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LANGUAGE LEARNING AND THE INTERNET: STUDENT STRATEGIES IN VOCABULARY ACQUISITION

Late in 1997, a team of computer scientists and language professionals at Northern Illinois University, in conjunction with Northern Illinois University's Center for Southeast Asian Studies, began development of an Internet site dedicated to the delivery and promotion of Southeast Asian languages and cultures. Today, SEAsite (www.seasite.niu.edu) features materials for both beginning and intermediate students of Thai, Indonesian, Tagalog, and Vietnamese. Funded in part by the National Security Education Program (NSEP), our goal was to build a Web site for these less commonly taught languages that would offer a range of interactive learning resources for Southeast Asian languages, literatures, and cultures. In other words, it was not intended to be purely a language learning site, but rather a globally accessible resource for information about Southeast Asian countries, including instruction in language. Our future development plans call for adding language materials and other resources for Khmer, Lao, and Burmese (again, funded by NSEP).

We knew from the beginning that these Southeast Asian languages are rarely taught in the United States (however, at Northern Illinois University, Thai, Indonesian, Burmese, and Tagalog are taught on a regular basis). To this end, we tried to make each of the four language sites serve as an independent and stand alone introduction to each language and country. Judging by the e-mail we receive, and our online survey questionnaire, our efforts have been a resounding success. People from all over the world use SEAsite on a regular basis. Many are interested in learning one or more of the represented languages, while others are more interested in the history, culture and religion, or politics of the countries. Our users range from serious students of the languages, to those who wish to learn some Tagalog, for example, so they can communicate with a spouse or friend. High school and college teachers and students, business people, military personnel, and our own language students at Northern Illinois University are all part of the world wide SEAsite audience.

Although the site was designed to be independent of any formal classroom instruction for the languages, the language professors who teach these less commonly taught languages at Northern Illinois University routinely make use of the resources and interactive language exercises as part of their classroom instructional efforts. These resources include, among others, readings in the second language often accompanied by spoken audio, online dictionaries for three of the

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languages, and a variety of Java applets that provide interactive tools for learning vocabulary, testing comprehension, and constructing written answers in the target language, in both roman and non-roman orthographies.

Both NSEP and our SEAsite team became interested in assessing more formally the ways in which our students were using these Web-based resources. Did the use of Web-based instructional tools help them in mastering language concepts? Could our students learn, for example, new vocabulary words with better retention if they used the Web-based resources? Which of the Internet resources did our students find most useful or most helpful sin their study of a second language?

This chapter describes the results of a semester long case study that we conducted among 20 students studying Tagalog at Northern Illinois University. The case study specifically was interested in assessing how these students used different learning strategies with different Web-based tools as they studied new vocabulary words and how this affected their success in learning and mastering the new vocabulary.

INTRODUCTION

Recent studies in second language vocabulary learning indicate that certain learning strategies are more effective in acquiring new vocabulary words (e.g., Brown & Perry, 1991) and that students have preferences in the strategies they use to learn vocabulary words in a second language. Learning efforts that combine a semantic processing strategy and a keyword strategy when studying new vocabulary words, for example, promote more vocabulary acquisition than a keyword or semantic mapping alone. These studies also indicate that using these strategies simultaneously enables students to become more effective in acquiring new vocabulary words with different levels of difficulty. These studies, however, have only compared two or three different strategies for vocabulary acquisition and have not shown an overall picture of the optimal use of learning strategies for vocabulary learning.

Most of these studies also constructed test instruments that used traditional forms of testing vocabulary retention, word depth and appropriate word use; for example, wordlist, defining words, and multiple choice on paper. These studies have not used any computer-based or Internet-based assessment tools.

This case study describes student strategy use of five different learning strategies that were supported by Internet-based activities. In addition, we measured achievement using Web-based quizzes and we collected the information about student preferences and quiz scores in a data base.

RELATED LITERATURE

Learning Strategies are the special thoughts or behaviors that individuals use to help comprehend, learn, or retain new information (O'Malley & Chamot, 1990). The

effective use of learning strategies is believed by many in the field of language acquisition and pedagogy to be one of the most important skills that students need to master in order to achieve success in language learning. Learning strategies are important to language learning because they enhance students' own learning, and students use them for active, self-directed involvement that is essential for developing communicative competence (Oxford, 1990).

