DESIGN OF THE VOCABULARY ELEMENT OF AN ESP COMPUTER/INTERNET CLASS

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JAPANESE ABSTRACT

　この論文は，コンピュータとインターネットの ESP（English for Special Purposes）クラスをデザインする際に，語彙という構成要素について行った選択とその論理的根拠について論じる。クラス開始前と後の教育目標に関してのテスト，ターゲット語彙の導入方法，エクササイズ，語彙の再強化と復習を図る小テストについても扱われている。アクティビティのいくつかとターゲット語彙も末尾に含められている。

ABSTRACT

This paper describes the choices and rationale behind the development of the vocabulary element of an English for Special Purposes class focusing on computers and the Internet. The main elements covered are pre- and post-testing of the educational goals, vocabulary introduction, vocabulary exercises, and quizzes for re-enforcement and review. Included are descriptions of some of the activities and a glossary of the target vocabulary for the class.

INTRODUCTION

This paper describes the vocabulary element for a computer/Internet English class. The students are first-year Information Technology/Business majors at a Japanese university. The level ranges from false beginner to intermediate. The class is required.

The purpose of this class is to help students become skilled in using the computer and the Internet in English. To do so, they must become familiar with a large amount of technical vocabulary. Looking at this vocabulary, there are two important details to keep in mind when evaluating their implementation.

First, students will be asked to learn a large number of new words. What justification is there for wanting the students to learn these particular words? In choosing the words, we have kept in mind that the probability of a word being encountered in the future and have attempted to give each item appropriate focus（Nation, 2001）. Since the students' major involves taking many computer classes, computer-related vocabulary can be considered to be high frequency in terms of the likelihood of their being met again.

Second, it is assumed that students have at least a basic knowledge of computers and the Internet

in their native language. Attention is therefore focused on receptive learning. That is, teaching students to take the L2 written or spoken form and retrieve its meaning. In Japanese classes, students will be learning the concepts and referents of computer/Internet terms in the L1. This class will introduce similar concepts and vocabulary in English and provide students with the opportunity to use it outside of our class.

In this paper, the aspects of testing, vocabulary introduction, activities, and quizzes are examined. The main focus here is on why and how testing takes place, what resources are available for students to access needed vocabulary, the effectiveness of course activities, and the purpose of quizzes.

THE PRE-TEST

Two primary reasons for administering a pre-test are to determine what knowledge the students have coming into class, and find out what items need more attention (Nation, 2001). Measuring student knowledge at the beginning of the year will also provide a basis of comparison to assess student achievement at the end of the year when the post-test is given. Finding out which test items the students know and don't know allows for class time to be used more efficiently, focusing on students' weaknesses.

For the pre-test we were mainly concerned with what is to be tested, the format to be used, and how to get the most reliable and valid results without making the test too difficult for the students.

While administering a pre-test can be justified, it is important to put together an assessment tool that properly reflects what we want the students to learn (Brown, 1996). In this course, the primary goal is to enable students to effectively use computers in English. Achieving this goal will require students to know the necessary English computer vocabulary. For our purposes and since we found a suitable textbook, "necessary" will mean all computer-related words used in the textbook, plus words needed for classroom communication. For a complete list of those words to be tested, see Appendix A. Because the number of test items is quite large, they are grouped into specific categories, so that items dealing with e-mail are together, items dealing with operating systems are together, etc. Sections range from six to twenty test items, ready to be placed into a proper format.

Since the course focuses almost entirely on receptive learning of word form and meaning, it follows that the test should focus on receptive knowledge (Baddeley, 1997). We decided to use a matching test format with minimal context (e.g. Open a new browser window). Using minimal context allows the student to see how the word can be used in everyday speech, and where it fits grammatically within a sentence. Students are to choose the best definition for each underlined word from a list of options. The matching format is good for testing a large number of items, and also best reflects receptive learning in that students will be tested on L2 items with L1 definition options. As Nation (2001) states, "... to provide learners with the greatest chance of showing the vocabulary knowledge they have, it seems appropriate to use matching items with a sentence context" (see also Joe, 1998).

Having chosen the test format, one modification to be made is the addition of distractors. Distractors are important, due to the fact that if the number of options matches the number of test items, then students can simply narrow their choices until all options are used. Distractors will help to

eliminate this problem, thereby increasing test reliability (Haladyna, 1994). In this test, distractors were chosen by simply taking two answers from one section and adding them to another. Care has been taken to ensure that they are not too far removed from those items being tested. In doing so, there is less chance of students recognizing them as distractors (Brown, 1996; Haladyna, 1994; Nation, 2001).

