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The Comparative Effectiveness of Word Lists and Video-Graphic Cues on University Level ESL Students' Vocabulary in Context Learning¹

- Using a posttest-only control group design, this study evaluated the role of instruction and compared the effectiveness of two methods of presentation—word lists and video-graphic cues—on the university-level second language students' ($N = 64$) ability to guess the meaning of unfamiliar lexical items contained in a videotape of an academic lecture. Subjects were randomly assigned to four treatment groups and told they would be tested after viewing the lecture on vocabulary items only. The first experimental group (VIDEO-GRAPHIC) saw a version of the tape on which computer-generated textual cues appeared. These video-graphic cues resembled closed captioning. Vocabulary items appeared on the videotape as the lecturer said the word and remained visible while the speaker gave the contextual clue to the word's meaning. The second experimental group (WORD LIST) saw the same lecture without the visual cues. Both experimental groups received a list of the vocabulary items on which they would be tested after viewing the lecture. These words were listed in the order they would come up during the lecture. The subjects in both experimental groups also received instruction in guessing word meanings from context. The third treatment group (INSTRUCTION) received only this instruction in guessing; they did not see the video-graphic cues nor receive a word list of vocabulary items. The last group (CONTROL) saw the videotape without text and received neither a word list nor instruction in guessing. After viewing the lecture, the subjects were tested on the vocabulary in context items contained in the academic lecture. A one way analysis of variance (ANOVA) and Tukey's Honestly Significant Difference Test (HSD) indicated that the subjects in the video-graphic group scored significantly higher ($p < .05$) on the vocabulary test than the students in the word list group and that both groups scored significantly higher than the instruction-only and control groups ($p < .05$).

Vocabulary, Palmberg (1987) pointed out, is by far the most sizable component in foreign language learning, and all second language learners will, at one time or another, find themselves in a situation where they do not know all of the words. Furthermore, second language learners cannot expect to learn in school more than a fraction of the lexis they will eventually need. Second language learners, Palmberg concluded, must develop ways of acquiring vocabulary for themselves. One strategy that would enable second language learners to acquire new words would be learning how to extract meanings of unfamiliar words from contextual clues.

The context approach to vocabulary learning is not a recent trend in language teaching (see, for example, Seibert, 1930), nor has it been limited to second or foreign language instruction (see Christ & Petrone, 1977; Cunningham, 1987; Johnson & Pearson, 1984; Sternberg, Powell, & Kaye, 1983). Beheydt (1987) stated that in terms of presentation of new vocabulary, from a psychological as well as a linguistic point of view, "undeniably, the first guideline would be that vocabulary must be learned in context" (p. 63). And certain empirical studies have found strong evidence for Beheydt's prescriptive claim about the context approach (Eubanks & Ferguson, 1982; Gipe, 1979; Jenkins, Stein, & Wysocki, 1984; McKeown, 1985; Nagy, Herman, & Anderson, 1985). Other researchers have proposed more qualified support (Cohen & Apeh, 1980; Dempster, 1987; Harris, 1978; Seidenberg, Tanenhaus, & Leiman, 1980). Practitioners too have advocated a learning from context approach to vocabulary instruction in both first and second language classrooms (Cunningham, 1987; Fox, 1983; Lindstromberg, 1985; Mason, 1986; Simpson, Nist, & Kirby, 1987).

One area of language instruction that would offer second language learners the opportunity to utilize contextual clues to develop vocabulary would be listening comprehension. In fact, Palmberg's description of the challenge facing EFL learners could also be used to describe accurately the challenge faced by second language learners in academic situations. Recently, genuine spoken and academic discourse presented in meaningful contexts is being increasingly utilized in listening comprehension instruction (Joiner, 1984; Lebauer, 1988; Porter & Roberts, 1981; Sally, 1985). And the ability of language learners to guess the meanings of unfamiliar words from context clues is a key component of this active approach to listening and language learning (Anderson-Mejias, 1986; Morley, 1983; Nagle & Sanders, 1986; Richards, 1983; Rosenthal, 1987). Additionally, technology, particularly video, has started to play a major role in listening comprehension instruction in second language classrooms (Gillespie, 1985; Javetz, 1986; MacWilliam, 1986; Manning, 1986; Stevens, 1983), precisely because video provides a measure of what

students would have to understand in real life. Advocates of video in language teaching note that it provides learners with input, stimulus, and discourse models.

