findings are then presented and discussed to seek the answer to the research question, then come the conclusion, limitations and suggestions for further study.

2. Content

2.1. Literature Review

2.1.1. Vocabulary retention via multimedia learning

Vocabulary retention, according to Mohammed (2009, p.16) [4], is defined as "the ability to keep the acquired vocabulary and retrieve it after a period of time to use it in different language contexts." According to Bennette and Rebello (2012) [5], retention of learned information can be defined as having the information stored in long-term memory in such a way that it is readily retrievable, for example, in response to standard prompts. Additionally, Souleyman (2009) [6] states that retention is a memory function that involves more complicated activities such as memorizing or learning, retention, recall, and recognition, which boost students' short and long term memory. Retention of vocabulary is critical while learning English as a foreign language.

In EFL contexts, for the sake of vocabulary retention, different techniques are employed. These techniques can be divided into four categories, according to Oxford and Crookall (1990) [7], based on vocabulary teaching methods. The first category is de-contextualising, which contains word lists, flashcards and conventional use of a dictionary. The second one is semi-contextualising, which consists of word grouping, association, visual imaginary, keyword, physical response, physical sensation, and semantic mapping. The third one is fully contextualizing which involves four skills: listening, speaking, reading and writing. The final one is adaptable: structured reviewing. Among the common tools for vocabulary teaching including word lists, dictionary use, vocabulary cards, negotiating vocabulary meanings, and glosses, etc., flashcards belong to the first category - de-contextualizing. According to Laufer, Meara, and Nation (2005) [8], flashcards are an efficient means of acquiring and retaining new words. Numerous studies have examined the effectiveness of digital flashcard tools in comparison with traditional flashcards toward EFL students in enhancing vocabulary range (Hung, 2015; Nakata, 2008; Spiri, 2008; Ho, 2019) [9-12]. Their papers mostly agreed that "digital applications like Quizlet have greater potential to develop English than traditional learning tools like paper flashcards." (Ho, 2019, p. 61) [12]

Multimedia learning is described by Mayer (2005) [14] to be the kind of learning that allows people to "learn more deeply from words and pictures than from words alone" (p.47). Cognitive theory of multimedia learning, which was built on Mayer's (2005) [13] theory of multimedia learning, is based on three main assumptions: (1) there are two separate channels (auditory and visual) for processing information; (2) there is limited channel capacity; and (3) that learning is an active process of filtering, selecting, organizing, and integrating information. In the light of cognitive theory, multimedia learning is good for vocabulary retention in the sense that words, together with illustrated pictures in the flashcards (like those used in Quizlet) can help students increase vocabulary retention because the learning process

happens via two channels: verbal and visual, and the prior knowledge can be integrated into this process (Mayer, 2001) [14].

Numerous studies have confirmed that multimedia benefits students' English vocabulary learning (Yanguas, 2009; Lin et. al, 2017; Ho, 2019) [15], [16], [12]. The action research reported in this paper applied Mayer's (2005) theory by having students learn actively through game-based activities utilizing Quizlet - a digital flashcard with multimedia display of words designed to aid students in memorizing verbal and visual features of target words.

2.1.2. SAMR model in integrating ICT

Integrating ICT to promote teaching and learning has become trendy in the two-first decades of the 21st century with various frameworks: TPACK, RAT, SAMR, PICRAT, etc. Although RAT and TPACK both have their own advantages in teaching, and PICRAT appears to be an intuitive model, SAMR has been shown to be more appropriate for this study context, which specifically focuses on teachers' ICT integration level in their teaching vocabulary.

Puentedura's (2006) [17] Model for Substitution Augmentation Modification Redefinition (SAMR) is a valuable way to evaluate the introduction of technology and its effect on education in teaching. Substitution and augmentation are two steps in the enhancement process, while modification and redefinition are the ones in the transformation process. In the Substitution stage, technology acts as a direct tool substitute with functional change. In other words, technology simply directly replaces an activity or a lesson. In the Augmentation stage, technology acts as direct tools with functionality, which means that it replaces the lesson with some improvements. In the Modification stage, technology allows for significant task redesign, for example, students can collaborate in one task at the same time in a shared assignment task, which they do not have the chance to explore in traditional class. In the Redefinition stage, technology allows for the creation of new tasks previously inconceivable, which means that technology allows for new tasks that could not be done without the use of technology. For instance, students can quiz together at the same time while they are aware of their own progress as well as their friends' via a ranking list.

