



Research Article

Leveraging apps for EFL learners' vocabulary development: Thread social constructivism and dual coding theory

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KEYWORDS

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ABSTRACT

Developing word comprehension is essential to facilitate English as a foreign language (EFL) learners English skill development. App-enabled lexical learning could be a beneficial learning approach for lexical retention. This learning approach was empirically found to be engaging and motivating. It also improves EFL learners' word knowledge. EFL learners and teachers could harness a variety of apps, such as WhatsApp, and self-manufactured apps, for vocabulary development. Those vocabulary learning apps propel students' engagement and better performance in their lexical acquisition. Social constructivist theory is commonly integrated into word comprehension. This student-centered theory, emphasizing collaboration and interaction among learners, bolsters student word attainment and memorization and students perceive it positively. Vocabulary learning is also closely influenced by dual coding theory (DCT). The use of DCT fosters EFL learners' lexical knowledge due to word visualization and contextualization natures of it. Clearly, lexical development could be propelled and optimized through app-enabled word acquisition, the social constructivist theory, and DCT. To know how those three variables would synergistically work together to enhance EFL learners' vocabulary knowledge, it is critical to review related literature to synthesize how effective the apps (DCT manifestation) and the social constructivist approach help EFL learners' word development. The EFL lexical instructional implications and recommendations for teachers are discussed as well.

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1. INTRODUCTION

Vocabulary knowledge is a building block in English development, so it is a critical part of English learning to enhance English as a foreign language (EFL) learners' English skills. EFL learners' enhanced word knowledge aids in developing their academic listening and reading skills (Quoc & Van, 2023). Speaking fluency is positively affected by vocabulary knowledge (Akbarian, 2010; Uchihara & Clenton, 2020). Furthermore, students' better descriptive writing quality is correlated to their larger vocabulary size (Dabbagh & Enayat, 2019). Therefore, English instruction should take into consideration lexical emphasis. However, teaching English

words without a context specification could impair the students' word comprehension. Thus, when discussing a certain English text, some relevant words could be emphasized, so students could easily contextualize those words. Those contextualized words benefit learners in both linguistic and interactive understanding and eventually lead them to use words appropriately (Kiasi & Gilakjani, 2023). Nowadays, EFL teachers have various word teaching methods to create effective and engaging vocabulary instruction. The use of mobile devices is among those methods.

Mobile devices and apps have been empirically proven to develop vocabulary (Hasan et al., 2022; Kohnke et al., 2021; Shi & Tsai, 2022). Mobile-assisted language learning (MALL) offers an authentic and personalized word-learning experience (Kohnke et al., 2021). App-based lexical learning is also compatible and independent of time and space. EFL students could easily expand English words even without their teachers' assistance and outside the classroom with the app. Kohnke et al., (2021) found leveraging a self-developed vocabulary app enhances EFL college learners' lexical retention. Students who happened to use SimpleMind (a self-developed mind-mapping app) showcased better vocabulary awareness and retention, leading to their positive perception of the app for word learning (Shi & Tsai, 2022). Furthermore, Hasan et al., (2022) found that WhatsApp effectively enhanced EFL university students' vocabulary learning. Although WhatsApp is not an app specifically designed for vocabulary learning, it is compatible for vocabulary attainment. When a certain educational institution plans to develop a specific app for vocabulary learning, Ludwig (2018) highlights that the app should lower student barrier access, such as a complicated log-in process. WhatsApp is a perfect example of a user-friendly app with high-frequency uses for easy and fun word learning.

When it comes to vocabulary instructional approaches, one of the well-established theories is social constructivism. The use of this theory has compelling efficacy in classroom instruction due to its student-centered learning focus, which emphasizes discussion, presentation, and reflection methods (Quoc & Van, 2023). They highlighted learners who were instructed using social constructivism had positive perceptions of it. Vocabulary learning is also tightly associated with dual coding theory (DCT), intertwining verbal and non-verbal features into learning (Liu et al., 2020). DCT theory could be reflected in multimodal (textual, images, and videos) instruction (Nami & Asadnia, 2024). Learners improved their incidental and intentional vocabulary words through word contextualization and visualization in the Digital storytelling (DST) approach (Nami & Asadnia, 2024).

The aforementioned paragraphs outline the success of apps and educational theories for building and comprehending EFL learners' vocabulary. Thus, teachers and educational practitioners can gain benefits by using those apps and theories in their daily English teaching, particularly lexical-related instruction. For depth and breadth of empirical discussion, it is required to review literature related to the efficacy of teaching vocabulary using apps to optimize multimedia usage collaboratively. This literature review will solidify our comprehension of this topic. EFL teachers could garner novel methods of word instruction backed up by empirical studies which they could apply in their classroom setting.