Experimental research supporting video applications for teaching listening comprehension, however, is quite limited. Parry and Meredith (1984) found that college students of Spanish who saw video versions of conversations between native speakers scored significantly higher on measures of listening comprehension than students who heard only the audio version of the dialogues. Durio and Kildow (1979) reported that video may promote greater student confidence in listening comprehension abilities, although the data these researchers presented regarding comprehension and method of presentation (video, audio, or reading of transcripts) were inconclusive. Precisely what is lacking, as Mueller (1980) noted, are studies designed to test the effects of visual aids on specific instructional tasks. The purpose of the present study was to investigate the effects of one development in video technology—computer-generated textual cues—on a specific language learning task, ESL students' ability to guess the meaning of contextualized vocabulary items contained in a videotaped recording of an academic lecture.

The dependent variable in the study, therefore, was university-level second language students' ability to use contextual clues to guess the meaning of unfamiliar words contained in a videotaped presentation of an academic lecture. Subjects were, in fact, engaged in a meaning acquisition process that had as its goal "the discovery of a stable meaning for an unfamiliar word that makes sense in, and illuminates the meaning of, the contexts in which the word appears" (McKeown, 1985, p. 484). The independent variables in the study were the methods of presenting cues to help students guess the meanings of the vocabulary items: (a) computer-generated video-graphic cues, (b) word lists, (c) instruction in guessing, (d) listening only.

The Hypothesis

Second language acquisition research has shown that successful learners utilize all available signals to predict and make guesses about meaning (Brown, 1978; Cohen & Apeh, 1980; Conrad, 1985; McKeown, 1985). Palmberg (1987) found that even students with an elementary knowledge of English made extensive use of different knowledge sources to guess at meaning and that poorer students ignored contextual clues. Furthermore, Dirven (1981), in a paper on designing listening comprehension materials, cited first and second language acquisition research (Brown, 1973; Wong-Fillmore, 1976; Schlesinger, 1977) that demonstrated exposure to language alone does not guarantee language acquisition. Finally, Long (1983) has shown that instruction does indeed make a difference in language learning. It follows then that students who are given instruction in

guessing meanings from context and who are given cues to help them attend to contextual signals, should score significantly higher on tests of vocabulary-in-context items than students who do not receive such instruction or signals.

Three hypotheses were tested in the present study.

1. Students who receive video-graphic cues, word lists, and instruction in guessing the meanings of unfamiliar words from context clues will score significantly higher on the test of context-embedded vocabulary items contained in the videotape of an academic lecture than students who receive word lists and instruction only, students who receive instruction alone, and students who only see the presentation and are subsequently tested on the vocabulary-in-context items contained in the lecture.

2. Students who receive word lists and instruction in guessing the meanings of unfamiliar words from context clues will score significantly higher on the test of context-embedded vocabulary items contained in the videotape of an academic lecture than students who receive instruction alone and students who only see the presentation and are subsequently tested on the vocabulary-in-context items contained in the lecture.

3. Students who receive instruction in guessing the meanings of unfamiliar words from context clues will score significantly higher on the test of context-embedded vocabulary items contained in the videotape of an academic lecture than students who only see the presentation and are subsequently tested on the context-embedded vocabulary items contained in the lecture.

Method

Subjects

With the cooperation of the Office of the Undergraduate Dean, letters were sent to all lower division second language speakers at California State University, Bakersfield with CSU English Placement Test (EPT) scores ranging from 120-141 (N = 272) requesting their participation in the study. Such an EPT score would place a student into a sequence of developmental coursework for English.

The subjects in the study were 64 matriculated lower division undergraduates who were nonnative speakers of English (NNS) at CSUB. The sample, which represented 23.5% of the identified population, included both resident (N = 32) and international (N = 32) NNS. In addition to an EPT score, the international students self-reported TOEFL scores ranged from 497-600. The subjects came from 21 different countries and spoke 21 different native languages. The resident students were predominantly Hispanic, but immigrant Asian and Southeast Asians were also represented in the population

(Mexico 14, El Salvador 4, Costa Rica 1, Philippines 3, Laos 4, Cambodia 3, Taiwan 2, Korea 1). The international students came from the following nations: Indonesia 4, Malaysia 2, Taiwan 4, Philippines 4, Japan 2, Nepal 1, Bangladesh 1, Pakistan 1, India 2, Iran 1, Ethiopia 1, France 4, Norway 4, Denmark 1, Germany 1. Subjects were randomly placed into the study's four groups.