2.1.3 Quizlet – an application for vocabulary learning.

Quizlet is an American online study application that allows students to study via learning tools and games. It was created by Andrew Sutherland in October 2005 and released to the public in January 2007. Quizlet trains students via flashcards, each contains target word integrated its pronunciation in one side of flashcard and picture with definition in the other side. Moreover, Quizlet features include various games and tests for students' vocabulary retention. With the advantages of using multimedia learning (using both words and pictures in implementing target words), Quizlet seems to be the most popular application for digital flashcards because it was chosen as one of the best applications according to American Association of School Librarians (AASL) in 2019 [18]. Studies in applying Quizlet in the EFL classroom have become a movement worldwide. Numerous studies have been conducted to demonstrate the efficacy of using Quizlet-a digital flashcard application, in teaching vocabulary (Dizon, 2106; Hung, 2015; Nakata, 2008; Spiri, 2008;) [19] [9-11] and specially under the SAMR model (Ashcroft & Imrie, 2014; Anjaniputra & Salsabila, 2018) [20] [21]. Therefore, the study inherited the prior research findings to examine the effectiveness of Quizlet application in SAMR model towards 7th graders' English vocabulary retention.

Quizlet was implemented according to three stages in the SAMR model for vocabulary teaching: Substitution, Augmentation, and Modification. Substitution was accomplished through the teacher's creation of flashcards in Quizlet. The flashcards were designed for low-level students and contained the target word on one side and the Vietnamese meaning and picture on the other, omitting the English meaning and sentence examples on the other side of the target

word. This type of flashcards merely replaced traditional flashcards for students based on the Glossary at the end of textbook. Augmentation took the form of a variety of models in which digital flashcards were combined with the spelling sound or pronunciation of target vocabulary and then integrated with game-based activities. The study focused on Augmentation mode combined with game-based activities including Hot seat and Pictionary to strengthen students' extrinsic motivation and let them have the opportunities to learn vocabulary actively. Such a plan was made with the expected outcome that students would have a better perspective toward English subjects as well as their English language proficiency. My modification was to use Quizlet's Test mode to generate vocabulary quizzes to assess students' vocabulary retention. Throughout the class periods, the Augmentation stage was primarily used to implement Quizlet.

2.2. Research methods

This study was conducted in the design of an action research following Burns' (2010) [22] model. The research procedure of this study – the first cycle - contained 4 main steps: (1) Plan, (2) Action, (3) Observe and (4) Reflect. The students' book used is English 7, a joint product between Pearson Education and the Ministry of Education and Training. Six female and nine male students from class 7N4B which is the class with the lowest English performance in grade 7, were participants of this study. The majority of participants were A1 level based on KETfs results. In order to collect data, the author used observation, questionnaire for students, and vocabulary quizzes. In order to measure the improvement in students' vocabulary retention in terms of form and meaning, the results of students' retention of learned words during the lessons (recorded via checklists designed in the observation sheet) and in vocabulary quizzes were compared. The words that appeared in the checklists (in the observation sheet) and in the quizzes were those learned throughout the units. So the observation and the quizzes could bring the data about the influence of Quizlet on students' vocabulary retention from the perspective of the teacher. The questionnaire was designed to collect data about the influence of Quizlet on students' retention of vocabulary from student's viewpoints. In addition, Text Inspector, an online tool for checking the difficulty levels of words was also employed to assist the process of classifying the types of words retained.

