The Impact of Using Digital Texts to Promote Learning Vocabulary for Fourth Graders

أثر استخدام النصوص الرقمية في تعزيز تعلم المفردات لدى طلاب الصف الرابع الأساسي

Balkis Wehbe (*)   بلقيس وهبي

Abstract

This study explores the impact of using digital texts to enhance vocabulary learning among fourth-grade students. The integration of technology in education has been shown to offer various benefits, and this research aims to specifically assess its effectiveness in vocabulary acquisition. A sample of fourth-grade students was divided into two groups: one using traditional vocabulary learning methods and the other employing digital texts through the use of digital devices such as tablets and educational apps. Over a period of eight weeks, both groups were monitored and assessed through pre-tests and post-tests to measure their vocabulary growth. The findings indicate that students who used digital devices demonstrated significantly greater improvement in vocabulary retention and usage compared to those who used conventional methods. Additionally, the study observed increased engagement and motivation levels among students using digital tools through the use of pre- and post- focus group questions. The results suggest that incorporating digital devices in vocabulary instruction can be a valuable strategy in elementary education, promoting more effective and enjoyable learning experiences. Future research is recommended to explore long-term effects and the potential of specific types of digital interventions.

Key words: digital devices, vocabulary learning, digital texts, learning engagement, vocabulary retention, educational apps, technology integration.

∗ Balkis Wehbe. PhD student at the Lebanese University, Faculty of Letters and Human Sciences, English Language and Linguistics.

طالبة دكتوراه في الجامعة اللبنانية، كلية الآداب والعلوم الإنسانية، اللغة الإنجليزية واللسانيات.

الملخّص

تستكشف هذه الدراسة تأثير استخدام النصوص الرقمية لتعزيز تعلم المفردات بين طلاب الصف الرابع. لقد تبين أن دمج التكنولوجيا في التعليم يقدم فوائد متنوعة، وتهدف هذه الدراسة إلى تقييم فعاليته تحديداً في اكتساب المفردات. تم تقسيم عينة من طلاب الصف الرابع إلى مجموعتين: واحدة تستخدم أساليب تعلم المفردات التقليدية والأخرى تستخدم النصوص الرقمية عبر الأجهزة الرقمية مثل الأجهزة اللوحية والتطبيقات التعليمية. على مدار ثمانية أسابيع، تمت مراقبة المجموعتين وتقييمهما من خلال اختبارات قبلية وبعدية لقياس نمو المفردات. تشير النتائج إلى أن الطلاب الذين استخدموا الأجهزة الرقمية أظهروا تحسناً كبيراً في

الاحتفاظ بالمفردات واستخدامها مقارنةً بأولئك الذين استخدموا الأساليب التقليدية. بالإضافة إلى ذلك، لوحظ زيادة في مستويات المشاركة والتحفيز بين الطلاب الذين استخدموا الأدوات الرقمية من خلال استخدام أسئلة مجموعات التركيز القبلية والبعدية. تقترح النتائج أن دمج الأجهزة الرقمية في تعليم المفردات يمكن أن يكون استراتيجية قيمة في التعليم الابتدائي، مما يعزز تجارب تعلم أكثر فعالية وإمتاعاً. يُوصى بإجراء أبحاث مستقبلية لاستكشاف التأثيرات طويلة الأجل وإمكانات أنواع محددة من التدخلات الرقمية.

مصطلحات الدراسة: الأجهزة الرقمية، تعلم المفردات، النصوص الرقمية، التفاعل التعليمي، الاحتفاظ بالمفردات، التطبيقات التعليمية، دمج التكنولوجيا.

Introduction

The rapid advancement of technology has significantly influenced various aspects of life, with education being one of the most impacted fields (Larson, 2010). One notable development is the widespread adoption of digital textbooks and digital apps in educational institutions, attributed to their portability and time-saving features. Despite their growing popularity, there is a gap in research regarding the effect of digital texts

on students' academic performance, particularly in learning vocabulary among fourth-grade students (Larson, 2010). This study aims to fill this gap by examining how the use of digital texts and apps influence vocabulary learning in this age group.

In recent years, the integration of digital technologies into education has transformed traditional learning environments, presenting both opportunities and challenges. One notable shift is the increasing use of

digital texts in elementary classrooms. As fourth graders transition from learning words to learning how to use these words to understand texts, it is crucial to understand how this shift affects their vocabulary learning.

