Providing Pedagogical Learner Training in CALL: Impact on Student Use of Language-Learning Strategies and Glosses

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ABSTRACT

While recent studies have found that viewing glosses with multimedia annotations can help students learn and retain vocabulary words (Chun & Plass, 1996; Al-Seghayer, 2001), O’Bryan (2005) found that when providing pictorial glosses for select words within an online reading unit, few students took advantage of the clickable gloss function allowed by the medium, a finding mirrored in a number of research studies (Hegelheimer, 1998; Hegelheimer & Tower, 2004). In an attempt to address this issue, this study investigated whether training learners to use CALL effectively following Hubbard’s (2004) 5-step approach leads to increased gloss use.

KEYWORDS

CALL, Vocabulary Acquisition, Pedagogical Learner Training, Gloss Use, Learner Strategies

INTRODUCTION

Many studies have found that using computerized texts with hyperlink glosses, that is, textual definitions or explanations, videos, pictures, or audio segments near the text, seems to encourage learners to interact both interpersonally (i.e., noticing and choosing to view the enhanced input) and intrapersonally (i.e., processing the input internally and stimulating thought about the linguistic item) with the text (Chapelle, 2003). When used for purposes of vocabulary acquisition, viewing an annotation for a glossed word can help students better learn and retain it (Chun & Plass, 1996; Al-Seghayer, 2001). However, O’Bryan (2005) found that when providing hyperlinked, image glosses for select vocabulary words within an online reading unit, few students took advantage of the clickable gloss function allowed by the medium; this mirrors findings in a number of research studies (Hegelheimer, 1998; Hegelheimer & Tower, 2004; Grgurovic, 2005).

In an attempt to help students realize the full potential of these types of materials and overcome the underuse of glosses, this concurrent mixed methods study was designed to better understand the effects of providing pedagogical learner training (Hubbard, 2004) by converging both qualitative (student interview or reflective online postings) and quantitative (online tracking) data. In the study, student awareness of the language-learning potential of the gloss function provided in an online reading unit was explored using student responses to reflective discussion topics posted by the researcher within an online course management system. In addition, online tracking data was used to assess whether providing pedagogical learner training had a significant effect on gloss use. The current study addressed two research questions:

1. How does learner training impact student awareness of the language-learning potential (LLP) made available by the glosses provided in an online reading unit?
2. Does learner training result in an increased use of glosses provided in the unit by ESL students?

It was hypothesized that as a result of the pedagogical learner training, students would gain a clear understanding of why glosses are made available in the unit and how, if viewed, they could help students to better learn and retain vocabulary words. In addition, it was hypothesized that this type of learner training would lead to a greater use of glosses when compared to the behavior of students who did not receive training because it would provide students with a better understanding of the theory and pedagogy informing the design of the unit and they would be encouraged to reflect on their interaction with the unit during the time they are working with it.

In the sections below, the study is first contextualized by reviewing relevant literature. Then, the procedures and methods used to collect and analyze the data are described. Next, the results of the analysis for the two research questions are discussed. To conclude the article, the research findings are discussed in the light of previous research, and implications for teachers and researchers are offered.

CONTEXT

CALL Materials and Training

Many of the design decisions in CALL materials are based on the interactionist theory of second language acquisition (SLA), which states that when learners have opportunities to interact with others, they are more likely to negotiate meaning, adjust their conversational output, and therefore make connections between form and meaning. While the term interaction is generally “used to refer to the interpersonal activity that arises during face-to-face communication” (Ellis, 1999, p. 3), Chapelle (2005) states that interaction can also occur “between person and computer” (p. 55). Design decisions that are thought to enhance this type of learner-computer interaction focus on allowing learners to “[obtain] enhances, or modified, input” (Chapelle, 2005, p. 55). Specific types of enhanced input “expected to be beneficial to learners” (Chapelle, 2003, p. 40) include salience, modifications, and elaborations.

