The Impact of Digital Technology on Vocabulary Knowledge and English Listening Skills

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Received: 22 September, 2024; Revised: 29 November, 2024; Accepted 12 December, 2024

Abstract

This research aimed to investigate 1) English vocabulary knowledge, 2) English sentence listening skills, 3) the relationship between vocabulary knowledge and listening skills, 4) the influence of vocabulary knowledge on listening skills among English major students, and 5) the role of technology and digital tools in enhancing vocabulary knowledge and listening skills. 6) To investigate the correlation between technology usage behavior and English vocabulary knowledge among English major students. The sample consisted of 200 undergraduate students majoring in English from the Faculty of Education and Human Development at Roi Et Rajabhat University. The research instruments included English vocabulary tests including 15 items with item difficulty between 0.51 to 0.73, item discrimination between 0.22 to 0.45, and reliability at 0.67 using KR 20, and listening skills tests included 15 items difficulty between 0.37 to 0.70, item discrimination between 0.24 to 0.38, and reliability at 0.72 using KR 20 , and questionnaires regarding the use of technology in learning English containing 21 items with Cronbach's Alpha at 0.76. The statistical methods used for data analysis were mean, standard deviation, percentage, Pearson correlation, and simple regression analysis.

The findings revealed that 1) the students had an average English vocabulary score of 9.35 (62.33%) 2) they had an average English sentence listening score of 8.57 (57.13%) 3) the relationship between vocabulary knowledge and listening skills had a Pearson correlation of 0.74, indicating a positive and statistically significant relationship at the 0.01 level 4) the regression analysis showed that vocabulary knowledge significantly predicted listening skills, explaining 55% of the variance in listening skills. The regression equation was: Listening score = 2.56 + 0.64 × Vocabulary knowledge 5) the survey on the role of technology and digital tools showed a positive influence, with the highest average score of 3.94 6) the correlation between vocabulary knowledge and listening skills has a Pearson correlation coefficient of 0.53, indicating a positive and statistically significant relationship at the 0.01 level.

Keywords:

Introduction

The English language is essential for individuals in academic and professional settings due to its dominant role in global communication (Mallillin, 2023). In environments where English is not the first language, learners frequently encounter difficulties in developing their English language skills, especially in

perfecting their ability to listen. Listening comprehension does not just involve identifying sounds and words, but also includes processing spoken information immediately (Li and Renandya, 2020). It is essential for non-native English speakers to hone their listening skills in order to actively engage in conversations, comprehend lectures, and participate in discussions.

Understanding words has always been seen as a fundamental aspect of learning a language. According to Nation (2001), vocabulary involves more than simply memorizing words; it also entails comprehending their definitions, applications, and the capacity to recollect them in suitable situations. This is especially accurate for listening comprehension, as learners need to rapidly interpret words and phrases as they are spoken instantly which might be obstacles for them. The learner's understanding of vocabulary is a crucial factor that impacts their listening comprehension. Vocabulary is essential for helping learners to understand spoken language faster and more accurately (Tamaoka and Minagawa, 2023). Students who have a strong vocabulary are more capable of making educated guesses about meanings from context, grasping word pairings, and comprehending spoken information with greater ease (Webb and Nation, 2017). Many research studies have shown that understanding of words is a good indicator of how well someone can listen, often using basic statistical analysis to emphasize the important influence of vocabulary on listening ability (Llach and Gallego, 2015). Recognizing how vocabulary skills impact listening ability is essential for creating successful language learning methods.

In academic contexts, students are often required to follow lectures, engage in discussions, and comprehend spoken information, making listening an indispensable skill (Vandergrift, 2007). Vocabulary knowledge, therefore, becomes critical not only in understanding isolated words but also in grasping sentences and longer spoken texts. Vocabulary knowledge plays an instrumental role in developing listening skills, as it helps learners recognize words, infer meaning, and process spoken language more efficiently (Schmitt, 2010). Listening, as a skill, involves more than simply hearing words. It requires the active engagement of various cognitive processes, including phonological recognition, syntactic parsing, and semantic interpretation (Field, 2008). Learners must integrate these processes to make sense of spoken language, often in unfamiliar accents or rapid speech.

