

**THE IMPLEMENTATION OF BLENDED LEARNING:
THE EFFICACY OF LEARNING MANAGEMENT
SYSTEM ON VOCABULARY RETENTION OF
NURSING STUDENTS**

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Abstract

This study investigates the efficacy of Learning Management System on vocabulary retention of STIKES *Harapan Bangsa* nursing students. The subjects of this quasi-experimental study consisted of 87 nursing students taking English for Nursing 2 course. The participants were grouped into two different groups, control and experimental group. Random sampling was used to assign the participants into different groups. Before the intervention, both groups were given a pre-test.

Following the pre-test, both groups studied 45 words from their course book in different classroom instruction. Experimental group studied the target words by using LMS SCALSA in the language laboratory, while control group studied the target words using communicative classroom instruction. After the intervention, both groups were given a post-test. Further, two weeks after the post-test, a delayed post-test/ retention test was given to test students' vocabulary retention. The results of this study revealed that the integration of LMS SCALSA in classroom instruction is effective in enhancing students' vocabulary retention.

Keywords: Learning Management System (LMS), vocabulary retention

Introduction

Nowadays, Indonesian nursing students are expected to have good English. It is not only to support their academic purposes, but also will be additional value for nursing graduates to work and to compete with nursing graduates from other developing countries such as Malaysia, India,

Thailand, and Philippine. The demand of medical providers in developed countries is high. It is a big chance for the Indonesian nursing graduates to be able to work abroad as professional workers, who are not workers with low paid salary.

In the learning context of nursing skills, text books used are mostly in English. For example, Nursing Interventions Classification (NIC) and Nursing Outcomes Classification (NOC) are fundamental books for nurses in writing nursing care plan (NCP), and also foreign journal on health which are often used as learning materials and case study. In fact, Indonesian nursing students' English proficiency needs to improve. Mufti (2009) states that speaking and writing skills of Indonesian nursing graduates is low. Vocabulary mastery is one of the main causes. Lack of vocabulary mastery becomes the main problem experienced by non-English native students in their reading, listening, speaking, and writing skills (Nation, 1993). It also experienced by nursing students of *STIKES Harapan Bangsa Purwokerto*.

The importance of vocabulary in language acquisition has been greatly emphasized among most of researchers. It is widely accepted that vocabulary is one of the main constituents of a language. In other words, acquiring second language

vocabulary is the prerequisite in learning second language. It contributes a lot on how well learners listen, read, speak, and write. The more vocabulary learners acquire the better language they perform. According to Eizadpanah, Abedi, and Ghaedrahmat (2014), vocabulary is the building block of language learning meaning that learners will have difficulty performing the tasks required without sufficient knowledge of vocabulary. Thus, a significant amount of vocabulary learners is essential for fluency and appropriate language use in various situations, for example listening to academic lectures, communicating with others, reading books, and writing essays (Nation, 2001).

Although, many researchers suggest explicit vocabulary instruction, vocabulary building is given less priority in second language (L2) classroom on assumption that learners will learn on their own through natural exposure to language or by necessity. In order to resolve this conflict over the limited amount of class time available, there is a growing interest among second language acquisition researchers and teachers in using technology for vocabulary instruction in and outside the language classroom. The development of technology and the access of computers or other electronic devices have influenced language teaching and learning generally,

and vocabulary teaching and learning specifically (Eizadpanah, Abedi, & Ghaedrahmat, 2014). Currently, computers have been easy to access and used in many schools and/or university. Then, teachers need to think the implication of computers in language teaching and learning. Computer-assisted language learning (CALL) is an example of the technological implication in language learning environment. It aims to help learners acquire second language learning better.

The use of web in CALL programs can be an alternative way to extend instructional language classroom. Web is the largest source of learning, and it becomes a primary tool for teaching language of specific purposes (Ruiperez, 2002). Moreover, web-assisted language learning (WALL) has been used in virtual language learning. For instance, Learning Management System (LMS) is web-based learning system which often used in schools or university in e-learning setting. It provides various learning activities, evaluating quiz result, and other useful features which enable teacher to manage language learning system without considering time and place. However, it does not mean can replace the face-to-face instruction at the classroom.

