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ENGLISH VOCABULARY RETENTION ON MOVIE SERIES WITH L1 AND ENGLISH SUBTITLES: THE ROLE OF VOCABULARY LEVEL AND FREQUENCY

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Abstract
Regardless of its significance for language learning, the effect of a movie subtitle on vocabulary retention was rarely investigated. This study aimed to compare the impact of the subtitles in the first language (L1, Indonesian) and English as the target language on the learners' vocabulary retention after watching seven episodes of a movie series. Sixty pre-service English teachers were divided into L1 and English subtitle groups to watch all episodes of the series in three non-consecutive days with a randomly pre-determined subtitle. They completed a vocabulary test before the experiment, immediately after the experiment, and one week after the experiment. The tests comprise words from the 2nd to 11th 1,000 level appearing at least five times across all episodes. The data were analyzed using inferential statistical analysis. The results show that vocabulary improvement was significant in both groups without any differences between groups. Still, the English subtitle group outperformed L1 subtitle counterparts for vocabulary between the 2nd and 9th 1,000 level and vocabulary appearing between five and ten times. These results suggest that movie series with both L1 and English subtitles can be used to expose students to English vocabulary, but a target language subtitle was superior for vocabulary retention. Therefore, English language learners are suggested to watch captioned English movies for maximum impact on vocabulary acquisition.

Keywords: caption, movie, subtitle, vocabulary acquisition, vocabulary retention

Introduction

Vocabulary is the core component of a language, which should be the starting point for language learning so that the language can be acquired. Therefore, the success of an individual in learning a new language is highly dependent on their vocabulary, which plays an essential part in learning foreign languages. According to Schmitt and Schmitt (2020, p. 157), vocabulary teaching not only covers "introducing new words" but also extends parts of the known vocabulary to the extent that students can use them when a context arises. However, learning new words is challenging for foreign language learners because, according to Rohmatillah (2014), learning vocabulary not only involves learning the meaning of

a word but also includes pronunciation, grammatical function, collocation, and pragmatic meaning. In addition, the difficulty of learning new vocabulary depends on three factors, i.e., target and the first language (L1) experience, the way words are learned or taught, and the inherent problems of the words (Nation, 1990). Furthermore, numerous studies have examined vocabulary teaching and learning strategies (Hoa & Huy, 2022; Saleh & Althaqafi, 2022; Shen, 2003; Susanto et al., 2020; Tahir et al., 2021). Based on these studies, many techniques can be applied to assist students in acquiring and retaining vocabulary.

In the context of vocabulary retention, there are several teaching media that a teacher can use for this purpose, one of which is an English movie. Movies can be used as a resource for learning because they motivate students to participate actively in the lesson, and visual cues in movies help students deduce the meaning of words. Students also recognize that watching movies is "the most effective way of learning English vocabulary (Mahardika, 2023). Second, Syahrozi et al. (2018) add that language used in movies can be treated as an authentic model of how a word is used in appropriate contexts. Therefore, students can learn vocabulary from watching movies for productive language skills. In addition, a study by Kabooha (2016) shows that students in a foreign language classroom could learn how native speakers initiate and sustain a conversation by watching movies, which helped them develop their language skills and motivated them to learn more. Finally, according to Almusharraf et al. (2024), subtitles in movies can create an effective learning environment for vocabulary learning because they provide "multi-sensory approaches" to language learning. Subtitles in movies can also help students develop their language skills, especially listening, and this movie feature has been widely used in teaching and research.

Several studies have investigated the impact of using subtitles in EFL classrooms. For example, Zulfahmi and Nikmah (2019) conducted a study involving the use of Indonesian subtitles and found that the participants believed that they could enjoy the movie and understand the story well enough. Ataç and Köprülü (2018) found that subtitles helped students learn new words, accents, dialects, idioms, proverbs, and slang. Another study analyzed a corpus of children's movie subtitles to predict how much they could potentially facilitate incidental vocabulary learning (Green, 2023). Finally, Baranowska (2021) compared the effect of English and L1 subtitles on vocabulary acquisition and found that students taught using English subtitles outperformed the L1 group. However, there is still a lack of evidence regarding vocabulary retention when English or L1 subtitles are used. Our literature search revealed that one particular study investigated vocabulary recall, i.e., Alharthi (2020), but the recall test was conducted two days after the students watched one movie. In Alharthi's research, the time between the intervention and test was too close to determine vocabulary retention. Therefore, our research intends to assess the effect of an English movie series with Indonesian (L1) and English subtitles on students' vocabulary retention. In our study, we allowed one week after the students completed watching the seven episodes of a movie series before administering the vocabulary test. Without this knowledge, teachers might not be able to choose the most appropriate subtitle for better vocabulary retention when using movies as the teaching medium.

