Original Article

Investigating Unknown Words On-line

Robert Dilenschneider

Abstract

Twenty university students participated in a four week study investigating the meanings of unknown words written within a reading passage using an on-line dictionary. Of the four treatment groups（No aid, Gloss, Click , Click & Spell）, participants of the Gloss condition were better able to retain the meanings of unknown words. Results suggest that the more activity learners perform away from a reading passage using an on-line dictionary, the less likely their retention of unknown words.

The Background of the Issue

Using electronic or portable computerized dictionaries and on-line dictionaries or dictionaries provided via the Internet is common with Japanese university students. Loucky's（2005）Informal Electronic Dictionary Usage Survey Questionnaire of Japanese master's candidates at a national university in Kyushu revealed that an average of 14.48% of the students had a computerized bilingual dictionary before college. In addition, 90.75% of the students surveyed recommended purchasing a bilingual dictionary to aid in English language learning. This same trend has also occurred with on-line dictionaries. Lan（2005）stated that 70% of students interviewed at Polytechnic University in Hong Kong used an on-line dictionary more frequently compared to book dictionaries. In addition, the resources available in on-line dictionaries have been increasing significantly. For example, from 1997 to 2005, *Onloo dictionary.com* has increased its index from just 188 to 992 dictionaries and *world language.com* has over 1500 dictionary products in 161 languages. So, electronic computerized and on-line dictionaries are popular. Therefore, educators must seriously examine these tools in the environment of English language education in order to learn how effective are they in helping students learn and retain words.

Statement of the Problem

Compared to an alphabetized dictionary, which requires learners to thumb through pages, a major advantage of electronic and on-line dictionaries is that they provide a quick search to find the meanings of words and thereby reduce interruptions when learners are engaged in a task or reading. Although electronic and on-line dictionaries are becoming popular due to their speed, there is concern, however, as to whether their use is an effective means to acquire unfamiliar vocabulary. To date some researchers have examined the use of computer dictionaries; however, the manner in which the participants have investigated unknown words in these studies was by using a computer mouse to click on unfamiliar words

English, Jichi Medical University

presented on a computer screen. However, Koren (1997) pointed out that the skills needed for using an electronic dictionary differ from those needed for using a printed monolingual or bilingual dictionary in that learners see, "information pop up after clicking some buttons without really having to search" (p. 9). Similarly, Laufer and Hill (2000) also presented the argument that this type of shallow processing or clicking when using electronic dictionaries to look up words could be detrimental to retention. That is, because learners usually click on a word rather than type the spelling of a word in order to investigate its meaning on a computer, some of the mental effort of the search process, which may be important for the learning and retention of words, may not be exercised. Therefore, because Japanese college and university students are more frequently using electronic and on-line dictionaries and because there is no empirical data examining the methods to which these dictionaries are effective, the purpose of this study will be to examine the different search methods when students investigate the meanings on unknown words using an on-line dictionary. This research may be beneficial in that language educators may better understand how on-line dictionaries may effectively be utilized either as part of a lesson within the classroom setting or as part of designing individual assignments and activities.

Background Literature

There are five significant and timely studies that have focused on the use of electronic dictionaries to acquire the meaning of unknown words. Loucky (2002) found that computer or portable electronic dictionaries are the most commonly owned dictionary and that students with different majors generally enjoyed using these types of dictionaries. Knight (1994) and Laufer and Hill (2000) both found that high and low proficiency participants who used electronic dictionaries made significant gains in learning and retaining unknown vocabulary items. Chun and Pass (1996) as well as Laufer and Hill (2000) noted that the use of electronic dictionaries may be beneficial for learning unknown words because their ease of use and speed encourages learners to look up words. However, Laufer and Hill (2000) also indicated that students who looked up words more frequently using electronic dictionaries did not, statistically speaking, remember or recall the meaning of words. Rather, they proposed that what matters is the attention an unknown word receives during the look up process. This finding is further supported by Hill and Laufer (2003), who stated that the amount of a word-related activity is an important factor affecting the learning of new words.

In addition, there have been three significant studies that have focused on the empirical evidence supporting for the Involvement Load Hypothesis (Laufer & Holstein, 2001), which states that the more involvement or mental effort that a task requires to be correctly completed with regard to the components of *Need, Search,* and *Evaluation,* the more likely an unknown word will be learned and retained. *Need,* the motivational component, refers to the necessity of whether or not a word is required to complete a task. *Search,* the first cognitive component, occurs when learners must employ effort to look for the meaning of an unknown word in a dictionary or other resource. *Evaluation,* the second cognitive component, occurs when learners decide whether or not a word's meaning is appropriate for the context of a task.