The combination conventional learning at the classroom with web-based learning is called

blended learning (Williams, 2002). One of the main characteristics in blended learning is that students have more control towards time, place, learning speed, and learning strategies. It is because they get it flexibly through the internet (Caterall & Ireland, 2010). Littlejohn and Pegler (2006) stated that blended learning gives some possibility to change our attitude on learning, not only on time and learning setting, but also on the sources and tools supporting the learning itself. Vaughan (2007) argued that the implementation of blended learning will possibly result positive effect on learning environment. It covers the learning system weaknesses of conventional instruction and online distant learning. Therefore, this study aims to investigate the efficacy of blended learning implementation in helping nursing students to improve their vocabulary retention through learning management system.

Methodology

Research design

This study employed a quasi-experimental pre-post control group design with two groups (experimental and control groups). The experimental

group received a different treatment with control group, though each group received the same pre-, post-, and delayed post-test. Blended learning was implemented in experimental group, while conventional classroom instruction was used in control group. Both groups received the treatment in 13 meetings. The study had been conducted on September 28th to November 9th, 2015.

Table 1. Research Design

	Pre-test	Post-test	Retention test
Experimental group	1 st meeting	13 th meeting	2 weeks after
Control group	1 st meeting	13 th meeting	2 weeks after

Participants

This study was conducted with the participant of 87 nursing students studying in *STIKES* (Health Science Institute) *Harapan Bangsa* Purwokerto. They were in semester fifth taking English for Nursing 2 course of 2015-2016 academic year. They were chosen from two classes with various English proficiency levels. Then, they were

assigned into experimental group (42 students) and control group (45 students). Each group consisted of students with elementary, pre-intermediate, and intermediate levels.

Instruments

A vocabulary test and questionnaire were used to gather the research data. A vocabulary test was designed and constructed by the researchers as an experimental instrument. It was used in pre-test, post-test, and delayed post-test. The target words were taken from English for Nursing 2 of Student's book which written by English lecturers who taught there. A five-point Likert scale from "strongly disagree" to "strongly agree" questionnaire was used to determine the students' perception on the implementation of Learning Management System as the extension of instructional classroom. The questionnaire was distributed only to experimental group.

Procedure and Materials

The early step of doing this study was to assign the participants into experimental group and control group. It was done using random sampling technique. The participants in each group were given pre-test in the first meeting. It aimed to determine

whether the target words were familiar or not, and also to see their vocabulary knowledge related to the lessons. The researchers involved the nursing lecturers in selecting the target words. Following the pre-test, both groups studied 45 words from English for Nursing 2 course book. In the experimental group, the students studied the target words in a classroom setting and in a language laboratory using a Moodle as LMS in *STIKES Harapan Bangsa Purwokerto* (it is named SCALSA). In this study, the researchers also ruled as the teachers as well. In the language laboratory, they studied the target words interactively through sequence of vocabulary learning activities which were designed by the researchers. The target words were exposed in the form of textual, visual, and audio media. The researchers designed the various vocabulary activities using features provided in LMS SCALSA such as multiple-choice questions, matching, fill-in-the-blanks, and true-false activities. Moreover, the student would get immediate feedback on their answers to questions. In addition, the glossary and wiki features were inserted in this web-based course. The glossary activity module enables participants to create and maintain a list of definitions, like a dictionary, or to collect and organize resources or information. It reminds

students about the target words they learn. Moreover, vocabulary games were inserted to make their vocabulary learning more fun such as hangman, crosswords, and snakes and ladders. In the language laboratory, the teachers guided the students in doing the vocabulary exercises in LMS SCALSA. The teachers never interfered the students when they were working with LMS SCALSA. They learned and practiced the vocabulary individually.

The screenshot shows a quiz interface with the following components:

- Quiz navigation:** A grid of question numbers from 1 to 20. Questions 1-18 are in a light blue box, 19-20 are in a light red box. Below the grid are options for 'Finish attempt...', 'Time left 0:45:33', and 'Start a new preview'.
- Question 1:** 'Name the respiratory organs below.' It is marked 'Not yet answered' and 'Marked out of 10.00'. There are options to 'Flag question' and 'Edit question'.
- Diagram:** A human respiratory system diagram with 10 numbered labels pointing to various parts: 1 (External nares), 2 (Nasal passage), 3 (Sinus), 4 (Nasal cavity), 5 (Soft palate), 6 (Pharynx), 7 (Larynx), 8 (Trachea), 9 (Bronchus), and 10 (Diaphragm).
- Answer buttons:** A row of buttons for 'Pharynx', 'Epiglottis', 'Sinuses', 'Nasal passages', and 'External nares'. Below this row are buttons for 'Bronchus' and 'Diaphragm'.
- Navigation:** A sidebar menu with 'Home' and 'Current course' (EFN013 - English For Nursing - Intermediate 3 - 2013B) with sub-items for 'Participants' and 'Reports'.