Generally, strategies are categorized in several ways; for example, metacognitive, cognitive, memory, compensation, affective, and social (Oxford, 1990). Metacognitive strategies involve thinking about the learning process, planning for learning, monitoring of comprehension or production while it is taking place, and self-evaluation after the learning activities have been completed. Cognitive strategies are more directly related to individual learning tasks and entail direct manipulation or transformation of the learning materials (Brown & Palincsar, 1982). Strategies under this category include formally practicing with sounds and writing systems, recognizing patterns, analyzing expressions, translating, taking notes, and summarizing. Social strategies are cooperative learning activities that involve peer interaction to achieve a common goal in learning (Slavin, 1983) and to ask questions for clarification. Strategies under this category may include the ability to cooperate with peers, cooperating with proficient learners, developing cultural understanding, and becoming aware of others' thoughts and feelings. Affective strategies as described by Oxford include "lowering your anxiety, encouraging yourself and taking your emotional temperature" (p. 17). Compensation strategies are used to overcome limited skills in speaking and writing. Students may use gestures, frequently ask for help, coin words, and in some instances avoid communicating in the target language (p. 19).

Oxford (1996) has argued that a greater emphasis should be placed on identifying effective language learning strategies and on teaching students how to use them successfully. Many have reported the differences between successful and less successful learners based on the language learning strategies they use (e.g., Abraham & Vann, 1987; Chamot & El-Dinary, 1999; Cohen & Cavalcanti, 1990; Lawson & Hogben, 1996; Naiman, Frohlich, Stern, & Todesco, 1996; Vandergrift, 1997). Good language learners seem to be skillful in monitoring and adapting different strategies. They demonstrate flexibility in using strategies to accomplish different language learning tasks. On the other hand, poor learners cling to ineffective strategies that hinder successful language learning. They focus too much on details, whereas effective learners focus on the task as a whole (Chamot & El-Dinary).

Kojic-Sabo and Lightbrown (1999) cited the following conclusions in their study of students' approaches to vocabulary learning and their relationship to success:

- More frequent and elaborate strategy use was associated with higher levels of achievement.

- Lack of self-reported effort on a student's part was linked to poor performance.

They cited time and learner independence as the two most closely related successful elements for a high level of achievement in vocabulary learning. Thus, if students spend more time on their own using effective strategies in a given language task, language learning will be more successful.

In Gu and Johnson's (1996) study of vocabulary learning strategies and language learning outcomes of Chinese students learning English as a foreign language, they concluded, "that both direct and indirect approaches to vocabulary learning can be useful" (p. 668). The direct approach includes oral repetition of words, reading words in context and employing a wide range of strategies in learning. Approaches they found ineffective, and which were overused by the group of students who did not perform well in the study, included a memorization strategy and putting greater emphasis on visual repetition of word lists.

The study reported here is a preliminary investigation of the vocabulary strategies students used in learning Filipino/Tagalog as a foreign language and their relationship to vocabulary learning achievement. This study is different from previous studies on language learning strategies because "technology," that is, the Internet, was the medium for gathering the data and presenting the strategies, as well as the vehicle for testing student performance over a semester of learning a foreign language.

PURPOSE OF THE STUDY

This case study of students studying Tagalog at NIU using SEAsite addresses the following questions: What learning strategies are used by students to acquire new vocabulary in a second language? What strategies facilitate longer retention, depth of word knowledge, and appropriate word use? What are the implications of these results in the teaching and learning of vocabulary words in a foreign language classroom, particularly when the medium for presenting instruction is, in part, the Internet?

This chapter describes the different learning strategies that our students used for vocabulary acquisition; compares these strategy groups as categorized by Oxford (1990) and identifies the most effective ones that were used to acquire new vocabulary through the use of two language assessment tools found at www.seasite.niu.edu/Tagalog that tested word retention, depth of word knowledge, and appropriate word use; and discusses pedagogical implications of the use of strategy-based activities on the Internet.

PARTICIPANTS

Participants in the study were 20 college students who were at the beginning level of learning Tagalog/Filipino as a foreign language at Northern Illinois University. Table 1 shows the profile of each of the students based on the Strategy for Language Learning (SILL) Questionnaire Version 5.1 (Oxford, 1990), which was administered to all the students at the beginning of the semester. The SILL is designed to provide a profile of English speakers who are learning a new language. This questionnaire helps students think more about their previous language learning experiences and helped us create an initial profile of each student's language learning capabilities based on their reported use and awareness of various language learning strategies. The scores reported are based on a scale of 5.0 and are our students' averages for each of the strategies covered in the SILL Questionnaire. Although the strategies profiled in the SILL questionnaire are not linked to any specific task, such as learning new vocabulary, the questionnaire does help to provide an initial assessment of how well a particular student might be expected to do in learning a new language.