While it is important to make the test challenging in order to get a true assessment of student knowledge, it is equally important to make the test as accessible as possible. The use of translation will help to achieve this. Since the vocabulary words being tested are, for the most part, technical in nature, offering L2 definitions to students would bombard them with an array of words, not to mention grammatical structures that would far surpass those items being tested. Nation (2001) supports this reasoning:

> Although there is no research yet demonstrating this, it is highly likely that a
> multiple-choice or matching test would be much easier for learners to do, and more
> valid, if the definitions were in the first rather than second language.

Taking Nation's statement into consideration, could it not also be inferred that if a test is easier to take, then student anxiety will be lowered?

Such anxieties, however, stem from more than just test content. Some students may find themselves pressed for time. Therefore, it is important to utilize that time as efficiently as possible. As noted by Haladyna (1994):

> Because the number of items given in a fixed time period directly affects the
> reliability of test scores and the adequacy of sampling of content, items needed to
> be as brief as possible. Because reliability and validity are two very important
> characteristics of test scores, one should make a very strong effort to minimize
> reading time.

Translating test options will significantly decrease reading time, thereby increasing test reliability and validity.

The pre-test is crucial in that it plays a big role in what will be focused on in class. In putting together the pre-test, four questions have been addressed:

- Why is a test being administered?
- What is being tested?
- What format is most suited for the test items?
- What modifications must be made to make the test as reliable and valid as possible, without making it too difficult for the student?

Answering these questions produces a sound and accurate assessment tool that will assist us throughout the course.

INTRODUCTION OF VOCABULARY

After introducing the relevant vocabulary to students, it is important to reinforce their importance. In this course, there are three primary resources which help to (re)introduce those important words and word phrases. The textbook, Web page, and integration with a parallel class taught by a Japanese

English teacher help reinforce the vocabulary items.

The textbook introduces and demonstrates how the vocabulary is used in context. By seeing the vocabulary in context, students can become aware of the parts of speech, collocations, and how the vocabulary is used in natural speech. Since students will be using the textbook every class, it is perhaps their main resource in accessing vocabulary. However, while the textbook is a useful resource, it is important that they be aware of other ways to gain access to vocabulary.

During every class, students are asked to view the Web page. Here, they are presented with each unit's vocabulary, out of context, with an L1 translation. By clicking on the word or word phrase, a new page opens and students are presented with an example of the word used in context. Collocations of the word are also given. Students are asked to review those words that they do not fully understand. The Web page complements the textbook, and also serves as a study guide for quizzes.

In addition to the textbook and Web page, all students take the parallel computer classes taught by Japanese English teachers. Japanese teachers have a list of all vocabulary that are being covered in the English-only class and will further make sure that students are aware of what words they should be studying. The Japanese teachers also help the students to get a better understanding of word concepts and referents that may not be as clear in the English class.

Both the textbook and Web page function to break down a large number of vocabulary items and present them in a more manageable format, while the integrated class helps redirect student attention to important words. These resources together give students frequent, structured access to needed vocabulary, and will be useful when dealing with in and out-of-class activities.

ACTIVITY EFFECTIVENESS

After giving students access to the vocabulary, we chose what activities are to be used to increase student knowledge and retention. Vocabulary activities used in the class consist of asking and answering questions, using the Inverted Pyramid word card strategy, matching words and definitions, and keeping a vocabulary log.

Are these activities effective? Nation（2001）poses four questions which should be addressed to help ensure student learning:

1. What is the learning goal of the activity?
2. What psychological conditions does the activity use to help reach the learning goal?
3. What are the observable signs that learning might occur?
4. What are the design features of the activity which set up the conditions for learning?

Answering these questions can help to implement proper activities and exercises.

What is the learning goal of the activity?

Asking and answering ------------➤ Meaning-focus
     Spoken/Written form questions   meaning connection

Inverted pyramid -----------------➤ Written form-meaning
     connection, Learn a strategy

Matching words and definitions ----➤ Written form-meaning
     connection

Vocabulary log -------------------➤ Written form-meaning
     connection, Grammar

What psychological conditions does the activity use to help reach the learning goal?

