An Evaluative Review of Mobile-assisted L2 Vocabulary Learning Approaches based on the Situated Learning Theory

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Abstract

There is a growing trend of utilizing mobile technology to develop effective contextual vocabulary learning methods based on the situated learning theory (SLT). In spite of substantial research on mobile-assisted vocabulary learning (MAVL), there have been few reviews of MAVL approaches, let alone evaluations of them based on the idea of SLT. To address this research gap, this study evaluated three types of MAVL approaches: (1) mobile message services, (2) vocabulary learning applications, and (3) digital simulation games according to the authenticity principle and characteristics of SLT. The evaluative review included in-depth examinations of two aspects: the extent to which these characteristics are manifested in each approach, and the way in which these characteristics are incorporated into the design of each approach. The result suggests that the MAVL approaches differ significantly, in terms of their authenticity and degree of correspondence to the SLT. This review offers practical implications for the development and improvement of MAVL approaches, as well as important suggestions for future research, all of which are believed to benefit the field of L2 vocabulary acquisition.

Keywords: L2 vocabulary, mobile-assisted vocabulary learning, contextual learning approach, situated learning theory, authenticity

1. Introduction

Given the significance of vocabulary knowledge in L2 communication (Beck et al., 2013; Graves, 2016, Heibert & Kamil, 2005), numerous attempts have been made to explore effective methods for L2 vocabulary learning by both educational researchers and language teachers in schools (Nation, 2006; Xodabande & Atai, 2020). In the early days when people's understanding of vocabulary knowledge was limited to word meanings, L2 vocabulary learning was merely referred to the memorization of definitions and L1 translations of L2 target words on dictionaries. Dictionary use was one of the earliest and most widely used vocabulary learning methods (Uz Bilgin & Tokel, 2019). Despite its continued dominance across all methods, the dictionary use approach has been critiqued for ignoring word usage knowledge and only teaching isolated word meanings that are deemed vocabulary knowledge on the surface (Shrum, 2015). Owing to the later research findings obtained in the field of vocabulary learning, both teachers and learners started to have a more comprehensive understanding of vocabulary knowledge (Hwang & Wang, 2016; Sternberg, 1987). Their goal for L2 word teaching and learning has extended from simply obtaining dictionary definitions to understanding both word meanings and usage, which, however, could hardly be achieved via the traditional method.

Both criticisms towards dictionary use method and learners' need for acquiring broader vocabulary knowledge consisting of both word meanings and usage facilitate the proposal of contextual learning approaches based on the situated learning theory (SLT) for learning L2 words (Brown et al., 1989). This approach, as contrary to the method of simply referring to dictionary definitions, emphasizes the relevance of context in vocabulary learning. It intends to not just provide context-relevant meanings of words but also teach how to use these words in authentic context (Uz Bilgin, 2016). Nonetheless, preliminary contextual vocabulary learning approaches failed to fulfill this intention completely, because only textual contexts could be employed as the context for L2 target words due to a lack of technology resources in the past. Instead of offering learners word usage knowledge in real-life circumstances, it

teaches them how to use L2 target words in phrases, paragraphs, and texts (Hu & Nassaji, 2012). This contradicts the idea of SLT, which states that language knowledge should be located in a real-world context, and that context construction should always adhere to the principle of authenticity (Brown et al., 1989).

Thanks to the rapid development of mobile technologies in the past two decades (Uz Bilgin & Tokel, 2018; Sung et al., 2015), there has been a trend of utilizing smartphone technologies to overcome the inadequacies of previous approaches and create authentic contexts for learning L2 words. Numerous mobile-assisted learning approaches have also been proposed and investigated in terms of their effectiveness in facilitating contextual vocabulary learning (Lin & Lin, 2019). However, few of them have been evaluated according to the idea of SLT, which is known as the foundation of contextual learning methods. This research gap suggests the necessity of conducting a thorough examination of the existing mobile-assisted contextual learning approaches using SLT. The current review is believed to provide useful implications for enhancing approach design and thereby facilitating L2 vocabulary learning.

2. Situated Learning Theory

As illustrated in SLT, comprehensive knowledge always contains its association with the culture, environment and activity where it can be used (Brown et al., 1989). The purpose of situated learning is to let the learning process go beyond understanding isolated conceptual knowledge and enable learners to develop the skills of using the knowledge in real-world circumstances. Asides from the broadened purpose, situated learning is also known to have a number of advantages. (1) It increases learning autonomy by allowing learners to become active participants having interactions with the context instead of passive observers in the learning process (Chen et al., 2009). (2) It has better learning retention by requiring greater learning efforts and attention from learners. As situated learning precludes learners from passively receiving the knowledge, Learners have to infer and obtain knowledge depending on the surrounding information in the context. (3) It boosts learning motivation by showing learners how the knowledge they acquire can be used to deal with problems in real life (Hwang et al., 2014).