While input enhancement has been used in traditional classroom environments, in CALL materials these enhancements take different forms. For example, enhancements may “appear as hypertext or hypermedia links that help the learners to comprehend the input” (Chapelle, 2003, p. 45). The hypertext medium also allows many of these enhancements to be temporary modifications to the original input, leaving the original intact.

Basing the design of CALL activities on SLA theory can help teachers and materials designers make sound pedagogical decisions when selecting materials with which their students will interact. However, little of the literature in CALL has shown teachers providing their students with the pedagogical training necessary to help them make sound decisions when interacting with CALL materials. Although learner strategy training research in SLA has been criticized for setting up “implicit constraints on the range of behaviors and activities that may be seen as appropriate to language learning” (Benson, 1995, para. 9), many have found strategy instruction to be beneficial to language learners, particularly when “woven into regular, everyday [second language] teaching” (Oxford, 2001, p. 363).

Traditional Approaches to Training Learners for CALL

In CALL, learner training has been traditionally designed to train learners to use computer
applications in order to accomplish specific tasks or to become autonomous users of CALL materials rather than to help them make informed decisions while interacting with CALL materials. Barrette (2001) states that “many teachers include CALL activities in the belief that they aid language acquisition only to discover that students need greater computer proficiency than they really possess in order to reap the benefits of the activities” (p. 8). Teachers face the task, then, of providing training in the use of the software themselves. In addition to the training that teachers provide, Hubbard (2004) notes that many computer applications often include “operational tutorials or detailed instructions in the layout of the user interface and functions of available controls” (p. 48), but points out that both students and teachers often bypass these tutorials in their rush to get to the main parts of the program.

Training learners to become autonomous users of CALL applications has often focused on teaching computer skills and language-learning strategies specific to CALL. For example, Shetzer and Warschauer (2000) describe a framework to help language teachers plan online lessons that “teach students valuable lifelong learning skills and strategies for becoming autonomous learners” (p. 176). Such skills and strategies include working collaboratively with others through computer-mediated communication and searching for—and navigating—online sources. Additionally, Healey (1999) sets forth conditions that “encourage learners to take on the attitude of greater self-reliance and independence that will let them actively seek out ways to enhance their own learning” (p. 391).

Providing students with training to help them accomplish a specific CALL task or to use specific CALL materials without instructor supervision no doubt has benefits for students and is an important first step in guiding students to use CALL materials effectively. However, restricting learner training to procedural details can only cause language learners to miss out on an important component that would enable them to truly take control of, and derive maximum benefit from, their interactions with CALL applications: understanding the pedagogical principles that guide the creation of CALL activities and the role that these principles play in fostering language acquisition.

**Pedagogical Training for CALL**

Hubbard (2004) acknowledges the literature on learner training in general and for specific applications but affirms “little in the way of literature showing that learner training in the pedagogical uses of CALL software is taking place” (p. 50). Finding that a great deal of research involving learner use of CALL assumes that “learners will naturally gravitate towards [using] technology most helpful to them” (p. 50) and that training is no longer necessary once students have learned how to use the technology, Hubbard states that “[i]t is our responsibility as teachers to see that [our students] are able to make informed decisions about how to use computer resources effectively to meet their learning objectives” (p. 51).

Based on his own experience as an instructor using CALL in the classroom as well as previous research on both teacher and learner training, Hubbard sets forth five principles of learner training. The first encourages teachers to personally experience CALL so as to know “CALL from the learner’s perspective … [an experience] that may lead to a sense of empathy and otherwise uncaptured insights” (p. 52).

The second principle, giving learners teacher training, serves not only to prepare learners in an autonomous learning situation by giving them explicit knowledge of the process of language learning but also to more clearly link the CALL activity to its learning objective. Hubbard (2004) states that “the learners need to understand the importance of making a connection between a particular CALL activity and some desired learning outcome or prog-
ress toward it” (p. 53). Helping to increase learners’ metacognitive knowledge, “the part of long-term memory that contains what learners know about learning” (Wenden, 2001, p. 45), would no doubt help learners adopt some of the cognitive and metacognitive strategies used by other ESL students that have been identified by O’Malley, Chamot, Stewner-Manzanares, Kupper, and Russo (1985), including self-management and elaboration.