2. THEORETICAL FRAMEWORK

EFL teachers apply an array of approaches in vocabulary teaching. Their approaches could be based on their long teaching experience, research studies, and teaching theories. When it comes to the best lexical teaching instruction, it is hard to determine which methodology is the most appropriate one. "There is no one right way to teach vocabulary, but there are many evidence-based practices that have been shown to be useful in students learning new vocabulary" (Fisher et al., 2021, p. 82). Therefore, EFL teachers' vocabulary teaching needs to adopt and adjust current research and theories, so their instruction will be relevant and meaningful. The following two theories are prevalent in EFL word learning.

Social constructivism in vocabulary development

Social constructivism is a well-known theory coined by Lev Vygotsky in 1968 (Akpan et al., 2020). They mention this theory sees social interaction, experience, and reality comprehension

could build knowledge, so collaboration becomes critical for knowledge construction. Social constructivism is largely applied in vocabulary teaching. The social constructivist approach has been empirically proven to elevate EFL learners' vocabulary knowledge compared to the teacher-centered approach (Quoc & Van, 2023). They highlight its student-centered focus as the root cause of its effectiveness. This focus emphasizes discussion, presentation, and reflection. Those three activities will corroborate student vocabulary understanding. "The learners play the central role in classroom teaching" (Lin, 2015, p. 639). The teachers' critical role is to ensure that students have effective and meaningful experiences and/ or interactions with their classmates and surroundings (Lin, 2015). When students are given more learning freedom, they will enjoy and get involved more deeply in vocabulary development. Further, they will be more likely to dedicate their time to learning vocabulary outside the classroom (Alipour, 2020). Thus, the social constructivist approach is one of the prominent approaches to raising an interactive and creative atmosphere in the classroom, and it has been largely researched and applied due to its student-centered emphasis (Quoc & Van, 2023).

Dual coding theory in vocabulary development

DCT was introduced by Allan Urho Paivio, a Canadian psychologist from the University of Western Ontario in 1971 (Luo, 2022). Paivio hypothesized around the construct of working memory, how to enhance learning materials to optimize processing efficiency. This theory is also called a theory of cognition. "Paivio found in his experiment that the fastest recognition is made by the help of dual memory of images and words" (Luo, 2022, p. 1). So, learning will take place effectively when both verbal information and the representation of images are delivered to the human brain synchronously. This theory is also well-implemented in EFL vocabulary development.

Teaching vocabulary through the DCT approach, multimodal inputs (text, sound, video, and picture), is believed to offer some benefits since multimedia material delivery in instruction enables students to understand vocabulary better (Liu et al., 2020). They consider that the learning process becomes more meaningful, engaging, and memorable through the use of multimedia. Vocabulary knowledge can be augmented through digital storytelling (DST), as these multimodal sources (text, video, audio, and image) in story delivery increasingly engage language learners in meaningful and authentic learning (Nami & Asadnia, 2024). However, images and teaching techniques have to be carefully chosen to optimize word comprehension and prevent student boredom (Liu et al., 2020). Additionally, integrating DST activities in EFL instruction could improve learners' motivation and vocabulary attainment and reduce their learning anxiety (Kristiawan et al., 2022).

Drawing from those theories, EFL teachers and researchers, particularly in student word performance context, need to be aware of the impact of social constructivism and DCT (see Figure 1) implemented in apps on EFL learners' lexical knowledge development. This review focus offers another perspective on lexical instruction which enriches the EFL learners' word learning and understanding. The following is a review of some related literature for a more thorough understanding of the variables related to the research topic.

