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Vocabulary plays an important part in second language acquisition and academic achievement. This paper will present several possibilities to enhance vocabulary acquisition and reading comprehension with the help of technology.

Introduction

The role that vocabulary knowledge plays in second and foreign language acquisition has long been neglected. However, vocabulary is currently receiving increased emphasis in the language teaching curriculum. This is due to several reasons, such as the influence of comprehension-based approaches to language development, the research efforts of applied linguists, and the exciting possibilities opened-up by the development of computer-based language corpora (Nunan, 1999: 103). Moreover, it is now increasingly pointed out that there is a reciprocal, well-documented relationship between vocabulary knowledge and reading comprehension. As Tozcu and Coady (2004: 473) point out, learning vocabulary is an important aspect of L2/FL acquisition and academic achievement and is vital to reading comprehension and proficiency, to which it is closely linked.

This paper will focus on various possibilities to enhance vocabulary acquisition and reading comprehension with the help of technology. First, it starts with a brief overview of the relationship between vocabulary knowledge and reading comprehension. It continues with a presentation of different [technological aids](#) that trigger improved vocabulary acquisition and reading proficiency, with a focus on annotations. Finally, it proposes several [teaching principles](#) related to incorporating technology in the language classroom to benefit vocabulary acquisition and reading comprehension.

Vocabulary Acquisition and L2/FL Reading Comprehension

Reading is an active skill that involves the reader, the text, and the interaction between the two. The acquisition of reading skills is a very important aspect of first (L1) as well as second (L2) or foreign language (FL) literacy. Reading in a L2 or FL is a dynamic and interactive process, during which learners make use of a variety of skills and strategies, combined with background knowledge, L1-related knowledge and real-world knowledge to arrive at an understanding of written material (Aebbersold and Field, 1997: ix).

Many variables play a role in L2/FL reading comprehension. Among the most important are L1 literacy, the use of both top-down and bottom-up strategies, activating background knowledge, the use of various reading skills (e.g. summarizing, identifying the main idea, distinguishing between facts and opinions), and vocabulary knowledge (Egbert, 2005: 21-22).

Several researchers have argued that vocabulary plays a major part in reading proficiency. Thus, Grabe (1991) stresses the important role of vocabulary as predictor of overall reading ability, and Nation (1990) states that effective L2 /FL instruction should also concentrate on cultivating vocabulary (both cited in Anderson, 1999: 25). Chanier and Selva also stress the fact that vocabulary knowledge is a key factor in reading comprehension (1998: 489) and so does Groot (2000), who argues that functional L2 reading proficiency requires mastery of a considerably large number of words.

Aside from knowing how to use the appropriate reading strategies, Grabe (1991, as cited in Butler-Pascoe and Wiburg, 2003: 124) argues that fluent L2/FL readers need to know about 2,000 to 7,000 words and sometimes even more if they want to reach native-like fluency. Similarly, Groot (2000: 62) argues that an adequate understanding of academic texts requires a vocabulary of at least 7,000 words. Generally, L2/FL readers need to

recognize approximately 95 per cent of the words in a given text in order to comprehend its meaning and they need to know the different meanings of words according to context, as well as words' grammatical properties. In summary, it can be pointed out that reading and vocabulary are inter-related, in other words, good readers have a rich vocabulary, and similarly, a rich vocabulary is one of the key elements that ensure reading proficiency.

Benefits of CALL for Vocabulary Acquisition and Reading Comprehension

It has been increasingly argued that computer technologies can support learning in a number of ways. Many features of the computer are considered to enhance vocabulary development and reading comprehension: multimedia is one of them. Multimedia refers to computer-based systems that use various types of content, such as text, audio, video, graphics, animation, and interactivity. The key concepts of multimedia are thus 'computer-based' and 'interactive'.

Some research assessed the general value of ESL / EFL software programs for improving reading comprehension and vocabulary (AlKahtani, 1999; Busch, 2003; McGlenn and Parrish, 2002). More recent studies examined the effect of extended use of computers on reading achievement, the effect of computer instruction on reading rate and reading comprehension; the effects of multimedia software on reading comprehension and vocabulary acquisition, as well as the relationship between vocabulary development and reading comprehension (Singhal, 1998: 2-6). Most research on vocabulary acquisition and CALL has focused on the effects of multimedia glosses, and the same is true for reading comprehension, since vocabulary and reading are closely and reciprocally related. This reciprocal relationship also accounts for the fact that many research studies on vocabulary development and CALL also examine reading comprehension, and vice versa.