In order to determine the degrees of processing or mental effort that are required to complete tasks, an involvement load index is calculated. For instance, the absence of an involvement factor is scored as 0, a factor that has moderate involvement would receive a score of 1, and a factor that has a strong involvement would receive a score of 2. Therefore, a task that requires learners to read a passage and answer

comprehension questions with the aid of words glossed in the margin would receive an overall score of 1 because the component of *Need* or necessity to use the word for the completion of the task is moderate, and the *Search* and *Evaluation* components would each receive an index score of 0 because the task does not require the learners to look for a word or for the learners to make a decision as to whether or not the word has a suitable meaning for the context of the task. Thus, the involvement load index for the reading comprehension task would receive an overall score of 1（Need = 1 + Search = 0 + Evaluation = 0）.

On the other hand, a task that requires learners to write a composition using words provided by the instructor would receive a higher score. For example, the *Need* or necessity to use the words would be moderate and receive a score of 1, the *Search* for the word would receive a score of 0 because it is already provided by the instructor, and the *Evaluation* of the word would be strong and receive a score of 2 because the learner must decide how to appropriately use the word in a writing context. Therefore, the involvement load index for this task would receive an overall score of 3（Need = 1 + Search = 0 + Evaluation = 2）.

As applied to this study, this theory holds that as the amount of processing or mental effort increases and becomes more demanding for learners, so will the degree of learning and retention of a new word. Therefore, if the *Need* and *Evaluation* components of the Involvement Load Hypothesis are held constant, the variation of different *Search* methods（clicking on words or typing words）may determine the degree of learning. In other words, when using the involvement load index, if the *Need* and *Evaluation* components are both held moderate 2（Need = 1 + Search = 0 + Evaluation = 1）or strong 4（Need = 2 + Search = 0 + Evaluation = 2）or in a type of combination 3（Need = 1 + *Search* = 0 + Evaluation = 2）or 3（Need = 2 + Search = 0 + Evaluation = 1）, tasks that employ different Search methods may reveal which process is more beneficial for the learning and retention of words.

Hulstijn and Laufer（2001）provided empirical research supporting the Involvement Load Hypothesis by demonstrating that composition tasks using target words have higher retention rates compared to tasks that require learners to read a passage and fill in gaps using target words or tasks that require learners to read a passage with the targeted words glossed. In addition, Keating（2008）found similar results when he conducted a study in which he kept time-on-task constant and tested for both passive and active or productive word knowledge. Finally, Kim（2008）found that better initial learning and retention of words is promoted when task involvement is kept high and the initial learning and retention of new words is similar when different tasks have the same involvement load.

Gaps in the Research

The literature reviewed in this study sheds significant light on the benefits of portable electronic dictionaries. However, one important difference or gap of these studies is that they investigate the use of electronic dictionaries with participants clicking on unknown words with the mouse of a computer rather than typing unknown words into a dictionary. Only Loucky（2002）used portable electronic dictionaries that required students to type unknown words. However, as mentioned previously, Loucky examined the participants' look up behavior rather than the actual learning and retention of word forms and meanings. Nevertheless, investigating word meanings with the cursor of a mouse to click on words, versus typing an unknown word into an on-line dictionary has not been investigated.

The second part of this literature review concerned the Involvement Load Hypothesis. Laufer and

Holstein (2001) explicitly define the involvement factors of mental processing for the components of *Need* and *Evaluation* processes as being absent (0), moderate (1) or strong (2), but they only define the component of *Search* as either being absent (0) or present/moderate (1). Kim (2008), in his review of the Involvement Load Hypothesis, stated that, "search is not conceptualized as the relative degree of cognitive processing; instead, it is either present (1) or absent (0)" (p. 288). In fact, Kim stated that if all components of the hypothesis were at their highest or strongest, the involvement index would be 5 (*Need* is strong 2, *Search* is present 1, *Evaluation* is strong 2).