Asking and answering ------------➤ Noticing and Retrieval
     questions

Inverted pyramid -----------------➤ Noticing and Retrieval

Matching words and definitions ----➤ Noticing

Vocabulary log -------------------➤ Noticing

What are the observable signs that learning might occur?

Asking and answering ------------➤ Negotiation, Repetition
     questions

Inverted pyramid -----------------➤ Repetition, Active involvement,
     Task accomplishment,
     Learners take control of their
     own learning.

Matching words and definitions ----➤ Attention to meaning,
     Repetition, Task
     accomplishment

Vocabulary log -------------------➤ Production of vocabulary
     Learners take control of their
     own learning

What are the design features of the activity which set up the conditions for learning?

Asking and answering ------------➤ Meaning-focused input,
     questions   Highlighting, Underlining,

Repetitive opportunities for
retrieval, Need to pass class

Inverted pyramid -----------------→ Repetition, Memorization,

Spaced retrieval, Learners take control of their own
learning

Matching words and definitions ----→ Reinforcement of word
Meaning, Repetition

Vocabulary log -------------------→ Using vocabulary in context,
Learners take control of their
own learning

THE ACTIVITIES

Throughout the year, students will be monitored on class participation. Students will be given one point every time they ask or answer a question. After twenty-six classes, if a student does not have at least twenty six points, then he will fail. Students are informed of this procedure throughout the year. Using a seating chart ensures easy marking of points. Care must be taken to make sure that points are distributed as evenly and accurately as possible.

The goal of asking and answering questions is to cement spoken and written form to meaning. During each class students are provided with ample opportunities to ask and answer questions. Students may ask, at any time, the meaning of words used in class, in the textbook, or on the Web page. The instructor asks questions which incorporate vocabulary being used in that lesson, as well as vocabulary introduced in past lessons. It is essential for students to focus on meaning here, as they will be actively involved. Each time a question is asked, the key vocabulary is written on the board by the instructor or underlined if written in context, and students are solicited for a response. Questions involving key vocabulary are repeated often during each class:

-Can you name a search engine?
-What search engine are you using now?
-What search engine is your partner using?
-Is Windows a search engine?

This repetition allows students to be frequently exposed to both the written and spoken form of the word. As discussed in Ellis and He (1999), modifications are made to the presentation beforehand to make sure students will be able to comprehend what is being discussed. That is, grammar is simplified, and more time is allotted for explanation.

The *Inverted Pyramid* word card method is taught to help increase written form-meaning connection, and to give the students a word study strategy (for detailed information on the Inverted Pyramid, see Appendix B). Because students must decide which words they will use, learning becomes self-directed. Selecting the vocabulary words of their choice and incorporating them into the inverted pyramid provides the students an excellent opportunity to notice the word form. Since

Japanese students tend to show high aptitude in rote learning (Tinkham, 1989), the memorization aspect of this strategy is good for the students. Likewise, the importance of not allowing too much time to pass between retrieval attempts (Nation, 2001) makes the Inverted Pyramid, with its built-in spaced retrieval system, a great learning strategy. Because the focus is on receptive learning, students will be taught to study words from L2-L1. This is done due to the fact that not only is receptive learning easier, but the test assesses receptive knowledge (Nation, 2001; Baddeley, 1997).

The process of using the Inverted Pyramid is much like a game of solitaire, with cards being introduced and shifted. There is a beginning, middle, and end. In this sense, students feel that there is a task to accomplish.

Future research will compare the effectiveness of the Inverted Pyramid to other vocabulary learning strategies. By having one group use the inverted pyramid, and another group use free-learning strategies, it is hoped that the Inverted Pyramid group will do better as a whole. Additionally, if other strategies prove successful, they too can be introduced to the class, giving students a wider variety of learning strategies.

At the beginning of each class, students are given twenty words and their translated definitions (see the Quizzes section). When matching words and definitions, the goal once again is to connect written form to meaning. Since students are reviewing words studied in past lessons, repetition occurs and the occurrence of problematic items can be increased. This repetition reminds the students once again that these words are important to learn.

Last, students are asked to keep a vocabulary log. This log is kept on floppy disk, and e-mailed to the instructor each week. The vocabulary log is one of the few chances students will get to productively use their vocabulary knowledge. In the log, students must write five words each week, write their definitions, and give an example of each word used in context. As in the Inverted Pyramid, students take responsibility for their own learning, thus increasing the chances of noticing to occur. Writing the definition solidifies the form-meaning connection, and writing a sentence helps them become more aware of how the word can be used in context.