2.3. Findings

2.3.1 Observation of students' vocabulary retention in terms of form and meaning

The observation process occurred at the same time as my teaching or facilitating processes, which means I had to do multiple tasks. That was the reason why I only gave two codes for the performance observation in terms of both form and meaning of vocabulary: one code for the case in which more than 50% of students and another code for the case in which fewer than 50% students provided the correct form (by pronouncing) and meaning (spoken) of vocabulary. Based on the observation data, students' performance in retaining vocabulary could be sorted into 4 categories as in the table below:

Table 1. Categories labeled for students' overall performance

Vocabulary aspect	**Form retention**	**Meaning retention**
Category		
(1)	>=50%	>=50%
(2)	>=50%	<50%
(3)	<50%	>=50%
(4)	<50%	<50%

As shown in Table 1, Category 1 included the cases in which more than 50% of students knew the form and meaning of the vocabulary. Category 2 referred to the cases in which more than 50% of students know the form and less than 50% of them know the meaning. Category 3 illustrated the cases in which less than 50% of students knew the form and more than 50% of them knew the meaning. Category 4 included cases in which less than half the class knew both the form and meaning of target vocabulary. In each lesson, as there were different words and activities in "Looking back", all these four categories could be observed at different times in one and the same lesson.

The proportions of each category in each lesson could be summarized in the figure below:

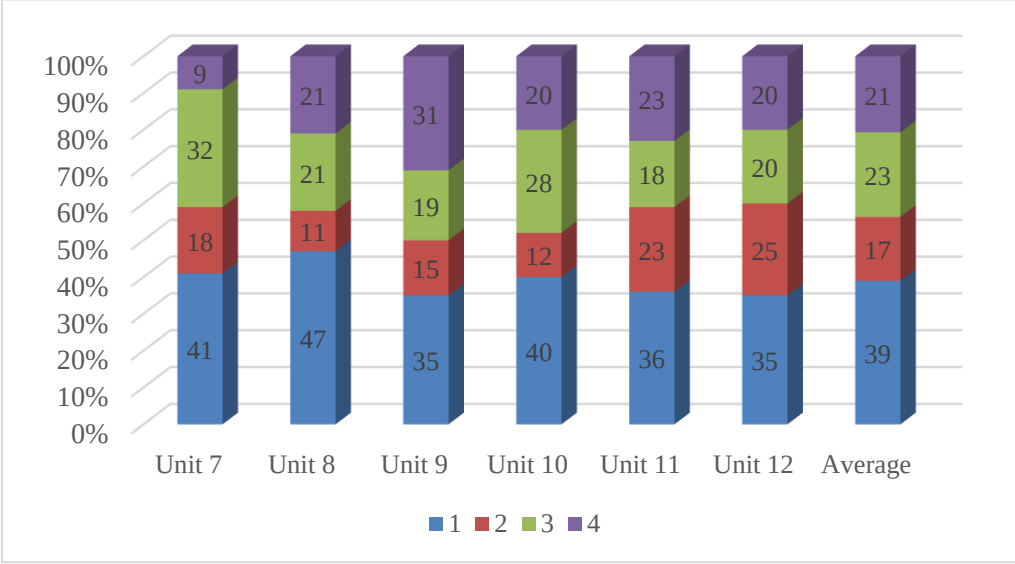

Figure 1. Overview of observation of students' vocabulary retention

The graph gives information on students' vocabulary retention observed by the teacher, also the researcher, between week 1 (Unit 7) and week 6 (Unit 12), 4 different colours are coded for 4 categories mentioned above in Table 4. The average ratio among 4 categories was not the same within 6 units. Some units had the same order from the most to the least as average: category 1, 3, 4 and 2 like Unit 7, and Unit 10. Two units having the same percentage of category 3 and 4 were Unit 8 and Unit 12. Unit 9 and 11 had the special pattern where the percentage in category 3 was less than in category 4 (Unit 9: 19% - 31%) (Unit 11: 18% - 23%).

2.3.2 Questionnaire

Table 2 summarizes students' reports on the influence of Quizlet on their retention of vocabulary, which could be retrieved from the answers to questions 1 to 4.