The third principle, using a cyclic approach to training, “allows new ideas to be created one at a time … [and] gives the opportunity to remind students of points they may easily forget over time” (p. 53). To avoid overloading students, Hubbard recommends letting learners play with the CALL application for a short period of time before discussing how to use it appropriately in order to promote better understanding of how it is used for language learning.

Hubbard’s fourth principle, using collaborative debriefings, encourages learners to “maintain a balance between the task objectives and language-learning objectives so that the latter do not get mislaid” (p. 54). In addition to doing this in class, another possibility would be to use synchronous chat or an electronic discussion board, which has been found to be beneficial in a number of studies (Irvine, 2000; Weasenforth, Biesenbach-Lucas, & Meloni, 2002).

Finally, principle five encourages teachers to help students generalize strategies learned in one CALL program in order to facilitate their use of other programs. Recommended strategies include mining language materials for other uses and manipulating the level of materials to make them easier or harder to learn. While some teachers, based on their classroom situations, may not find it appropriate to adopt all of these principles, together they provide a framework for providing essential knowledge for students in order to help them understand the language-learning potential (LLP) of CALL applications.

### Training Learners to Raise Awareness and Increase Gloss Use

While providing pedagogical training for learners using CALL may be beneficial for relating classroom learning objectives to CALL activities or helping learners understand how CALL can be used for language learning, it may also encourage students to take advantage of the enhanced input provided within the CALL activities. A recent study investigating CALL use in an authentic English as a foreign language environment in the United Arab Emirates found that some beginning-level students did not use any optional features, such as a computerized glossary, despite the fact that these features could help students’ language development (Hegelheimer & Tower, 2004). The authors hypothesized that students may be more inclined to use certain options provided within a program if they are sufficiently introduced by the teachers, noting that “teachers are instrumental in demonstrating how to use the interaction options. … Future research should look into the relationship of teacher encouragement and learner use” (p. 201). Some evidence of this relationship is given by Kolaitis, Mahoney, Pomann, and Hubbard (2006), who showed that after providing pedagogical training to beginning through advanced-level adult ESL students interacting with CALL materials, students were observed “utilizing strategies to exploit different capabilities that a program offers” (p. 328).

Providing pedagogical training for learners, then, may enable them to take “operational competence in a given computer application and transfer that into learning competence” (Hubbard, 2004, p. 51, emphasis in original). Therefore, by understanding why enhanced or modified input, such as a gloss, is associated with certain linguistic features or provided in a specific mode, students may be more willing to interact with the gloss in order to enhance
their learning because the training has provided them with the metalinguistic knowledge necessary to understand the connection. Based on this call for research and the pedagogical approach to learner training provided by Hubbard (2004), the present study begins to fill the gap between student-computer interaction and pedagogical learner training.

**METHODS**

This mixed methods study investigated the impact of pedagogical learner training on student awareness of the LLP provided by glosses in an online reading unit and also compared the online gloss use of students from two intact academic-reading classes, one that had received training before interacting with the unit (the experimental group) and the other that had received no formal training before interacting with the unit (the control group). Mixed methods research recognizes that “both quantitative and qualitative research [methods] are important and useful” (Johnson & Onwuegbuzie, 2004) and seeks to use both in either a single study or “among several studies in a program of inquiry” (Creswell, 2002, p. 210). While mixed methods designs can pose challenges, they can be useful for investigating a complex issue like learner training.