When planning activities, it is important to consider the learning goal(s) of the activity. It is equally important to consider whether aspects of the activity are conducive to achieving the goal(s). Thorough evaluation can draw a path from activity implementation to goal accomplishment. The activities used in this class are focused mainly on students achieving a strong form-meaning connection. As a teacher, it is important to help facilitate student learning, but at the same time care should be taken to make sure students become more involved in their own learning (Newton, 2001).

QUIZZES

Students are quizzed every week at the beginning class. The quizzes are administered via computer on the class Web page. Students receive immediate feedback, and quizzes are e-mailed directly to the teacher. Quizzes are created using CourseBuilder for Dreamweaver.

In an ESL classroom, the possibility of miscommunication is high and students may not be learning what is being taught, or quite possibly, learning the wrong things (Cohen, 1994). The quiz helps make sure that student learning is going in the right direction. In this course, the quiz performs

this function, but also introduces and reviews problem vocabulary, motivates student learning, and provides a "class-like" feeling to help fulfill the students' expectations.

The pre-test allows the teacher to see what vocabulary items are the most problematic for students. These words will also be used on the quizzes. Each quiz introduces ten items that are to be used in that day's lesson, and ten items from previous lessons. The quiz format is the same as the pre-test. Items and distractors have simply been re-arranged and slightly altered. Introducing and reviewing problematic vocabulary in a quiz format requires students to take more responsibility for their learning, in that the quiz reminds them each week of what vocabulary they do and do not know.

Students are aware that a quiz will be administered every class. While there is the possibility of student apathy toward the quiz, it is generally thought that student motivation can be increased through the use of quizzes（Cohen, 1994）. The Web page highlights those words which are likely to be on a quiz. Knowing that they will be taking a quiz may influence some students to pay more attention to those words on the Web page.

Incorporating computers establishes a new paradigm of learning which presents challenges not found in a traditional classroom（Ellsworth, 1994）. Learning in such an environment may give the students the impression that they are not in a "real" class. Assessing student learning through quizzes may help to create a more traditional classroom environment that students have come to expect （Cohen, 1994）.

Quizzes allow the teacher to make sure that learning is going as planned, as well as expose students to the vocabulary and encourage them to take control of their learning. A quiz will also psychologically persuade students to take a non-traditional class setting more seriously.

THE POST TEST

At the end of the class year, students are given a final test of achievement. The test is given in order to measure student learning, but it also helps to evaluate the effectiveness of the class curriculum（Brown, 1996）. In this case, it is not only the students who are being tested, but the teacher as well. Although the content is basically the same as the pre-test as far as form and content, the reasons behind administering the post-test are different.

Whereas the pre-test measures what students know, the post-test measures what they have learned. It is this information that allows the teacher to assign each student a grade based on his achievement. Due to the fact that testing is done using a criterion-referenced based test, it is conceivable, as Brown（1996）suggests, for all students to receive the same grade, assuming they all learn the same amount of material. However, since our goal is mastery rather than the creation of a curve, this is not a problem. On the post-test, students must show 60% knowledge in order to pass. So, if all students learn 60% of the vocabulary objectives, they can all pass the class（assuming all students achieve the required class-participation points）. In order to create a more focused measure, the test items that were known by 80% of the students on the pre-test are removed from the post-test. Using the same form and content as the pre-test makes it easier for the teacher to see what the students did and did not learn.

By examining test scores, a teacher may find deficiencies that were brought about by any number

of features, ranging from the curriculum design to learning atmosphere （Brown, 1996）. Therefore, the post-test not only evaluates students, but teachers as well. Whether it's a small change or drastic overhaul, the post-test will help to make those changes that will increase student achievement

The post-test is a critical tool to measure student learning, especially if it follows the same format as the pre-test. It is also useful to the teacher in assessing what changes might be needed to maximize student learning.

CONCLUSION

Implementing a vocabulary element into our course design has required us to focus on a number of areas. Here, those areas have included pre-testing, materials which introduce those words, activities to encourage learning and retention, quizzes, and post-testing. Each area has been examined, and the following questions answered:

- Why is a pre-test being administered?
- What is being tested?
- What format is most suitable for the test items?
- What modifications must be made to make the test as reliable and valid as possible without making it too difficult for the student?
- What resources are there for students to access vocabulary?
- Are the activities effective?
- Why quizzes?
- What are the purposes of the post-test?
- How does the post-test differ from the pre-test?