However, there has not been empirical evidence to show how different levels of the *Search* component effect the learning and retention of unknown words. That is, although Hulstjin and Laufer's (2001) study had an involvement score of 1 (Need = 1 + Search = 0 + Evaluation = 0), Keating's (2008) study had an involvement score of 2 (Need = 1 + Search = 0 + Evaluation = 1) and Kim's (2008) study had an involvement score of 3 (Need = 1+ Search = 0 + Evaluation = 2), the *Search* component for each of these studies was zero. As a result, participants of these studies were to infer and remember the meanings of unknown words only through the context of reading passages. However, because participants were not required to search for the meanings of unknown words, the varying degrees to which the *Search* component may enhance the learning a word by means of consulting it through a gloss, glossary or dictionary was not explicitly measured.

Nevertheless, there are studies, that if taken together, make the distinction of learning words between using marginal glosses and dictionaries which may be paralleled to processes of clicking on words or typing words into a computer to learn new word meanings. For example, a few studies (Cho & Krashen, 1994; Knight, 1994; Luppescu & Day, 1993) have demonstrated that learners were better able to remember the meanings of words if they were looked up in a dictionary than if they were inferred through the surrounding context of a reading task. As a result, the *Search* component for the involvement load index for these studies may be reflected as dictionary use or presence of *Search* (1) and no dictionary use or absence of *Search* (0). In addition, other studies (Hulstijn, 1992; Hulstijn, Hollander & Greidanus, 1996; Jacobs, Dufon, & Fong, 1994; Watanabe, 1997) found that marginal glosses were more beneficial for word retention than no marginal glosses in a reading task. As a result, the *Search* component for the involvement load index in these studies may be reflected as marginal gloss use or presence of *Search* (1) and no marginal gloss use or absence of *Search* (0).

However, Hulstijn, Hollander and Greidanus (1996) also examined the use of marginal glosses and dictionaries. The results showed that the participants in the dictionary group learned fewer words than the marginal gloss group because they seldom consulted their dictionaries. However, when participants in the dictionary group did look up words, they were better at retaining them than the marginal gloss group. This suggests that when reading a passage the mental effort involved in using dictionaries differs compared to using marginal glosses to acquire new words. However, because the dictionaries were not consulted as frequently as the marginal gloss, the results are not based on an equal comparison of marginal glosses and dictionaries. Therefore, if, for example, there was a study that had a group of participants consult dictionaries as frequently as a group of participants who consult marginal glosses, results may be different and may indicate that there is another level to the *Search* component. That is, no dictionary or marginal gloss use or absence of *Search* (0), marginal gloss use or moderate presence of *Search* (1), and dictionary use or strong presence of *Search* (2).

Purpose of Study

Using an on-line dictionary, the primary purpose of this study was to investigate two issues. First, this study will examine if the *Search* component of the Involvement Load Hypothesis has two levels（0 = not present and 1 = present）as proposed by Laufer and Hulstijn（2001）or multiple levels（0 = not present, 1 = gloss, 2 = click, 3 = click and spell）that contribute to the retention of unknown words. The second purpose of this study was to examine how different component levels of the *Need* and *Evaluation* perform in combination with the *Search* component of the Involvement Load Hypothesis for the retention of unknown words.

Methods

The participants of this study were twenty first-year Japanese medical students at Jichi Medical University. Before entering the medical university, all participants had at least six years of formal English instruction at their respective junior and senior high schools. Although, no official examination score depicting their level of English proficiency was necessary for admission to the university, participants were considered to be very capable as admission to the university entailed scoring high on an entrance exam which, among other subjects, tested students' command of English.

This study took place over a period of one trimester（10 weeks）when participants were enrolled in a required medical course which taught them medical terms, phrases and issues in English. Four of the ten class sessions took place in the university's computer lab where participants engaged in reading four different medical-related passages via the instructor's web page and on-line dictionary. Participants were told that, in addition to their textbook, the exercise of reading the health passages via computer using both context and an on-line dictionary would help increase their English medical terminology. In addition, participants were also told that this exercise was part of the instructor's research and that they had the right to decline from participating. However, if they did participate, all identification on behalf of the participants would remain anonymous.

Four reading passages were prepared by first selecting a textbook passage and using an Internet vocabulary profiling instrument designed by Tom Cobb, a Canadian linguistics professor, to assess its high and low frequency words. Second, words profiled to be low frequency by the Internet vocabulary profiling instrument were then screened by the chairperson of English language department at Jichi Medical University to assess, based on previous teaching experience, which words first-year university students may or may not know. Third, low frequency words noted to be unfamiliar by the department chair were then screened again by six upperclassmen. These upperclassmen, who were either second or third-year students at Jichi Medical University, indicated whether or not they were, as first-year students, already familiar with the low frequency words when they entered the university.

