Prospects for Developing L2 Students’ Effective Use of Vocabulary Learning-Strategies via Web-Based Training

Jim Ranalli
Iowa State University, jranalli@iastate.edu
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ABSTRACT
A large body of research supports the efficacy of learning strategies employed in the acquisition of second language vocabulary. However, research also indicates that many such strategies are underused or misused by learners and, further, that any effort to integrate learner training in the use of such strategies into classroom instruction faces a number of challenges, among them a shortage of appropriate training materials, a lack of expertise on the part of the teacher, and ingrained habits or even resistance on the part of the learner. This paper describes a classroom-based investigation into the utility of a prototype web-based learner-training resource called The Virtual Vocabulary Trainer (The VVT Site), which combines multimedia tutorials, practice exercises, and awareness-raising tasks. Participants’ use of the site and their opinions about the training they received were investigated by way of a survey, interviews, observations, and screen-capture devices. The results provide insights into the benefits that might be gained from an online multimedia approach to learner training, as well as useful design and content considerations for future enhancements to the site.

KEYWORDS
Vocabulary, Learning Strategies, Learner Training, Web-based Multimedia Tutorials, Strategies-based Instruction

INTRODUCTION
There is a widely recognized need for L2 learners to take some measure of responsibility for their own vocabulary learning, and in this endeavor vocabulary-learning strategies are seen to play a key role. However, research evidence shows that such strategies are often poorly used or neglected by learners (Nation 2001). Training learners in the use of such strategies, while not without controversy, is considered a promising idea. The nature of such training suggests that it be situated in the context of ongoing language courses to increase the likelihood of, among other things, guidance from a teacher, sufficient opportunities for practice, and feedback on one’s efforts (Nation, 2001; O’Malley & Chamot, 1990; Oxford, 1990; Wenden, 1987). However, studies of attempts to integrate learner training into commercial course books, whose contents often guide priorities and approaches in the language classroom, have produced disappointing findings (Lake, 1997; Ranalli, n.d.; Sinclair & Ellis, 1992).

The present study, which focuses on a new approach to learner training, was inspired by the author’s attempts to train himself in certain CALL-related technologies (namely, the web development application Dreamweaver) using commercially produced web-based multimedia tutorials. The unique strengths of this form of instruction quickly became apparent: engaging modes input and practice, convenient access via the web, the ability to learn at
one’s own pace, and motivation arising from the technology itself. These advantages, considered in light of Bonk’s (2002) assertion that web-based training is increasingly being used in a wide range of professional endeavors to supplement or even replace face-to-face training prompted the question whether the same approach might be employed to train learners in the use of vocabulary-learning strategies.

A prototype website was built that incorporated video tutorials made from screen-captured PowerPoint presentations and recorded audio narration deployed in conjunction with online exercises of various types. Three modules were developed and uploaded to the internet in the form of an online course called The Virtual Vocabulary Trainer (The VVT Site). This report describes a preliminary investigation into the perceived usefulness and relevance of the site among ESL students at the tertiary level. The aim was to evaluate the utility of such an approach to learner training in order to decide whether it was promising enough to warrant further investment of time and labor.

LITERATURE REVIEW

The Importance of ‘Learning How to Learn’ Vocabulary

Despite having suffered past neglect in applied linguistics, vocabulary is currently enjoying a revival. A number of researchers have noted the urgent need for learners to quickly acquire the 3,000 most common words of English so they can comprehend basic spoken and written texts and communicate in everyday situations (Adolphs & Schmitt, 2003; Laufer & Shmueli, 1997; Nation & Waring, 1997). Scholarship in the fields of both psycholinguistics (Howarth, 1998; Pawley & Syder, 1983) and corpus linguistics (Sinclair, 1991) suggests that lexical items, particularly multiword chunks, play a key role in both productive and receptive fluency as well as native-like idiomaticity. Still other research shows that the most common and serious errors made by language learners are lexical in nature (Gass & Selinker, 2001). It follows that for both receptive and productive purposes, learners of English need to develop large, functional L2 vocabularies quickly in order to make sense of what they hear and read and to express themselves fluently and appropriately.

Calls for helping learners improve the way they go about acquiring vocabulary have been made on a number of psycholinguistic and methodological grounds. Rivers (1983) argues that the lexicon is a personal resource both in terms of content—the items themselves and the way they fill an individual’s professional, academic, interpersonal needs, and so on—and in the way the individual mental lexicon is organized. Sokmen (1997), in reviewing contemporary trends in vocabulary teaching, argues that teachers need to foster independent learning since it is “not possible for students to learn all the vocabulary they need in the classroom” (p. 225). Furthermore, independent vocabulary learning is not only practical but also psychologically beneficial; Atkinson (1972) found that learners who could decide for themselves which new items to learn showed a 50 percent higher rate of recall than those learning words chosen by someone else. If by many accounts a large part of the responsibility for success in vocabulary acquisition lies with the learner’s own efforts, it makes sense to discuss the role of learning strategies in facilitating these efforts.

