Chapter 21
Effects of Using Multimodal Glosses in Video Games to Enhance Incidental Vocabulary Learning and Retention

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ABSTRACT

Given the crucial role of vocabulary knowledge in language development, the literature is replete with studies that explore the effects of various vocabulary learning strategies. This chapter taps into two areas of research on vocabulary learning, multimodal glossing and digital gaming, and reports on an experimental study whose aim was to investigate the effect of providing EFL students (n=162) with three gloss conditions (L1 test + picture, L2 text + picture, and picture-only) when they play a video game on their vocabulary acquisition and retention. The students took two vocabulary tests immediately after playing the game, and again two weeks later. The findings revealed that while all groups benefited from multimodal glossing, the L1 text + picture gloss group significantly performed better than the other two groups in the acquisition and retention of the targeted words. The chapter concludes by discussing the limitations of the current study and suggesting new directions for future research.

INTRODUCTION

Undoubtedly, vocabulary knowledge is very crucial for second language learning. At the early learning stages, base vocabulary knowledge is important because it plays a facilitative role in the development of other language skills. In SLA literature, there is a general consensus among vocabulary researchers that a significant proportion of L2 vocabulary is acquired incidentally, with no deliberate intention by learners to commit new words to their memory (Bordag, Kirschenbaum, Rogahn, & Tschirner, 2017; Laufer, 2003). This occurs when L2 learners pick up new vocabulary unintentionally – as by-product – while they are primarily engaged in some activities in the target language, e.g., reading a text, listening to music, watching a movie, or playing a video game.

Given the importance of vocabulary knowledge, L2 researchers have been interested in investigating the effect of different learning techniques on L2 incidental vocabulary learning. The vast majority of such research has been carried out in the area of reading (e.g, Dupuy & Krashen, 1993). Reading researchers suggest that L2 learners acquire new vocabulary mostly through inferring meanings of unknown words while reading L2 texts (Huang & Yang, 2012). However, the uptake of new vocabulary knowledge through reading is incremental and slow, as the acquisition of new vocabulary requires *multiple exposures to a word in different contexts* (Huckin & Coady, 1999, p. 185). It is also possible that language learners incorrectly infer the meaning of the words or perhaps pay no attention to the new words, as such no vocabulary acquisition will take place. Additionally, the effect of lexical inferencing has been found to be limited (Bisson, van Heuven, Conklin, & Tunney, 2013). It is assumed that L2 learners need to know at least 95% of the words in a reading text in order to correctly infer meaning from the reading context (Nation, 2001). Recently, de la Garza and Harris (2017) found that learners' ability to successfully infer the meaning of new vocabulary begins to decrease as the number of unknown vocabulary per sentence increases especially beyond five unfamiliar words per sentence.

In response to this limitation, the use of multimodal glossing was thought to be an effective strategy to help learners improve their vocabulary learning. Nation (2013) defines a gloss as *a brief definition or synonym, either in L1 or L2, which is provided with the text* (p. 238). With the widespread of computers in language classrooms, electronic glosses can be created and linked to the targeted word in different formats (text, picture, audio, or video). The provision of information in multiple formats has been found to enhance learner's cognitive interpretation of the input (Mayer, 2001, 2009). In SLA, researchers have examined the impact of different forms of multimodal glosses on reading comprehension (Khezrlou, Ellis, & Sadeghi, 2017; Türk & Erçetin, 2014), listening comprehension (Çakmak & Erçetin, 2017), and vocabulary learning and retention (Boers, Warren, He, & Deconinck, 2017; Yoshii, 2014). The findings of these studies generally support the use of multimodal glossing to enhance language learning (for meta-analyses see Abraham, 2008; Yun, 2011).

The current chapter taps into three areas of research in second language development: incidental vocabulary learning, multimodal glossing, and digital video-based learning. Specifically, the chapter reports on an experimental study whose aim was to measure incidental vocabulary learning and retention of new vocabulary presented in three modes, picture + L1 text, picture + L2 text, and picture-only, to elementary EFL learners while they play an online hidden-object game for fun. Hidden-object games are casual video games in which game players are provided with names of random objects and asked to find them in a visually complex picture. The objects are camouflaged among other objects to reduce saliency and prevent pop-out effects. The challenge is then to find those hidden objects in the shortest time possible in order to earn extra points and/or compete with a friend on social websites, e.g. Facebook. This gameplay seems to help in establishing verbal-visual associations of vocabulary in a player's mind. According to Mayer (2009), creating verbal-visual associations is *perhaps the most crucial step in multimedia learning* (p. 74). But in SLA, these associations can be made through the aid of learner's L1 or L2. The question of what language, L1 or L2, leads to better incidental vocabulary learning has brought mixed findings in previous research (Cheng & Good, 2009; Hu, Vongpumivitch, Chang, & Liou, 2014; Xu, 2010). In this study, two general hypotheses are suggested. First, a video game environment is more conducive to incidental vocabulary learning than any other language learning contexts (e.g., reading or listening), as meanings of words can be easily derived or inferred from the visual cues presented in the game environment. Second, the provision of multimodal glosses in both L1 and L2 may lead to

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