After a total of 32 words were selected on the high probability of being unknown to first-year students by means of the Internet vocabulary profiling instrument, the English language department chair, and six upperclassmen, eight unknown words for each passage were incorporated in to the reading passages. In addition, each passage was written to be as statistically similar to each other with regards to word length, readability and grade level. For example, each passage was of about the same number of words ranging from 231 to 235 words. Next, readability was based on the Flesch Reading Ease test provided by Microsoft Word documents which uses a formula to factor in the average number of syllables per word and

words per sentence to determine how easy it is to read a passage. The higher the score, the easier it is to understand the document. Microsoft states that for most passages for the Flesch Reading Ease test score should be between 60－70 out of a 100 point scale. As a result, the four passages included in this study were written to have similar readability with all scores ranging between 60.0－60.8. Finally, grade level was based on the Flesch-Kincaid Grade Level test also provided by Microsoft Word documents which rates passages according to grade levels in the United States based on an alternative formula which includes the average sentence length and average number of syllables per word. Microsoft states that most passages for the Flesch-Kincaid Grade Level test should be between 7.0 to 8.0 or 7^{th} to 8^{th} grade reading level in the United States. Therefore, the passages included in this study were written at the same grade level with all scores being 8.0 or the 8^{th} grade reading level.

Before reading a passage, participants were provided with a handout to indicate which words they already knew. After participants completed the handout, they were each assigned to read a passage in one of four conditions as provided on the instructor's website. For example, for the first passage of Food & Health, five participants were assigned to the condition of only reading the passage (Need = 0 + Search = 0 + Evaluation = 0), five participants were assigned to the condition of reading the passage with a gloss (Need = 0 + Search = 1 + Evaluation = －0), five participants were assigned to the condition of reading the passage with the aid of clicking on highlighted words which linked them to an on-line dictionary and provided the unknown word's meaning (Need = 0 + Search = 2 + Evaluation = 0), and five participants were assigned to the condition of reading the passages by first, clicking on highlighted words which linked them to an on-line dictionary and second, typing the unknown word's spelling into an online dictionary (Need = 0 + Search = 3 + Evaluation = 0). When students finished reading their passage, they were then given a short quiz to test their knowledge and retention of the unknown words. This procedure was also used for the Aging passage, but before reading, this reading, students were told they needed to learn the highlighted words for the final exam. For the Exercise passage, participants were given an evaluation exercise (a fill-in the sentence task with targeted words listed at the top of the handout) after they were finished reading their passage, but before they given the short quiz. Finally, for the Sleep passage, participants were told they needed to learn the highlighted words for the final exam and were also given an evaluation exercise before they were given the short quiz. The title of the passages, their involvement load index, and the format of the study was as follows:

	Group 1	**Group 2**	**Group 3**	**Group 4**
Passage	**N－S－E**	**N－S－E**	**N－S－E**	**N－S－E**
1. Food & Health	0－0－0	0－1－0	0－2－0	0－3－0
2. Aging	1－0－0	1－1－0	1－2－0	1－3－0
3. Exercise	0－0－1	0－1－1	0－2－1	1－3－1
4. Sleep	1－0－1	1－1－1	1－2－1	1－3－1

- N = Need (0－No need, 1－Moderate Level; i.e. Instructor requires word for the final exam)
- S = Search (0－No Aid, 1－Gloss, 2－Click, 3－Click & Spell)
- E = Evaluation (0－No evaluation exercise, 1－Moderate evaluation exercise; i.e. Fill-in)

Notes:

1）No Aid = Participants were required to learn the meaning of unknown words using the context of the reading passage. Because the reading passages consisted of low frequency words and similar in word length, readability and grade level, participants should have been already familiar with all non-targeted vocabulary.