Literature Review

This section introduces the literature on vocabulary learning and what factors help vocabulary acquisition. By discussing these two topics, we could show how vocabulary retention can be achieved by using movies with subtitles. Finally, we linked these two topics to previous research on vocabulary learning with this media.

Vocabulary in language learning

Vocabulary is the core component of language proficiency from which language learning should start before a student can proceed to other language skills. It has been claimed that vocabulary is the most essential language component in learning a foreign language (Dağdeler, 2023), and the success of language learning is determined by the number of words acquired over a specific learning duration (Alqahtani, 2015). Vocabulary knowledge also determines students' academic success because it influences how much they understand texts used as reading assignments and classroom activities (Saleh & Althaqafi, 2022). Therefore, vocabulary learning and instruction should be a priority among learners and teachers (Amiryousefi, 2015).

Vocabulary instruction and vocabulary learning strategies have attracted much interest from language learning and acquisition researchers. According to Celce-Murcia (2013), learning vocabulary involves a step-by-step process, requiring encounters with meaningful repetitions of words over time, and the more students think about a word, the more likely it is that the word will be transferred from their short-term memory to their long-term memory. Therefore, vocabulary learning strategies can facilitate the success of vocabulary acquisition (Ghalebi et al., 2020). Al-Darayseh (2014, p. 1114) points out that "the use of both explicit and implicit vocabulary teaching strategies has given students enough chance to practice and learn new vocabulary items and has greatly influenced students' vocabulary size, and, as a result, has reflected positively upon their skills in reading comprehension." The types of exercise have also been found to have a different effect on vocabulary retention (Hu & Luo, 2024). Therefore, it can be concluded that language learning researchers have a common belief that strategies in vocabulary learning determine the success of vocabulary instruction and vocabulary acquisition. However, other factors are also significant for vocabulary acquisition.

Two factors affecting vocabulary acquisition

The factors which play significant roles in vocabulary include language exposure and vocabulary encounter frequency. Numerous research findings have demonstrated that second language vocabulary can be acquired through exposure to inputs such as reading, watching, and listening (Rosales, 2019; Zhang & Graham, 2020; Zuo & Yan, 2019). Green (2023) suggests that learners can learn new vocabulary if they are exposed to sufficient amounts of these words in their authentic context. Additionally, Kozhevnikova (2019) states that language exposure, or the amount of time students spend exposed to the target language and culture, is one factor that influences the success of L2 learning. Therefore, authentic materials, which bring the means and goal of learning together, are one of the most straightforward and enjoyable ways to increase students' vocabulary (Kozhevnikova, 2019).

The amount of exposure divides vocabulary into several categories because some vocabulary appears more frequently in reading and listening inputs than others. Therefore, vocabulary is divided into several levels based on its frequency in specific discourse. Nation (2006) established 14 levels of vocabulary, with one level containing 1,000 most frequently used word families based on British National Corpus (BNC). The 1st 1,000-word families or vocabulary level 1 consists of the first 1,000 most frequently used word families in all discourses. The research found that high-frequency vocabulary is learned earlier than lower counterparts because these words appear more frequently in any text (Siregar, 2020). Therefore, teachers are recommended to set vocabulary targets in this order (Ishikawa et al., 2024; Mo & Bi, 2024).

Movies in vocabulary learning

The use of a movie in language learning has been widespread due to its effectiveness. Many research studies on using movies in vocabulary learning have shown that movies can help students improve their vocabulary (e.g., Gomathi et al., 2017; Sabouri & Zohrabi, 2015). In one of the studies, Alharthi (2020, p. 222) claims that "informal input of spoken genres such as movies can produce incidental vocabulary learning opportunities for learners." As a result, students who watch movies frequently come across rare lexical items, allowing them to enhance their vocabulary (Reynolds et al., 2022). Moreover, multimodal input may lead to a greater depth of processing; a mix of video, audio, and captions appears to be advantageous for vocabulary development, particularly in learning word meaning (Hsieh, 2020). Furthermore, Hao et al. (2022) add that watching a movie, with or without captions, still assists learners in expanding their vocabulary.