**Participants**

Twenty-two ESL adults, 8 males and 14 females, from a variety of primarily Asian language backgrounds including Indonesian, Korean, and Chinese, participated in this study (see the participant profile in Appendix A). The participants were students at a major research university in the United States, and, based on results from an English placement test taken upon entrance into the university, were enrolled in an academic-reading class for graduate and undergraduate students. In the study, 19 participants were undergraduate students, and 3 were graduate students. The participants in the control group \((n = 11)\) were enrolled in the academic-reading course in the 2004 fall semester, and the participants in the experimental group \((n = 11)\) were enrolled in the course in 2005 fall semester. Although the classes were taught by different teachers, both groups completed the study at the same time of the semester and outside of the classroom.

**Reading Texts**

The 3-week online unit was organized around three authentic texts on the topic of the environment. The texts were subjected to content analysis by the researcher, and the Flesch-Kincaid readability statistic\(^1\) was calculated for each text; the three texts were rated at the 12\(^{th}\) grade reading level, which coincided with the researcher’s judgment. The readings appeared in a two-frame setup with the text occupying the bottom frame and the top containing both directions for clicking on the words and a blank space where, if the annotated words were clicked, either an image or textual definition would appear (see Figure 1). In order to capture whether students clicked on the glossed words, a tracking system was created using ColdFusion, which collected information on which words, if any, students clicked, as well as the pages visited in the unit, the times pages and words were clicked on, and the responses to the vocabulary exercises at the end of each reading.
Figure 1
Online Reading Text

Glossed Vocabulary Words

Because the study was conducted in classes at the university level, items from both the academic word list (AWL) (Coxhead, 2000) and words not on the Academic or University Word List—referred to as offlist words which are usually technical, context-specific terms—were thought to be ideal and appropriate for glossing. To determine which words in the texts were AWL and offlist words, each reading passage was run through a vocabulary profiler developed by the English Centre at the University of Hong Kong. Next, each word was rated for abstractness and imageability, and the number of words glossed per text was kept consistent at about 10%. Finally, 2-3 images from Google Images (2005) were identified by the researcher as corresponding to each abstract, imageable word, and these images were then rated for accurate representation by a cross-cultural group of raters in the hope of ensuring the selection of culturally sensitive images. Once each image was rated in terms of preference, those with the highest preference for a particular word were selected. The textual annotations were context-based dictionary definitions. In all, 48 abstract, imageable words (9 offlist and 39 academic) were identified and annotated with images or definitions in the online reading texts (for a discussion of all the procedures listed here, see O’Bryan, 2005).
Training

In accordance with Hubbard’s (2004) first principle for learner training, personally experiencing CALL, the researcher interacted with a variety of online CALL materials and attempted to use them for language-learning purposes before beginning the research project. Because this unit was assigned at the same point during each semester and because both instructors followed roughly the same syllabus, students from both groups had experience with some form of online activities in class before beginning the online unit, which coincided with Hubbard’s third principle of calling for a cyclic approach to training. The control group received no formal directions before beginning the unit; they saw only the directions provided in the unit describing how to click on a word to display an image and how to get the image to disappear once it was viewed (see Figure 2).

![Figure 2: Text Directions](Image)

In contrast, before beginning the unit, the experimental group had a brief, 10-minute training session conducted by the researcher who discussed the theory behind providing images for help with vocabulary acquisition, the pedagogical implications of doing so, and a brief overview of what the students would see as they progressed through the unit (see the training session outline in Appendix B). This preunit training was motivated by Hubbard’s (2004) second principle of training, providing learners with teacher training. Since the researcher was not teaching the academic-reading course, the brevity of the training was due to the limited amount of time granted for training by the course instructor. Once the participants began the unit, they also saw the directions in the unit shown in Figure 2. Finally, a summary of the training was posted in WebCT, the course management system at the university, so students could refer back to the material covered in the preunit training at any time in order to enhance the cyclic nature of the training.