Table 1: SILL student profiles

student	remembering	use mental processes	compensating	organizing/ evaluating	managing emotions	learning with others	average
1	3.4	3.3	2.2	3.5	3.8	4.0	3.4
2	2.9	3.4	3.6	3.2	2.4	4.2	3.3
3	2.9	2.0	4.0	2.6	2.4	3.8	3.0
4	3.7	4.4	3.7	1.7	2.1	4.4	3.5
5	2.6	2.5	3.3	2.8	3.0	3.0	3.0
6	3.0	3.8	3.0	4.0	2.0	4.0	3.3
7	2.6	1.8	1.3	1.7	1.2	2.3	2.0
8	2.9	3.2	4.1	3.1	1.6	3.2	3.1
9	2.6	2.4	2.5	2.6	3.0	2.4	2.1
10	2.8	2.6	4.3	1.4	3.3	2.1	2.5
11	3.3	3.4	3.7	3.8	3.1	4.6	3.6
12	3.1	3.5	3.5	3.6	3.3	3.8	3.5
13	3.3	3.1	3.3	3.9	3.4	3.5	3.4
14	2.7	2.7	3.3	2.3	2.0	2.1	2.6
15	3.2	3.2	3.7	3.3	3.1	3.0	3.2
16	4.5	5.0	4.8	4.8	4.7	4.8	4.8
17	3.7	2.6	3.6	2.9	1.7	3.4	3.0
18	3.7	3.8	3.3	3.4	2.3	3.7	3.3
19	4.0	3.9	3.5	4.3	4.1	5.0	4.1
20	3.7	3.1	4.4	4.4	2.9	4.2	3.7

Six main strategies are covered in the questionnaire. *Remembering more effectively* is a memory strategy characterized by, among others, making associations, placing new words in context, using imagery and sound and image combinations. *Using mental processes* is a cognitive strategy that reflects repeating, practicing with sounds and writing, practicing the new language in a variety of authentic situations, using

references, and so forth. *Compensating for missing knowledge* is a compensation strategy that allows students to use all possible clues to guess meaning, to understand the overall meaning and not just single words, and to find ways to get the message across. *Organizing and evaluating learning* is a metacognitive strategy that gives students the ability to link background knowledge to newly acquired knowledge, to set goals and objectives, to plan for a language task, and to learn from errors. *Managing emotions* is an affective strategy that helps students to be positive about themselves and their learning. Often students will keep their own "learning log." *Learning with others* is a social strategy that encourages students to work with peers, develop cultural awareness, and be willing to ask for and accept correction during language tasks.

Table 2 shows two groups of students based on their overall average on the SILL questionnaire. The average for cluster 1 indicates that students "generally used" all the learning strategies covered in the SILL, while the cluster 2 group average indicates that students "sometimes used" the learning strategies, but not very often. As the clustering indicates, only 6 of the 20 participants used all of the learning strategies and were aware of these modes of learning while 14 demonstrated an average, if not minimal, use of these strategies. This initial profiling of the students from the SILL Questionnaire helped provide a benchmark of expectations about their performance in the class. Those who indicated a greater awareness and use of the various language learning strategies would be expected to perform better than those who lacked these traits.

The minimal use of strategies by cluster 2 is an indication that these students need to be made aware of the different foreign language learning strategies that can be used in the learning process. They also need to be trained explicitly in how to use these strategies more effectively. Several studies (e.g., Green & Oxford, 1995) have shown that the active use of strategies helps students attain higher proficiency in the target language and perform successfully in other language tasks. Therefore, foreign language training should include strategy instruction early in the language learning process. We believe that both the classroom and the Internet can provide innovative and meaningful materials that demonstrate different strategies and their use in foreign language learning.