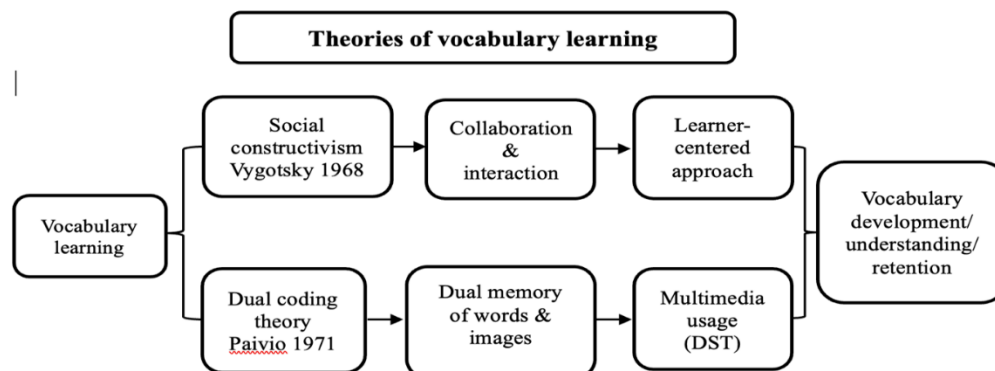


Figure 1. Theories of vocabulary learning

3. REVIEW OF RELATED LITERATURE

To comprehend extensively and deeply the different app use and teaching methods on lexical development, this section will organize, summarize, and synthesize a wide array of literature related to lexical development. Thus, readers would have a broader spectrum of this topic and see the affordances of specific apps to augment vocabulary instruction and create more engaging and meaningful vocabulary learning. The literature discussion and synthesis would be organized thematically for better comprehension.

EFL students enhance their lexical knowledge when the classroom instruction is equipped with apps (Hasan et al., 2022; Kohnke et al., 2021; Shi & Tsai, 2022). Kohnke et al. (2021) investigated a self-developed app at a Hong Kong university involving 159 students. Upon one month of intervention, students showed improvement in their vocabulary retention. That investigation proves that although word learning is devised by a short period of app use, lexical comprehension still takes place. Another research on the use of the SimpleMind app (a mind-mapped app for vocabulary learning) and vocabulary was conducted by Shi & Tsai (2022). They did research in Taiwan with 80 Grade 11 students. The investigation showcased SimpleMind app is better at improving students' vocabulary performance compared to the traditional mind-mapping approach. Also, EFL students perceived the app as helpful for word learning. Another study was carried out by Hasan et al. (2022). They investigated WhatsApp for vocabulary development in Bangladesh. Their research study involved a total of 64 EFL university learners in Bangladesh. The data analysis found WhatsApp effectively enhanced the vocabulary learning of tertiary-level EFL students. Also, students had positive attitudes toward the implementation of WhatsApp for vocabulary learning. All those research findings elucidate how impactful the app is for lexical development; therefore, EFL teachers should consider app-facilitated word learning in their EFL classes.

Next literature reviews discuss the correlation between vocabulary and academic self-concept (ASC) (Alek et al., 2023), vocabulary comprehension through word contextualization (Kiasi & Gilakjani, 2023), and lexical development using blended learning (Alipour, 2020). Alek et al. (2023) investigated whether ASC (covering self-regulation, motivation, creativity, and intellectuality) is correlated to formal English vocabulary knowledge (FEVK). Their statistical analysis involving 121 sophomore EFL students from an Indonesian Islamic state university discovered ASC is positively correlated to FEVK. It is a strong indication that students with heightened conditions of self-regulation, motivation, general intellectual abilities, and creativity (ASC) could facilitate better FEVK achievement. Furthermore, Kiasi & Gilakjani (2023) studied the effectiveness of contextualizing words for word development. The study taking place in Iran was done in a private English institute with 66 EFL learners. The findings indicated that sentential and textual vocabulary interventions were more effective at improving vocabulary retention compared to the definitional vocabulary approach. In other words, vocabulary instruction using textual and sentential helps Iranian EFL learners' vocabulary acquisition better while relying solely on memorization (definition approach) proves to be less effective. Alipour (2020) studied 90 Iranian intermediate-level EFL learners' vocabulary enhancement using blended learning. His data analysis found that blended learning was better for vocabulary learning than online learning. However, there was not a significant difference between these two approaches. Surprisingly, both approaches were significantly better than the traditional face-to-face teaching approach.

Some studies assessed social constructivism application in lexical learning classes (see Homayouni, 2022; Quoc & Van, 2023; Wang & Suwanthep, 2017). Quoc & Van (2023) studied how the social constructivist theory augments EFL learners' word retention. Conducted in a private university in Vietnam with 75 Engineering students, they found that a teaching method anchored to social constructivism theory was proven to magnify EFL learners' vocabulary retention compared to the conventional teacher-centered approach. Students positively perceived the social constructivist method for English word learning. Further study on vocabulary learning and constructivism was performed by Wang & Suwanthep (2017). Their study, involving 90 sophomore students in Thailand, focuses on an app-based constructivist theory for EFL lexical learning. Their findings clarified the use of the constructivism-based

vocabulary learning app significantly outperformed traditional drilling vocabulary instruction in enhancing EFL learners' productive and receptive vocabulary knowledge. Homayouni (2022) studied how peer assessment, rooted in social constructivism, affects EFL learners' vocabulary development and speaking skills. The data analysis found that peer feedback and collaborative/ scaffolded learning enhanced EFL learners' speaking skills and vocabulary development. This positive outcome could be affected by learners' active engagement in their communication, which also improved their self-confidence, motivation, and active participation.