Subtitles for vocabulary learning

Subtitles are texts of spoken language that have been converted into written form in the original or translated language. Hao et al. (2022, p. 530) divide subtitles based on this aspect into "intralingual and interlingual." An Intralingual subtitle is one type of subtitle where the source language is the same as the target language. The interlingual subtitle is subtitling for television programs and films translated into foreign languages. Zengin (2021) categorizes subtitles into three types: bimodal subtitles, standard subtitles, and reversed subtitles. A bimodal subtitle, also known as a caption, is a subtitle in the same language of the movie; a standard subtitle is a subtitle in a translated language (L1); and a reversed subtitle is a subtitle of L1 dialogues in L2.

Subtitles have been used as teaching materials in language classes. Many studies have found that subtitles have a positive effect on vocabulary acquisition, and they have the potential to be used as a teaching tool (e.g., Alharthi, 2020; Dizon & Thanyawatpokin, 2021; Hsieh, 2020; Peters et al., 2016). Based on a correlation analysis conducted by Masrai (2020), there was a positive relationship between long-term watching of L2 movies with English subtitles and students' auditory vocabulary. Regarding the subtitle type, the bimodal group outperformed the standard subtitle counterpart in understanding an English text (Almusharraf et al., 2024). Furthermore, a reversed subtitle has better potential for vocabulary learning than a standard subtitle (Bairstow & Lavaur, 2017). Finally, Kusumawati (2018) opines that subtitles in movies are more effective at improving overall

585

understanding than in movies without subtitles because subtitles allow the accent language to be understood by all viewers, and the use of subtitles in movies is more effective at conveying words according to the viewer's native and culture.

Research has also looked at the effect of subtitles based on student's self-report. For example, Silva and Gomes (2017) found that the best type of subtitle for learning foreign language vocabulary, according to learners, is an interlingual subtitle, and learners also consider it a valuable tool to learn vocabulary. Moreover, Puspitaningtyas (2018) argues that the use of subtitles, as perceived by students, is beneficial in increasing their enthusiasm to learn the language, and students also assume that subtitles in movies help them better understand the materials in the classroom. Fauzi and Muljanto (2021) also state that students agree that subtitles were helpful in learning new, unfamiliar words and improving their vocabulary even though they used Indonesian subtitles. Furthermore, Napikul et al. (2018) claim that students agree that by observing the body language of characters, they can effectively guess the meaning of several new words, and captions help students understand the movie's content and vocabulary.

Method

The objective of this study is to determine the effect of an English movie series with Indonesian (L1) and English subtitles on students' vocabulary retention. To achieve this objective, we used a quantitative approach with a quasi-experimental design, specifically a pre-test, post-test, and nonequivalent-group design. The group design involved two groups that completed the pre-test, treatment, and post-test.

Participants

This experimental research involved 60 pre-service English teachers at a well-known university in Aceh, Indonesia. They were in the second and fourth semesters, and the semester was nearly ended when the research was conducted. Although the participants were in different semesters, their English language proficiency was not significantly different because the difference was only two semesters, and their English proficiency also varied even in the same semester. Most participants were females, i.e., 49 students or 82 percent, compared to their male counterparts, 11 students or 18 percent, aged between 21 and 22 years old. The participants were randomly divided into two groups, i.e., the L1 group and the target language group, in this case English, consisting of 30 participants in each group. All the participants gave their consent to participate in the research.

Research instrument

The instruments used in this research were vocabulary tests for the pre-test and post-test. The test was presented as a completion test, in which students were asked to provide an Indonesian translation for every word presented (see Appendix). The words include verbs, nouns, and adjectives. These words were extracted from the subtitles of the movie series entitled *The Queen's Gambit*. This movie was selected because it is a drama genre series, and thus, the series consists mainly of dialogues. Therefore, there is a high chance that more words will be repeated. In addition, the movie ranked 8.5 out of 10 on IMDB (an online database of movies with information, ratings, and reviews), and its last episode ranked 9.2,

which means that the movie was so interesting that fewer participants were expected to withdraw their participation from the research. The movie consists of seven episodes, and they are between 46 and 68 minutes. Only words that appeared at least five times in the movie were included in the test, which is one time less than the minimum number of exposures to learn a new word (Rott, 1999; Uchihara et al., 2019).