Table 2: SILL questionnaire grouping

cluster	overall average
1 (6 students)	3.7
2 (14 students)	2.9

DATA COLLECTION AND ANALYSIS

Data collected in this study included classroom observation made by the language instructor, weekly reports made by students in their accountability chart, interviews made by the instructor with the students, an online (Web-based) strategy survey, and online tests. Cohen (1987) and Cohen & Hosenfeld (1981) argued that

learning strategies are internal mental processes and not directly observable behaviors; their identification and description have relied greatly on students' reports (cited in Chamot & El-Dinary, 1999). However, most language strategy research has favored the use of questionnaires, inventories, and surveys because information can easily be collected by a large number of participants and the analysis is uncomplicated (e.g., Cohen, 1998, O'Malley & Chamot, 1990, Oxford, 1990, 1996).

Students participated in classroom activities four days a week and one day was designated for activities in the language center for audio and computer-based Internet activities. The instructor also designed *classroom* activities that demonstrated the different strategies used in this study. Sample activities included telephone relay, Pictionary, role-playing, charade, a concentration game using words and pictures, reading short cultural narratives, and paired/small group conversation. To record weekly activities, students were asked to keep an accountability chart that indicated which strategies they used at home and on the Internet, the time spent on each strategy, and the activities that they preferred in the classroom. The accountability chart was used during teacher-student conferences. As part of the required tasks for this class, students were asked to visit the Web site and to study on their own at home during the week. When at home, they kept track of the different ways they studied a weekly list of vocabulary words and kept track of the amount of time they spent studying those words. When visiting the Web site, students were asked to choose any of the five strategy-based activities presented on the Tagalog Web site. Each vocabulary lesson was presented with Web-based activities that supported the following strategies:

ASSOCIATION

This is a *memory strategy* that involves associating new language information with familiar concepts. It helps strengthen comprehension as well as make new vocabulary words easier to remember. We used the matching exercise pictured in Figure 1.

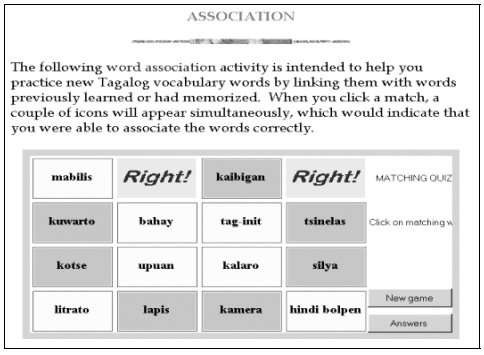


Figure 1. Java-based word matching exercise

TRANSLATION

This is a *cognitive strategy* that allows learners to use their own native language as a basis for understanding new vocabulary words in the second language. This strategy is helpful early in the language learning process. This was supported by the flashcard exercise shown in Figure 2.

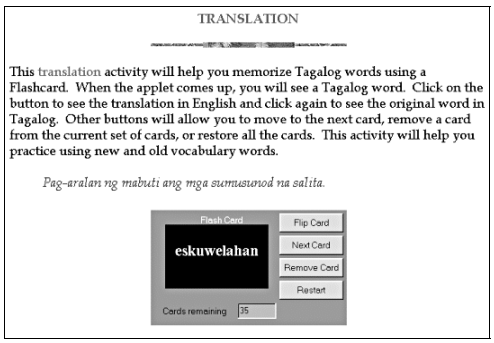


Figure 2. Java-based flashcard exercise

USE OF LINGUISTIC AND OTHER CLUES

This *compensation strategy* utilizes previous knowledge of the second language, the learner's own language, other languages learned, and other sources that are not language related to provide linguistic and other clues to the meaning of new vocabulary words. Students read second language sentences (with accompanying spoken audio) and had access to an online Tagalog-English dictionary for this activity. Figure 3 shows is a screen snap shot of a typical "clues" page.

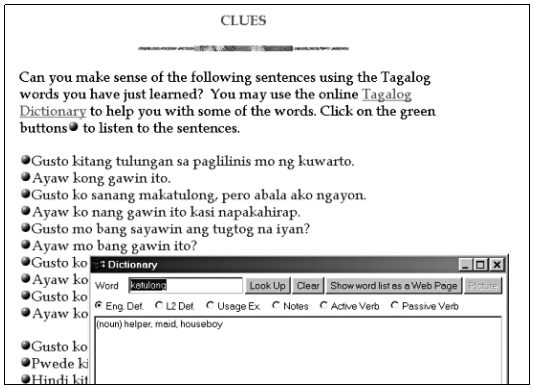
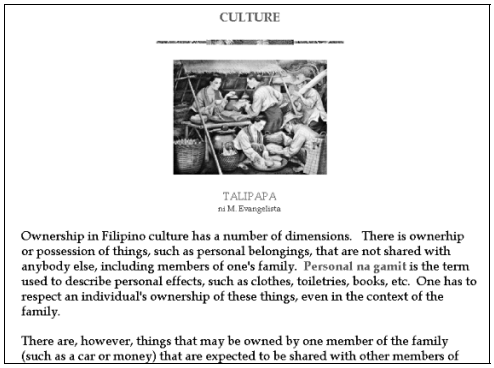