Multimedia Glosses and Vocabulary Development

One of the first to examine the effects of multimedia glosses for vocabulary development were Lyman-Hager and Davis (1996), who integrated a computer program into the French foreign language curriculum and discussed vocabulary acquisition and students' glossing choices for 262 intermediate level students studying French. Two conditions were used in this study: computerized reading and non-computerized reading using an excerpt of Oyono's 'Une Vie de Boy'. Both groups had access to glosses: the computer group had access to multimedia annotations, whereas the control group could consult printed text with the same glosses. As to whether or not computer treatment offered significant benefits to FL students, the results of the written recall protocol indicated that the experimental group who used the computer program to read the text significantly outperformed the control group who used the glossed reading in the print form.

Similarly, in an article exploring multimedia annotations and vocabulary acquisition, Chun and Plass (1996a) present the positive results of three studies with students in their second year of German who used Cyberbuch, a multimedia application offering various types of annotations (picture, text, video). The goals of this study included the exploration of incidental vocabulary learning, and the examination of the effectiveness of multimedia annotations on vocabulary acquisition. The results of this case study supported previous research on the effectiveness of different types of annotations, according to which visual imagery was found to help in learning and retention of new foreign words. Moreover, visual multimedia advance organizers were found to help not only recalling new words, but also act as facilitators of reading comprehension, which stresses the close relationship between vocabulary and reading (Chun and Plass, 1996b: 512). Text+picture annotations produced the best results in the recall protocol focusing on reading comprehension.

Using Multimedia for Vocabulary-building

However, multimedia is not used only for glossing texts. Multimedia is a central component of good computer-assisted skill-building software. Thus, Chanier and Selva (1998) stressed the benefits of multimedia support for learning L2/FL vocabulary and presented ALEXIA, a lexical learning environment for French as a L2/FL, which includes a corpus of texts, a general and a personal dictionary, and a lexical activities unit. After reviewing various viewpoints about the effectiveness of multimedia for vocabulary learning, they propose useful criteria for evaluating the quality of a visual representation in a lexical environment. Groot (2000) presented another multimedia-enhanced computer-assisted word acquisition program, called CAVOCA, whose aim was to speed up the

vocabulary acquisition process. CAVOCA is an interactive program that takes learners through different stages of vocabulary development: deduction, consolidation, and long-term retention.

Similarly, Tozcu and Coady (2004) conducted a case study that examined the outcomes in vocabulary acquisition when using interactive computer-based texts as opposed to traditional materials. The aim was to determine the effect of direct vocabulary instruction via computer assisted learning as opposed to traditional vocabulary training via print texts. Moreover, the effect of this direct instruction on reading comprehension and word recognition speed and therefore reading rate were also analyzed. The subjects of the study were 56 intermediate level students from various L1 backgrounds who were studying English for university academic preparation. The results suggested that the treatment group, who used a tutorial computer assisted courseware, outperformed the control group in all the three analyzed areas: vocabulary knowledge, reading comprehension, and reading speed. These results suggest positive implications of integrating technology in the language classroom for reading instruction and vocabulary development.

Benefits of Multimedia-enhanced Dictionaries

Other research that focused on vocabulary development with technology argued for the increased effectiveness of multimedia-enhanced electronic dictionaries designed specifically for English language learners, and which have several built-in aids that their book counterparts cannot provide (e.g. the Longman Interactive English Dictionary, the Oxford Picture Dictionary Interactive, etc.) (Butler-Pascoe and Wiburg, 2003: 126-127).

Vocabulary-development Software without Multimedia Components

However, not all software for vocabulary development has a multimedia component, and a good example is concordance software, which triggers good results, since it allows for the examination of lexical, syntactic, and semantic patterns in various reading passages and contexts (Anderson, 1999: 32). This type of computer program can be a valuable instructional tool to raises students' awareness of the various types of lexical items in authentic contexts and provides non-threatening classroom experiences giving students opportunities to improve reading and vocabulary skills (Butler-Pascoe and Wiburg, 2003: 128).