Digital texts, encompassing e-books, interactive websites, and educational apps, offer dynamic and engaging content that can enhance the learning experience. These resources often include multimedia elements such as audio, video, and interactive features designed to support diverse learning styles and needs. Proponents argue that digital texts can improve engagement, provide immediate feedback, and offer access to a broader range of reading materials (Lysenko & Abrami, 2014).

However, the impact of digital texts on learning vocabulary is a subject of ongoing debate. Critics highlight potential drawbacks, such as digital distractions, reduced deep vocabulary learning practices, and the cognitive overload associated with navigating digital formats. Moreover, there is concern that the immersive and often nonlinear nature of digital texts might hinder the development of traditional vocabulary learning (Mangen, Walgermo, & Brønnick, 2013).

This study aims to explore the impact of digital texts on learning vocabulary among fourth graders, a critical age group for developing foundational literacy skills. By examining existing research and conducting empirical studies, we seek to understand how digital texts influence learning vocabulary outcomes compared to traditional print media. The findings will provide insights into how educators can effectively integrate digital texts into their teaching practices to support and enhance vocabulary learning in young learners.

By investigating the impact of digital texts on vocabulary learning in fourth-grade students, this study provides valuable insights into the shifting dynamics of elementary education in the digital era (Jonassen, 1999). The findings are expected to enhance the understanding of how digital resources can be effectively utilized to improve vocabulary. Additionally, this research offers practical implications for educators who are looking to incorporate digital strategies into their teaching methods to foster better vocabulary learning among young learners (Jonassen, 1999).

Abu Elenein (2019) believes that nowadays teachers play a role in designing, evaluating, and guiding the educational process, moving beyond

merely transmitting and communicating information. With scientific and technological advancements reshaping education, teachers must recognize this shift, which has introduced new terminology and trends. These changes have enabled learners to evolve from passive recipients of knowledge to active researchers and discoverers.

Given the increasing demand for teachers to employ techniques, tools, and strategies that promote critical thinking, research, self-directed learning, and skill acquisition among students, a significant gap has emerged between students' educational needs and teachers' ability to keep pace with rapid changes. Teachers' roles must be flexible enough to adapt to scientific advancements, transforming how subjects are taught and how learners are engaged to achieve success and educational goals (Ali et al., 2020).

Consequently, Amelia (2018) believes that incorporating digital learning in teaching is essential, aligning with technological progress and the extensive development in various life aspects. Digital learning is crucial as it enhances students' social communication, motivation for learning, technological literacy, and cognitive development, fostering innovation through accessible learning applications.

This integrated approach to digital learning leverages technology to positively transform traditional learning methods, creating an intellectually stimulating environment and facilitating effective communication within the educational process, thereby integrating all elements into the digital age, one of its most prominent features (Chiong et al., 2018).

The main purpose of the research is to answer the question "What is the effect of digital texts on vocabulary learning and students' attitude toward learning vocabulary of grade four students?" Accordingly, this research aims at answering the following research questions:

1. Is there a significant difference between vocabulary scores of the experimental group of students using digital texts and the control group students using printed texts?

2. Is there a significant difference between the attitude of the experimental group students using digital texts and the control group using printed text?

Therefore, it is hypothesized that there is a significant difference in vocabulary test scores between fourth grade students who use digital texts and those who use printed texts. In addition, there is a significant difference between students' attitude

who use digital texts and those who use printed texts.

Literature Review

The rise of digital technology has amplified the need for reading, as there is unprecedented access to a wide array of texts, including specialized magazines, an increased number of published books, more newspapers, and countless articles available online. Consequently, reading had already gained significance even before technological advancements began to further enhance the reading experience (Alotaibi et al., 2021).

Gningue (2022) states that reading is a fundamental skill that serves as the foundation for individuals to learn about the world. Its importance lies in facilitating learning both in school and throughout one's life. Reading enables beginners to comprehend texts, images, and their messages, enhancing their understanding of values, beliefs, and practices. This ensures that such knowledge is passed on to future generations and allows individuals to link past experiences with new learning (Chamberlain et al., 2020).

Early literacy proficiency is crucial for students, impacting their success both academically and in life. Kim (2010) affirmed this by stating that learners who fail to develop fundamental reading skills by grade 4 will struggle to meet the minimum literacy standards thereafter. The lack of progress in fourth grade reading skills has become a significant concern worldwide and locally (Huntley, 2021).

Instructional digital technology offers several benefits for improving reading and writing in both EFL and ESL contexts. For example, Williams (2012) noted that technology positively impacts students' literacy skills. Additionally, Bennett (2011) highlighted the advantages of digital technology, emphasizing its interactivity and accessibility, which enrich instructional resources and help students enhance their literacy skills.