Figure 3. Clues page with the movable dictionary window on top

DEVELOPING CULTURAL UNDERSTANDING

This *affective strategy* provides learners with some background knowledge of the culture for a better understanding of new vocabulary words. Students read text that supplemented the weekly theme (e.g., "Ownership and Possession") with a discussion of Filipino attitudes, beliefs, and cultural traditions related to this topic. The discussion often used the weekly vocabulary words in context.



CULTURE

TALIPAPA
ni M. Evangelista

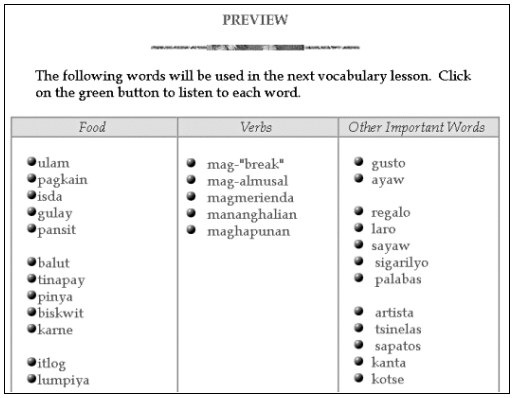
Ownership in Filipino culture has a number of dimensions. There is ownership or possession of things, such as personal belongings, that are not shared with anybody else, including members of one's family. **Personal na gamit** is the term used to describe personal effects, such as clothes, toiletries, books, etc. One has to respect an individual's ownership of these things, even in the context of the family.

There are, however, things that may be owned by one member of the family (such as a car or money) that are expected to be shared with other members of

Figure 4. Cultural essay related to weekly theme

OVERVIEW AND LINKING WITH ALREADY KNOWN MATERIAL

This metacognitive strategy involves reviewing new vocabulary words for an upcoming language activity and linking these with what the learners already know.



PREVIEW

The following words will be used in the next vocabulary lesson. Click on the green button to listen to each word.

Food	*Verbs*	*Other Important Words*
ulam pagkain isda gulay pansit balut tinapay pinya biskwit karne itlog lumpiya	mag-"break" mag-almusal magmerienda mananghalian maghapunan	gusto ayaw regalo laro sayaw sigarilyo palabas artista tsinelas sapatos kanta kotse

Figure 5. Preview of next weekly theme

As mentioned, the Web-based activities included flashcard, word matching, and an online dictionary, as well as picture-drag-and-drop and sentences with audio. All of these activities except the last are Java applets that provide considerable

interactivity with a student. Prior instruction on how to use these applets and activities was demonstrated in the classroom and at the language center. Additional instruction was also available on the Web site. Each week, students chose any activities that suited their individual style of learning. As part of the reporting process, students also filled out an online strategy survey to assess the strategies they used most, those they found most useful, and those they enjoyed the most.

An online quiz and an e-mail quiz were administered to the students at the end of each week to measure their progress. The online quiz was an Internet-based quiz that combined multiple choice, fill-in the blanks, and short answer items. These items tested word definition and appropriate word use. The e-mail quiz combined appropriate word use in sentences and word depth. Students were presented with pictures on the Internet and asked to describe each picture or write a short narrative about any topic of choice using the pictures presented and the weekly vocabulary words. Vocabulary words included in all the tests were based on the weekly thematic lessons presented in class and from all the exercises posted on the Web site. Answers elicited on the tests were evaluated by determining acceptability; for example, synonyms were accepted.

Student answers to the online quiz questions, as well as their overall score, were recorded each week in a database along with their weekly strategy survey answers. A copy of the online survey appears in the Appendix. Descriptive statistics were used to provide a quantitative analysis of the data collected.

RESULTS, DISCUSSION, AND ANALYSIS

As noted before, descriptive statistics were used to cluster the students into two groups based on their average SILL scores, a self-reporting tool that helped provide an overall profile of our student participants. As noted before, cluster 1 students demonstrated a greater and more diverse use of strategies while cluster 2 students showed a more infrequent use of strategies and reported using similar strategies at all times. Given this distinction between the two groups, one would expect that the cluster 1 students would demonstrate more potential in the classroom.