In addition to the preunit training, participants in the experimental group were also asked to complete what Hubbard (2004) termed “collaborative debriefings” (p. 54), his fourth principle of training, on an electronic discussion board within WebCT. This medium for the debriefings was chosen based on the fact that, because the online unit took the place of three regularly scheduled class periods, the students did not meet as a group in class on these days. A discussion topic was posted by the researcher in conjunction with each of the three texts in order to encourage the participants to think about the language skills they used while going
through the unit, reflect on the effectiveness of the two modes of input they received (image and text), and share frustrations, if any, of this format for vocabulary acquisition. Another purpose of the discussion topics was to confirm whether the students retained information from the preunit training and investigate whether it played a part in their clicking on the glossed words to see the image annotations (see the discussion topics in Appendix C).

The final principle, generalizing the strategies learned to other CALL activities, was not implemented due to a lack of class time available to the researcher since the class was taught by another instructor. Table 1 provides a summary of how Hubbard’s principles were implemented in this study.

Table 1  
Implementation of Hubbard’s (2004) Suggested Principles for Learner Training  
<table>
<thead>
<tr>
<th>Principle for Learner Training</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience CALL yourself</td>
<td>Researcher used a variety of online CALL programs prior to the study.</td>
</tr>
<tr>
<td>Provide learners with teacher training</td>
<td>Participants received a 10-minute preunit training session.</td>
</tr>
<tr>
<td>Use a cyclic approach to training</td>
<td>Participants completed some online activities in class before completing the online unit.</td>
</tr>
<tr>
<td>Encourage collaborative debriefings</td>
<td>Participants responded to questions posted in WebCT by the researcher after they completed each text.</td>
</tr>
<tr>
<td>Generalize strategies learned to other CALL activities</td>
<td>This principle was not implemented.</td>
</tr>
</tbody>
</table>

Procedure

The design of this study followed a concurrent nested strategy because qualitative research methods guided the study but both qualitative and quantitative data were simultaneously collected. Creswell (2002) states that the nested approach “has a predominant method that guides the project” and “is [often] used so that a researcher can gain broader perspectives as a result of using the different methods as opposed to using the predominant method alone” (p. 218). In the present study, the guiding research question—addressed by using qualitative research methods—investigated student awareness of the LLP inherent in the glosses provided in the online reading unit. If student awareness increased, as hypothesized, this awareness would likely lead to increased use of the glosses, the second research question addressed by using quantitative research methods. Consequently, quantitative research methods were embedded or nested within qualitative research methods.

Qualitative data collection

The participants in the experimental group were asked to log on to WebCT and respond to the debriefing topic for each of the three reading passages and associated exercises in the unit. Each debriefing topic consisted of at least four discussion prompts. Analysis of the log data in WebCT indicated students posted their responses after completing each reading assignment. Eight students responded to prompts for the first two texts, and four responded to the prompt for the third text. In addition, while the debriefing was meant to be collaborative, the students
did not read or reference other students’ responses in their postings, as evidenced by analyzing both the responses and the log data. Therefore, it would be more accurate to categorize these as individual guided reflections.

The students in the control group were invited to meet with the researcher for interviews after they had completed the entire unit (see the interview questions in Appendix D). The interviews were optional, and four students agreed to meet with the researcher who recorded and later transcribed their responses. The interview questions elicited information about the level of the texts, how words clicked on were chosen, how words clicked on changed as the second and third texts were read, whether the annotations were useful in both learning and remembering words, and whether the annotations were helpful or distracting.

**Quantitative data collection**

Participants in both the experimental and control groups were able to complete the individual components of the units as they wished and spend as much time on them as necessary. Directions were clearly stated at the beginning of each text and at the top of each page (see Figure 2), and the researcher could be easily reached if students had questions. Each text was a small unit unto itself and included vocabulary and comprehension exercises (see Figures 3 and 4, respectively).