The abovementioned learning purpose and benefits can be realized by the provision of context in the learning process (Hwang & Wang, 2016), which became the starting point for developing contextual learning approaches. As the authenticity principle is the core of SLT, researchers have described several characteristics to reflect this principle and guide the development of contextual learning approaches (Herrington & Oliver, 2000), the most typical and critical of which is the provision of authentic context and activities. Authentic context refers to the actual surroundings in which knowledge can be obtained and used. Authentic activities are defined as the tasks that require learners' purposeful participation and engagement in applying knowledge in authentic contexts (Uz Bilgin, 2016). Both characteristics can be realized in three ways (McLellan, 1994): (1) utilizing physical environments and activities in real life, (2) creating virtual contexts and tasks that simulate the real-world counterparts, (3) displaying authentic contexts and activities via multimedia technology. What needs to be noted is that contexts and activities realized in these three ways seem to differ in their degree of authenticity, as indicated by their differences in learners' participation and relevance to the real world. Only the first two ways necessitate learners' engagement in contexts and activities. Real-world contexts and activities described in the first method, as a part of real life, apparently have a higher degree of relevance to the real world than the virtual simulated counterparts in the other two methods. Prior research implied that contextual learning approaches that utilize real-world context and activities adhere to the authenticity principle of SLT to the largest extent (Huang et al., 2016). It might be the most effective in facilitating learning, given its potential to arouse learners' utmost motivation and sense of immediacy.

To summarize, the number of SLT characteristics included in the approaches, as well as the manner in which these features are incorporated in the approach, are indicators of the authenticity level of learning approaches and can be used to indicate the extent to which they implement the idea of SLT. Furthermore, both aspects appear to have an impact on the approach effectiveness. However, empirical studies which have attempted to develop contextual learning approaches based on SLT, have mostly referred to the characteristics of providing authentic contexts and activities during the process of approach development (Uz Bilgin & Token, 2018; Huang et al., 2014; Hwang et al., 2014; Hwang & Wang, 2016). Careful considerations have seldom been made on how the characteristics can be manipulated to maximize the approach authenticity. Reviews of SLT-based contextual learning approaches have primarily focused on their effects on learning outcomes (Lin & Lin, 2019; Xodabande, 2020; Wu, 2015). Little attention has been paid to evaluating the design of the existing learning approaches according to the authenticity principle and characteristics required by SLT, particularly in terms of feature availability and the ways in which these features are realized in these approaches. To address this research gap, the current study, which intends to review the mobile-assisted vocabulary learning (MAVL) approaches based on SLT, will focus on these two crucial aspects. It is

expected to provide a more comprehensive picture of authenticity of MAVL approaches, and directions for future practices employing technology resources to develop and improve vocabulary learning methods.

3. Evaluating the Mobile-Assisted Vocabulary Learning Approaches Based on SLT

There are four primary types of contextual vocabulary learning approaches that utilize mobile technologies, as seen in Table 1. They are message services, vocabulary learning applications (apps) and digital simulation games (Lin & Lin, 2019; Xodabande, 2020). The current review evaluates the extent to which these three types of approaches implement the idea of SLT through answering two questions. (1) Are the characteristics of providing authentic contexts and activities manifested in the approach? (2) In what way are the characteristics realized in the approach. Table 1 displays the results concerning these two questions.

Table 1. Results of Evaluating MAVL Approaches Based on SLT

		Context			Activity		
		Use real environments	Create simulated environments	Show authentic contexts	Use real-life activities requiring learners' participation	Simulate real-life activities requiring learners' participation	Showing authentic activities without learners' participation
Message service	SMS						
	MMS			P			P
Vocabulary learning apps	Apps without real-world connections			P			P
	Apps with real-world connections	P					P
Digital simulation games			P			P	

As to the first type of approach, mobile message services can be divided into two types of approaches: short message services (SMS) and multimedia message services (MMS) (Basoglu & Akdemir, 2010; 2009; Hayati et al., 2013; Song & Fox, 2005; Thornton & Houser, 2005). Teachers frequently utilize SMS to deliver L2 vocabulary study materials to students. The target words appear in textual settings including phrases, paragraphs, and entire texts. The provision of textual context is scarcely considered authentic context, as students using this approach are passive learners who are unable to engage in tasks that require the real usage of L2 words. In spite of the use of mobile technology, the approach of SMS fails to fulfill the requirement of providing authentic contexts and activities in its design. The other MMS approach is employed for the same purpose of providing learners with more comprehensive vocabulary knowledge. It allows learners to watch how other people use the words in specific situations and tasks, which may enable them to acquire some word usage knowledge. Thus, the MMS approach has the advantage of showing learners authentic surroundings and activities using multimedia technology. However, learners who are merely viewers of videos or pictures showing word knowledge and contextual information have little learning autonomy. They are not given the opportunity to practice using L2 vocabulary. Although MMS has roughly included the features of providing authentic context and activities to learners, the way of displaying them in pictures or videos via multimedia technology renders it a learning approach that lacks sufficient authenticity and thus fails to fully reflect the idea of SLT.