The emergence of digital technology has transformed the way language learning is done, providing learners with a range of tools aimed at improving their vocabulary and listening abilities. The ways in which learners learn and practice vocabulary have changed due to the increase in digital technologies, especially mobile-assisted language learning (MALL) and online platforms (Li et al., 2023). Conventional ways of learning vocabulary, like memorization and classroom activities, are now being enhanced by digital resources that provide interactive and adaptable learning opportunities. Apps such as Memrise and Quizlet utilize spaced repetition and gamification to assist users in boosting their vocabulary retention. However, while these tools have demonstrated effectiveness in vocabulary acquisition, there is a notable research gap in exploring their potential for simultaneous enhancement of vocabulary and listening comprehension. Current studies primarily focus on isolated skill improvement, leaving an opportunity to investigate how integrated digital tools could address the combined development of these interrelated language skills (Nakata, 2019). These platforms enable students to work on vocabulary in short sessions, simplifying the integration of language learning into everyday schedules.

In addition to learning new words, technology has also changed how students improve their listening skills. YouTube, TED Talks, and BBC Learning English offer authentic listening materials for learners to experience various accents, speech speeds, and conversational settings. Studies have demonstrated that frequent interaction with genuine spoken language on digital platforms enhances learners' listening skills by enabling them to become more accustomed to the natural rhythm of conversation (Godwin-Jones, 2018; Li and Ma, 2021; Satar, 2017). These platforms enable self-paced learning by giving learners the option to modify playback speed, review portions of speech, and read along with transcripts or subtitles, enhancing the adaptability of listening practice to cater to individual needs.

Artificial intelligence and machine learning algorithms have improved technology's role in language learning by personalizing experiences according to a learner's progress and weaknesses (Lu, 2018). AI-enhanced platforms are able to assess a student's progress and adjust the material as needed, targeting weak areas for enhancement. The integration of artificial intelligence (AI) in language learning further enhances the customization of both vocabulary learning and listening practice (Mou and Li, 2023). AI-driven platforms like Babbel and Rosetta Stone offer personalized learning experiences that adapt to the learner’s progress, providing tailored feedback and exercises that target weak areas (Lu, 2020). These technologies allow for adaptive learning paths that ensure learners are practicing at the appropriate difficulty level, which maximizes their retention and comprehension of new vocabulary while simultaneously improving their listening skills. Applications such as Rosetta Stone and Babbel utilize artificial intelligence to customize vocabulary and listening activities based on the individual learner's proficiency, giving specific assistance to enhance listening skills. Platforms like FluentU and LingQ offer listening exercises with vocabulary support, including real-time translations and pronunciation guides. These characteristics help learners grasp unknown words within a particular setting, aiding in both the acquisition of vocabulary and comprehension of spoken language (Lai, 2016).

However, despite the numerous technological advancements in language learning, there remains a need for further research into the combined effect of technology on vocabulary knowledge and listening comprehension. While past studies have established that vocabulary knowledge is essential for listening comprehension (Li and Ma, 2021; Tai, 2023; Rameshianfar et al., 2015), there is limited research on how learners use technology to simultaneously enhance both skills. As technology continues to play a larger role in language education, understanding its impact on these interconnected language abilities becomes increasingly important.

This study aims to explore the relationship between vocabulary knowledge and listening comprehension using simple regression analysis, while also examining the role of technology in supporting language learning. Specifically, the research seeks to investigate how English major students utilize digital tools to improve their vocabulary and listening skills, providing insights into the effectiveness of technology-enhanced language learning in a non-native English-speaking context. The findings of this study will contribute to the growing body of literature on the role of technology in language acquisition, with a particular focus on its potential to support learners in developing essential communication skills.

Research objectives

-To explore English vocabulary knowledge of English major students at faculty of education, Roi Et Rajabhat university.

1) To examine English sentence listening skill of English major students at faculty of education, Roi Et Rajabhat university.

2) To study the relationship of English vocabulary knowledge with English sentence Listening skill of English major students at faculty of education, Roi Et Rajabhat university.

3) To investigate the influence of English vocabulary knowledge that affects English sentence Listening skill of English major students at faculty of education, Roi Et Rajabhat university.

4) To explore the role of technology and digital tools in enhancing English vocabulary knowledge and listening skills among English major students at Roi Et Rajabhat University.