In designing the research instrument, all words were extracted from all subtitles of episodes 1 to 7, sorted to find duplicates, and counted the number of times the same word appeared in the movie. Then, each word was assigned a level based on the British National Corpus word family provided by Nation and Beglar (2007). Because the purpose of the instrument is to measure the students' vocabulary retention, the vocabulary levels should be higher than the participants' vocabulary size, which is most likely level 3, as predicted by Mustafa (2019). For this reason, only words from level 3 (3rd 1,000 most frequent word family), which appeared at least six times in the movie, were included in the research instrument, and some words from level 2 were also included if the researchers believed the word was still not familiar to the students.

Data collection

In the experiment, no pre-viewing or post-viewing activity was provided to ensure that the activity was authentic. The movie was played on a wide projected screen in a movie theater setting where the light was turned off, and popcorn and soft drinks were provided. The students watched the seven episodes of the movie series with the selected subtitles, either L1 or English, without any repetition. Two episodes were screened daily in the first two days and the other three on the last day. The first test was administered immediately after the students watched all the episodes. The second test was conducted in the second week after the movie viewing, and participants were asked to complete the same test for both English and Indonesian subtitle groups.

Data analysis

As the method suggests, the data in this research were analyzed using inferential statistics. The data used in the analysis was the difference in vocabulary between the first and the second tests. Before the analyses, missing data were replaced with mean to ensure that the data for the two tests were complete. Descriptive statistics were used to have a general understanding of the data shape. However, before the primary data analysis, the data normality was analyzed using the Shapiro-Wilk test. An independent sample t-test was used to test the pre-determined hypothesis, i.e., to compare the data in the Indonesian subtitle group and English subtitle counterpart for the data pairs that were normally distributed. For the data which were not normally distributed, the Mann-Whitney U test was used. The normality was decided at a significance level of 0.05.

The final step of data analysis was testing the hypothesis to draw an accurate conclusion to answer the research question. Regardless of the type of test used for hypothesis testing, the significance level used as a cut-off point is 0.05, which means that the null hypothesis was rejected if the p-value was lower than or equal to 0.05; otherwise, it was accepted. Vocabulary retention was considered different

between the two groups if the null hypothesis was rejected, meaning that the alternative hypothesis was accepted.

Findings and Discussion
Findings
        This study is based on the results of analyses using inferential statistics. However, the results of descriptive statistics are presented in this section to show the shape of the data. In addition, the results of the normality test using Shapiro Wilk are presented to show how the data are distributed, which determines the selection of the inferential statistic method. In addition, the analyses were based on vocabulary level and frequency of occurrence in the movie. Therefore, the results are divided into two subsections.

Data analysis based on vocabulary level
        The data were collected from a vocabulary test delivered three times. To facilitate comprehensive and detailed analyses, the test results were divided into eight levels.
-   Level 1 consists of vocabulary in the 2nd to 4th 1,1000 words.
-   Level 2 consists of vocabulary in the 2nd to 5th 1,1000 words.
-   Level 3 consists of vocabulary in the 2nd to 6th 1,1000 words.
-   Level 4 consists of vocabulary in the 2nd to 7th 1,1000 words.
-   Level 5 consists of vocabulary in the 2nd to 8th 1,1000 words.
-   Level 6 consists of vocabulary in the 2nd to 9th 1,1000 words.
-   Level 7 consists of vocabulary in the 2nd to 10th 1,1000 words.
-   Level 8 consists of all vocabulary in the test (the 2nd to 11th 1,1000 words.)

        The description of the data consists of minimum (min), maximum (max), first quartile (Q1), third quartile (Q3), median (med), mean, and standard deviation (sd). The data were the difference between the first and second tests. The descriptive statistical analysis results are presented in Table 1, along with the results of the Shapiro-Wilk test for normality distribution analysis.