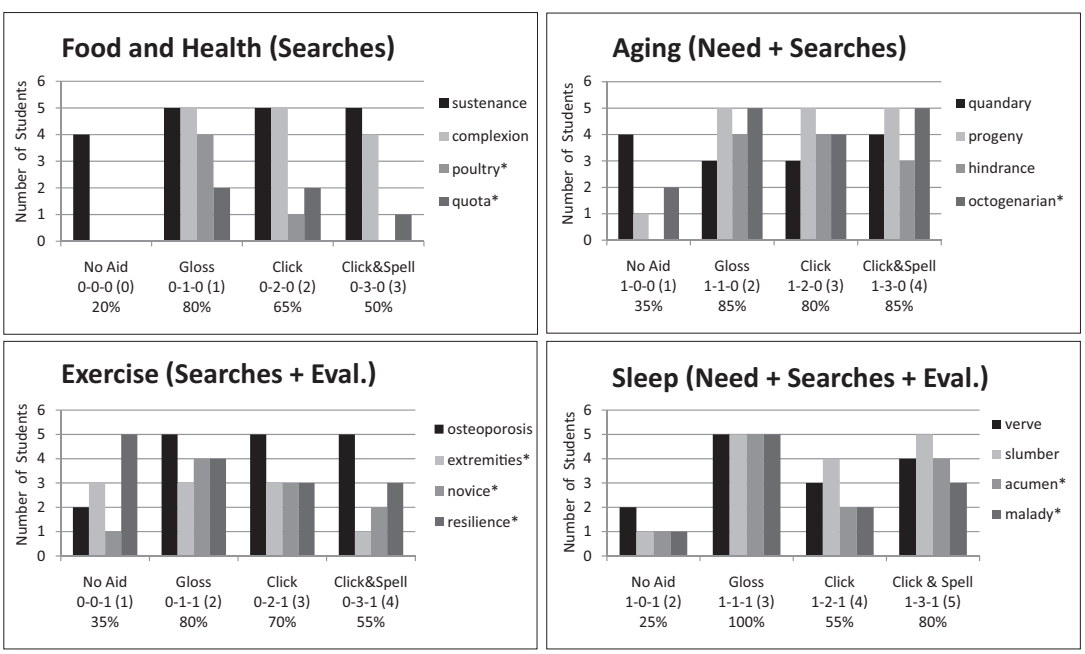
2）See Appendix A to view the word preview task for the Sleep passage.

3）See Appendix B to view the, Sleep passage.

4）See Appendix C to view an evaluation task for the Sleep passage.

5）See Appendix D to view a post quiz for the Sleep passage.

Note: Words without an * beside them were recalled receptively and words with a * beside them were recalled productively on the post quiz.



Results and Conclusion

Results from this study revealed significant findings with relation to the aids and loads for retaining unknown words. First, this study examined if the *Search* component of the Involvement Load Hypothesis has two levels or multiple levels that contribute to the retention of unknown words. By examining the results from the four passages, participants who searched for the meanings of unknown words in the Gloss group were able to retain more words than compared to those participants who were in the No Aid, Click or Click & Spell groups. In fact, the Click & Spell group did not perform as well as the Click group and students in the No Aid group recalled the fewest number of words of overall.

Second, this study also examined how different component levels of *Need* and *Evaluation* perform in combination with the *Search* component of the Involvement Load Hypothesis for the retention of unknown words. Results between the Aging passage（Need + Search）and the Exercise passage（Search

+ Evaluation), showed that announcing to the participants the *Need* to learn a word before reading the Aging passage was better for the Gloss, Click, and Click & Spell groups than compared to administering an evaluation task after reading the Exercise passage. Also, because the overall involvement loads were higher, it is not surprising that the Sleep passage performed better for the Gloss and Click & Spell groups. However, it is an anomaly that the Click group for this passage remembered fewer words than the Click & Spell group. This was not the case for trend or the other three passages. As a result, it may be necessary for this portion of the study to be administered a second time in order to confirm results.

Nevertheless, in examining the results of the first research question concerning the varying degrees of the *Search* component, when researching unknown words, there may be four levels rather than two levels to the *Search* component. That is, rather than the *Search* component being not present (0) or present (1), as originally proposed by Laufer and Hulstijn (2001), the *Search* component may have four levels that rank from weakest to strongest as No Aid (0), Click & Spell (1), Click (2), and Gloss (3). Therefore, when teaching vocabulary using an on-line dictionaries, providing a word gloss may be the best method to help students learn and retain words. In addition, results from this study also suggest that the more activity students perform investigating an unknown word away from a reading passage, the less likely they will retain their meanings. However, in examining the results of the second research question concerning combinations of involvement loads, when it is necessary for students to investigate words away from a reading passage, it appears that establishing the motivation or need for students to look up words before they read a passage, rather than administering a word fill-in evaluation task after they read a passage, fosters higher retention for the meanings of unknown words.