It must be remembered that no course design is perfect, and changes will always be needed. These questions have helped to implement a vocabulary element that should be both effective and reliable and provide rich feedback which can be used for continual improvement of the course.

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APPENDIX A

Vocabulary Test Items

"at" symbol	e-mail
address book	e-mail account
attachments	e-mail address
brand	enter key
category	expand
Cc:	explore
CD-ROM	FAQ
check your e-mail	file
click	file menu
close	fill out
colon	floppy disk
comma	floppy disk drive
computer	group list
computer lab	highlight
computer network	hyphen
control key	icon
copy	image
cursor	Internet
cut and paste	Internet café
cyber café	Internet Explorer
dash	keyboard
database	keywords
delete key	left parenthesis
documents	limit your search
DOS	link
dot	linked
edit menu	Mac OS
menu	search topic
message	send e-mail
minus symbol	shift key
monitor	sign up
mouse	slash
Netscape	sound

new	space bar
news link	spell check
online	supercomputer
online quiz	surf the web
online shopping	tab key
open	telephone lines
password	text
period	title
print out	To:
quotation marks	URL
return key	user name
save	Web
save as	Web browser
save draft	Web card
screen	Web directory
search	Web page
search box	window
search engine	Windows OS
search operators	word processor
search results	World Wide Web
search strategies	write letters

APPENDIX B

The Inverted Pyramid Word Card Strategy

The Inverted Pyramid is a word card strategy for learning vocabulary. Its main attributes are that it presents the learner with a goal（clearing the pyramid）, and has a built-in system of spaced retrieval. Like other word card strategies, cards have the L2 word or word phrase on one side, and an L1 translation on the other.

The process of the Inverted Pyramid involves a learner choosing one card from a stack of word cards and placing it in front of her. The learner studies the word, and guesses the meaning. If incorrect, the card returns to the bottom of the stack. If correct, the card is advanced to the next spot, and a new card is introduced. The pyramid is built with one card at the bottom, two cards above that, and so on. Only those cards at the end of a level are guessed. If an incorrect guess is made on a card that is to be advanced in the pyramid, that card is returned to beginning of that level（row）. Pyramid levels can reach any size, although a five level pyramid（15 cards）is easiest for retention and desk space.

```
X    X    X    X    ?
   X    X    X    ?
     X    X    ?
       X    ?
         A
```

Here, card A is introduced to the learner, and the meaning is guessed. If the guess is incorrect, the card is returned to the stack, and a new card is chosen.

```
X    X    X    X    ?
  X    X    X    ?
  X    X    ?
    A    ?
    B
```

If card A is guessed correctly, it advances to the beginning of the next level. The process in Step 1 is then repeated for card B, with the same results. It is important to remember that a card is only studied if it is in position to move to a higher level (those spaces indicated by a question mark). Since card A is not yet in position to advance, it simply moves over to make room for card B (see below).

```
X    X    X    X    ?
  X    X    X    ?
  X    X    ?
    B    A
    C
```

Card C is now introduced, but before it can advance to the next level, card A must also advance. The learner looks at card A and again guesses the meaning. If incorrect, it returns to the beginning of the level. In this case, it would switch places with card B, and card B would be in position for advancement. Cards will continue to be returned to the beginning of that level until one card advances.

```
X    X    X    X    ?
  X    X    X    ?
  A    X    ?
    C    B
    D
```

Assuming card A was guessed correctly, it advances to the next level. Since card B was not in position for advancement, it simply moves into the next position. Card C is guessed and either put back into the stack (if wrong), or advances to the next level (see above). Card D is introduced.

```
E    D    C    B    A
  I    H    G    F
  L    K    J
    N    M
    O
```

Skipping ahead, it can be seen that the pyramid has been completed. Now, cards will begin to be removed. Cards continue to be advanced as usual, with the exception that no new cards are introduced.

```
F    E    D    C    B
  J    I    H    G
  M    L    K
    O    N
```

Card A is guessed and then removed from the pyramid. Cards B, C, D, and E all move into position without being guessed, and card F is guessed and advanced as usual. Remember that only those cards in advancement position (the

right side）are guessed. Also keep in mind that if an incorrect guess is made, that card returns to the beginning of that level. Regular movement continues until the last card has been removed from the pyramid.