A Functional Definition of Vocabulary-Learning Strategies

Vocabulary-learning strategies are often considered a subset of general learning strategies, which O’Malley and Chamot (1990) define as “the special thoughts or behaviors that individuals use to help them comprehend, learn or retain new information” (p. 1). This broad definition
is echoed by Schmitt (1997) in defining vocabulary-learning strategies. Citing Rubin (1987), Schmitt says learning is “the process by which information is obtained, stored, retrieved and used.” Therefore vocabulary learning strategies could be any which affect this broadly defined process (p. 203). This definition leaves open to question whether vocabulary is best learned incidentally or deliberately, a topic much debated in the literature. In an alternative definition, Nation (2001) clearly posits the intentional character of vocabulary learning and, interestingly, bases his description on the qualities a strategy must possess in order to warrant attention in a language classroom. A vocabulary-learning strategy, Nation says, must

1. involve choice, that is, there are several strategies to choose from;
2. be complex, that is, there are several steps to learn;
3. require knowledge and benefit from training; and
4. increase the efficiency of vocabulary learning and vocabulary use. (p. 217)

How Learners Use Vocabulary-Learning Strategies

Most research into vocabulary-learning strategies has been descriptive in purpose. Many studies have correlated patterns of strategy use with variables such as achievement level (Ahmed, 1989; Gu & Johnson, 1996), vocabulary size and proficiency level (Gu & Johnson, 1996), gender (Gu, 2002), course level (Griffiths, 2003), and tertiary-level field of study (Peacock & Ho, 2003). Findings that frequently emerge from these studies are that the more successful language learners tend to use wider repertoires of strategies, as well as more cognitively demanding strategies, and also tend to be more reflective, independent, motivated, and organized in their learning; while less successful learners use fewer and simpler strategies and tend to lack independence, self-awareness, motivation, and organizational skills.

It is not surprising, therefore, that many of these researchers cite the need for strategy training. Sananoui (1995) concluded that the underachieving group of learners in her investigation “would benefit most from instructors’ guidance in developing effective approaches” (p. 25). In a similar vein, Lawson and Hogben (1996) noted that “if students are not aware of the advantages of these procedures for some vocabulary acquisition situations, there is a need to press this point more directly during language teaching” (p. 129). Noting discrepancies among those strategies perceived by learners as most useful compared to the ones they actually used, Schmitt (1997) concluded that “learners may be willing to try new strategies if they are introduced to them and instructed in them” (p. 221). Summarizing findings from this research, Nation (2001) asserts,

Most vocabulary learning strategies can be applied to a wide range of vocabulary and are useful at all stages of vocabulary learning. They also allow learners to take control of learning away from the teacher and allow the teacher to concentrate on other things. Research shows that learners differ greatly in the skill with which they use strategies. For these reasons, it is important to make training in strategy use a planned part of a vocabulary development program. (p. 222)

Learner Training

The question arises: can less successful learners really be trained to use learning strategies more effectively? The record appears mixed. Oxford (2001) asserts that learning strategies are indeed teachable. But in his survey of classroom-based studies, McDonough (1995) con-
cludes that improvements from training are weak, culturally dependent, and show up only in certain measures. On the other hand, Stoffer (1995) says strategy instruction was the single best predictor of the use of vocabulary-learning strategies, while Hulstijn (1997) cites numerous studies showing gains in the successful use of one particular mnemonic strategy, the keyword technique, after strategy training. Nation (2001) summarizes similar findings for the strategy of guessing meaning from context. The only certainty seems to be that more research in this area is needed.

A number of guidelines have been proposed for the design of training interventions, both in the field of general language-learning strategies and for vocabulary-learning strategies in particular. O’Malley and Chamot (1990) cite studies showing that an explicit focus on learning processes is necessary if learners are to be able to transfer strategies to new tasks and situations. Learners also need a good deal of practice applying strategies (Nation, 2001), and this practice ideally should be integrated into regular language-learning tasks so learners see it as relevant (Wenden, 1987). Importantly, training must address not only cognitive strategies (e.g., guessing meaning from context) but also metacognitive strategies to avoid leaving learners “without direction or opportunity to plan their learning, monitor their progress, or review their accomplishments and future learning directions” (O’Malley & Chamot, 1990, p. 8). Finally, training must incorporate a motivational framework in which learners have opportunities to reflect on and discuss their feelings about the training experience, as well as successes and difficulties they encountered in applying learning strategies (O’Malley & Chamot, 1990; Wenden, 1987; Oxford, 1990).

Such guidelines have been used to evaluate how successfully commercial ESL course book authors support learning strategy development in their published works. Sinclair and Ellis (1992) and Lake (1997) found in their respective surveys that while course books were increasingly likely to include material for learner training, they generally failed to address such key issues as sufficient practice opportunities, appropriate focus on metacognitive development, or an explicit learner-training approach. Ranalli (n.d.) produced similar findings in his study of the treatment of vocabulary learning strategies in upper-level commercial course books. Insofar as these studies can be said to represent the state of strategy training in conventional instructional materials, it seems fair to say learner training is insufficiently addressed. One goal of the software development project which is the focus of this paper is to examine whether an unconventional approach—namely learner training via CALL—can be used to fill the gap.

**CALL and Learner Training**

The need for learner training to support the effective use of CALL has recently been discussed by Hubbard (2004). However, a converse approach, that is, using computer-based training to help foster effective use of learning strategies, appears so far to have gone largely unexplored. While a small number of studies have addressed learner training in CALL, it has usually been in a tangential way, with the main focus on other issues such as general instruction or the strengths and weaknesses of a particular software package. For example, O’Bryan and Hegelheimer (2007) report on a podcasting project that sought to help ESL students use listening strategies more effectively, but the research described dealt primarily with the integration of CALL into mainstream language classrooms rather than with learner training.

One of the few references found to explicitly describe the potential uses of computers in learning strategy development is Bull (1997), who describes an intelligent CALL program designed to “raise awareness of the variety of strategies available and to allow students to
make informed choices about the approaches most useful to them” (p. 12). The program, called Mr. Collins, engages learners in the use of a number of metacognitive, cognitive, and social learning strategies via exercises addressing pronoun placement in Portuguese. Data on users’ strategy use is collected and referenced to a list of potential strategies, after which the program prompts learners to consider other strategies that might prove helpful or that they had not yet tried. Bull notes, however, that “there is no attempt to directly teach the use of learning strategies … The aim here is to raise learner awareness of the range of strategies available, and to encourage a learner to reflect on what may work best for him” (p. 31).