Benefits of Multimedia for Reading Comprehension

Multimedia is a great instructional component not only for vocabulary instruction, but also for reading comprehension, as some of the research presented above has suggested. The positive effect that multimedia has on reading comprehension comes, according to Busch (2003: 278), from the great advantage that online readers have over traditional printed readers: the possibility to enhance computerized texts with glosses in multimedia format. This is probably the reason why most studies dedicated to a computer-based approach to reading have focused on the usefulness of glosses in different formats to increase reading comprehension and vocabulary retention. Several researchers have argued for the positive effects that hypermedia has for L2/FL readers, because a text can be made more comprehensible for them by annotating it with multiple types of media glosses (Sakar and Ercetin, 2004: 28).

The effects of multimedia glossing received increased attention as researchers considered the possibility that computer-aided reading could create more proficient readers by offering a choice of various types of glosses to develop better vocabularies, greater background knowledge surrounding the text, and more effective reading strategies (Lyman-Hager and Davis, 1996: 775). Various studies argued that multimedia glossing is beneficial for reading comprehension and, consequently, for L2/FL vocabulary acquisition. Thus, Lomicka (1997) explored how multimedia annotations influenced the level of FL reading comprehension for students enrolled in a second semester French course. Three conditions were used when students were reading a text on the computer screen: full glossing, limited glossing, or no glossing. The results indicated that the students who had access to full glossing improved better than those who had access to either limited glossing or no glossing. Similar results were also suggested by Sakar and Ercetin (2004), who went even further and explored 44 adult intermediate-level EFL learners' preferences for hypermedia annotations. The results suggested that students preferred visual annotations to textual and audio annotations. Video and graphic annotations were accessed when students wanted to retrieve background information about the topic, and graphic annotations were used to illustrate the meanings of words.

In **summary**, it can be pointed out that vocabulary and reading comprehension are closely related, as it may be seen from the case studies presented above nearly all studies focused both on vocabulary and reading proficiency as they are influenced by multimedia. Vocabulary plays an important part in reading comprehension and techniques that are useful for vocabulary development (such as multimedia glossing) also benefit reading comprehension, and vice versa.

Teaching Principles

Given the fact that this paper has focused on various ways in which technology can assist in vocabulary acquisition and reading proficiency, the teaching principles that I suggest relate to the use of CALL in vocabulary and reading development.

First Principle: Instructors Should Pay More Attention to the Existence of Various Teaching Tools

The first principle I would like to propose is related to vocabulary acquisition and technology, namely, instructors should pay more attention to the existence of various teaching tools that help in vocabulary development, both traditional, and technology-enhanced. Apart from the traditional vocabulary teaching techniques (e.g. bilingual lists), instructors should also be aware of the potential of integrating technology in the language classroom. Thus, for vocabulary acquisition, instructors could make great use of technology by using multimedia glossed texts, electronic dictionaries, corpora and concordance software, as well as various vocabulary-building software.

Second Principle: Instructors Should Introduce Multimedia-glossed Texts into Their Vocabulary/Reading Classes

The second principle I propose is related to vocabulary development and glosses. As it can be concluded from the various research studies presented above, one great way to increase vocabulary acquisition and retention is the use of computerized reading passages enhanced with various types of glosses. As research has suggested, multimedia glossing triggers better results when compared to print glosses. Moreover, full glossing seems to be the best facilitator of vocabulary acquisition and reading comprehension, as opposed to little or non-glossed texts. In addition, best results in retention are triggered by picture + text annotations, whereas pronunciation, video, and audio glosses seem to correlate negatively with reading comprehension. Multimedia glossing is, however, a valuable tool that can assist in vocabulary acquisition and recall, as well as in reading proficiency and should, therefore, be integrated by TESOL instructors in their vocabulary and reading classes.

Third Principle: Instructors Should Be Acquainted with the Criteria for Software and Courseware Evaluation

The third principle I find of great value for future ESL and EFL teachers, as well as for L2/FL instructors in general, who decide to use technology in their classrooms, is that they should be acquainted with the criteria for software and courseware evaluation (e.g. goals, presentation, appropriateness, outcomes), as well as take into consideration two very important factors: time and effort. Teachers must be aware that there are many different types of software or online materials available for ESL / EFL, however, not all of them are valuable for classroom instruction. Some materials focus on specific skills, while others focus on a wide range of skills and strategies. Moreover, instructors should also ensure that the materials used in class are motivating for students and are at an optimum, 'i+1' difficulty level, so that progress can be attained. Teachers should also pay attention to students' level of familiarity with computers and keep in mind whether the chosen software will trigger the desired outcomes.