<p>Question 8</p> <p>Not yet answered</p> <p>Marked out of 1.00</p> <p>Flag question</p> <p>Edit question</p> <p>Next</p>	<p>Air enters your lung</p> <p>Select one:</p> <p><input type="radio"/> a. esophagus</p> <p><input type="radio"/> b. trachea</p> <p><input type="radio"/> c. alveoli</p>	<p>Meeting 8: Male Reproductive Org</p>  <p>Quiz 1</p> <p>Words list of Male Reproductive Orga</p> <p>Watch the video of Male Reproductive</p> <p>Quiz 1 Fill In the Blank</p> <p>Quiz 2</p>

Figure 1. Interactive vocabulary instruction through LMS SCALSA

On the other hand, the control group only studied in a classroom setting. The target words were studied through printed materials and vocabulary games. The teacher fostered a communicative atmosphere through instructional classroom activities such as vocabulary games, pair-and/or group-works, and discussion. A variety of vocabulary teaching techniques were used to present the target words such as constructing definition of the words in English, guessing words from the context, vocabulary games, puzzles. Moreover, the teacher also employed realia such as flash cards, pictures, jumbled-words, and jumbled-

letters. In addition, the students were provided vocabulary worksheet. Then, the teachers gave feedback or correction if necessary after they had done the activities. During the process of vocabulary learning the students are asked to follow the teachers' instructions.

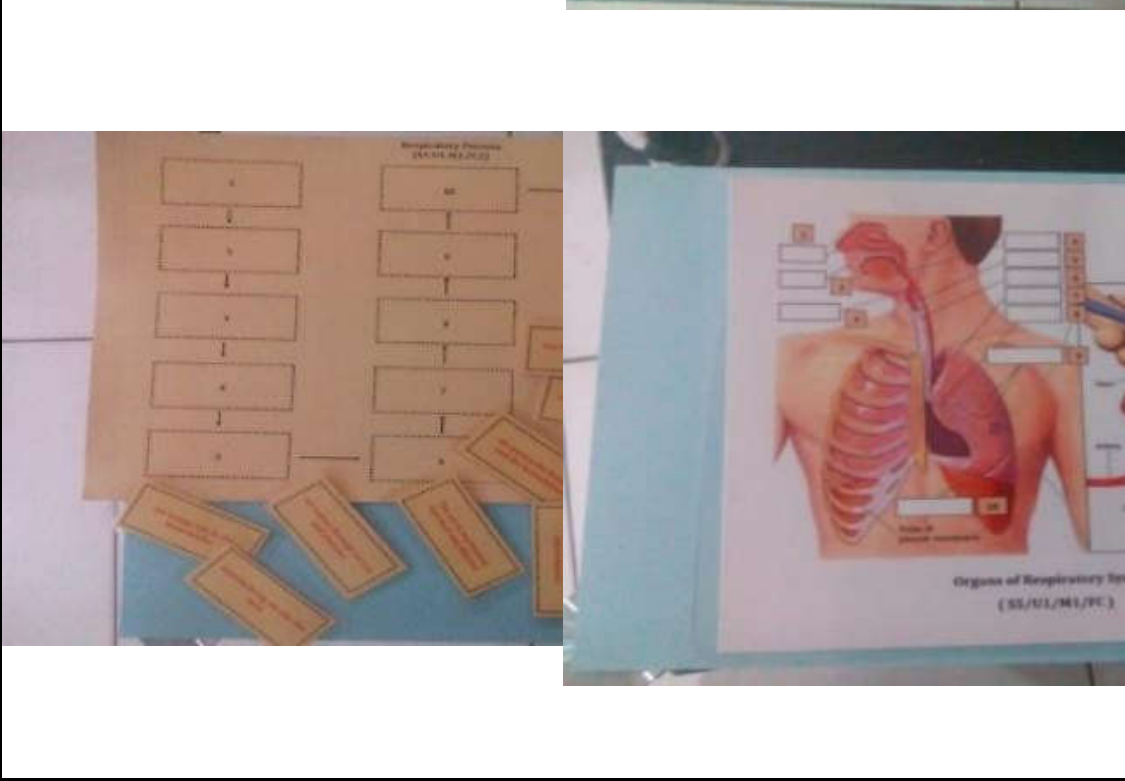
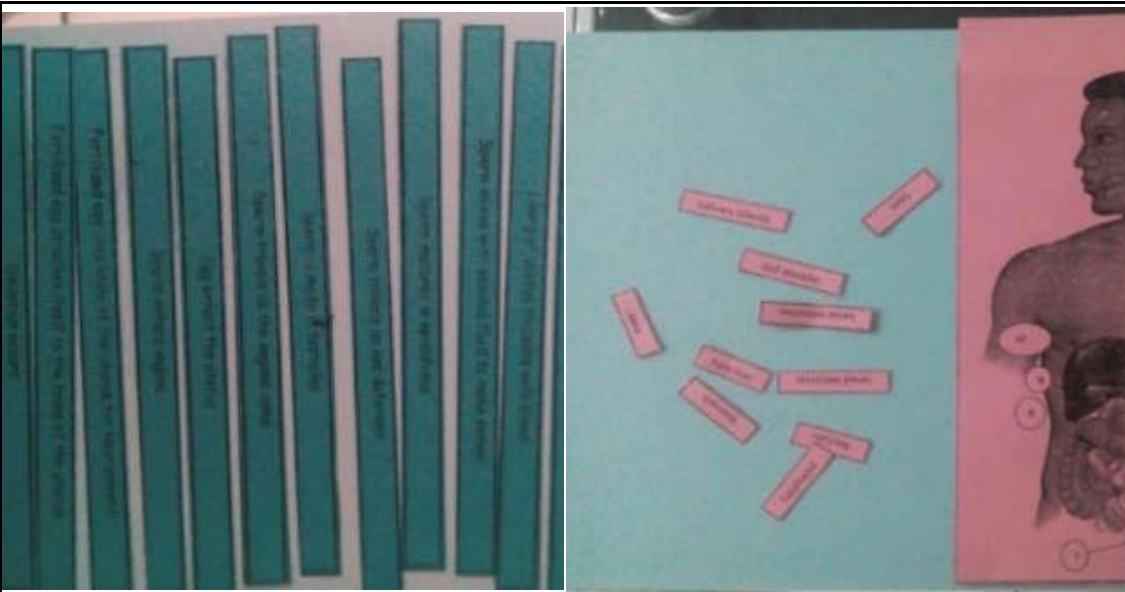