We also determined the mean, median, and standard deviation of the student quiz scores and these results helped us group the students into two new groups that we will call G1 and G2. The G1 group scored above the mean quiz score and the G2 group scored below the mean quiz score. These new groupings were then used in a cross tabulation analysis of the online survey results where the students reported which learning strategies they used during each week of the case study. This cross tabulation showed a preliminary relationship between vocabulary learning strategies used, achievement level, and the initial SILL grouping of students. Students who belonged to the initial cluster 1 SILL group turned out to be the same group of students whose quiz scores were above the mean, and those students who were in the initial cluster 2 SILL group corresponded with the group whose quiz scores fell below the mean. This demonstrates that students who are more familiar with

different learning strategies and who frequently used a wider variety of strategies achieved greater success in learning new vocabulary words than those who did not.

Students in both groups (G1 and G2) reported in their accountability charts that they spent approximately 3 to 5 hours a week doing the Web-based exercises. This result is understandable since students were required to spend at least 3 hours each week on these exercises as well as other related language tasks at the language center; for example, listening to tapes and studying Web-based thematic lessons.

Most of the students in G2 reported that they spent a similar amount of time at home memorizing lists of words and writing the words repeatedly in their notebooks. On the other hand, G1 students reported less time at home (not more than an hour) reviewing lists of words, using words in sentences and writing these words on small notecards.

Kojic-Sabo and Lightbrown (1999) indicated that time and learner independence are two closely related factors for high levels of achievement in language learning. But they also added that the use of effective strategies helps language learning become more successful. Although G2 students reported more time spent on both the Web-based and at-home language learning exercises, they unfortunately used less effective strategies such as writing lists of words repeatedly and memorizing them outside of meaningful contexts. G1 students reported a similar amount of time doing Web-based exercises, but less time doing language learning tasks at home. They, however, used more effective strategies at home such as using the words in meaningful sentence construction and organizing word cards. This same group also demonstrated more interest in using the Web-based exercises effectively.

Supporting information based on instructor observations, student accountability charts, interviews, and the written e-mail quizzes supports a similar conclusion. Students who reported a more varied use of strategies were those who performed well on their quizzes and demonstrated more word retention and better command of the language. This is an important indication that using a *variety* of strategies in language learning contributes to a student's language achievement.

This observation has important implications for instructional design, particularly if the instructional material is going to be presented over the Internet. Students should be provided with a variety of learning aids, even when doing something as simple and straight forward as learning new vocabulary. It is not sufficient only to publish a list of words and their other language mates on the Internet and expect that students will study them and learn how to use them correctly in sentence construction. Our case study has shown that providing a wide variety of different learning aids that support different learning strategies has a more pronounced impact when it comes to word retention and word depth.

ONLINE QUIZZES

Thirteen weekly Web-based quizzes were administered to the participating students. The quizzes became available online just prior to the scheduled time to take the test, thus the students did not have an opportunity to take an early look at the quiz and gain an advantage. The quizzes combined multiple choice, fill in the blank, and short answer type questions. Thus, they were primarily used to measure word definition and appropriate word use. The quizzes were automatically graded when submitted by a student, and the results of each student's quiz was saved in our database. A sample quiz is included in Appendix. A number of the students indicated that they had not taken any tests on the Internet before and expressed concerns about using this mode of testing. This expression of anxiety supported what was uncovered in the SILL questionnaire regarding one's ability to manage emotions in language learning. Students reported an average of 2.0, which is an indication that they have a very low use of their affective strategies. This anxiety level may have affected the scores of some of the 12 students (see Table 3) that fell below the mean (see Table 4). However, after a couple of weeks, the participants seemed to lose their anxiety over taking Internet-based quizzes. Familiarity with them, as well as giving them access to similar Web-based "practice" quizzes, lessened their concerns. The practice quizzes were identical in format to the real quizzes. When submitted, a page would appear in the browser that showed them their answers to each question along with the correct answers. Thus, they had immediate feedback on their effort.

As remarked earlier, the group of students who scored above the mean quiz score were, for the most part, the same group of students who were grouped into the cluster 1 SILL group. Those who reported (in interviews, accountability records, and online surveys) using a wider variety of learning strategies were those who consistently performed better on the quizzes. These are the same students who, in their interviews and accountability records, indicated initially that they were less concerned with taking quizzes online and using Internet-based learning resource.