**Figure 3**

**Sample Vocabulary Exercise**

1. Polluting
2. Disposal
3. Impacts
4. Respiratory
5. Smoker
6. Contributes
Students often completed a subunit in a single sitting, although some completed all three texts or began reading the text, logged off, and then came back to the unit hours or days later. Reflecting a setting typical of using online materials and the nature of the academic-writing course, which was originally an independent study course, students were given a wide latitude to complete the unit. They were free to choose the order of texts to be read (although once in the unit the order of exercises was fixed) in order to foster a degree of control over their own learning. The online tracking system recorded all students’ interactions with the unit.

**Analysis**

The data consisted of either the interview or WebCT responses and log entries from the online tracking system that captured which words students clicked on (i.e., viewed glosses of the words). In order to address research question 1, exploring how learner training impacts student awareness of the LLP made available by the glosses, the students’ interview and WebCT responses were analyzed to determine whether students perceived being aware of the LLP of the CALL activity. To address research question two, investigating whether the pedagogical learner training resulted in an increased use of glosses, the nonparametric Wilcoxon rank-
sum test, chosen because of the small sample size, was used to compare the distribution of the dependent variable “gloss use” over the two groups. In addition, the “gloss use” variable was also assessed for effect size using Cohen’s $d$-test, appropriate since the sample sizes are small.

RESULTS

It was hypothesized that learner training would lead to an awareness of the LLP made available by the glosses and to increased use of the glosses. When analyzing the student responses from the experimental group in WebCT, it appeared that students had a clear understanding of the theory and pedagogy behind the online unit and were therefore aware of the LLP made available by the glosses. Results from the inferential statistics, however, showed that there was no significant difference in gloss use between the students who received training and those who did not.

Learner Training and Students’ Responses

Each student from the experimental group who responded to the final discussion prompt 3 weeks after the initial training session demonstrated awareness of the LLP of the glosses in the online unit. When asked why they thought pictures were chosen to represent words in the glosses rather than textual definitions, one student responded that “Pictures usually give people more directly impression than words,” while another replied that “Those pictures help me understand better because the pictures stimulate my brain to remember longer.” In these statements, both students seemed to grasp the purpose of using images rather than textual definitions to help them learn vocabulary by echoing statements made by the researcher during the 10-minute, preunit training. This claim is further supported by a response from a student who, when asked after reading the final text what he remembered about the preunit training, replied “When readers read the articles, the pictures help them to guess the meaning of vocabulary words than providing a dictionary definition.”

When asked whether the preunit training helped them better understand why pictures were chosen for the glosses rather than textual definitions (i.e., the pedagogical reason), one student replied “I think pictures not only give me the explanation of the words, they also encourage me to thinks the meaning from the information I received. It is more interactive and initiative than solely showing the dictionary definition.” Similarly, another student stated, “Although I prefer to paper reading, this on-line reading also helps me to better understand the point of the unit and why pictures were chosen instead of dictionary definitions. Specially, I never forget the meaning of some words because of the pictures providing. The pictures are well-expressed the meaning.” Interestingly, these two students viewed glosses 49 and 43 times, respectively, two of the three highest users of glosses in their group. The students’ responses in WebCT and their actions within the unit seem to support the hypothesis that when learners make the connection between a CALL activity and a language-learning outcome, they will begin to make more effective use of CALL materials.

Learner Training and Gloss Use

The descriptive statistics showed that the students in the control group viewed a mean of 15.83 glosses, while students from the experimental group viewed a mean of 22.83 glosses. However, there was a very large standard deviation for each group ($SD = 19.07$ for the control...
The large standard deviation was due primarily to the fact that some students chose not to view any glosses, while others chose to view almost all. The Wilcoxon rank-sum test was used to compare the distributions of gloss use over the two groups. The results revealed that learner training did not have a statistically significant effect on students’ use of glosses ($p = .44$). In addition, because the sample size was small, Cohen’s $d$ for effect size was calculated in order to enhance the strength of these findings. This effect size for gloss use falls between the small and medium levels set forth by Cohen (1988) ($d = 0.330$).