A study conducted at Calhoun County High School in Michigan by Jones et al. (2005) investigated the effects of Merit Reading Software on reading. Both groups of students read the same texts, but the treatment group used the software, while the control group used printed texts. The results indicated significant differences in reading scores, favoring the students who used the software, leading to the conclusion that digital texts can improve reading comprehension.

Additionally, technology may influence students' motivation. Ciampa (2012) reported that digital eBooks increase reading motivation among

both general and struggling learners, noting that interaction with digital eBooks enhances students' interest and engagement in learning.

Conversely, a study by Collins (2018) in the US context found that technology cannot fully replace traditional reading and writing methods. To maximize the benefits of technology, students must have basic reading and writing skills, which are best developed through traditional practices. Furthermore, Wells (2012) explored the impact of electronic books on the reading comprehension of middle- and high-school students and found no statistically significant differences in comprehension levels between those reading digital texts and those reading printed texts.

Vocabulary is a fundamental aspect of language development. It encompasses the words an individual knows, understands, and uses in both spoken and written communication (Akyol & Temur, 2013). Words that are actively used in communication according to their meanings constitute active vocabulary. Conversely, words whose meanings are not fully grasped or can only be understood in context form part of passive vocabulary (Yıldız et al., 2010). To ensure vocabulary becomes integrated into one's knowledge base, active use of acquired

words is crucial. This developmental process begins early in life and is influenced by various factors.

Various elements, such as a child's environment, school experience, and family dynamics, influence their vocabulary development (Biemiller, 2006). Indeed, these aspects shape the lexicon that children acquire over time (Hoff, 2003). Notably, the vocabulary that a child acquires during and even before their elementary school years exerts a direct influence on their language abilities, reading comprehension, and consequently, their overall academic achievement (Marulis & Neuman, 2010). A substantial and diverse vocabulary is instrumental in facilitating children's reading comprehension (Dickinson, Golinkoff, & Hirsh-Pasek, 2010). Proficient vocabulary allows children not only to comprehend the content of the texts they read more effectively but also to establish connections across different texts. In a study by Ouellette (2006), it was found that the breadth and depth of elementary students' vocabularies directly influenced their reading comprehension skills. Similarly, Kayıran and Ağaçkıran (2018) identified vocabulary as a crucial determinant of reading comprehension. In essence, when children recognize and understand the

words within the texts they read, their capacity to comprehend the overall text significantly improves. These findings provide critical insights for educators, suggesting that language teaching methodologies should incorporate strategies designed to broaden children's vocabulary.

A child's vocabulary breadth significantly impacts their academic performance (Snow et al., 2007). Proficiency in reading, writing, and other academic skills relies heavily on possessing a wide-ranging vocabulary. Understanding a word's meaning and using it appropriately in context are crucial for academic success (Stahl & Nagy, 2006). Furthermore, a rich vocabulary can accelerate the acquisition of foreign languages. Both national and international research underscores a strong link between students' proficiency in their native language and their proficiency in a foreign language (Cunningham & Stanovich, 1997). Vocabulary's importance transcends academic achievement; it also supports children's social and emotional growth (Crain, 1991). The more extensive a student's vocabulary, the more effectively they can express their thoughts and feelings. Additionally, children with a comprehensive vocabulary may demonstrate an enhanced ability

to understand others' thoughts and emotions, promoting empathy and facilitating positive social interactions (Rubin et al., 2006).

Given the pivotal role of vocabulary in language development, it is crucial for educators and families to employ strategies aimed at enhancing children's vocabulary. These strategies may include exposing children to diverse texts of varying genres and complexity, engaging them in word games, and encouraging the use of a wide range of words in everyday conversations (Biemiller & Boote, 2006). Digital tools can also be utilized to implement these strategies, as technology is widely recognized for its impact on language instruction and vocabulary development (Castek et al., 2012; Kervin & Derewianka, 2011; Neuman et al., 2011). Compared to traditional methods of vocabulary instruction, technology-supported approaches can make children's vocabulary learning more effective and engaging (Larson et al., 2012). Notably, multimedia and interactive learning applications enable the representation of word meanings through multiple modes, thereby facilitating the learning process (Mayer, 2009; Segers & Verhoeven, 2009). Integrating technology into language learning can enhance children's reading

comprehension by providing access to a broader vocabulary (Castek et al., 2012; Proctor et al., 2007). Research confirms that technology significantly enhances language teaching, improving students' vocabulary and language skills (Saka et al., 2014; Başal, 2015).