Table 1. Description of the data and results of the normality test

Level	Group	min	Q1	med	Q3	max	mean	sd	stat	p
Level 1	Eng.	-3	0	0	1	4	0.63	1.68	0.903	0.010
	Ind.	-3	0	0	1	2	0.13	0.95	0.825	0.000
Level 2	Eng.	-4	0	0	2	5	0.94	2.14	0.911	0.016
	Ind.	-3	0	0	1	2	0.09	1.29	0.903	0.010
Level 3	Eng.	-4	0	0	2	6	0.83	2.07	0.924	0.033
	Ind.	-4	0	0	0	2	-0.12	1.36	0.872	0.002
Level 4	Eng.	-4	0	1	2	6	0.95	2.06	0.935	0.068
	Ind.	-4	-1	0	0	2	-0.15	1.39	0.879	0.003
Level 5	Eng.	-4	0	1	2	6	0.92	2.09	0.944	0.118
	Ind.	-5	0	0	0	2	-0.18	1.55	0.874	0.002
Level 6	Eng.	-4	0	1	2	6	0.91	2.22	0.918	0.023
	Ind.	-5	0	0	1	2	-0.2	1.61	0.856	0.001
	Eng.	-4	0	1	1	6	0.87	2.21	0.906	0.012

Level	Group	min	Q1	med	Q3	max	mean	sd	stat	p
Level 7	Ind.	-5	0	0	1	2	-0.08	1.68	0.859	0.001
Level 8	Eng.	-5	0	1	1	6	0.77	2.21	0.901	0.009
	Ind.	-4	-1	0	1	3	-0.1	1.7	0.919	0.026

The data presented in Table 1 can be summarized in the following description. Only two scores were normally distributed ($p > 0.05$), i.e., scores of the English subtitle group in level 4 and level 5. However, no pair was normally distributed; thus, the Mann-Whitney U test should be used in hypothesis testing, and the results are presented in Table 2.

Table 2. Results of significance test – vocabulary level

Levels	Mean	Statistic	p-value
Level 1	0.504	499	0.446
Level 2	0.845	554.5	0.110
Level 3	0.949	599.5	0.023
Level 4	1.094	601.5	0.022
Level 5	1.095	592.5	0.032
Level 6	1.114	590	0.035
Level 7	0.953	553.5	0.122
Level 8	0.869	558	0.106

Table 2 shows the results of hypothesis testing to determine whether the difference between the first and second tests in the English subtitle group is significantly different from the difference between the first and second tests in the Indonesian subtitle group. The results presented in Table 2 reveal that vocabulary retention was significantly different in level 3 ($2^{nd} – 6^{th}$ 1,000 words) through level 6 ($2^{nd} – 9^{th}$ 1,000 words). The positive value in mean, i.e., the mean difference (English group minus Indonesian group), indicates that the English subtitle group outperformed the Indonesian subtitle counterpart.

Data analysis based on vocabulary frequency

For data analysis based on the frequency of vocabulary that appeared in the movie, the test results were divided into three groups, each consisting of at most ten questions. However, Frequency 3 or third group consists of 12 questions to cover vocabulary appearing more than ten times in the movie.

- Frequency 1 consists of vocabulary appearing 5 – 6 times (9 questions)
- Frequency 2 consists of vocabulary appearing 7 – 10 times (9 questions).
- Frequency 3 consists of vocabulary appearing 11 – 133 times (12 questions).

The description of the data in Table 3 consists of similar components as that in Table 1, i.e., minimum (min), maximum (max), first quartile (Q1), third quartile (Q3), median (med), mean, and standard deviation (sd). Statistic (stat) and p-value (p) are to report the results of the Shapiro-Wilk test for normality distribution analysis.

Table 3. Description of the data and results of the normality test

Freq	Group	min	Q1	med	Q3	max	mean	sd	stat	p
Freq. 1	English	-2	0	0	1	2	0.33	0.8	0.843	0.000
	Indonesian	-2	0	0	0	2	-0.01	0.77	0.803	0.000
Freq. 2	English	-2	0	0	1	4	0.54	1.34	0.886	0.004
	Indonesian.	-2	0	0	0	1	-0.21	0.8	0.794	0.000
Freq. 3	English	-2	0	0	0	1	0.04	0.66	0.816	0.000
	Indonesian	-1	0	0	0	2	0.01	0.82	0.846	0.001

Based on the data summarized in Table 3, no pair shows normal distribution based on the Shapiro-Wilk test (p-value < 0.05). Therefore, the differences between the vocabulary retention among the English and Indonesian subtitle groups were calculated using the Mann-Whitney test, a non-parametric statistical analysis. The results of these hypothesis tests are presented in Table 4.