A similar approach is mentioned by Myles (1998) in her description of design considerations for computer-assisted vocabulary-learning programs. She notes the possibility of integrating “modes of presentation or exercises … such as will facilitate the adoption of successful learning strategies for the learners’ future use” (p. 44). While this would address the above mentioned guidelines for integrating learner training into general language learning, it may neglect other key requirements, such as an explicit focus on strategy development and attention to both metacognitive and cognitive strategies. Moreover, any CALL-based initiative should also address the need for sufficient practice and opportunities for students to reflect on and discuss their views about the training. This suggests that a blended approach in which use of the online training is integrated into a classroom-based course would be ideal.

**Research Questions**

To summarize, independent vocabulary study is a vital component of language learning, and vocabulary-learning strategies play a key role in facilitating vocabulary study. Because many learners fail to use a broad range of strategies or to employ them effectively, learner training is called for. The research indicates, however, that such training is a complex undertaking and that existing conventional teaching materials fail to adequately support it. While the idea of using CALL tools for learner training has gone largely unexplored until now, a prototype resource called The VVT Site has been developed to investigate the utility of a CALL-based approach. Before more work was expended on developing the resource, however, it was logical to try to determine through a preliminary investigation whether the basic idea was worth pursuing. Three research questions were therefore formulated as follows:

1. Do users find The VVT Site *useful*, that is, do they see the training as helpful and relevant and feel they learned something?
2. Do users find The VVT Site *useable*, that is, were the purpose and content clear, were the exercises well designed, and was the site easy to navigate?
3. Do users enjoy using The VVT Site and express any preferences in terms of a methodological approach?

It is important to point out that this study looks into perceptions of usefulness rather than actual training outcomes, the evaluation of which will have to wait until The VVT Site is more fully developed and a longer, more thorough classroom-based investigation is possible.

**METHODOLOGY**

**Participants**

The study involved a convenience sample of 19 intermediate-level adult learners enrolled in an ESL reading class at a major Midwestern research university. They were mostly under-
graduates and came from a variety of L1 backgrounds including Mandarin Chinese, Korean, Hindi, Hungarian, Vietnamese, Thai, Japanese, and Bahasa Indonesian. Time spent in the US ranged from 2 months to 2 years. Responses on a preproject questionnaire indicated that most of the group felt comfortable using computers and the internet and also believed that vocabulary is an important part of language learning that requires some measure of independent study. Five of the 19 were asked to participate in structured interviews following the laboratory phase of the study.

Materials

The VVT Site

This is a prototype online learner-training resource for students of English who are at a pre-intermediate level of proficiency or above. It represents a distillation of research from the author’s studies into vocabulary-learning strategies and his experience as an English instructor and teacher trainer steeped in the lexical approach (Lewis, 1993). The VVT Site consists of a number of static HTML pages incorporating exercises, awareness-raising tasks, and links to multimedia tutorials. The content is meant to eventually comprise 10 modules, three of which were in operation at the time of the study (see Figure 1).

The tutorials are the primary means of input. They consist of Flash movie files created using a program called Camtasia Studio to record PowerPoint presentations along with...
voiceover commentary by the author. Accompanying each tutorial is a transcript that appears in a separate browser window when learners click on a hyperlink. Specially selected words or phrases in the transcript were annotated using a JavaScript feature that creates a popup box providing the part of speech and a brief gloss when the cursor moves over the word (see Figure 2).

Figure 2
*PowerPoint*-based Tutorial with Accompanying Transcript and Hypertext Annotations

The annotated words were chosen using an online vocabulary profiler (Cobb, 2000) to find low-frequency items lying outside the set of 2,000 most frequent words of English in West’s *General Service List* (1953). Annotation was expected not only to support comprehension of the tutorials but also to contribute to incidental vocabulary acquisition since some research has found this to result from hypertext annotation (Chun & Plass, 1996).

The *VVT Site* currently has three modules. Module 1 provides an introduction to a number of different aspects of vocabulary knowledge deemed important for productive use (Nation, 2001; Read, 2000), including multiple meanings (i.e., polysemy), word families (i.e., derivatives), spoken and written forms, word grammar (i.e., colligation), connotation, collocation, register, and frequency. This module familiarizes users with the terminology used to describe these lexical aspects and lays the groundwork for further elaboration in later modules. The module is also meant to raise interest in the training by showing learners how there may be more to vocabulary learning than they realized. Module 2 addresses dictionary use, which is also an important preliminary area insofar as users will be referencing dictionaries in all of the modules that follow. The content of Module 2 touches on the differences between monolingual and bilingual dictionaries and the types of information to be found in a good learners’ dictionary, while the practice activities involve exploiting the different parts of a dictionary entry for information. Module 3 looks in depth at one particular area of vocabulary knowledge, that of collocation. Learners are introduced to the different types of collocation (e.g., noun + noun, noun + verb, adverb + adjective), the ways that collocations occur in texts, methods of researching collocations in dictionaries, and the differences between collocations and idioms. Because of limited time, only Module 1 and Module 3 were incorporated into the study.
The exercises in *The VVT Site* are of two types. The first is open ended, that is, consisting of questions which have more than one (or indeed a multitude of) possible answers. In these exercises, text boxes or other types of field are provided (see Figure 3), and learners check their responses by watching brief video tutorials addressing each question.

Figure 3
HTML Forms-based Activity with Links to Video Tutorials Containing Answers

Activity 1: Vocabulary Knowledge Quiz

How good is your English vocabularly knowledge? Do you know a lot of words and expressions? Can you use them correctly when you speak/write?