Figure 2. Realia used to present the target words
Data analysis

The quantitative data gathered from pre-, post, and delayed post-test were analyzed using SPSS 22.0 software. First, the pre-test scores of control and experimental group were compared using independent-samples t-test. Then, the results of post-test scores of both control and experimental group were compared using independent-samples t-test. Finally, the scores of post-test and delayed post-test/ retention test of each group were compared using paired-samples t-test. The results of the questionnaire were analyzed by finding out the mean score and standard deviation of each item in the questionnaire.

Research Results

In order to answer the research question, both independent- and paired-samples t-test were used to find the t-value and p-value. The pre-test scores of both control and experimental group and the post-test scores of both control and experimental group were compared using independent-samples t-test. Meanwhile, the pre- and post-test scores of each control and experimental group and the post- and retention-test of each control and experimental group were

compared using paired-samples t-test. The results of comparisons between both groups and the tests were presented in the following tables.

Table 2 shows that the results of pre-test scores for both control and experimental groups. The mean scores (45.64 and 46.67) of both control and experimental group showed that there was no statistically significant difference between groups' vocabulary knowledge before the intervention. It was found that the value of the sig (2-tailed) was above .05 ($p = .751 > .05$) which indicated there was no significant difference between the pre-test scores of the two groups.

Table 2. The Comparison of the Pre-test Scores of Control and Experimental Group

Groups	N	Mea n	Std. Dev.	t- valu e	Sig (2- tailed)
Control Group	4 5	45.6 4	14.89 5	-	.751
Experiment al Group	4 2	46.6 7	15.00 8		

The scores of pre- and post-test of control group were analyzed using paired-samples t-test as shown in Table 2. From the data reported in Table 3, the tests scores showed that there was a significant difference between the vocabulary pre- and post-test in control group. The mean score of post-test (\bar{x} = 58.44, SD = 12.743) was higher at a significant level $p < .05$ ($p = .000$). The p value was smaller than the specified alpha value of .05. Therefore, it can be concluded that there was a significant difference in the target vocabulary recognition and use in pre- and post-test of control group.