Table 3: Students' quiz scores

scores below the mean *n*=12 (female=5 male=7)	scores above the mean *n*=8; (female=5 male=3)
128	204
125	199
116	182
115	153
114	152
111	138
110	137
101	132
91	
82	
75	

Table 4: Students' overall scores

	N	minimum	maximum	mean	*SD*
total score	20	75	204	129.65	34.97
valid *N*	20				

VOCABULARY STRATEGIES USED

Initial comparison of the two groups of students indicated some similarities in their use of the five different strategies. (see Appendix C) Both groups indicated that the clues activity (which demonstrates how the vocabulary words are used in sentences and provides audio for all of the sentences) is the one they used the most and found very useful, followed by association (an activity that requires students to rely on background knowledge to remember previously learned words) and translation (much like using a bilingual dictionary). In addition, both groups also indicated that they enjoyed doing association and clues the most. The choice of activities was probably influenced by the expectations of the instructor, that is, students were expected to be able to use the vocabulary words in context and to identify the meanings of words used in context. In addition, both groups indicated that they spent most of their time doing the translation and association activities, but this was to be expected since these two activities naturally required more time to complete. The only difference was how they ranked the strategy they used most. G1 group preferred the use of association, culture, and clues as the top three choices, and G2 ranked translation, association, and clues as the most used strategies. The students in the G2 group reported that the translation activities were similar to using a bilingual dictionary. Although translation is helpful in the early language learning process, it can also slow the development of other vocabulary related language skills, such as using words appropriately and in meaningful contexts. On the other hand, association as a memory strategy can strengthen comprehension as well as make new vocabulary words easier to remember.

CONCLUSION AND PEDAGOGICAL IMPLICATIONS

This case study has indicated that strategy use plays a very important role in language learning, especially in learning vocabulary words. Our data showed that the more diverse the strategies chosen to assist in language learning, the more our students retained and recalled new vocabulary words. This is also related to the conclusions made by Craik and Lockart (1972), that the more diverse and profound the processing involved in the learning, the more effective and long term the learning is likely to be.

SEAsite employs a wide variety of instructional tools that offer considerable flexibility for language teachers to use in ways that support a number of learning strategies. In other words, our site is not a typical "point-click-see" Web site. We have substantial qualitative evidence that the language students like the variety of

ways in which they can approach their learning tasks. In particular, they like the activities that are interactive and provide visual feedback. Future Web development efforts, whether at Northern Illinois University or other locales, should strive to provide a mix of activities that permit students to be flexible in their study habits and which engage the students on multiple cognitive levels.

Another factor that contributed to greater achievement is having some prior knowledge of the language. Students who had exposure to the language even before they enrolled in the class, that is, students of Filipino Heritage, achieved higher scores than those who came to the class with no background at all. This is not surprising. Five of the eight participants that were above the mean are Filipino Americans, that is, Filipinos born in the US. Of the six Filipino American students in the class, only one fell below the mean. This individual student expressed no knowledge of the language at the beginning of the semester.

According to language learning studies cited in Carter and Nunan (2001), there are several factors that may affect a student's strategy use. The following are some of the factors that we believe influenced the choice of strategies the participants used in the classroom, on the Web, and at home:

- Motivation for learning the language was an important influence on their choice and use of strategies. Most of the participants who fell below the mean on the quizzes took Tagalog only to fulfill their foreign language requirement. In their reported strategy use, they often used associational memory strategy, and translational cognitive strategy, to learn their vocabulary words. They used the other three strategies, clues (compensation strategy), culture (affective strategy), and overview (metacognitive strategy), only minimally. On the other hand, the students who fell above the mean all indicated high interest in the language. Most were of Filipino heritage and desired to learn and speak the language. Some took the class to fulfill their foreign language requirement, but also to meet others from the Filipino culture. These students all expressed interest in achieving a high grade. They also reported a more diverse strategy use. They reported equally using association, translation, and the other three strategies, clues, culture, and preview of the next lesson.
- The language-learning environment affected the strategies used. Unlike learning in a second language setting, the participants did not have a community where they could interact with others beyond the four walls of the classroom. Although the participants were encouraged to work in groups for doing work outside the classroom, most of them reported that they worked individually rather than in groups.