5) To investigate the correlation between technology usage behavior and English vocabulary knowledge among English major students.

Research conceptual framework

In this study, the researchers studied the English Vocabulary knowledge that affects English sentence Listening skill by studying documentary theories and shows the concepts as follows.

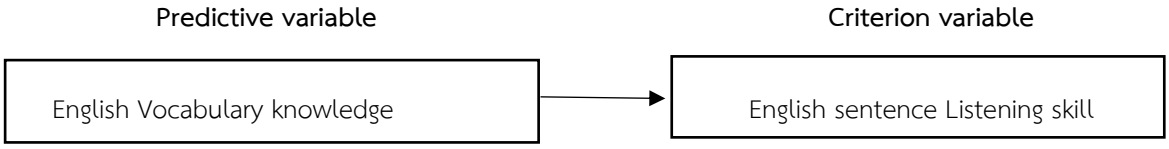


Figure 1 Research Conceptual Framework

Research methodology

This is a correlational research study examining English Vocabulary knowledge that affects English sentence Listening skill.

Population and samples

Population: The population included 370 students in the academic year 2023 from English major at faculty of education, Roi Et Rajabhat university.

Sample Group: The sample group included 200 students in the academic year 2023 from English major at faculty of education and human development, Roi Et Rajabhat university. The participants' background is familiar with technology tools as they were trains to use them in various major subjects. The sample was selected through simple random sampling, with the sample size determined based on the rule of thumb for simple regression analysis, requiring at least 20 times the number of variables (Lindeman, Merenda & Gold, 1980). This study included two variables multiple by 20 times, making the sample size sufficient for data analysis. According to Yamane's sample size (1967), the population was 370 students which can be calculated with 5 percent of standard error showing that 192 samples are appropriated. This refers that the sample size in this study is adequate.

Research Instruments

English vocabulary knowledge test: this test, consisting of 15 multiple-choice questions with 4 choices each, assessed English vocabulary knowledge from A2 to B1 CEFR levels on the topic of daily life.

The focus on A2-B1 aligns with the foundational and intermediate needs of English majors, ensuring the test reflects their academic and professional language goals. The scoring criteria were incorrect = 0, correct = 1. The test's IOC ranged from 0.66 to 1.00, difficulty from 0.51 to 0.73, discrimination from 0.22 to 0.45, and reliability was at 0.67 using KR20.

English Listening Skills Test: the test is a 15 multiple-choice questions with 4 choices. The listening text is a conversation about daily routine, and the length of each text is 1-1.30 minutes. Test administration allows 25 minutes to finish. The scoring criteria were incorrect = 0, correct = 1. The test's IOC ranged from 0.66 to 1.00, difficulty from 0.37 to 0.70, discrimination from 0.24 to 0.38, and reliability was at 0.72 using KR20.

Questionnaire on the Use of Technology for Enhancing English Vocabulary and Listening Skills: the questionnaire consisted of 21 items focusing on 3 aspects including Technology Use for Vocabulary Learning, Technology Use for Listening Skill Development, and General Perceptions. The 5-point Likert scale for each item was employed for strongly agree to strongly disagree on their behavior using technology. The IOC ranged from 0.66 to 1.00, and its reliability was used Cronbach's alpha which was at 0.76.

Data Collection

The researcher conducted data collection in February 2023 as follows: Contacted the samples to request permission for data collection.

Administered 200 sets of the vocabulary test, listening test, and the questionnaire to the sample group at English major at faculty of education, Roi Et Rajabhat university. The researcher personally collected the data using an online form and supervising the test administration and responses, resulting in a 100% complete data collection (200 sets).

Data Analysis

-Analyzed the vocabulary test, listening test, and the questionnaire results using descriptive statistics. The researcher used in Jamovi statistical program to determine the percentage (%), mean ($\bar{X}$), and standard deviation (S.D.).

-Analyzed the correlation between English vocabulary knowledge and English sentence listening skill using Pearson's Rxy in Jamovi statistical program.

-Analyzed the correlation between technology usage behavior and English vocabulary knowledge among English major students using Pearson's Rxy in Jamovi statistical program.