Table 2. Students' report on the influence of Quizlet on their retention of vocabulary

	Very poor	**Poor**	**Fair**	**Good**	**Excellent**
	1	2	3	4	5
1. The ability to pronounce the word correctly	0	0	4	6	5
average percentage (%)	0 %	0 %	26.7%	40%	33.3%
2. The ability to remember the form – spelling of a word	0	0	3	5	7
average percentage (%)	0 %	0 %	20%	33.3%	46.7%

3. The ability to understand the meaning of a word	0	0	4	5	6
average percentage (%)	0	0	26.7%	33.3%	40%
4. The ability to use the learnt words in new contexts	4	6	3	2	0
Average percentage (%)	26.7%	40%	20%	13.3%	0 %

This table summarizes the data collected from the first section in the questionnaire, which illustrates the advantages and disadvantages of applying Quizlet for vocabulary retention. The students mostly agreed that Quizlet assisted them to increase "the ability to pronounce the word correctly", "the ability to remember the form/ spelling of a word" and "the ability to understand the meaning of a word", while their "ability to use the learned words in new contexts" was reported to be limited.

The ability to pronounce words correctly (the first question) was reported at the level of "good", "excellent" and "fair" in descending order (40% -33.3% -26.7%). None of the 15 students chose a "poor" or "very poor" as their response to the first question.

The answer to the second question revealed the ability to remember the form/spelling of a word. With the same result as the first question, none of the participants' answers was "very poor" or "poor". The percentage of recorded responses that were "excellent," "good," or "fair" decreased accordingly (46.7 % -33.3% -20%).

The ability to understand the meaning of a word (the third question) was reported to be "fair", "good" and "excellent" with the percentage of 26.7%, 33.3% and 40% respectively. Based on the questionnaire, most students agreed that learning vocabulary via Quizlet benefited them because of "funny pictures", which help them easily remember vocabulary in meanings.

The answer to the fourth question about "the ability to use the learned words in new contexts" of participants was not positive, which coincides with the researcher's prediction. These responses were understandable, and could be explained by the scope of the study (as provided in the Introduction). To be more specific, the study reported in this paper examined vocabulary retention in terms of form and meanings only, so I purposely did not try to create learning situations where students could be creative and had the capability to use it in context, and even new context.

2.3.3 Vocabulary quizzes

Figure 2 below summarizes the results of six vocabulary quizzes administered following six "Looking back" lessons to assess students' vocabulary retention following the use of Quizlet. The figure illustrates the average vocabulary retention rate of 15 students during the intervention as revealed from the analysis of quiz results.

Figure 2 illustrates vocabulary retention from quiz results in terms of vocabulary form and meaning based on vocabulary quizzes. Overall, the students were better at recalling vocabulary meaning than its form (average in meaning is 66% while average in form is 58%). Moreover, the average percentage (58%) was higher than the one based on the teacher's observation (about 39%).

The assistance of Text Inspector

Text inspector is a tool to analyze the Common European Framework of Reference (CEFR) level on a scale of A1-C2 of vocabulary. In this study, this tool assisted the researcher to examine the level of target words used, retained vocabulary and vocabulary that could not be retained in terms of form and meaning by 15 students in grade 7 with low proficiency in English.