  We believe that the use of the resources on the Internet helped contribute to this kind of isolation. When someone is reading something on a computer monitor, whether it's a news story from CNN or a second language reading on SEAsite, it is far too easy to tune others out and to remain isolated with one's thoughts. Perhaps this is an indication that

some instructional resources that are going to be placed on the Web should be designed specifically to be done as group activities. The Tagalog site on SEAsite does have a chatroom where students can log in and communicate with one another in written Tagalog. From time to time, one of our Tagalog speakers will join the chatroom and provide assistance on points of grammar and sentence construction. A discussion forum is also available for those who would like to post a question or a statement that pertains to the target language and have other users respond to the posted inquiry. Resources such as these may encourage students to work with one another in a more group oriented endeavor.

- Some differences in strategy use and achievement in vocabulary learning were also seen along gender lines. In this study, more female participants were above the mean than their male counterparts. They also reported that they were willing to try different strategies in learning the vocabulary words on the Web, at home and also in class. However, male participants reported that they spent more than 4 hours on the Web studying the vocabulary words each week while the female participants reported only 1–2 hours per week of Web site activities.
- The nature of the language task presented to the participants, that is, vocabulary learning using different strategies, was new to most of them. Most were not aware that there actually were different ways of learning vocabulary words. Some expressed uncertainty about which strategy would work best for them. Most preferred memorizing and writing the words in their notebooks in order to learn the new words each week. Others felt the need to keep weekly word lists written on small pieces of paper. Most of the participants also expressed uncertainty of how best to use the Web site.

The applied nature of the study meant that certain controls possible in other classroom and Internet-based research were not possible in this case. First, students visited the Web site and did the lessons on their own or with a group without the instructor's presence and were only required to report their activities using the online strategy survey and in their accountability calendar.

Second, some participating students reported difficulties navigating the Web site. This problem may be due to students' inability to focus on the assigned tasks or unfamiliarity with the site. Inability to focus may be related to the following variables: a) open access to other sites while on line, b) failure to open the vocabulary activities on the Web with a java-enabled browser, and c) the absence of immediate supervision and assistance from the instructor when difficulties or questions arose. Unfamiliarity with the site can be attributed to students' limited access and use of the site for language learning purposes. A number of students reported that using the Internet as a learning tool was a new and unfamiliar concept for them. This is a significant observation in its own right. Using the Internet to study is, in many ways, still a relatively new idea for many students. For many, the Internet is a medium that provides entertainment and e-mail. It is clear that future use of the Internet in our language classes calls for more training of students in how

to navigate and how to use the online resources. Perhaps a published "user's guide" on the site itself, that explains what to do and how to proceed, is something that we need to investigate and initiate.

Although the results described here are preliminary findings, they helped us accomplish several things. First, we recognize the need to train students in the use of strategies. Strategy training should help students learn to use a variety of methods to learn weekly vocabulary lists. Several studies (e.g., Cohen, Weaver, & Li, 1996) have suggested that explicitly discussing, describing, and reinforcing strategies in the classroom can promote greater achievement in language learning. Although this study did not intend to determine whether strategy-based instruction should have a role in foreign language learning, we strongly believe that if we introduce and emphasize strategies that can promote achievement in language learning, students will improve their performance on any given language task, for example, vocabulary learning.

Second, instructional materials for classroom implementation and Internet use should be centered around building strategy techniques. Brown (1994) stated that in developing activities and materials for classroom and individual student use, more attention should be paid to specific instructional goals. Examples of such goals are to help students lower their inhibitions, encourage risk taking, and to promote cooperative learning. We hope to consider goals such as these in developing and improving the materials in the Tagalog Web site and to provide more interesting and meaningful classroom activities for learning Tagalog as a foreign language.

Third, we identified some limitations in learning using the Internet. Students need more time to acclimate to how to study using the Web and how to use the online resources efficiently. More time needs to be spent in the first week or two with personal instruction on how best to use the language Web site. In addition, occasional computer program glitches or technical difficulties developed and technical staff worked to limit future problems. Problems of this nature sometimes frustrate one's attempts to study and work with the online materials.

Fourth, we were able to begin discussing more efficient and reliable techniques using active server pages to track student strategy use while accessing the Internet in real time. This will help us make better judgments of reported versus actual use of the online materials. Finally, we have begun to explore statistical methods for analyzing the quantitative data in such a way that it will lend further support to the qualitative data that we derive through observation and interviews.

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