**CONCLUSION**

It was hypothesized that the students who received pedagogically oriented learner training would gain an understanding of why glosses were made available in the online reading unit and how the glosses could help them better learn and retain vocabulary words. The debriefings posted in WebCT confirmed this hypothesis as students demonstrated their understanding of the LLP of the image glosses and retained information from the 10-minute preunit training even after a period of 3 weeks. Providing students with this type of training therefore achieved Hubbard’s (2004) goal of helping learners “understand the importance of making a connection between a particular CALL activity and some desired learning outcome or progress toward it” (p. 53).

In addition, while the debriefings were not truly “collaborative,” students participating in individual guided reflections consciously engaged in the metacognitive strategies of self-management and elaboration (O’Malley et al., 1985). Cohen (1998) suggests that “language learning will be facilitated if students become more aware of the range of possible strategies that they can consciously select during language learning and language use” (p. 65) and emphasizes that “the element of choice is important here because this is what gives a strategy its special character ... the element of consciousness is what distinguishes strategies from those processes that are not strategic” (p. 4, emphasis in original). Therefore, providing students with pedagogical learner training and a forum for them to reflect on strategy use gained through this training could help to facilitate the language-learning process.

The analysis of the debriefings indicated that the time spent on the learner training in class, albeit brief, seemed well worthwhile. Because the classes were not taught by the researcher, it was not possible to spend more time with these students as they interacted with CALL activities later in the semester to see if they used the strategies they had learned and knowledge they had gained to exploit the learning potential of other CALL programs. Therefore, future research might investigate the impact of pedagogical training on learners over time with other CALL applications. Also, time spent on learner training in this study was minimal. Other research might investigate how the amount of time spent on learner training impacts students’ behavior within a CALL program.

It was also hypothesized that once students who received training gained an increased understanding of the theory and pedagogy informing the design of the unit, they would view more glosses than students who did not receive training. While the descriptive statistics showed that on average students who received the training clicked on more glosses than those who did not, it may be more appropriate to implement this type of training throughout an entire course rather than for just one CALL activity. Hubbard (2004) and Kolaitis et al. (2006) advocate providing training of this type for both CALL and non-CALL activities. In addition to helping increase students’ understanding of the benefits of help options in a variety of activities, a more highly integrated approach to training for all class activities may
also help increase the collaborative nature of the debriefings. If students first practice these collaborative debriefings in a traditional classroom environment, they may better understand how debriefings in an online environment could also be collaborative. Requirements, such as mandating that students comment on each others’ entries, could also enhance the collaborative nature of debriefings in an online environment. A study investigating the impact of a more highly integrated approach to training would also be interesting and beneficial to teachers and language learners.

Limitations of this study include the small sample size, the noncollaborative nature of the debriefings, and the short period of time spent on learner training. Because of the short period of time, it was not possible to implement all of Hubbard’s (2004) principles for providing learner training. Despite these limitations, the findings in this study provide at least a basis for research in an area that has been previously unexplored. While the results did not show that training led to increased gloss use, they did show that learner training can lead to greater awareness and understanding of the theory and pedagogy behind the design of the online unit. This finding could be a starting point in beginning to determine how to best help students take advantage of the options offered within CALL programs.

NOTE

1 While convenient to calculate, the Flesch-Kincaid readability statistic has limitations when used for ESL students. For example, some vocabulary words may be recognized by the formula as elementary (e.g. "snowman"), while, due to cultural and societal differences, these may not be known by some ESL students (e.g. someone from a very warm climate). The formula for the Flesch-Kincaid Grade Level score is (.39 x ASL) + (11.8 x ASW) – 15.59, where ASL = average sentence length (the number of words divided by the number of sentences) and ASW = average number of syllables per word (the number of syllables divided by the number of words).