-Analyzed the influence of English vocabulary knowledge on English sentence listening skill using simple regression analysis in Jamovi statistical program. The following assumption checks were performed to ensure the validity of the regression model:

Linearity: Verified the linearity assumption by inspecting scatter plots of the predictor (English vocabulary knowledge) and the outcome variable (English sentence listening skill) to ensure a linear relationship. The scatter plot of English vocabulary knowledge against English sentence listening skill showed a linear relationship.

Independence: Checked the independence of residuals using the Durbin-Watson statistic. The DW statistic was 2.30, considering acceptable.

Homoscedasticity: Assessed homoscedasticity by plotting the residuals against the predicted values to ensure that the variance of the residuals is constant across all levels of the predictor variable. The residual plot showed a random scatter with no clear pattern.

Normality: Evaluated the normality of residuals using the Kolmogorov-Smirnov statistic to confirm that the residuals are normally distributed. Result showed that the p-value was 0.052, suggesting normality.

Results and Discussion

Objective 1: To study English vocabulary knowledge

The English vocabulary knowledge of the students was assessed using an English vocabulary knowledge test**.** The results are summarized in Table 1.

Table 1 Results of the English vocabulary knowledge test

n=200	min	max	mean	S.D.	Percentage
English vocabulary knowledge	4	15	9.35	2.34	62.33

This table displays the English vocabulary knowledge of 200 students. The results show that students scored an average of 9.35 out of 15, with a standard deviation of 2.34. This represents 62.33% of the total possible score, indicating a moderate level of vocabulary knowledge.

The study's findings reveal that students possess a moderate level of English vocabulary knowledge, with an average score of 9.35 out of 15. This aligns with more recent research which suggests that vocabulary development in language learners is often constrained by limited exposure to authentic language contexts (Nakata, 2019). Lai (2016) highlights that while traditional classroom methods provide foundational vocabulary, the integration of mobile-assisted language learning (MALL) tools can significantly enhance students' vocabulary acquisition by promoting spaced repetition and interactive learning. Therefore, further incorporation of technology-based vocabulary learning could help address the gaps in students' current vocabulary knowledge, offering a more engaging and effective approach to retention (Webb and Nation, 2017).

Objective 2: To study English sentence listening skills

The English sentence listening skills of the students were assessed using an English Listening Skills Test**.** The results are summarized in Table 2.

Table 2 Results of the English sentence listening skills test

n=200	min	max	mean	S.D.	Percentage
English sentence listening skills	6	12	8.57	2.04	57.13

Table 2 presents the results of the English sentence listening skills test. The students had an average score of 8.57 out of 15, with a standard deviation of 2.04. This represents 57.13% of the total score, suggesting that students have a moderate proficiency in listening skills.

With an average score of 8.57 out of 15, the results indicate moderate proficiency in listening skills among the students. Listening is often one of the most difficult skills for language learners to master, especially when confronted with fast or unfamiliar speech patterns (Li and Renandya, 2020). Vandergrift and

Goh (2018) emphasize that listening comprehension relies on both vocabulary knowledge and cognitive processing abilities, which can be enhanced through repeated exposure to authentic listening materials. Recent advancements in technology, such as AI-driven learning platforms and language apps, have introduced more opportunities for learners to practice listening in real-world contexts (Lu, 2020). These digital platforms provide personalized feedback and allow learners to practice at their own pace, which could be beneficial for students who struggle with listening comprehension (Li and Ma, 2021).

Objective 3: To investigate the relationship between English vocabulary knowledge and English sentence listening skills

The relationship between English vocabulary knowledge and English sentence listening skills was analyzed using Pearson's correlation coefficient. The results are presented in Table 3.

Table 3 Correlation Between English Listening Behavior and English Listening Skills

Variables	Correlation Coefficient (r)	Significance (p-value)
English vocabulary knowledge and English sentence listening skills	0.74	<.001

This table shows the correlation between English vocabulary knowledge and English sentence listening skills. The Pearson correlation coefficient (r) is 0.74, which indicates a strong positive relationship between the two variables. The p-value (<.001) shows that this correlation is statistically significant.