Take this quiz and find out. Try to answer each question by yourself before checking.
Also think about what type of knowledge you need to answer each question.

1. What does leisure mean? (Type a brief definition in the box.)

   Leisure means...

   ![Check button](check-exact.png)

2. What does arm mean? (This word has several meanings. Type as many as you know in the box.)

   Arm has several meanings, including...

   ![Check button](check-exact.png)

3. The word camera is a noun. What about these words?

   happy
   believe
   t
   the
   like

   ![Check button](check-exact.png)

The other type of exercise consists of close-ended questions for which there is usually only one correct answer, and this is provided via computer feedback. For these questions, the *Hot Potatoes* suite of authoring tools (Arneil & Holmes, 1997-2006) was used to create matching, cloze, and multiple-choice questions (see Figure 4).
Together, these combinations were seen to constitute two different approaches to methodology: an inductive approach in which users first attempt an exercise and then receive input as well as feedback on their efforts, as exemplified in Module 1; and a deductive approach in which users first watch a single, longer tutorial and then attempt exercises where they must apply what they have learned, as illustrated in Module 3. The deliberate contrast of these approaches was incorporated into the study (Research Question 3) to determine whether participants had a preference for one over the other that could inform future training designs.

**Preproject questionnaire**

At the beginning of the project, participants completed a questionnaire designed to gather biodata including age, gender, L1 and other languages spoken, length of time in the US, and self-reported TOEFL score. They also were asked to rate their level of ability with, and comfort using, computers and their feelings about vocabulary learning. Additional open-ended questions asked them to evaluate their strengths and weaknesses as learners, the ways in which they used computers for language learning, and the methods they tried to improve their vocabulary knowledge independently (see preproject questionnaire in Appendix A).
Postproject survey
This instrument, which had been piloted with the researcher’s own students in another ESL class, was administered immediately after the laboratory phase of the experiment. It included 20 Likert-scale items organized around the study’s three research questions, which probed the participants’ opinions of the site regarding

1. enjoyment and ease of use,
2. clarity of purpose and of the information presented,
3. level of challenge and interest found in the exercises,
4. how much they felt they had learned,
5. perceived usefulness of the video tutorials and type of tutorial preferred (long or short),
6. preference for an inductive or deductive training approach,
7. whether they would use the site again, and
8. whether they felt such material should be included in a language course.

An additional six open-ended questions asked respondents to elaborate on what they liked and disliked about the site, what they found most and least useful in it, whether they felt it could help improve their language learning (and how), and ways they thought the site could be improved (see postproject questionnaire in Appendix B).

Interviews
On the basis of their responses to the preproject survey as well as their gender, L1 background and age, five of the 19 participants were selected for 20-minute interviews scheduled in the 2 weeks following the laboratory phase. The semistructured discussions, which took place within reach of a computer running The VVT Site, were designed to elicit more detailed information about the participants’ experiences and perceptions. The interviews were recorded and transcribed for later analysis.

Observations and screen-capture recordings
During the laboratory phase of the project, the researcher was present in the main computer lab used by the participants to observe their use of the site and to take notes on problems, unexpected behaviors, and so forth. In addition, five computers were configured to record screen-capture data of the same five participants selected for the interviews, again using Camtasia Studio. Due to a technical problem, one computer failed to function properly, but the remaining four provided approximately 315 minutes worth of visual data. After an initial review by the author, a tally sheet was devised to quantify the screen-capture data related to the research questions, for example, number of instances of transcript use, number of online dictionary searches, number of instances of failure to proceed through the exercises in the correct order (see tally sheet in Appendix C). The screen-capture data was then reviewed in its entirety, and tallies for each category were collected.

Procedure
The reading class met for 50 minutes once a week; the laboratory phase of the project was done in three consecutive class periods near the end of the semester. For this purpose, the
students were relocated from their classroom to a computer lab. Human subjects permission having been granted, the researcher first informed the participants of the purposes of the study and asked if they were willing to take part. All agreed and signed a consent form. Data relevant to the study was then collected as described below.

**Week 1**
After the recruitment stage, which constituted the first half of the session, students spent the rest of the class period becoming familiar with the website and computer equipment, particularly the headphones and volume control features since audio is an important part of the methodology of *The VVT Site*. To address the aforementioned learner-training condition that students be provided with a motivational framework, this session also engaged students in brief small-group discussions about their language-learning practices and their attitudes toward vocabulary study. Finally, they completed the preproject questionnaire.

**Week 2**
The session started with another brief discussion, first in pairs and then in plenary, about participants’ impressions of the site so far and what they expected to learn that day. They then spent the rest of the session working through Module 1 activities and tutorials.

**Week 3**
The final laboratory session started with a short, informal debriefing session in which participants were asked to recall what they had learned the previous week. They then discussed their impressions of the training so far and how it might be applied to their own language learning. The next stage involved working through the tutorials and activities of Module 3. The final 10 minutes of the session were spent completing the postproject survey.

**Weeks 4-5**
Interviews with five selected participants were arranged and conducted by the researcher in his office.

**Weeks 6-9**
The screen-capture data were reviewed initially in order to create a tally sheet which was then used by the researcher to review the screen-capture data in its entirety and quantify observed behaviors related to the research questions.

**Analysis**
To answer the first and third research questions about participants’ perceptions of the site’s usefulness, enjoyment gained from using the site, and methodological preferences, the study made use of data from the postproject survey and interviews. Descriptive statistics were
compiled for responses to each Likert-scale item, while responses from the open-ended survey questions and interview transcript were thematically coded by identifying utterances that revealed attitudinal or motivational characteristics. The second research question regarding usability of the site was addressed using data from direct observations and screen-capture recordings, as well as responses to the survey and interview questions.