REFERENCES

1) Cho, K. S., & Krashen, S. (1994). Acquisition of vocabulary from the Sweet Valley Kids Series: Adult ESL acquisition. *Journal of Reading, 37,* 662-667.

2) Chun, D., & Plass, J. (1996). Effects of multimedia annotations on vocabulary acquisition. *The Modern Language Journal, 80* (2), 183-199.

3) Hill, M., & Laufer, B, (2003). Type of task, time-on-task and electronic dictionaries in incidental vocabulary acquisition. *IRAL, 41,* 87-106.

4) Hulstijn, J. H. (1992). Retention of inferred and given word meanings: Experiments in incidental learning. Vocabulary and Applied Linguistics. In P. Arnaud & H. Bejoint (Eds.), *Vocabulary and applied linguistics* (pp.113-125). London: Macmillan.

5) Hulstijn, J. H., Hollander, M., & Greidanus, T. (1996). Incidental vocabulary learning by advanced foreign language students: the influence of marginal glosses, dictionary use, and reoccurrence of unknown words. *Modern Language Journal, 80* (3), 327-339.

6) Hulstijn, J. H., & Laufer, B. (2001) Some empirical evidence for the involvement load hypothesis in vocabulary acquisition. *Language Learning, 51,* 539-558.

7) Jacobs, M. J., Dufon, P. & Fong, C. H. (1994). L1 and L2 vocabulary glosses in L2 reading passages: Their effectiveness for increasing comprehension and vocabulary knowledge. *Journal of Research in Reading, 17* (1), 19-28.

8) Keating, G. (2008). Task effectiveness and word learning in a second language: The involvement load hypothesis on trial. *Language Teaching Research, 12* (3), 365-386.

9）Kim, Y.（2008）. The role of task-induced involvement and learner proficiency in L2 vocabulary acquisition. *Language Learning, 58*（2）, 285-325.
10）Knight, S. M.（1994）. Dictionary use while reading and vocabulary acquisition for students of different verbal abilities. *Modern Language Journal, 78*（3）, 285-299.
11）Koren. S.（1997）. Quality versus convenience: Comparison of modern dictionaries from the researcher's teacher's and learner's point of view, *2*（3）, 1-12.
12）Lan, Li,（2005）. The growing property of on-line dictionaries. *English Today, 83*（3）, 16-21.
13）Laufer, B., & Hill, M.（2000）. What lexical information do L2 learners select in a call dictionary and how does it affect word retention? *Language Learning and Technology. 3*（2）, 58-76.
14）Laufer, B., & Hulstijn, J.（2001）. Incidental vocabulary acquisition in a second language: The contruct of task-induced involvement. *Applied Linguistics, 22,* 2001.
15）Loucky, J. P.（2002）. Improving access to target vocabulary using computerized bilingual dictionaries. *ReCall, 14*（2）, 295-314.
16）Loucky, J. P.（2005）. Combining the benefits of electronic and online dictionaries with CALL web sites to produce effective and enjoyable vocabulary and language learning lessons. *Computer Assisted Language Learning, 18*（5）, 389-416.
17）Luppescu, S., & Day, R. R.（1993）. Reading dictionaries and vocabulary learning. *Language Learning, 43,* 263-287.
18）Watanabe, Y.（1997）. Input, intake and retention: effects of increased processing on incidental learning of foreign vocabulary. *Studies in Second Language Acquisition, 19,* 287-307.

(Appendix A: Step 1 - Word Preview)

Name: (Romaji) _____ Student Number _____

Topic: Sleep

Welcome to the Computer Language Lab. Today's activity (and for the next few weeks) will help you learn new words using the context of your reading passage and the Internet. Please apply your best effort to complete this activity. The results will not be shared with other students or teachers.

These words WILL be on the final exam!

Step #1: Do you know the meaning of the words below? Check the correct spaces.

WORD	**NO,** I do not	**YES**, I do
adolescents	_____	_____
toddler	_____	_____
slumber	_____	_____
acumen	_____	_____
verve	_____	_____
malady	_____	_____
insomnia	_____	_____
narcolepsy	_____	_____

Step #2: : **Go to: www.yahoo.com (English website)**

Step #3 : **In the Search Box type:** http://hstrial-RDilenschneider.homestead.com

Step #4 : **Click:** hstrial-RDilenschneider.homestead.com

Step #5 : **Click:** Group 4 - Sleep

Step #6: : **Read the passage**

(Appendix B: Step 2 - Reading the passage on the computer.)