The strong positive correlation (r = 0.74) between vocabulary knowledge and listening skills supports findings from recent studies that establish a clear link between the two (Llach and Gallego, 2015; Shen, 2020). According to Webb and Nation (2017), learners with a larger vocabulary are better equipped to understand and process spoken language, as they can more easily infer meaning from context. To innovate, future curricula could integrate vocabulary and listening practice through technology, using apps like Quizlet for vocabulary building paired with interactive listening tasks. This approach bridges the gap between theory and practice, fostering simultaneous skill enhancement. Shen (2020) also found that vocabulary breadth and depth are crucial for listening comprehension, as learners with a stronger lexical base can understand unfamiliar topics more effectively. Digital resources such as TED Talks for listening practice and Memrise for vocabulary development could be used in the classroom to implement these findings. By combining these exercises, students can improve their vocabulary memory and practice contextual understanding, leading to integrated skill development. This relationship reinforces the idea that improving vocabulary knowledge is a key strategy for enhancing listening proficiency, particularly when students are exposed to authentic listening materials through digital means.

Objective 4: To examine the influence of English vocabulary knowledge on English sentence listening skills of English major students

The results of studying the English vocabulary knowledge on English sentence listening skills of English major students at Roi-Et Rajabhat university are shown in Table 4.

Table 4 Estimated Coefficients of the Regression for Predicting English sentence listening skills of English major students Using English vocabulary knowledge

English vocabulary knowledge	b	S.E.	β	t	p-value
Constant	2.56	0.40		6.45	<.001
English vocabulary knowledge	0.64	0.04	0.74	15.63	<.001

Model Summary: R = 0.74, R^2 = 0.55, SE = 0.40, F = 263.56, p < .001

Table 4 summarizes the regression analysis results, revealing that English vocabulary knowledge significantly predicts English sentence listening skills. The β coefficient of 0.74 and R^2 value of 0.55 mean that 55% of the variance in listening skills can be explained by vocabulary knowledge. This highlights the substantial influence of vocabulary on listening ability. It could be written as the equation as follow:

English Sentence Listening Score = 2.56+0.64 × English Vocabulary Knowledge

$Z_{\text{LISTENING SKILLS}} = 0.74 \times Z_{\text{VOCABULARY KNOWLEDGE}}$

The regression analysis demonstrates that vocabulary knowledge is a significant predictor of listening comprehension, explaining 55% of the variance in listening proficiency (R^2 = 0.55). However, external factors like teaching quality or individual learning preferences may also shape these outcomes, influencing the relationship beyond the measured variables. This finding is in line with Liu and Zhang's (2019) research, which also concluded that vocabulary knowledge significantly influences the ability to process and understand spoken texts. Schmitt (2010) emphasizes the importance of vocabulary depth in listening tasks, noting that learners with more comprehensive vocabulary are better able to understand spoken content, even when speech is rapid or includes unfamiliar terms. Furthermore, the integration of technology into vocabulary learning—through mobile apps, interactive platforms, and AI-powered tools—can enhance retention and provide opportunities for continuous practice, thus improving both vocabulary and listening skills over time (Golonka et al., 2017; Nakata, 2019).

Objective 5: To explore the role of technology and digital tools in enhancing English vocabulary knowledge and listening skills among English major students at Roi Et Rajabhat University.

Table 5 The students' usage of various digital tools for enhancing their English vocabulary and listening skills

	Item	$\bar{x}$	S.D.
1.	I frequently use Duolingo to improve my English vocabulary through interactive exercises.	**3.75**	**0.75**
2.	I often use Memrise to learn new vocabulary using spaced repetition techniques.	**3.96**	**0.62**
3.	I regularly practice vocabulary using Quizlet flashcards or similar apps.	**3.54**	**0.96**
4.	I rely on social media platforms (e.g., Instagram, TikTok) to discover new English vocabulary.	**4.05**	**0.77**
5.	I use Cambridge Dictionary or Merriam-Webster online to check the meaning of new words.	**3.37**	**0.80**
6.	I spend at least 15-30 minutes using vocabulary learning apps in a single study session.	**3.89**	**0.79**