Numerous technology-enhanced methods can be utilized to expand the vocabulary of elementary school students. Digital tools offer an engaging avenue for children's language development. For instance, digital storytelling empowers students to create and share their narratives in a digital format, which can enhance vocabulary acquisition by encouraging exploration of word meanings and their integration into personal creations (Robin, 2008; Yang & Wu, 2012). Game-based learning strategies using digital platforms promote vocabulary acquisition and stimulate children's motivation (Hsu et al., 2008; Rabu & Talib, 2017; Zou et al., 2021). As children learn new words and their meanings through games, they also improve their social skills (Kucirkova, 2014). Augmented reality (AR) technology introduces an innovative approach to language learning. By enriching vocabulary acquisition with diverse visual and auditory stimuli, AR applications facilitate more effective word learning (Hsu, 2019).

Due to the critical role of integrating digital learning platforms into education, educators have stressed their urgent necessity. Without these platforms, students at all academic levels would struggle to learn and manage their daily lives. In this regard, the purpose of this research is to investigate the impact of the use of digital applications and texts on the performance of grade four students in learning vocabulary.

Research Methodology
Research Design

To investigate the reliability of the variables mentioned in the hypotheses, the research is based on experimental method which "tests for the presence of a distinct cause and effect relationship (Salkind, 2012). The research is based on the use of the quasi- experimental quantitative and qualitative model which focuses on collecting data through qualitative tool such as pre and posttests. It also uses a qualitative tool such as focus group interviews.

The research aims to investigate the effects of using digital apps on learning vocabulary for students in grade four. The method in this research is characterized by collection and analysis of quantitative data relying on the pre and posttests. In addition,

the research depends on the qualitative data that is collected through the pre and post focus group questions which is used with the experimental group. The reason for choosing the mixed method is to make the results more comprehensible by supporting the quantitative and qualitative data.

To answer the first research question, i.e. whether there is a significant difference between vocabulary scores of the experimental group of students using digital texts and the control group students using printed texts, the students' scores in the pre and post tests were studied and analyzed.

To answer the second research question, i.e. whether there is a significant difference between the attitude of the experimental group

students using digital texts and the control group using the printed text, the students' answers to the focus group questions were obtained.

Research Sample

The participants of the research are grade four students enrolled at Makassed schools in Beirut- Lebanon. The research is conducted with two private schools at Al Makassed whose students study English as a foreign language. These two schools are Ali Ben Abi Taleb College and Abi Baker Al Sidiq School. The number of participants involved in the research is 51. Abi Baker Al Sidiq students are 26 who are in the control group, and Ali Ben Abi Taleb students are 25 who are the experimental group. (Table 1)

Group	Abi Baker Al Sidiq (ABSS)	Ali Ben Abi Taleb College (ABAT)
Control	26	
Experimental		25
Total		51

Table 1 Number of participants in the research

The subjects are ten years old students who have been studying English as a foreign language for almost five years. Each school has one section of grade four. The classes have both boys and girls. The research is carried out in the second term (between December and March) of the academic year 2023-2024.

The researcher chose these schools since the variables among them are limited. Both schools use the same academic annual distribution, and the teachers are given the same opportunities for professional development, considering their needs, and almost all the teachers who are involved in the experiment have the

same number of years in experience. It is also worth noting that the variables are limited since the students are in the same grade level which makes them similar, to a certain extent, in the academic experience, exposure to similar curriculum content, and similar developmental stages. Students may also face similar challenges or opportunities related to their educational environment.

Research Instrument

The research is conducted by using qualitative tool such as pre and posttest and qualitative tool such as pre and post focus group questions.

1. The pre-test is the first step in which the students are involved in the treatment. It is for both groups. The objective of the pre-test is to measure the level of the learners' proficiency before the treatment. It is made up of twenty vocabulary questions.

2. After the treatment, a posttest is conducted to investigate the outcome. It takes place during the 12th week of the experiment, and it is made up of twenty vocabulary questions.

3. The pre-focus group questions is one of the instruments that is used at the beginning of the treatment. It is conducted for the experimental

group. The objective of the pre-focus group questions is to allow the researcher to know more about the students' attitude in regard to using digital apps to learn vocabulary. It consists of five questions.

4. The post- focus group questions are conducted after the treatment to investigate the outcome. It takes place on the 12th of the experiment. It consists of five questions.