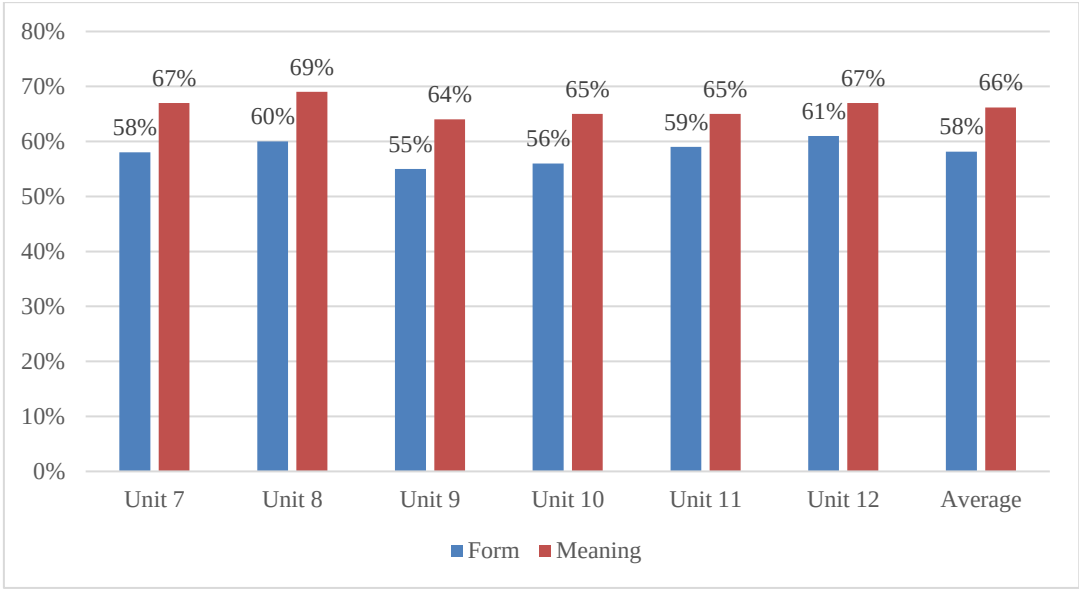

Figure 2. Vocabulary retention as revealed from the quizzes

Compared to retained vocabulary level (B1), the highest difficulty level in non-retained vocabulary is higher (B2). However, the English language proficiency of students before the study is mostly pre-A1 or A1 level based on KET. The difficulty levels of these words were three levels higher than those in pre A1 level, the participants' lowest level, which is against Krashen's [21] input hypothesis (i+1) that the acceptance of difficulty level is supposed to be one level above students' level in theory.

2.4. Discussion and Implications

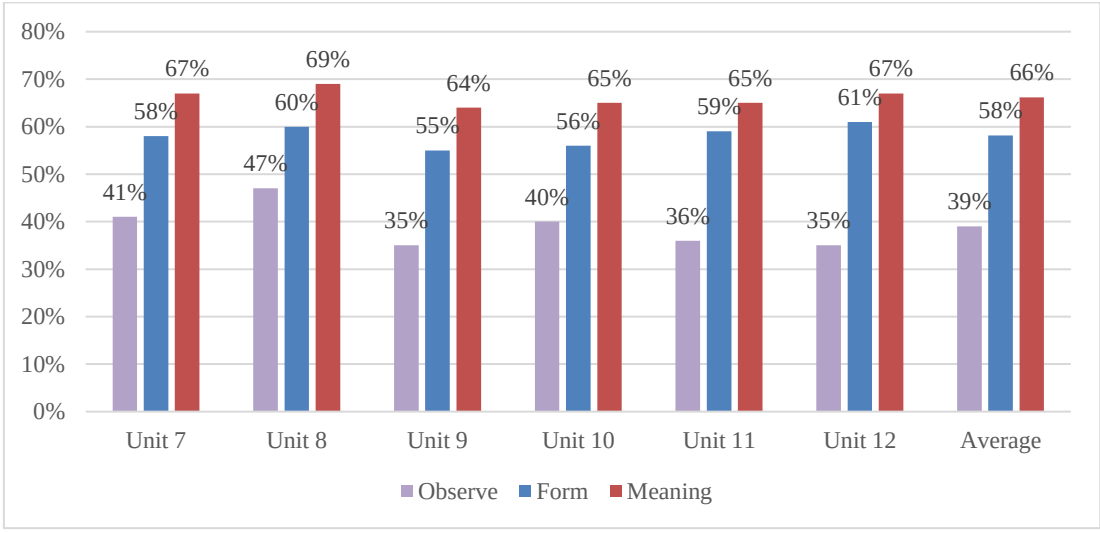

Figure 3. Comparison of vocabulary retention rate between teacher's observation and the quiz results in terms of form and meaning

The results of data analysis show the positive influence of the use of Quizlet on students' vocabulary retention, with the focus on form and meaning. To be more specific, the Text Inspector analysis revealed that the employment of Quizlet accommodated students' retention of both the form and meaning of the vocabulary in the A1 to B1 range. Most of the words students

could not retain belonged to the B2 and higher range. Such a situation could be explained by Krashen's (1985) [23] input hypothesis (i+1) that the acceptance of difficulty level is supposed to be one level above students' level in theory.

This study result strengthens prior research results (Dizon, 2016; Nakata, 2008; Spiri, 2008; Hung, 2015) [19] [9-11] for supporting the use of digital flashcards, Quizlet in particular, to retain English vocabulary. The author can see students' improvement through the increase in retaining percentage comparing teacher's observation and vocabulary retention checklist results as in Figure 3.