7.	Gamified vocabulary apps (such as Duolingo and Memrise) have significantly improved my vocabulary retention.	**4.12**	**0.61**
8.	The vocabulary I learn from digital tools is relevant to my daily communication needs.	**3.71**	**0.84**
9.	I find technology-based vocabulary learning more effective than traditional learning methods (e.g., textbooks).	**3.59**	**0.77**
10.	I use technology to review and practice vocabulary that I have previously learned.	**3.94**	**0.66**
	Technology Use for Vocabulary Learning	**3.80**	**0.24**
11.	I use mobile apps to practice listening to English conversations.	**3.80**	**0.79**
12.	I use YouTube to watch English-language videos to practice listening skills.	**4.12**	**0.64**
13.	Watching videos with subtitles helps me better understand spoken English.	**4.09**	**0.71**
14.	Technology-based listening practice has enhanced my ability to understand native English speakers.	**4.65**	**0.37**
15.	I regularly listen to TED Talks to improve my ability to understand academic and conversational English.	**3.89**	**0.76**
16.	I prefer listening practice through technology over listening in traditional classroom settings.	**3.83**	**0.79**
17.	The use of digital audio features (e.g., pronunciation guides) helps me improve my listening skills.	**4.26**	**0.54**
18.	AI-powered tools like Rosetta Stone or Babbel have personalized my listening practice according to my proficiency level.	**4.12**	**0.63**
	Technology Use for Listening Skill Development	**4.10**	**0.28**
19.	Technology is an essential part of my English language learning process.	**3.84**	**0.75**
20.	The use of technology has made me more confident in using English vocabulary and listening to English conversations.	**4.06**	**0.66**
21.	I use interactive listening exercises on language apps (e.g., Duolingo or Babbel) to improve my listening comprehension.	**4.21**	**0.61**
	General Perceptions	**4.04**	**0.19**
	Total	**3.94**	**0.70**

The results from the questionnaire, as shown in Table 5, demonstrate the students' usage of various digital tools for enhancing their English vocabulary and listening skills. For three aspects, it showed that technology use for vocabulary learning had overall average rating at 3.94 and S.D. at 0.66. Another aspect of technology use for listening skill development revealed that the average was 4.10 and S.D. at 0.28. For general perceptions showed mean score at 4.04 and S.D. at 0.19. The highest-rated items include technology-based listening practices (mean = 4.65) and the use of digital audio features such as pronunciation guides (mean = 4.26). Gamified vocabulary apps like Duolingo and Memrise received high scores for improving vocabulary retention (mean = 4.12), and interactive listening exercises also showed significant engagement (mean = 4.21). The overall average rating for all items was 3.94, indicating consistent use of technology in supporting English language learning.

The results from the questionnaire indicate that technology plays a crucial role in enhancing both vocabulary acquisition and listening skills among students. The high ratings for items related to digital audio

features (mean = 4.26), interactive listening exercises (mean = 4.21), and gamified vocabulary apps (mean = 4.12) suggest that students are engaging effectively with technology in their language learning process. These findings align with recent studies emphasizing the value of mobile-assisted language learning (MALL) tools, which provide flexibility and accessibility for learners to practice language skills on their own terms (Lai, 2016; Kukulska-Hulme and Viberg, 2018).

Gamification in apps like Duolingo and Memrise has been found to enhance learner engagement and motivation, leading to better vocabulary retention through techniques like spaced repetition and interactive quizzes (Nakata, 2019). However, barriers such as unequal access to devices and insufficient teacher training may hinder implementation. Addressing these challenges involves providing schools with funding for technology infrastructure and offering professional development programs to equip teachers with the skills to effectively integrate these tools into their curriculum. This supports the finding that students using these tools perceive them as effective for vocabulary development. Moreover, AI-powered platforms such as Rosetta Stone and Babbel offer personalized learning paths based on individual proficiency levels, which have been shown to improve listening comprehension by targeting areas of weakness (Lu, 2020). The questionnaire results reflect this, as students rated the use of AI-driven tools highly (mean = 4.12) for improving their listening skills.

In terms of listening comprehension, digital platforms like YouTube and TED Talks provide exposure to authentic spoken English, offering learners opportunities to hear various accents, speeds, and real-life conversation scenarios (Li and Ma, 2021). The use of subtitles, highlighted in the questionnaire (mean = 4.09), has also been found to aid comprehension by allowing learners to follow along visually while listening, thus improving both vocabulary recognition and listening accuracy (Golonka et al., 2017).