Procedure

In this research, participants were divided into two groups; 26 students at Abi Baker Al Sidiq who are the control group, and 25 students at Ali Ben Abi Taleb who are the experimental group.

Using digital texts and apps to enhance vocabulary learning was investigated for two hour-session weekly. It was carried out over 12 weeks, i.e. for a period of three months in order to collect and gather all the information needed. The first session was allocated to set a unified pre-test for all the participants. The results were collected and calculated to attain the vocabulary knowledge of each student. After the pre-test, students in the experimental group went through the pre- focus group questions. It was used to inspect students' attitude towards using digital texts to enhance their vocabulary. Later, students in the

experimental group were engaged in a treatment where they were instructed using digital texts for learning vocabulary.

The two teachers of grade four in each school collected data through the following steps:

1. The teachers of both classes, the control and the experimental, carried out the pretest for both groups, the control and the experimental in the first week of the experiment. The pretest is designed to measure the level of the learners' vocabulary level before the treatment. It consists of 20 reading vocabulary questions (5 points for each question).

2. The researcher engaged the students in the experimental group with the pre- focus group questions in the first week of the experiment. The objective of the pre-focus group questions is to allow the researcher to know more about the students' attitude towards using digital texts and apps to enhance their vocabulary learning. It consists of five questions.

3. The researcher engaged the students in the experimental group with different vocabulary apps for a period of 10 weeks. The vocabulary apps that were used were Duolingo, Falou, and Quizzlet. The control

group was instructed without the use of any digital devices or apps.

4. The teachers carried out the posttest for both groups, the control and the experimental in the twelfth week of the experiment. The posttest is designed to measure the level of the learners' vocabulary after the treatment. It consists of 20 vocabulary questions. (5 points for each question).

5. The researcher engaged the students in the experimental group with the post focus group questions in the twelfth week of the experiment. The objective of the post-focus group questions is to allow the researcher to know more about the students' attitude towards using digital texts and apps to enhance vocabulary learning. It consists of five questions.

Results and Analysis

To answer the first research question if there is a significant difference between vocabulary scores of the experimental group of students using digital texts and the control group students using printed texts, the subjects' scores in the pre and post tests were obtained.

In order to measure both the control and experimental group level in vocabulary, a unified pre-test was taken

by both groups in the first week of the study. The test included 20 multiple choice questions. Each correct answer was graded with a score of 5. So, the total score for all correct answers was 100. The students' scores in the pre-test were recorded in an excel sheet.
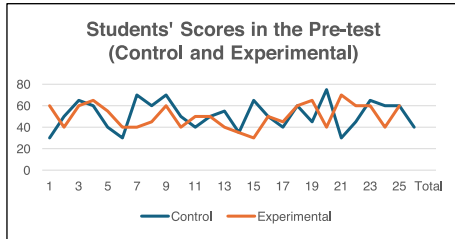

Figure 1: Pre- Test Scores of Control and Experimental Groups

In figure 1, the two graphs corresponded to each other and intersected in many points. This showed that the students in the control group and the experimental group somehow got the same scores in the pre-test.
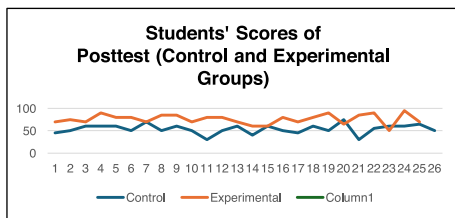

Figure 2: Post- Test Scores of Control and Experimental Groups

In figure 2, the two groups did not correspond with each other as they did in the pre-test. They did not intersect in many points. The indicator of the

experimental group is higher than that of the control group. This indicates an improvement in the grades of the learners in the experimental group after the treatment. The gap in grades between both groups indicated that the learners in the experimental group had improved in learning vocabulary. The students' scores in the post-test were recorded in an excel sheet.
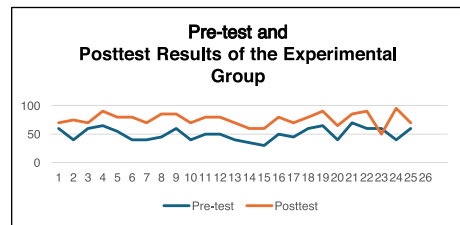

Figure 3: Pre- Test and Post- Test Results in the Experimental Group

In figure 3, the two indicators do not match. They do not intersect in many points. This shows that there was a difference in the scores of the experimental group students in the pre-test and post- test. Students improved and gained higher scores after using digital texts and apps for vocabulary.