Sleep

People spend more time sleeping than any other activity during the day. Most grown-ups need to sleep seven to eight hours each night. Most **adolescents** should have 10 hours of sleep each night. On the other hand, a **toddler** needs a lot more sleep. Therefore, it seems that as we get older, the less sleep we need. Although most people know that **slumber** is important, why do we really need to sleep at all in the first place?

To understand why we need to sleep, it is helpful to look at how our bodies respond and react when we do not get the rest we need. If you sleep only two or three hours for one night, you will feel tired the next day. However, if you miss an entire night's sleep, you will begin to lose your **acumen**. And, if you do not sleep for two nights in a row, it may be impossible for you to think clearly. Therefore, we should try to get a lot of sleep in order to keep up our health and **verve** for our daily lifestyles.

Some people have sleeping **maladies**, however. One kind of problem is called **insomnia** . It can be treated with drugs to help people rest and relax. Also, another kind of sleeping problem is called **narcolepsy** . People with this kind of disorder take drugs to stay alert and active.

(Appendix C: Step 3 – Evaluation Task)

Name: _____ Student Number_____

Directions: Read the sentences and write the word of the word that best matches the meaning of the sentences below.

A. ***acumen***	**B.** ***acute***	**C.** ***adulterate***	**D.** ***adolescent***		**E.** ***insomnia***
F. ***insignia***	**G.** ***malady***	**H.** ***malaise***	**I.** ***narcolepsy***		**J.** ***narcotic***
K. ***slomper***	**L.** ***slumber***	**M.** ***toddler***	**N.** ***toddy***	**O.** ***verdant***	**P.** ***verve***

1. Bob has ***insomnia*** because he has difficulty sleeping at night and is usually tired during the day.

2. Sometimes a young child is called a ***toddler*** because she is learning to walk.

3. After a long day, I usually go into a deep ***slumber*** because I am very tired.

4. Joe has ***narcolespsy*** because sometimes in the middle of the day he suddenly falls asleep.

5. Anne really likes her job! Every day she has a lot of ***verve***.

6. Somebody who is a teenager is also called a(n) ***adolescent***.

7. A ***malady*** is another term for illness, disorder or disease.

8. Someone who can make smart judgments is said to have good ***acumen***.

(Appendix D: Step 4- Quiz)

Sleeping

Name (Romaji) _____ Student Number _____

Part 1:

Write the letter that matches the meaning of the bold (dark) word.

1. verve _____
   a. A long sleep to help improve a person's spirit
   b. The spirits of dreams
   c. Living happily for a long time
   d. Vitality or having a lively vigorous spirit
   e. To feel slow and sleepy with no spirit

2. adolescent _____
   a. The child of an adult
   b. Somebody who is of the age before becoming an adult
   c. Someone who needs a lot of sleep
   d. Another word for an adult
   e. Somebody who has recently become an adult

3. narcolepsy _____
   a. A condition of uncontrollable sleeping
   b. A condition of using narcotic drugs to fall asleep
   c. A condition of sleeping late at night
   d. A condition of being alert and active
   e. A condition that prevents clear thinking

4. slumber _____
   a. Another word that means "tired"
   b. Another word that means "sleep"
   c. Another word that means "to walk lazily"
   d. Another word that means "lack of sleep"
   e. Another word that means "sleeping illness"

Part 2:

Write a simple and short meaning for the words below either in English（英語）or Japanese（日本語）.

5. acumen

6. malady

7. insomnia

8. toddler

オンライン辞書を用いた未知語の調査分析

ロバート・ディレンシュナイダー

要　約

オンライン辞書を使っての英文中の未知の語彙調べに関する調査を，20人の大学生が参加し４週間に渡っておこなった。４つの異なる作業グループ（補助無し，注解，クリック，クリック＆スペル）の内，注解を利用したグループが最も良く未知の語の意味を記憶する傾向が見られた。この調査結果から，オンライン辞書を使って読解文から離れた活動をすればするほど，未知の語の意味を意図的にも，偶然的にも記憶しなくなる傾向が明らかになった。

自治医科大学　英語