Overall, the integration of technology into English language learning, particularly through MALL tools and interactive platforms, has proven to be an effective strategy for improving both vocabulary and listening skills. Recent advancements in AI and adaptive learning systems continue to offer personalized and engaging ways for students to develop their language proficiency, making technology an essential component of modern language education (Kukulska-Hulme and Lee, 2012).

Objective 6: To investigate the relationship between technology usage behavior and English vocabulary knowledge

Table 6 Correlation between technology usage behavior and English vocabulary knowledge

Variables	Correlation Coefficient (r)	Significance (p-value)
Technology usage behavior and English vocabulary knowledge	0.53	<.001

This table shows the correlation between technology usage behavior and English vocabulary knowledge. The Pearson correlation coefficient (r) is 0.53, which indicates a strong positive relationship between the two variables. The p-value (<.001) shows that this correlation is statistically significant.

Results showed a moderate positive correlation (r=0.53) between technology use and vocabulary skills in English majors that is statistically significant. This outcome highlights the significant influence that technology has on gaining vocabulary. In particular, students who use digital language-learning tools often, like apps and online platforms, typically possess greater levels of vocabulary comprehension. This connection supports recent research indicating that digital resources create interactive learning spaces that enhance vocabulary retention better than conventional techniques (Li and Ma, 2021; Nakata, 2019).

The significance of technology in vocabulary enhancement is especially clear in the application of mobile-assisted language learning (MALL) platforms. Duolingo, Memrise, and Quizlet utilize gamification, spaced repetition, and adaptive learning to enhance vocabulary retention and sustained engagement (Golonka et al., 2017). The use of gamified features enhances motivation and encourages regular practice, making the process of acquiring vocabulary more fun and less boring for learners according to Nakata (2019). These tools enable students to review words in different situations, enhancing their memory and comprehension of vocabulary.

Digital platforms like YouTube and TED Talks provide exposure to real-world language and varied accents, offering rich contexts in which students can practice listening and expand their vocabulary simultaneously (Li and Ma, 2021). This exposure helps learners better understand spoken language structures and contextual usage, which are vital for both vocabulary acquisition and listening comprehension. The option to use subtitles further enhances learning, as students can connect visual input with auditory cues, reinforcing vocabulary through context (Golonka et al., 2017).

Overall, the moderate positive correlation between technology use and vocabulary knowledge supports the view that technology-enhanced learning tools are effective for language acquisition. This finding is particularly relevant as the use of MALL and other technology-based platforms becomes increasingly widespread in language education. By integrating these tools into language curricula, educators can provide students with flexible, engaging, and highly effective resources for vocabulary development. Further research could explore which specific technological features most benefit vocabulary retention and how these tools influence broader language skills over time.

Conclusion

This research concludes that English vocabulary knowledge plays a critical role in enhancing English sentence listening skills among English major students. The results indicate a strong positive correlation between vocabulary knowledge and listening skills, highlighting the importance of vocabulary development in improving listening comprehension. However, the limitation of the study revealed that the research instrument on vocabulary knowledge should include more items to cover all areas of students' vocabulary knowledge which could be applied from Paul Nation's vocabulary test. Moreover, the study demonstrates that technology and digital tools have a relationship with vocabulary acquisition. With the help of technology, students are better equipped to understand native speakers and improve their overall English proficiency. These findings suggest that integrating technology into English language learning can be an effective approach to enhancing students' vocabulary and listening skills.

Recommendations

For Application

1) Integrating Vocabulary and Listening: Incorporate more vocabulary-rich listening activities like English podcasts or conversations to enhance both vocabulary retention and listening skills.

2) Using Technology: Leverage digital tools such as language apps and interactive videos to make vocabulary learning and listening practice more engaging.

3) Promoting Active Vocabulary Use: Encourage students to use new vocabulary in practical contexts like discussions or role-playing to improve retention and listening comprehension.

4) Creating a Supportive Environment: Foster a positive learning environment with constructive feedback to reduce anxiety and improve both vocabulary and listening skills.

For Further Study

1) Longitudinal Studies: Conduct long-term studies to track how vocabulary and listening skills develop over time.

2) Exploring Technology: Investigate the impact of various technologies, such as apps and virtual tools, on language learning outcomes.

3) Advanced Statistical Analysis: Use MRA or SEM to explore the complex relationships between vocabulary, listening skills, and other factors.

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