This means that students who were using digital apps for learning vocabulary showed better achievement than those who were not. This proved the first hypothesis and answers the first research question.

To answer the second research question if there is a significant

difference between the attitude of the experimental group students using digital texts and apps and the control group using the printed text, the students who were in the experimental group were engaged in the pre and post focus group questions to identify their attitude towards using digital texts and apps to enhance their vocabulary.

The answers of the pre-focus group questions of the students in the experimental group indicate that the students have low motivation towards learning vocabulary. Here is an analysis of the key themes and insights from the students' answers:

Based on the provided answers, key themes indicating low motivation and disengagement towards learning vocabulary among grade 4 students include:

1. **Boredom and Lack of Enjoyment**: Students find vocabulary learning uninteresting and not enjoyable, leading to disengagement.

2. **Ineffective Learning Strategies**: Students rely on simple memorization techniques, which they find difficult and ineffective, resulting in frustration and lack of retention. They also claim that they forget the words later on.

3. **Perceived Lack of Importance:** Students do not see the relevance or importance of learning a lot

of vocabulary words at once, diminishing their motivation to engage with the material.

4. **Difficulty and Overwhelm:** Students have trouble distinguishing and remembering new words, often leading to feelings of being overwhelmed and a tendency to give up.

5. **Inadequate Support and Resources:** Existing tools and resources (such as dictionaries and flashcards) are not seen as helpful, and students lack alternative engaging methods to support their learning.

These themes collectively highlight a pattern of disengagement, minimal effort, and limited awareness of effective vocabulary learning among the participants.

The answers of the post focus group questions of the students in the experimental group indicate that the students are motivated and have achieved a significant level of words learned. Here is an analysis of the key themes and insights from these answers:

Based on the provided answers, key themes indicating high motivation and engagement towards learning vocabulary using apps among grade 4 students include:

1. **Enjoyment and Fun:** Students

find vocabulary learning apps enjoyable and fun, often comparing the experience to playing a game. Students do not feel the pressure they put on when they are learning in class.

2. **Effectiveness and Ease of Learning:** Students feel that apps help them learn new words more effectively through interactive elements like games and quizzes, which aid in memory retention.

3. **Engaging Features:** Students appreciate engaging features such as games, pictures, points, and badges that make learning new words interesting and rewarding.

4. **Problem-Solving and Adaptability:** Despite encountering occasional problems like app slowness or internet problems, students are proactive in seeking help or exploring solutions such as trying to find downloadable or offline apps, indicating a positive and adaptable attitude.

5. **Willingness to Recommend:** Students are enthusiastic about recommending vocabulary learning apps to their friends and suggest enhancements like adding more games and improving app performance to make the learning experience even better.

To χονχλυδε, students prefer using apps and digital devices over traditional books for learning vocabulary due to their interactive and enjoyable nature. They are enthusiastic about recommending digital devices and apps to peers, believing they can significantly improve their learning process of vocabulary and make studying more enjoyable.

This explains that students who were using digital texts and apps in learning vocabulary showed a better attitude towards learning than those who were not. This proves the second hypothesis and answers the second research question.

Discussion

In general, the results of the pre and posttests for the experimental group indicate that the students showed progress in vocabulary when they were using digital devices and apps. In addition, their attitude towards learning vocabulary was enhanced.

Thus, the hypotheses of the research are accepted. When students are using digital devices and apps, they will develop better results in vocabulary. In addition, they will have a better attitude towards learning vocabulary.

Given this foundational review, the study of the impact of using digital devices and apps on vocabulary learning for students in grade four was conducted. The researcher

applied the research on 51 students who are studying English as a foreign language. The students were divided into two groups: the experimental group who were using digital devices and apps to enhance their vocabulary, and the control group who were not. Both groups did the pre-test and the post- test to check their vocabulary knowledge and their progress. Students of the experimental group were involved in the pre and post focus group questions before and after the treatment to determine their attitude towards learning vocabulary.

The results of the research showed that the students have a better attitude towards learning vocabulary when they were using digital devices and apps than those who were not. In addition, students who were engaged in the treatment achieved better results in terms of vocabulary. The findings at the end of the research succeeded in providing clear answers to research questions.

Finally, the research contributed to the notion that involving students with digital devices and apps has a positive impact on students' vocabulary and their attitude towards vocabulary learning.

References

Abu Elenein, A. H. (2019). The effect of utilizing digital storytelling on developing oral communication skills for 5th grade students at Rafah primary schools. *International Journal of Language and Literary Studies*.