Table 3. The Comparison of the Pre- and Post-test Scores of Control Group

Tests	N	Mean	Std. Dev.	t-value	Sig (2-tailed)
Pre-test	45	45.64	14.895	-7.114	.000
Post-test	45	58.44	12.743		

The paired-samples t-test analysis of the pre- and post-test of experimental group was computed in order to discover whether experimental group's knowledge of the target vocabulary increased after the intervention. As shown in Table 4, the mean of pre-test score of the experimental group was 46.67

(SD = 15.008) and the mean of the post-test score was 60.38 (SD = 12.197). The results of the pre- and post-test scores of experimental group indicated that there was a significant difference of the group's target vocabulary knowledge and use. Furthermore, the p value calculated from the pre- and post-test scores was less than .05 ($p = .000$) which means that there was a significant difference between the pre- and post-test scores. Putting it differently, the experimental group's target vocabulary knowledge and use was increased statistically at a significant level after the intervention. Therefore, the integration of LMS SCALSA in vocabulary learning lesson was proved to be effective in improving the students' knowledge of the target vocabulary.

Table 4. The Comparison of the Pre- and Post-test Scores of Experimental Group

Tests	N	Mean	Std. Dev.	t-value	Sig (2-tailed)
Pre-test	42	46.67	15.008	-9.432	.000
Post-test	42	60.38	12.197		

To find out whether the experimental group's target vocabulary recognition and use was higher than the control group, the post-test scores of both groups

were compared. From the data reported in Table 5, the results showed that the mean score of the control group was 58.44 (SD = 12.743) and the mean score of the experimental group was 60.38 (SD = 12.197). In addition, the p value from the comparison of both groups was shown at .472 ($p > .05$) which indicated that there was not a statistically significant difference in the mean post-test scores of control and experimental group. In other words, both instruction types i.e. traditional class and blended learning class were successful in increasing students' vocabulary knowledge and recognition.

Table 5. The Comparison of the Post-test Scores of Control and Experimental Group

Groups	N	Mea n	Std. Dev.	t- valu e	Sig (2- tailed)
Control Group	4 5	58.4 4	12.74 3	-	.472
Experiment al Group	4 2	60.3 8	12.19 7		

Two weeks after the post test, students in both groups were given a vocabulary retention test. The results of post- and retention-test were compared

using paired-samples t-test as shown in Table 6 and 7. Data in Table 6 and 7 indicated that there was no significant difference between post- and retention-test of both groups. The p-value shown in Table 6 and 7 was greater than .05 (p control group = .691; p experimental group = .074). These values were substantially greater than the specified alpha value of .05. Therefore, it can be concluded that there was no significant difference between the post- and retention-test scores of both groups. The results indicated that the students in both control and experimental group could still remember the target vocabulary learned previously in the both instruction types.

Table 6. The Comparison of the Post- and Retention-test Scores of Control Group

Tests	N	Mean	Std. Dev.	t-value	Sig (2-tailed)
Post-test	4	58.44	12.74	3.489	.691
	5		3		
Retention-test	4	52.80	15.53	3.489	.691
	5		7		

Table 7. The Comparison of the Post- and Retention-test Scores of Experimental Group

Tests	N	Mean	Std. Dev.	t-value	Sig (2-tailed)
Post-test	4	60.38	12.19	3.058	.074
	2		7		
Retention-test	4	55.90	17.38	3.058	.074
	2		6		

To investigate whether LMS SCALSA was effective for nursing students' vocabulary retention, a questionnaire consisting of twenty-three question items were distributed to the students in the experimental group. The students were asked to respond to the questionnaire on the 20th meeting, after the post-test. Table 8 showed that LMS SCALSA helped the students to learn and improve their vocabulary knowledge in an interesting way (items 5, 10, 13, 18, and 23). Regarding to their experience of vocabulary retention improvement through LMS SCALSA (items 4, 5, 6, 7, and 8), the mean scores were rated ranging from 3.62 to 3.95. Mostly, the students learned many new words by doing exercises given by the teacher in LMS SCALSA (item 5, \bar{x} = 3.95; SD = .66). They admitted that LMS SCALSA helped them improve their vocabulary and remember newly learned words (Item 7, \bar{x} = 3.90; SD = .48) and item 8 (\bar{x} = 3.76; SD = .66 respectively). In