Regarding the second type of approach, two sub-categories of vocabulary learning apps in mobile devices are also identified, based on their connections with real environments. Those that are hardly associated with real situations and activities (Agca & O Ozdemir, 2013; Chen & Chung, 2008; Ono et al., 2015; Wu, 2014), are intended to assist learners in acquiring L2 words by offering tailored learning resources. The provision of adaptive learning content is realized by the inclusion of vocabulary practices examining learners' real-time learning outcomes. It is similar to the MMS approach in that the provision of contextual information is realized via multimedia technology. Although

learners using these apps have the chance to practice with L2 words, the majority of vocabulary practices refer to the traditional test questions, such as dictation and translation. In these exercises, Learners' use of knowledge is rarely comparable to their participation in actual activities. Therefore, although this type of vocabulary learning apps has characteristics of providing authentic contexts and activities by presenting the contextual information via multimedia technology, this approach is not completely in line with SLT, because one of the most important indicators of activity authenticity is learner participation, which is not available in these apps. The other type of vocabulary learning apps has a strong connection to real environments (Baeudin et al., 2007; Ogata & Yano, 2003; Sandberg et al., 2011). It is known for utilizing sensory and GPS technology in mobile devices to teach vocabulary knowledge relevant to learners' locations and physical surroundings. This approach has the advantage of using real environments to meet the requirement of providing authentic contexts. Despite the fact that learners receive learning materials in real-life circumstances, the materials are similar to those used in other approaches, consisting of target words and multimedia information showing contexts and activities in which these words are used. It suffers from the same shortcoming that is seen in the other approaches. No physical activities where learners can demonstrate their use of words are provided. Learners are hardly treated as the active agent in the learning process. Although this approach implements the idea of SLT to a larger extent by using the real environment that has a greater degree of authenticity, its drawback regarding the lack of authentic activities involving learners' participation cannot be neglected.

The last type of vocabulary learning approach refers to digital simulation games (Calvo-Ferrer, 2017; Chen & Hsu, 2020; Peterson, 2021; Wang, 2019). It teaches L2 vocabulary in virtual settings and tasks that simulate real-world situations and activities. Throughout the process of playing games, learners acquire the word knowledge and the ability to apply L2 words in authentic contexts and activities. This approach has met the requirement of providing authentic contexts and activities to learners. It is the only mobile-assisted learning approach that elicits learners' participation in activities, giving it a higher degree of authenticity than the other approaches and allowing it to embody the idea of SLT to a fuller extent.

4. Conclusion and Future Research

In conclusion, the existing MAVL approaches vary in terms of the extent to which and the way in which they fulfill the requirement for including SLT-based characteristics in their design. This suggests that these approaches are different in their degree of authenticity and the extent to which they correspond to SLT.

Digital simulation games are thought to best reflect the authenticity principle of SLT of all the approaches. Future research could focus on determining the most effective ways to situate the current teaching content and materials in mobile simulation games. It's also worth discussing the possibilities of using digital games in a broader range of pedagogical practices. Besides, apart from mobile games, most of the vocabulary learning approaches examined in this study fail to provide opportunities for learners to demonstrate their use of knowledge in authentic activities. This issue must be addressed in future studies that aim to completely integrate the idea of SLT in the development of successful vocabulary learning approaches. Additionally, despite that real-world environments and activities have the highest level of authenticity and can be used to better reflect SLT, no approach has placed the learning process in both real-life circumstances and tasks. It is worth looking into how technology and pedagogical resources can be leveraged to create contextual learning approaches that situate learning in real-world contexts and activities. This review, as one of the first to look into mobile-assisted vocabulary learning (MAVL) approaches based on SLT, has only looked at the characteristics of providing authentic contexts and activities, given that they are the most important and straightforward features that can be achieved with the technology resources available at the current stage. However, in addition to these two features, more characteristics have been proposed and should be considered while developing ideal contextual learning approaches. Future empirical studies and reviews that intend to develop or evaluate MAVL approaches should refer to the full list of SLT characteristics. Continued efforts should as well be made to improve the approach design as technology progresses. The idea of evaluating learning approaches based on the authenticity principle and characteristics of SLT should not be limited to vocabulary learning approaches. Future research should consider evaluating other learning approaches in a similar way.

This review provides an overall picture of the current MAVL approaches. On the basis of the SLT theory, discussions are made on their strengths and weakness. It is expected to give readers a comprehensive understanding of MAVL approaches, offer suggestions for future research on this topic, and facilitate the development of vocabulary learning approaches.

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