Table 4. Results of significance test – vocabulary frequency

Frequency	Mean	Statistic	p-value
Frequency 1 (5-6 times)	0.34	594	0.0220
Frequency 2 (7-10 times)	0.75	592.5	0.0237
Frequency 3 (11-133 times)	0.02	479	0.6471

Table 4 shows that the vocabulary retention, or the change in vocabulary score from the first to second test, was significantly different between the English subtitle group and the Indonesian subtitle counterpart for vocabulary appearing between five and ten times. However, the difference was not observed in vocabulary appearing more than ten times in the movie.

Discussion

The objective of this study was to find out the difference in vocabulary retention between students watching an English movie series with an English subtitle and those watching the same movie with an Indonesian (L1) subtitle. The research results show that, when considering vocabulary level, the vocabulary improved among both groups of students, and no significant difference was observed for all vocabulary levels. However, the English subtitle group retained the vocabulary they obtained from watching the movie better than the Indonesian subtitle counterpart up to level 6 (9th 1,000 most frequently used word families). When vocabulary frequency is considered, the English subtitle group outperformed the L1 subtitle counterpart for vocabulary appearing ten times or less in the movie.

These results suggest that both English and L1 subtitles are effective for vocabulary retention. This conclusion is supported by the fact that combining textual and phonological information provides the best results in learners' vocabulary recall (Almusharraf et al., 2024). In addition, Aidinlou and Moradinejad (2016) found that vocabulary retention obtained by watching target language-subtitled movies was a result of continuous exposure to new words with adequate, suitable, and highly noticeable inputs. In our study, the English proficiency level of most participants did not reach an advanced level because they were in the second and fourth semesters. However, the L1 subtitle was helpful for learners with a

limited range of vocabulary because it helped them understand the meaning of a word by reading the L1 subtitle and simultaneously hearing the target language version of the word (Dizon & Thanyawatpokin, 2021). In contrast to the findings of the present study, Sadiku (2018) found that L1 subtitles help learners acquire vocabulary more effectively than target language subtitles for both short and long-term memory, as they provide learners with multimodal input, such as pictures, original sound, and text. This difference can be explained by the difference in the amount of exposure, where only two movies were used in the experiment. In addition, both movies were action comedies, which emphasize what actors and actresses do instead of what they say. Therefore, the language input from the movie is much less compared to the present study, i.e., seven episodes with about one hour for each. These conflicting results suggest that the effect of L1 and target language subtitles is equal among students watching movies for an extended period of time.

Another interesting finding of this research is that the vocabulary level affects learners' ability to retain it. There was no difference in score in vocabulary retention between the English and the Indonesian subtitle groups at level 2 (2nd - 5th 1,000). However, for level 3 to level 6 (2nd – 9th 1,1000), a significant difference was found in the learner's ability to retain new words, but this difference was not found in level 7 (2nd – 10th 1,000) or level 8 (2nd – 11th 1,000). According to Schmitt and Schmitt (2020), vocabulary levels are divided into three: high-frequency vocabulary, which includes the first 3,000 most frequent word families; mid-frequency between 3,001 and 9,000-word families; and low-frequency from 9,000+. The result of the present study has provided significant insight to add more information to the vocabulary category initially proposed by Schmitt and Schmitt (2020). For vocabulary lower than the 9th 1,000, no difference in the vocabulary retention was found between the English and the Indonesian subtitle groups. This result is explained by the fact that learners have never heard those words before, and it is the first time for them to hear those words in the context, which makes it difficult for them to guess the meaning even though they appeared several times in the movie. Finally, the fact that the English subtitle group did not outperform the L1 subtitle counterpart for the vocabulary levels 2nd – 5th 1,000 was unexpected because we predicted that the result would be similar to the level 2nd – 9th 1,000 because it consists of high-frequency words. This unexpected result needs further investigation through other quantitative or mixed-method research.