According to Figure 3, in the quizzes, the percentage in vocabulary retention rate increased from what the author could observe during the lessons. As found from the observation, the average percentage of students' retention rate is about 39%. As revealed from an analysis of the vocabulary retention shown from the quiz results, the number of retained words increased significantly to 58% in form and 66% in meaning. Overall, the percentage of students' actual vocabulary retention shown from the quizzes was 20% higher than what the author could measure with my observation checklists during my vocabulary teaching. As the words in the quizzes were actually those that appeared in the previous lessons within two weeks per each unit, their appearance in the quizzes could be considered the repetition of the words students had learned. The enhanced retention of these words might be a good demonstration that: the more students are exposed to the words, the better those words could be retained. This finding seems to echo the discussion related to the positive impacts of the spacing effect in students' learning process.

The major possible explanation for the increase in vocabulary retention rate might be that the researcher, also the teacher, combined cognitive theory of multimedia learning to enhance students' retaining English vocabulary after each Unit, which possibly boosted the vocabulary retention rate. First, the implication of illustrated pictures accompanying the texts helped students learn vocabulary more than the text alone (Mayer, 2001) [14]. Second, the learning process via game-based activities required students to be active in learning. In game-based activities, the students' vocabulary changes from passive - listening to the teacher's lecture - to active - applying learned vocabulary to play games. In addition, the other possible explanation was that the active learning process helped students to increase their long-term memory because of the association with the specific context of the students, even though it was the context that was already constructed in the classroom. This finding strengthens Nunan's (1999) [24] statement: "Teaching second language words and expressions has to be carried out in a logical context and in parallel with the appropriate context" (p. 65). Moreover, it strengthens the existing literature contributed by Ho (2019) [12] that "digital applications like Quizlet have greater potential to develop English than traditional learning tools like paper flashcards" (p. 61) in Vietnamese context.

The research implications in this study emphasizes the practical implication for teachers, students and ICT application developers. For the teachers, the findings of the study can serve as an example of applying Quizlet – digital flashcards into classrooms where there is no direct use of students on the application but the teacher only. With Quizlet, the teachers no longer have to present as in the traditional teacher-centred approach but shift to the student-centred approach as letting students actively learn in the class, which helps to increase students' learning process, in particular, boost their English vocabulary retention. The research results are not only beneficial for English language teachers, but teachers in other subjects as well. For the students, students should have the opportunity to be exposed to digital flashcard systems like Quizlet, which has been shown to be advantageous to their learning process. Additionally, incorporating Quizlet's flashcard mode and game-based activities encourages students to actively participate in class vocabulary learning, which increases motivation for low-proficiency pupils. Furthermore,

learners can further familiarize themselves with Quizlet's advantages at home for better vocabulary retention. For application developers, the findings of the action research can be used to illustrate the gap in collaborative activities. The designers can put this suggestion into consideration in improving the design of Quizlet so that it can be played on a single device in classrooms. In addition, rather than having the teacher report the scores on the board, the program may summarize the scores to the students effortlessly.

3. Conclusions

In conclusion, the study examined the effectiveness of Quizlet in vocabulary retention under the SAMR framework. Fifteen English low-proficiency 7th-graders participated in one semester in school X in the school year 2020-2021. When comparing the observation data and vocabulary retention quizzes scores, students' improvement in terms of form and meaning could be confirmed, which means there was evidence that students' English vocabulary retention was improved. The results analyzed from the questionnaire data also echo this conclusion. This study result contributed to the literature review of the beneficial effects for supporting the use of digital flashcards, Quizlet in particular, to retain English vocabulary, with the support of Cognitive theory of multimedia learning under the SAMR model. The research stresses the practical implications for instructors, students, and ICT application designers when Quizlet is used in classrooms on a single device.

To fully utilize Quizlet, future research should consider extending the ICT intervention outside of school hours while students have access to electronic devices. Teachers can track each student's progress through the assigned Quizlet vocabulary set, which is aligned with the student-centered approach in teaching. The application of other ICT tools like Quizlet under SAMR model depending on research purpose and research context is also recommended.

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