RESULTS AND DISCUSSION

Participants expressed overall favorable perceptions of The VVT Site, particularly with regard to its usefulness and novel contents. They also seemed to like the originality of a site focusing on strategies for learning vocabulary rather than on specific vocabulary items. However, many participants were critical of various aspects of the site, including the tutorials, navigation, and interface design. Research questions 1-3 will be discussed in turn.

Research Question 1: Perceptions of Usefulness

From their responses on the postproject survey (whose quantitative results are summarized in Table 1) and in the interviews, participants indicated that they found The VVT Site generally useful. On a scale of 1 to 5, with 1 indicating “strongly disagree” and 5 indicating “strongly agree,” they expressed clear agreement with the notion that the information contained in the video tutorials was helpful (mean = 4.5, SD = 0.7). They also agreed, though slightly less strongly, that strategies like those presented in the site could help them improve their English (mean = 4.2, SD = 0.5) and more generally that websites like The VVT Site can help students improve their English study skills (mean = 4.2, SD = 0.5). Participants indicated weak agreement with the notion that they were already familiar with the strategies taught on the site (mean = 3.3, SD = 1.1), suggesting that for some at least, the material was not only helpful but new.

However, they perceived the site to be less beneficial for practical know-how in the application of vocabulary-learning strategies, indicating less than complete agreement with the notion of having learned how to study vocabulary from the video tutorials (mean = 3.9, SD = 0.7) and the exercises (mean = 3.8, SD = 0.6), and even less with the statement that their language-learning skills had become more effective as a result of using the site (mean = 3.6, SD = 0.6).

Table 1
Perceptions of Usefulness of The VVT Site (N = 19)

<table>
<thead>
<tr>
<th>Postproject Survey Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. The information in the video tutorials was helpful.</td>
<td>4.5</td>
<td>0.7</td>
</tr>
<tr>
<td>8. I learned a lot about how to study vocabulary from the video tutorials.</td>
<td>3.9</td>
<td>0.7</td>
</tr>
<tr>
<td>9. I learned a lot about how to study vocabulary from the exercises.</td>
<td>3.8</td>
<td>0.6</td>
</tr>
<tr>
<td>14. I was already familiar with the learning strategies discussed on The VVT Site.</td>
<td>3.3</td>
<td>1.1</td>
</tr>
<tr>
<td>15. I think the strategies on The VVT Site can help me improve my English.</td>
<td>4.2</td>
<td>0.5</td>
</tr>
<tr>
<td>17. Websites like The VVT Site can help students improve their English study skills.</td>
<td>4.2</td>
<td>0.6</td>
</tr>
<tr>
<td>18. My language-learning skills have become more effective by using The VVT Site.</td>
<td>3.6</td>
<td>0.6</td>
</tr>
</tbody>
</table>
Interviews and open-ended survey data\(^1\) shed light on some of these quantitative findings. The generally positive attitudes toward the site were reflected in comments such as

I think the video tutorials were the most useful. Because I could not only see but also hear the material what he was talking about (14, S).

This website is very good for international student because I like its idea, to learn how to learn English (22, I).

It's a good site for a second language learner of English. And if they go through the tutorials and see this, they can learn a lot about vocabulary (1, S).

Some comments remarked on the originality of the site's content, in particular the instructional value of the tutorials and the information about collocation.

It wasn’t boring. I think a lot of vocabulary learning project or sites are so boring ... It was new. I have never thought things like this ... I just used the words what I heard, but I didn’t know that it’s collocation (14, I).

This is a very special website. This audio of a teacher’s voice made me more concentrate to learn (3, S).

The slide show is clear and we can repeat again and again (16, S).

I know more English study skill than before. Some like collocation, I know some of its function but never understand benefit it will bring up (5, S).

Not all participants were happy with the tutorials, however. Several commented that those in Module 3 were too long. Others complained that the pace in general needed improvement.

Video, some makes me sleepy because of slow (17, S).

The speed of tutorial must be little faster because it will let me fall sleep (19, S).

This perception could explain the screen-capture data showing great variation in the number of tutorials watched in their entirety. At most, 12 of the 19 tutorials in Modules 1 and 3 were watched in full by a participant; the smallest number was seven. In many cases users fast-forwarded using the slider bar or prematurely stopped the recording to answer a question or move on to another item or exercise, indicating their impatience with the pace of the tutorial.

As for how much they learned that was of practical benefit, several participants said the site had provided them with new techniques for studying vocabulary while others said the abundance of information provided, combined with the limited time, prevented this.

The VVT Site help me improve my English study skills because of collocation. While looking for vocabulary, I will try to remember collocation (15, S).

Because we didn’t spend much time in this website, so I’m not sure how many I have learned. But I believe it can help us to learn something. I just didn’t use many times (21, I).
In sum, participants found the site useful and saw it as having the potential to enhance their vocabulary-learning skills, particularly if given more time to explore it, although some features, particularly the video tutorials, were criticized as not user friendly. The critical comments touch on the aspect of usability, which is the focus of the next section.

**Research Question 2: Usability**

To answer this question, survey data regarding the participants’ attitudes and perceptions (see Table 2), as well as observational and screen-capture data, were analyzed. In general, participants expressed satisfaction with the site’s usability, but specific problems were noted in the navigation, instructions and other features.