Akyol, H. & Temur, T. (2013). Kelime hazinesinin geliştirilmesi [Improving vocabulary]. In A. Kırkkılıç, & H. Akyol (Eds.), *İlköğretimde Türkçe öğretimi [Turkish Teaching in Primary Education]* (pp. 1548-). Pegem Akademi Yayınları.

Ali, M. M., Bashir, A., Ikram Anjum, M. A., & Mahmood, M. A. (2020). Impact of mobile assisted language learning on the young ESL learners' vocabulary in Pakistan. *Journal of Research and Reflections in Education*, 14. http://jrre.ue.edu.pk/index.php/JRRE/article/view/98

Alotaibi, A., Khalil, I., & Wardat, Y. (2021). Teaching practices of the mathematics male and female teachers according to the PISA framework and its relation to their beliefs towards their students. *Elementary Education Online*.

Amelia, L. C. H., & Abidin, M. J. Z. (2018). Young ESL learners' perception on the effects of using digital storytelling application in English language learning. *Pertanika Journal of Social Sciences & Humanities*.

Başal, A. (2015). The implementation of a flipped classroom in foreign language teaching. *Turkish Online Journal of Distance Education, 16*(4), 2837-. https://doi.org/10.17718/tojde.72185

Bennett, C. (2011). Genres of research in multicultural education. *Review of Educational Research*.

Biemiller, A. (2006). Vocabulary development and instruction: A prerequisite for school learning. *Handbook of Early Literacy Research*.

Biemiller, A., & Boote, C. (2006). An effective method for building meaning vocabulary in primary grades. *Journal of Educational Psychology, 98*(1), 4462-. https://doi.org/10.10370663.98.1.44-0022/

Castek, J., Dalton, B., & Grisham, D. L. (2012). Using multimedia to support generative vocabulary learning. In E. H. Hiebert & M. Sailors (Eds.), *Finding the right texts: What works for beginning and struggling readers* (pp. 1430-). Guilford Press.

Chamberlain, L., Lacina, J., Bintz, W. P., Jimerson, J. B., Payne, K., & Zingale, R. (2020). Literacy in lockdown: Learning and teaching during COVID-19 school closures. *The Reading Teacher*.

Chiong, C., Ree, J., Takeuchi, L., & Erickson, I. (2018). *Comparing parent-child co-reading on print, basic, and enhanced e-book platforms*. The Joan Ganz Cooney Center.

Ciampa, K. (2012). Reading in the digital age: Using electronic books as a teaching tool for beginning readers/La lecture à l'ère numérique: L'utilisation de livres électroniques comme outil d'enseignement pour les lecteurs débutants. *Canadian Journal of Learning and Technology/La Revue Canadienne de l'Apprentissage et de la Technologie*.

Collins, A., Brown, J. S., & Newman, S. E. (2018). Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. In J. Voss, D. Perkins, & J. Segal (Eds.), Knowing, learning, and instruction (pp. 453-494).

Crain, S. (1991). Language acquisition in the absence of experience. *Behavioral and Brain Sciences, 14*(04), 597–612. https://doi.org/10.1017/s0140525x00071491

Cunningham, A. E., & Stanovich, K. E. (1997). Early reading acquisition and its relation to reading experience and ability 10 years later. *Developmental Psychology, 33*(6), 934–945. https://doi.org/10.1037/0012-1649.33.6.934

Dickinson, D. K., Golinkoff, R. M., & Hirsh-Pasek, K. (2010). Speaking out for language: Why language is central to reading development. *Educational Researcher, 39*(4), 305-310. https://doi.org/10.3102/0013189X10370204

Gningue, S. M., Peach, R., Jarrah, A. M., & Wardat, Y. (2022). The relationship between teacher leadership and school climate: Findings from a teacher-leadership project. *Education Sciences*.

Hoff, E. (2003). The specificity of environmental influence: Socioeconomic status affects early vocabulary development via maternal speech. *Child Development*. https://doi.org/10.1111/1467-8624.00612

Hsu, H. K., Wang, S. K., & Comac, L. (2008). Using audioblogs to assist English-language learning: An investigation into student perception. *Computer Assisted Language Learning, 21*(2), 181-198. https://doi.org/10.1080/09588220801943775

Hsu, T. C. (2019). Effects of gender and different augmented reality learning systems on English vocabulary learning of elementary school students. *Universal Access in the Information Society, 18*, 315-325.