REFERENCES


### APPENDIX A

Participant Profile ($N = 22$)

<table>
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<th>Classification</th>
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</tr>
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</tr>
<tr>
<td>Male</td>
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<td>Chinese</td>
<td>15</td>
</tr>
</tbody>
</table>

Note: "." indicates missing data
APPENDIX B
Outline for Learner Training

1. Talk to students about the difference between doing online activities on their own, and activities in class
   a. need to understand the point
   b. be motivated to do it
   c. plan when to work on it
   d. have a lot more choices to make than when doing something in class where all this is spelled out for them!

2. Show students the unit
   a. what they'll be doing
   b. what the point of the unit is supposed to be (vocabulary acquisition of academic words)

3. Talk about the reason for pictorial annotations
   a. students have a choice to view or not view annotations—this provides control over whether to use this type of modified input or not
   b. when coupled with text from the reading, the pictures are supposed to help students better understand the words and better retain them based on their being a different type of input (the more modes of input students have, the more likely they'll be able to make meaning of the word)
   c. pictures are a more immediate type of input (i.e. students can bring a part of their experience to the picture and relate to it more easily than just the text alone).

APPENDIX C
Debriefing Questions Posted in WebCT

Topic: Reading Text 1
After completing the first reading text in this unit, please take a moment to think about what you did by responding to the following questions:

1. What language skills do you feel you used during this reading (skimming? scanning? reading text? reading visuals?)?
2. Did you click on any of the words? If so, how did you choose which ones to click on?
3. If you viewed any images, did you feel that they helped you better understand the vocabulary word? Why or why not?
4. How do you feel about interacting with text and help options within an online unit like this?
Topic: Reading Text 2
In your first posting, many of you said that you used some skimming and scanning strategies while reading online, and that many of you clicked on vocabulary words you did not know so you could see the pictures. For this posting, I’d like you to consider the following questions:

1. If you clicked on a word and saw a picture, how did you interpret it?
2. Did the picture seem to make sense to you immediately or did you have to think about it for a while?
3. Once you saw a picture for a given word, how did you use it to make meaning of the word?
4. What strategies did you use when trying to tie the meaning of the picture and the meaning of the word in context together? Did you look at one then the other? Just use the meaning from the picture? The context? Or did you? Discuss this.
5. Finally, regardless of whether you clicked on vocabulary words or not, are you having any problems with this unit? Have you had experience with this type of an online activity before, and if so, in what form? Do you have suggestions on ways to improve this unit?

Topic: Reading Text 3
Please respond to the following questions as completely as possible.

1. When going through the online unit, have you been clicking on any of the vocabulary words?
2. When thinking about whether you want to click on a word or not, what is your thought process like? (In other words, besides not knowing the word, what else do you think before clicking on the word? That you will possibly remember the word better? Better understand it?)
3. If so, what do you think is the point of choosing pictures to represent these words rather than providing a dictionary definition?
4. Do the pictures help you define these words, or would you rather have a dictionary definition? Why?
5. What do you remember about the short overview of the unit I gave during your class when I explained what you were the do, the point of it, etc.? Please write down anything you can remember.
6. Did that brief overview I gave you, and also the one posted under “Resources” on the WebCT site, help you to better understand the point of the unit and why pictures were chosen instead of dictionary definitions? Please elaborate.

APPENDIX D
Interview Questions for Students in the Control Group

1. Did you think the texts were too hard?
2. Did you have trouble understanding the texts?
3. Did the comprehension exercises help you understand the texts better?
4. Did the vocabulary exercises help you understand the texts better?
5. How did you choose which words to click on?
6. As you read the second and third texts, did the way you chose words to click on change? For example, did you click on all words in all texts, or, as you read the second and third text, did you start to only click on the words you didn’t know?
7. Did you think that the words that looked like links within the text were the most helpful ones to be annotated? If yes, why? If no, which ones should have been?
8. Overall, did the annotations help you understand the words that you didn’t already know that looked like links?
9. Did the annotations help you remember the words, or did the context the words were used in help more? Was it a combination?

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