Fourth Principle: Instructors Should Keep Up with Current Methodology and Make Best Use of Visuals and Multimedia

A fourth principle I would like to propose is for CALL instructors / developers. Thus, given what we currently know about the reading process and the various aids that help increase vocabulary acquisition, it is important that computer-based instruction designed to teach vocabulary and / or reading skills, is based on the current knowledge and methodological principles about how to best teach them.

Moreover, good CALL programs should make best use of visual elements and multimedia

glossing, as well as generate students' participation. The programs should be interactive, allowing the students to make choices. Also, they should consist of a wide range of different types of exercises in which students not only choose the right answers but also type in answers.

Conclusion

To conclude, there is a reciprocal relationship between vocabulary acquisition and reading comprehension. The better the students' vocabulary knowledge is, the better they perform with reading comprehension tasks. Similarly, the more the students read using the appropriate skills and strategies, the more their vocabulary develops. Multimedia plays an important part in both vocabulary acquisition and reading comprehension; therefore, instructors should be aware of the potential benefits of integrating technology in the language classroom.

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Vocabulary Acquisition is the process of learning the words of a language and the methods can differ between adults and children. Several of our own studies . . . have explored the use of annotations in second-language multimedia environments for reading and listening comprehension. These studies investigated how the availability of visual and verbal annotations for vocabulary items in the text facilitates vocabulary acquisition as well as the comprehension of a foreign language literary text. We found that especially the availability of picture annotations facilitated vocabulary acquisition, and that vocabulary words learned with picture annotations were better retained

than those learned with textual annotations Researchers in L2 vocabulary acquisition and use may agree that L2 vocabulary knowledge is essential in L2 text comprehension (Laufer, 1997; Nassji, 2003; Nation, 2001; Read, 2000). L2 learners who have limited vocabulary knowledge are less likely to be able to develop advanced levels of reading, listening, writing and speaking skills in the target language. Vocabulary Incidental Acquisition in Vocabulary Pre- and Post-tests The data in Table 1 demonstrates that mean scores of RHLH, RHLL, and RLLH groups' vocabulary post-tests are both higher than those of their pre-tests. The increased percentage score ranged from 1.12% (RLLH) to 3.4% (RHLH). Effects of computer-assisted glosses on EFL learners' vocabulary acquisition and reading comprehension in three learning conditions. Article. Apr 2017. Learners had a positive perception of the usefulness of these tools in assisting with class preparation, in promoting easier and more rapid reading, and in reducing learner fatigue. While learners found the use of electronic dictionaries to be beneficial for exploratory reading, there was also a preference for curated glossaries to complement their learning. Ongoing training and assistance were necessary to avoid a "digital divide" in the take-up of e-technologies. View. Show abstract.

Kim " vocabulary acquisition with affixation. 44. precondition for learners' discourse comprehension, which allows grammatical rules to be patterned in the learners' mind. Additionally, Hudson (2007) says language is formed of words and learners' vocabulary is key in language and its acquisition. There are a variety of ways to effectively learn and teach vocabulary such as affixation practice, flash cards, intensive reading, and so on. Making students understand and then memorize a great deal of vocabulary is difficult for English teachers in Korea because the Korean language, Hangul, consists 1. Vocabulary Observation - If students take the time to study, they are able to memorize new words and definitions. - Even though they can define a word, they have not reached a level of transfer to where they can use new words in context. Question -How can I help students transfer their knowledge of definitions to proper use in the context of their speaking and writing? 2. Background Observable Phenomena: Sophisticated critical thinking, strong reading comprehension, completes work thoroughly and on time, supports ideas with evidence from texts (both in writing and verbally). Literacy Test in Vocabulary Learning Through Computer Assisted Language English Language Essay. 4596 words (18 pages) Essay in English Language. 5/12/16 English Language Reference this. Reading is an active skill that involves the reader, the text, and the interaction between the two. Reading in a L2 or FL is a dynamic and interactive process, during which learners make use of a variety of skills and strategies, combined with background knowledge, L1-related knowledge and real-world knowledge to arrive at an understanding of written material (Aebersold and Field, 1997: ix). Holmes therefore suggested using pictures to initially improve inferential reading, and then gradually advancing to using print only. Imagery and vocabulary acquisition.