Furthermore, vocabulary could be amplified through DCT and DST (Kristiawan et al., 2022; Liu et al., 2020; Nami & Asadnia, 2024). A study on the EFL students' self-created digital stories for vocabulary learning effectiveness was done (Nami & Asadnia, 2024). It was found the collaborative use of DST by EFL learners has been proven to enhance vocabulary learning compared to flashcard storytelling. They developed both their incidental and intentional words due to word visualization and contextualization in the form of DST. Furthermore, the students agreed that DST promotes better engagement in learning and improves their motivation due to their freedom to craft their storylines, personalize and contextualize learned words, and use their creativity through multimedia in their storytelling. Liu et al. (2020) investigated DCT intertwined with a computer for lexical learning. Involving 88 high school students in China, their study found EFL students demonstrated positive attitudes toward the computer-enabled DCT in their vocabulary learning. The use of multimedia (such as images, sounds, and videos) was able to create more engaging, memorable, and meaningful vocabulary instruction. A study on DST was also done in Indonesia (Kristiawan et al., 2022). They conducted a case study at a junior high school in East Java, Indonesia, involving 30 EFL students aged 12 to 14 years. They identified DST's impact on students' vocabulary building, motivation, and cultural identity. The findings were DST through images and sounds could be an effective tool for EFL learners to express their local cultural identity and emotion. Also, student engagement was facilitated in the DST task-based project, involving multimedia tools and collaboration, and students understood vocabulary words better and were more motivated to learn.

The synthesized literature above mostly inclines to the positive outcomes that the app-facilitated EFL instruction has enhanced EFL learners' vocabulary knowledge. Thus, the research findings imply the effectiveness of DCT through diverse apps for enhanced vocabulary development in EFL instruction. In other words, previous empirical research found the positive impacts of apps on lexical retention and acquisition. Additionally, the study results highlighted earlier reinforce the social constructivist use in formal EFL classrooms, especially in the vocabulary teaching context.

4. CONCLUSION

Many studies support DCT and social constructivism for word learning through app-enabled word recall and retention in the EFL context. That lexical learning using various teaching approaches helps learners improve their vocabulary rapidly with extraneous positive effects; higher motivation, heightened self-independence, improved creativity, and better engagement. Furthermore, word processing learning could take place independent of time and place. Thus, EFL teachers need to optimize DCT for their students' lexical acquisition. Teachers' continuous support and advocacy with different app use should be done to gain better word learning outcomes. Intertwining a social constructivism method and apps/ DCT has great potential to magnify EFL word acquisition and development. These two combined variables (apps/DCT and social constructivism) let students learn words using multimedia, past knowledge and experience, social interaction, and digital technology for lexical progression in more favorable ways. The authors advise that EFL teachers apply that teaching method so that students' word retention and comprehension will be positively amplified.

5. CONTRIBUTION AND RECOMMENDATION

This literature review is expected to contribute to the literature pertaining to the effectiveness and practical applications of app use and social constructivist implementation on EFL learners' vocabulary development. Also, EFL teachers can refer to this literature to create more well-organized and well-structured vocabulary instruction resulting in better teaching outcomes. Hopefully, this review and related literature can become valuable references for curriculum designers to create a more effective and evidence-based vocabulary teaching curriculum. They can optimize their lesson designs by integrating various apps (having multimodal sources, such as images, texts, sounds, and videos) and doing more collaboration and presentation (social constructivism) for heightened learning outcomes.

The synthesized articles above can be referred to by EFL teachers and students for vocabulary development practices due to its accessibility, easy application, and positive impact on students' word knowledge irrespective time and place constraints. It would be more useful if an institution could have a self-manufactured app for word development, so students could personalize their learning much more easily. Then, researchers investigate the self-made app efficacy in comparison with free apps, such as WhatsApp, which are not particularly designed for lexical development. For researchers who are interested in researching this topic, a longer intervention study should also take place in future research to know the long-term impacts of students' word retention and acquisition.

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