Table 2
Perceptions of Usability of The VVT Site (N = 19)

<table>
<thead>
<tr>
<th>Postproject Survey Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. I found The VVT Site easy to use.</td>
<td>4.1</td>
<td>0.7</td>
</tr>
<tr>
<td>3. I clearly understood the purpose of the site and how to use it.</td>
<td>4.3</td>
<td>0.7</td>
</tr>
<tr>
<td>4. The information in the video tutorials was clear.</td>
<td>4.5</td>
<td>0.6</td>
</tr>
<tr>
<td>6. I used the transcripts while watching the video tutorials.</td>
<td>2.9</td>
<td>1.2</td>
</tr>
<tr>
<td>7. I used the highlighting function in the transcripts to find the meaning of unfamiliar words.</td>
<td>2.7</td>
<td>1.1</td>
</tr>
<tr>
<td>16. Being able to access The VVT Site on the Internet is helpful.</td>
<td>4.4</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Participants expressed clear agreement that the site was easy to use (mean = 4.1, SD = 0.7) and that its purpose was clear (mean = 4.3, SD = 0.7). They expressed even stronger agreement that the information in the tutorials was clear (mean = 4.5, SD = 0.6) and that they found it helpful to access the content via the internet (mean = 4.4, SD = 0.7). However, they indicated that they did not make much use of the accompanying transcripts (mean = 2.9, SD = 1.1) and, as one would therefore expect, even less of the hypertext annotation feature (mean = 2.7, SD = 1.1). These data correspond with the researcher’s observations; few instances of transcript use were witnessed during the laboratory sessions, and screen-capture data recorded only 10 instances of transcript windows being opened. Moreover, not a single instance of use of the glossing feature was observed in any of the data.

The limited use of the transcripts can be explained by noting comments from the interviews in which participants said the transcripts were simply unnecessary.

I don’t think it is useful because I can understand by the video and sound, and [the transcript] is kind of boring. Most of [the tutorials] are clear (5, I).

I think it was understandable. I understood the voice and then I could see the main points on the video, too, and that was enough. (14, I)

By contrast, another resource, the online dictionary, was better utilized. Screen-capture data showed that the four participants whose work was recorded looked up 48 different words in the second 50-minute session of the study. This is not surprising, considering the instructions mention that use of the online dictionary is needed to complete the exercises in Module 3.
Meanwhile, in four separate cases observed during the laboratory phase, it was clear the participants did not know how to proceed to the next exercise. Rather than navigating to the subsequent activity in the same module, they opened up a different module or returned to the home page. Analysis of the screen-capture data also showed participants having difficulty with site navigation; six instances of misdirection were observed. The users appeared to miss the highlighted “next activity” link at the bottom of the page, suggesting it was not signposted clearly enough. This interpretation was confirmed in interviews with some of the participants.

Sometimes I don’t know which I should click to go to next activity ... I didn’t lost it but it took some time, a few minutes to find ... It’s all the same color (5, I).

I think some hyperlink is not clear, too small, I think. You should make bigger. When I finish this module, I didn’t see that (22, I).

Some participants’ confusion over how to do certain exercises also became clear in analysis of the screen-capture data. All four of the users whose work was screen-captured appeared initially uncertain how to do the first matching exercise in Module 3; it took several seconds of trial and error before they realized it was a drag-and-drop activity. This suggests that written instructions must be added to pages containing these exercises.

Finally, in the interviews several students also expressed disappointment that their work in each exercise had been lost once they proceeded to the subsequent page. (This is a consequence of the current design of the website, which involves static HTML pages that do not have the capacity to record data input into fields by users.) Screen-capture data showed 21 instances among three participants of returning to the exercises in Module 1 apparently to change answers based on new information gleaned from the tutorials.

To address the problem, participants offered a number of suggestions, including a warning to users that all data would be lost when they left the page; a print button at the end of the exercise to allow creation of a paper record of one’s work; and, most drastically, the creation of a dynamic site in which users could register and save their work.

It’s needed to preserve the answer some ways. If some student want to look again, he can do it. Because I want to check my answer again after seeing the video. (22, I).

I think it’s problem. At least I think you have to make them save the answer ... Maybe, like, you can login with your own account. Something like that. (21, I).

While the survey findings suggest overall satisfaction with The VVT Site’s usability, the interviews and observation data point to particular problems that need to be addressed, most notably aspects of the navigation, clearer instructions, and some way to allow users to keep a record of their work. The question whether to include transcripts in future tutorials also requires scrutiny.

Research Question 3: Enjoyment and Methodological Preferences

Responses in reference to Question 3 (see Table 3) indicated that participants generally enjoyed using The VVT Site (mean = 3.9, SD = 0.5) and found the exercises interesting (mean = 4.1, SD = 0.7), although there was less agreement with the notion that the exercises were
challenging (mean = 3.7, SD = 0.9). The participants indicated that they would use The VVT Site again in the future (mean = 4.1, SD = 0.7) and felt this sort of training should be included in a language course (mean = 4.1, SD = 0.7).

Table 3
Enjoyment of the Site and Methodological Preferences (N = 19)

<table>
<thead>
<tr>
<th>Postproject Survey Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I enjoyed using The VVT Site.</td>
<td>3.9</td>
<td>0.5</td>
</tr>
<tr>
<td>10. The exercises in The VVT Site were challenging.</td>
<td>3.7</td>
<td>0.9</td>
</tr>
<tr>
<td>11. The exercises in The VVT Site were interesting.</td>
<td>4.1</td>
<td>0.7</td>
</tr>
<tr>
<td>12. I liked trying out the exercises first and then checking my answers in the tutorials (as in Module 1).</td>
<td>4.0</td>
<td>0.7</td>
</tr>
<tr>
<td>13. I liked watching a tutorial first and then doing exercises to check my understanding (as in Module 3).</td>
<td>3.4</td>
<td>0.6</td>
</tr>
<tr>
<td>19. I would use The VVT Site again in the future.</td>
<td>4.1</td>
<td>0.8</td>
</tr>
<tr>
<td>20. This kind of training in vocabulary learning strategies should be included in a language learning course.</td>
<td>4.1</td>
<td>0.7</td>
</tr>
</tbody>
</table>

A number of comments from the survey shed light on participants’ motivation. Asked what they enjoyed most, some responded,

I like watching board. It is useful to understand in lecture because it’s simple and clear (3, S).