Measurement Instruments

EPT scores provided a measure of assurance that the resident and international subjects were well matched in terms of their overall language proficiency. As a further check of the subjects' vocabulary levels, the vocabulary portions (Vocabulary, $k = 30$; Word Parts, $k = 30$) of the Stanford Diagnostic Reading Test (SDRT) were also administered to one intact ESL class (N = 14) and to the local second language speakers in two intact remedial English classes (N = 19). Test scores indicated the two groups of subjects did not apparently differ in regard to their vocabularies. Mean scores and grade level equivalents (GLE) for the two second language groups on the vocabulary portions of the SDRT are presented in Table 1.

Table 1.
L2 Means and Grade Level Equivalents for SDRT

Group	Vocab/GLE	Word Parts/GLE	Combined/GLE
International	20.5/7.9	22.9/12.5	43.4/ 9.5
Resident	22.1/8.5	22.9/12.5	45.0/10.2

A portion of a videotape of an academic lecture in Philosophy (approximately 20 minutes in length) was obtained from the University's Audiovisual Center by the researcher. To ensure that valid vocabulary-in-context items were used in the study, a system for classification of context clues (Hughes & Chinn, 1986) was utilized to identify in the lecture 54 vocabulary items which contained contextual clues to guessing their meaning.

These 54 context-embedded vocabulary words were given to 18 native English speakers in an intact freshman English class. The first language students had EPT test scores ranging from 145-156—scores which would exempt a student from developmental English coursework—as well as higher mean SDRT scores and GLEs than the second language students (Vocab 27.2/ 12.8; WP 25.4/ post high school;

Comb 52.6/ post high school). The students were asked to generate a meaning for each of the 54 vocabulary-in-context items identified in the lecture and the item facility (IF) (see Brown, 1988); that is, the percentage of students who answered each item correctly was then calculated for each of the words.

The assumption was that if an item was relatively difficult for the students in the freshman English class, who had substantially higher EPT and SDRT scores than the second language students in the present study, the item would be even more difficult for the second language subjects. This increased the likelihood that the meanings of words in the study were guessed from contextual clues and were not words previously known by the second language subjects. Consequently, any word with an IF greater than .67 for the freshman class was discarded. As a result, 22 items were eliminated from the vocabulary test. Two other items were deleted because they appeared within 10 seconds of another context-embedded vocabulary word in the lecture. This process resulted in a 30-item test. The average item facility for the freshman English students on the vocabulary test was .41. The internal consistency reliability of the vocabulary test developed for the study as determined by Spearman-Brown split-half formula calculations was .860.

Trampe (1983) noted that in many studies of vocabulary a specification of the criterion of learning achievement is not included. At issue is what it means to say a word is known. Trampe claims the minimal case for specification of vocabulary learning achievement is "meaning," a definition of learning that would exclude both grammatical knowledge and other potential lexical uses of a particular vocabulary item. Following the procedure of McDaniel and Pressley (1984) and Brown (1978), any answer to the vocabulary questions which indicated understanding of the meaning of the word, as it was presented in context, was judged acceptable and counted as correct in the present study, whether or not the response given by the subject was exactly the same as the wording of the contextual clue given in the lecture. McDaniel and Pressley found that when more productive criteria were used to determine whether a word in context had been learned—for instance the ability to use the word in a sentence—only subjects who already knew the word in question were able to do so.

Design and Procedure

The design applied in this study was the posttest-only control group design. This design was selected because it controls for many sources of invalidity and because random assignment of subjects to groups was possible.

Prior to the administration of the study, the MINDSET text-generating computer graphics program was used to place the vocabulary items to be tested onto the video-graphic version of the vid-

eotaped lecture. The text generated on the video resembled closed captioning; that is, each of the vocabulary items to be tested appeared on the screen as the lecturer said that word. The word remained on the screen while the lecturer gave the contextual clue. The generated text did not include words in the context clue. Only the individual vocabulary item appeared on the screen. The reason for excluding the text of the context clue was to ensure, as far as possible, that listening, and not reading skill, was being tested.