Huntley, D. E. (2021). *Applied research on promoting proficiency in fourth-grade reading* (Doctoral dissertation). The University of Mississippi, Oxford, MS, USA.

Kayıran, B. K., & Ağaçkıran, Z. K. (2018). An investigation of the primary school first grade students' reading comprehension success and reading speed in terms of various variables. *Gaziantep Üniversitesi Eğitim Bilimleri Dergisi, 2*(2), 30-44.

Kervin, L., & Derewianka, B. (2011). New technologies to support language learning. In B. Tomlinson (Ed.), *Materials development in language teaching* (2nd ed., pp. 328-351). Cambridge University Press.

Kim, Y. S., Petscher, Y., Schatschneider, C., & Foorman, B. (2010). Does growth rate in oral reading fluency matter in predicting reading comprehension achievement? *Journal of Educational Psychology*.

Kucirkova, N. (2014). iPads in early education: Separating assumptions and evidence. *Frontiers in Psychology, 5*, 1-3.

Larson, L. C., Dixon, T., & Townsend, D. (2012). How can teachers increase classroom use of academic vocabulary? *Voices from the Middle, 19*(4), 16-21.

Marulis, L. M., & Neuman, S. B. (2010). The effects of vocabulary intervention on young children's word learning: A meta-analysis. *Review of Educational Research, 80*(3), 300-335.

Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). Cambridge University Press.

Neuman, S. B., Newman, E. H., & Dwyer, J. (2011). Educational effects of a vocabulary intervention on preschoolers' word knowledge and conceptual development: A cluster-randomized trial. *Reading Research Quarterly, 46*(3), 249-272.

Ouellette, G. (2006). What's meaning got to do with it: The role of vocabulary in word reading and reading comprehension. *Journal of Educational Psychology, 98*(3), 554–566.

Proctor, C. P., Dalton, B., & Grisham, D. L. (2007). Scaffolding English language learners and struggling readers in a universal literacy environment with embedded strategy instruction and vocabulary support. *Journal of Literacy Research, 39*(1), 71-93. https://doi.org/10.1080/10862960709336

Rabu, S. N. A., & Talib, Z. (2017). The effects of digital game-based learning on primary school students' English vocabulary achievement and acceptance. *Innovative Teaching and Learning Journal (ITLJ)*, *1*(1), 61-74.

Robin, B. R. (2008). Digital storytelling: A powerful technology tool for the 21st century classroom. *Theory Into Practice, 47*(3), 220-228. https://doi.org/10.1080/00405840802153916

Rubin, K. H., Bukowski, W., & Parker, J. G. (2006). Peer interactions, relationships, and groups. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of child psychology: Social, emotional, and personality development* (Vol. 3, 6th ed., pp. 571–645). John Wiley & Sons Inc.

Saka, F., İşman, A., & Koçak-Usluel, Y. (2014). The effects of computer-based instruction on the achievement, attitudes and retention of fourth grade mathematics students in North Cyprus. *Computers & Education, 78*, 1-11.

Segers, E., & Verhoeven, L. (2009). Learning in a sheltered Internet environment: The use of WebQuests. *Learning and Instruction, 19*(5), 423-432. https://doi.org/10.1016/j.learninstruc.2009.02.017

Snow, C. E., Porche, M. V., Tabors, P. O., & Harris, S. R. (2007). *Is literacy enough? Pathways to academic success for adolescents*. Paul H Brookes Publishing.

Stahl, S. A., & Nagy, W. E. (2006). *Teaching word meanings*. Lawrence Erlbaum Associates Publishers.

Wells, C. L. (2012). Do students using electronic books display different reading comprehension and motivation levels than students using traditional print books? (Doctoral dissertation, Liberty University).

Williams, S. G. (2012). The ethics of internet research. Online Journal of Nursing Informatics.

Yang, Y. T., & Wu, W. C. (2012). Digital storytelling for enhancing student academic achievement, critical thinking, and learning motivation: A year-long experimental study. *Computers & Education, 59*(2), 339-352. https://doi.org/10.1016/j.compedu.2011.12.012

Yıldız, C., Okur, A., Arı, G. & Yılmaz, Y. (2010). *Kuramdan uygulamaya Türkçe öğretimi [Theory to practice Turkish language teaching]*. Pegem Akademi Yayıncılık.

Zou, D., Huang, Y., & Xie, H. (2021). Digital game-based vocabulary learning: where are we and where are we going?. *Computer Assisted Language Learning*, *34*(5-6), 751-777.