Listening to the tutorial and doing the exercises (1, S).

Watching the video, because through example included on it, I can be easier to see what the topic means (6, S).

One participant said she particularly liked the integrated nature of the tutorial input and exercises.

Some exercises is interesting and makes me concentrate on the video (14, I).

However, as noted above, the same tutorials featured in other participants’ complaints about the site. Asked what he enjoyed the least, one mentioned,

Tutorial. A little boring and too simple visual thing (4, S).

Survey items 12 and 13 were designed to gauge participants’ predilection for either an inductive or deductive approach. The quantitative data indicated a preference for the former (mean = 4.0, SD = 0.7) over the latter (mean = 3.4, SD = 0.6). In the interviews, some participants explained their choices.

I think the second exercise, watching the video first, is more beneficial, because I think this verb plus adverb thing, collocation, is the things that students are mostly lacking ... So giving information beforehand to them proves to be beneficial for them (1, I).
I prefer this one. I like to see the instruction and tutorial first before I start to do exercise. So this one is good because maybe I forgot some grammar or some knowledge (22, I).

Screen-capture data showed 12 instances among three participants of jumping back and forth between paused tutorials and corresponding exercises, further suggesting the desirability of an approach better integrating input and practice material on the site.

When asked how the site could be made more useful, several participants noted dissatisfaction with its appearance and layout. Similar comments were noted in the interviews.

Layout is a little boring (5, S).
Make colorful background. Put some song in the beginning & end (23, S).
Make it more beautiful, more colorful (21, I).
I just like you to improve the background. I think it’s not interesting ... It’s just letter, letter, sentence (22, I).

Finally, some participants provided reasons why they felt it would be helpful to expose students to *The VVT Site* in the context of a language course. These included a higher likelihood of using the site, increased opportunities for practice, and having the support of a teacher.

If this website is included on a language course, I probably will use it more. Especially if it is made as homework. Otherwise, even if I want to study it, maybe I don’t have time or some days, you know, I’m feeling lazy so I want to do other things (1, I).
I think I don’t need a teacher to use the site. I can understand it ... But if I use this site for a course, it will better because I can try to learn the vocabulary of the course in this way (14, I).
Teacher can help me to know correct way. And I can have more chances to try (5, I).

To sum up, while participants generally found using the site enjoyable and indicated they would use it again, they were less sure whether the exercises were appropriately challenging. The same features which pleased some participants displeased others (i.e., the tutorials), and many commented on the need to make the design more colorful and engaging. There was a marked preference for an inductive versus a deductive approach to input and practice and, importantly, general agreement that such training should be integrated into conventional language-learning activities.

**CONCLUSION**

Returning to the research questions, it seems clear that learners found training via *The VVT Site* helpful, interesting, and relevant. Furthermore, they felt in general that, while the brief amount of training they experienced precluded much actual skill development, the concept of online learner training via multimedia tutorials has potential. In addition, they generally enjoyed using the site despite problems with design, navigation, and functionality. Limited these findings may be, they suggest that further work on developing *The VVT Site* is
warranted but that this must also include a redesign to make the site more useful, more usable and more appealing. Based on these findings, the following enhancements have been planned:

1. Clearer navigation
   Users should not have to think about where to go next while navigating their way through the site. Future navigation should be clearly signposted and optimally located.

2. Migration to a database-driven, dynamic platform
   Users will want to have the option of keeping a record of their work on the site and would probably also appreciate receiving information on their overall performance, which recommends migrating The VVT Site to a dynamic, database-driven platform, possibly an open-source multimedia content management system. An additional benefit to be gained from this innovation would be the integration of online forums in which users could exchange experiences, opinions and advice, thereby constituting a convenient venue for metacognitive reflection and contributing to the motivational framework necessary for successful learner training. Also, the dynamic format could allow future researchers to collect usage data automatically through tracking features.

3. Layout and color scheme
   These should be more appealing and sophisticated to attract and keep users who, because of their exposure to high-quality web designs elsewhere, have higher standards and expectations.

4. Accompanying materials for course integration
   Downloadable revision and practice worksheets for students, as well as background readings and a manual for teachers, should be created and made available through The VVT Site so that interested parties can more easily integrate use of the site into classroom-based courses. Teachers’ forums could also be supported in the new dynamic version of the site to allow instructors to share ideas and information about incorporating The VVT Site into their work.

Regarding the limitations of this study, it must first be recalled that the study only looked into perceptions of usefulness, not training outcomes. Because of the preliminary nature of both the resource and the investigation, it is impossible to say whether the participants actually improved their abilities with the learning strategies involved. One can imagine that, although they enjoyed working through the modules and discovered useful new facts about vocabulary learning, their learning behavior has not at all been affected, as some clearly suggested. As noted in the literature review, learner training is a complex undertaking not likely to achieve success in the space of three 50-minute sessions. Furthermore, guidelines for learner training strongly recommend that it be situated in the context of an ongoing language course for the variety of reasons mentioned. Future studies of The VVT Site or other web-based learner training resources, therefore, should be more longitudinal in nature and incorporate a range of appropriate data collection measures, both quantitative and qualitative, to evaluate the actual effects of training on learning strategy use.