During the study, the first experimental group (VIDEOGRAPHIC) saw a videotape of an academic lecture on which computer-generated textual cues appeared. The second experimental group (WORD LIST) saw the same lecture without the textual clues. Both groups received instruction in guessing word meanings from context, and each received a list of the vocabulary words that would appear on the video. A third group (INSTRUCTION) received instruction in guessing meaning from context but did not see the textual clues nor receive a word list of vocabulary items. The last group (CONTROL) saw the videotape without text and received neither a word list nor instruction in guessing word meanings from context before being tested. All subjects were told that they would be tested after viewing the lecture on vocabulary items only. A level of $p < .05$ was set for statistical significance in the study.

Results

Mean group scores, standard deviations, and standard error of means for the vocabulary test were computed. These descriptive statistics for the study are presented in Table 2.

Table 2.
Means, Standard Deviations, and Standard Error
of Means for Groups on the Vocabulary Test

Group	Vocabulary Test			
	Size	Mean	Std Dev	SEM
Video-graphic	16	21.37	4.50	1.12
Word list	16	16.12	4.73	1.18
Instruction	16	11.18	2.50	.63
Control	16	9.18	3.63	.91

Note. $k = 30$

A simple analysis of variance (ANOVA) was then performed. This analysis showed an overall significant difference among the groups' means on the test (see Table 3).

Table 3.
Results of One-Way ANOVA

Source	df	SS	MS	F	P
Between groups	3	1425.56	475.18	30.58*	<.05
Within groups	60	932.38	15.54		
Total	63	2357.94			

Since the overall effect from the ANOVA for the test was statistically significant, Tukey's Honestly Significant Difference Test (HSD), a post hoc test, was used to identify all pairs that differed significantly on the test. In the study, a difference of 3.68 was found to be a significant difference between two means, according to the Honestly Significant Difference Test. Mean differences between the groups are presented in Table 4.

Table 4.
Significant Mean Differences Between Groups on the Vocabulary Test Using Tukey's Honestly Significant Difference Test

	Word List	Instruct	Control
Video-graph	5.25*	10.19*	12.19*
Word List		4.94*	6.94*
Instruct			2.00

Note: Significant differences are marked with an asterisk

HSD = 3.68

* $p < .05$

The results of the study support the first two research hypotheses. The subjects who received video-graphic cues, word lists, and instruction scored significantly higher on the vocabulary test than students who received only word lists and instruction and students who received instruction alone. The word list group also scored significantly higher on the test than the control group and the group that only received instruction in guessing. The scores for the instruction-only group did not reach a level of statistical significance. However, it should be noted that one of the limitations of the study may be the restricted period of time allowed for instruction (30 minutes).

Discussion

A possible explanation for the significant effects of the two treatments is that the two prompting techniques selectively (and quite effectively) cued student attention to contextual clues and modified students' orientation during listening. The video-graphic cues in particular caused students to focus on the contextual clues to unfamiliar word meanings in the lecture. In fact, the mean score for students in the video-graphic group was more than double the mean score of students in the control group.

The present study is believed to be important for two principal reasons. First, the experiment utilized an authentic academic lecture. The material in the study is, therefore, entirely consistent with an active model of listening and comprehension. It contains (a) a natural delivery of material, (b) genuine communication intended for a real purpose, (c) authentic spoken discourse (not a recording of written material), (d) content appropriate for the audience, and (e) no over-attention to language form.

Second, the subjects in the study, ESL students, in particular under-prepared ESL students, may or may not generally see academic lectures as a chance to learn language as well as content. Helping ESL students realize that goal—an important component of second language teaching in an academic setting—entails finding, as Palmberg pointed out, effective ways to teach students how to improve their vocabularies on their own. And although claims about the potential of technology, especially video technology, by its advocates in ESL are common, too few studies have examined specific technological applications in language teaching and learning in an empirical way.

The results of the study indicate that, in fact, under conditions where the students are given a specific learning task and the expectancy of immediate testing of learning outcomes, technology can play an important role in vocabulary teaching and learning for university-level ESL students in academic settings. And, in the absence of access to technology, focused listening tasks, such as those provided by the use of word lists, can likewise be effective for teaching students how to make guesses about the meaning of contextualized vocabulary items.

Weener (1974) found that task anticipation and instrumental learning activities, such as note taking, can influence the relationship between learning tasks and learning outcomes. Further research is needed to investigate the effects of technological applications on specific language learning tasks when condition variables such as those noted by Weener are factored into the analysis. ■

Footnotes

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