The analysis of the frequency of words appearing in the movie episodes gave significant results. For words that frequently appeared in the movie, i.e., more than ten times, the type of subtitle used in the movie gave the same results for vocabulary retention. However, students watching the movie series with an English subtitle outperformed those watching with the L1 subtitle. These results imply that students can retain a word faster when a target language subtitle, known as caption, is used. Previous studies suggest using a caption for vocabulary acquisition (Finger-Bou & Muñoz, 2023; Reynolds et al., 2022), and the results of the present study conclude that a captioned movie does not only help with vocabulary acquisition but also makes vocabulary retention more achievable. When watching an English movie with an L1 subtitle, the viewers tend to focus more on the subtitle to understand the movie and ignore the spoken language. Most of the time, the subtitle quickly disappears because it needs to synch with the movie; therefore, the viewers are forced to read texts restlessly. In addition, because it is a translated version of the

original language, the L1 subtitle might not be word for word, which can make viewers unable to relate between the words they hear and those they read. Therefore, it requires much exposure until the words can be retained (Aidinlou & Moradinejad, 2016). Meanwhile, the spoken words and written texts in an English-subtitled movie are identical, so the students read what they hear, making it easier to acquire (Sadiku, 2018) and, at the same time, retain the words. Our data shows that students only needed to be exposed to the word five times for vocabulary retention when they watched a captioned movie, but they needed 11 times with an L1-subtitled movie.

Conclusion

The results of this research have shown that an intralingual subtitle (English subtitle) and interlingual subtitle (L1 subtitle) could facilitate English vocabulary retention when the students were adequately exposed to the target words. First, high-frequency words, specifically words in the 9th 1,000 or higher, could be retained regardless of the type of the subtitle. However, students in the English subtitle group outperformed those in the L1 subtitle group for vocabulary levels lower than the 9th 1,000. Regarding the amount of exposure, the research results have revealed that students in the English subtitle group obtained better vocabulary retention for vocabulary that appeared ten times or less in the movie than the students in the L1 subtitle group. However, no significant difference was evident between the two groups when the vocabulary exposure was more than ten times.

This research has provided a significant pedagogical implication in vocabulary learning. While many studies provided implications for classroom practice, the present research contributes to independent vocabulary learning. Based on this research, students who rarely watch a movie are encouraged to use an English subtitle because it is better for English vocabulary retention when exposure is limited. Therefore, English subtitles are recommended for classroom practice. However, students may choose the subtitles they are comfortable with when they like watching movies or movie series more frequently because both subtitles have the same effect on vocabulary retention.

The results of this study have provided important information which had not been addressed by previous studies. However, the generalizability of this study is subject to some limitations. The sample size is somewhat limited. Although the sample size met the requirement of statistical analyses, a larger sample size can represent a larger population and be more accurate. Second, the researchers could not enforce committed participation because this research was conducted during the semester when the students had other assignment commitments. Therefore, some students skipped some episodes, some came late, and others left early. If the research had been conducted in a vocabulary development class, the movie could have been played as part of class activities rather than merely for a research purpose. Finally, English proficiency level is an essential factor that determines vocabulary learning; however, we do not have the participants' English proficiency level in this study. Therefore, future studies are recommended to include this variable and, if possible, establish participant groups based on this variable.

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Appendix.
Word list included in the study

No	Vocabulary	BNC Level	Frequency	Frequency category
1	Adjourn	7	6	Freq. 1
2	Adopt	3	7	Freq. 2
3	Basement	4	5	Freq. 1
4	Belong	2	6	Freq. 1
5	Bishop	3	22	Freq. 3
6	Chess	6	133	Freq. 3
7	Cracker	6	6	Freq. 1
8	Crowd	2	30	Freq. 3
9	Custodian	9	7	Freq. 2
10	Defend	3	6	Freq. 1
11	Defense	2	11	Freq. 3
12	Desire	2	5	Freq. 1
13	Emperor	4	9	Freq. 2
14	Erase	5	7	Freq. 2
15	Exhales	8	16	Freq. 3
16	Fever	4	10	Freq. 2
17	Gambit	11	5	Freq. 1
18	Intense	2	9	Freq. 2
19	Knight	5	35	Freq. 3
20	Match	2	13	Freq. 3
21	Mate	2	12	Freq. 3
22	Nest	2	17	Freq. 3
23	Opponent	3	7	Freq. 2
24	Orphan	5	8	Freq. 2
25	Pawn	8	44	Freq. 3
26	Resign	3	9	Freq. 2
27	Rook	11	24	Freq. 3
28	Sheave	10	5	Freq. 1
29	Tournament	3	26	Freq. 3
30	Tranquility	5	5	Freq. 1