While this study has not provided evidence of the efficacy of The VVT Site, perhaps it will inspire CALL developers, technologically oriented teachers, or others interested in learner
autonomy to consider exploiting CALL for purposes of learner training. While the resource described here focuses on vocabulary-related strategies, there are a great number of other learning strategies that might be addressed in a similar way. The potential benefits for the growing number of learners who have ready access to broadband internet are substantial, provided that web-based learner training is found to be an effective way of making useful strategies more accessible and learners more independent.

NOTE

1 Parenthetical information following each quote lists the participant’s ID number and whether the quote came from the postproject survey (S) or interview data (I).

REFERENCES


APPENDIX A
Preproject Questionnaire

Name: ___________________________ Project I.D. number __________

Gender: M or F

Age: _________

Native Language: _________ Other languages: _________

How many months have you been in the U.S.?: __________

How many years have you studied English in school?: __________

TOEFL Score: __________

For questions 1-10, indicate your answer by circling the appropriate number to match your opinion.

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Not sure/No opinion</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel comfortable using computers in general.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. I feel comfortable using the Internet.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. I feel comfortable using online resources to help me improve my English.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. I feel comfortable studying English independently.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. I think vocabulary is an important part of language learning.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. I think it is important to try to improve my vocabulary knowledge independently (i.e. outside of class).</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. I enjoy learning vocabulary.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. I think I have good knowledge and skills for studying vocabulary independently.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. Learning vocabulary is easy.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. I think computers and the Internet can help me improve my English vocabulary.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
For questions 11-15, please respond as indicated.

11. Have you used computers or the Internet to help you improve your English?

☐ YES  ☐ NO

If yes, briefly list the types of activities you have engaged in.

12. In which areas do you think a computer or the Internet can be most useful for improving your English?

13. When it comes to your overall English proficiency, what do you think *your strengths* are? Please list them.

14. When it comes to your overall English proficiency, please list areas *you need to improve*.

15. Have you ever tried to improve your vocabulary knowledge independently (i.e. outside of English class)?

☐ YES  ☐ NO

If yes, briefly list the type of activities or strategies you have used.
APENDIX B
Postproject Survey

Participant ID: __________

Ranking questions

For items 1-20, circle the number that most closely matches your response to each statement.

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Not sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I enjoyed using The VVT Site.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>I found The VVT Site easy to use.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>I clearly understood the purpose of the site and how to use it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>The information in the video tutorials was clear.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>The information in the video tutorials was helpful.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6.</td>
<td>I used the transcripts while watching the video tutorials.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7.</td>
<td>I used the highlighting function in the transcripts to find the meaning of unfamiliar words.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8.</td>
<td>I learned a lot about how to study vocabulary from the video tutorials.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9.</td>
<td>I learned a lot about how to study vocabulary from the exercises.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10.</td>
<td>The exercises in The VVT Site were challenging.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11.</td>
<td>The exercises in The VVT Site were interesting.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12.</td>
<td>I liked trying out the exercises first and then checking my answers in the tutorials (as in Module 1).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13.</td>
<td>I like watching a tutorial first and then doing exercises to check my understanding (as in Module 3).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14.</td>
<td>I was already familiar with the learning strategies discussed on The VVT Site.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15.</td>
<td>I think the strategies on The VVT Site can help me improve my English.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16.</td>
<td>Being able to access The VVT Site on the Internet is helpful.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
17. Websites like The VVT Site can help students improve their English study skills. | 1 | 2 | 3 | 4 | 5 
18. My language-learning skills have become more effective by using The VVT Site. | 1 | 2 | 3 | 4 | 5 
19. I would use The VVT Site again in the future. | 1 | 2 | 3 | 4 | 5 
20. This kind of training in vocabulary learning strategies should be included in a language learning course. | 1 | 2 | 3 | 4 | 5 

Open-ended questions

21. Which aspect of The VVT Site did you find most useful?

22. Which aspect did you find least useful?

23. What did you enjoy the most about using The VVT Site?

24. What did you enjoy the least?

25. Do you think using The VVT Site will help you improve your English study skills? If yes, how? If no, why not? Please be specific.

26. How do you think The VVT Site could be made more useful for language learning?
### APPENDIX C

Screen-capture Data

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutorials watched in their entirety</td>
<td>1 7</td>
</tr>
<tr>
<td>Transcript windows opened</td>
<td>2 1</td>
</tr>
<tr>
<td>Instances of misdirection / wrong order followed in activity sequence</td>
<td>3 3</td>
</tr>
<tr>
<td>Instances of jumping back and forth between paused tutorial and exercise</td>
<td>3 3</td>
</tr>
<tr>
<td>Instances of JavaScript text glossing feature usage</td>
<td>0 0</td>
</tr>
<tr>
<td>Instances of online dictionary lookups in Module 3</td>
<td>2 2</td>
</tr>
<tr>
<td>Instances of non-project related work</td>
<td>6 6</td>
</tr>
<tr>
<td>Instances of changing previous responses after viewing tutorial</td>
<td>0 0</td>
</tr>
<tr>
<td>Instances of apparent confusion about how to do an exercise</td>
<td>2 2</td>
</tr>
</tbody>
</table>

### AUTHOR’S BIODATA

Jim Ranalli is a Ph.D. student in applied linguistics and technology at Iowa State University. His research interests include vocabulary learning and applications of technology for learner training.

### AUTHOR’S ADDRESS

Jim Ranalli
203 Ross Hall
Iowa State University
Ames, IA 50011
Phone: 515 294 7460
Fax: 515 294 6814
Email: jranalli@iastate.edu
Web: http://www.jimranalli.net