terms of experience of the value of the help and feedback in LMS SCALSA (items 9 – 12), the mean scores were rated ranging from 3.48 to 3.95, which falls into the level of “Agree”. It can be concluded that the help and feedback in LMS SCALSA stimulates the students to have positive attitude towards the use of LMS SCALSA in helping them improve their vocabulary knowledge. Further, it was also found that students experienced learner centeredness while using LMS SCALSA (items 13 – 16). They agreed (mean scores ranging from 3.50 to 3.95) that LMS SCALSA not only helped them improve their vocabulary knowledge and retention, but also it trained them to be an autonomous learners. Interestingly, the students’ preference in learning through LMS SCALSA (items 17 – 23) was rated in the range of agree level. From the results, the total mean score was 3.75, which falls into the level of agree. This result indicated that LMS SCALSA was proven to be an effective tool in increasing students’ vocabulary knowledge and retention.

Table 8. Questionnaire the efficacy of LMS SCALSA for nursing students’ vocabulary retention

Statements	Mean	St. Dev.	Level of Agreement
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1. I discuss the meaning of difficult words with others.	3.79	0.84	Agree
2. I ask others about the meaning of difficult words.	3.79	0.52	Agree
3. Others respond to my discussion by giving feedback.	3.64	0.69	Agree
4. The explanations of words were clear enough for me to understand new words.	3.76	0.48	Agree
5. I learned many new words by doing the exercises uploaded in the SCALSA.	3.95	0.66	Agree
6. SCALSA can help ESL students learn new words easily.	3.62	0.70	Agree
7. I think using SCALSA can improve my vocabulary.	3.90	0.48	Agree
8. Exercises in SCALSA were useful for me to remember new words.	3.76	0.66	Agree
9. The lecturer stimulates me by giving feedback.	3.81	0.45	Agree
10. The lecturer encourages me to participate.	3.95	0.31	Agree
11. The lecturer models good discourse.	3.79	0.52	Agree

12.	Other students encourage my participation.	3.48	0.59	Agree
13.	SCALSA changes and improves my learning attitude to be better.	3.95	0.49	Agree
14.	SCALSA trained me to be an autonomous learner.	3.50	0.55	Agree
15.	SCALSA has given me immediate assessment and evaluation that help me to identify my weaknesses.	3.76	0.48	Agree
16.	SCALSA offers me flexibility in terms of time and place to learn.	3.76	0.48	Agree
17.	I enjoy doing the various activities presented in SCALSA.	3.60	0.59	Agree
18.	The experience in SCALSA makes learning vocabulary more interesting to learn.	3.98	0.52	Agree
19.	I would like to be involved in more activities in SCALSA	3.57	0.70	Agree

	during the class time.			
20.	I would like to access SCALSA outside the class time.	3.64	0.62	Agree
21.	I like learning vocabulary through SCALSA.	3.67	0.61	Agree
22.	I experience no difficulty to participate in the activities in SCALSA.	3.64	0.66	Agree
23.	This kind of learning model should be included in language courses.	4.02	0.75	Agree
	TOTAL	3.75	0.58	Agree

Discussion

The findings showed that both control and experimental group's post-test mean score were found to have increased statistically significant in terms of vocabulary knowledge. It can be concluded that both traditional and blended learning instructional model resulted in an increased vocabulary knowledge. However, from the findings, students acquired more considerable increase in their vocabulary knowledge by learning vocabulary

through LMS SCALSA. By doing some vocabulary exercises provided in LMS SCALSA, students in the experimental group showed a significant increase on their vocabulary knowledge and use. Further, the mean score of retention-test conducted two weeks after the post test showed that there was no significant difference between the post- and retention-test of the experimental group. In other words, LMS SCALSA not only helps the students enhance their vocabulary knowledge and use, but also strengthens their vocabulary retention over period of time. LMS SCALSA was proven to help students maintain the knowledge of previously learned vocabulary effectively. In contrast to the results of the prior studies, the finding validates Laufer & Hill (2000) and Rodriguez & Sadoski (2000), where they proved that computer assisted instruction offers better learning experience to students in terms of vocabulary learning and retention. Therefore, the results of this study support the related literature (Laufer & Hill, 2000; Rodriguez & Sadoski, 2000) regarding the efficacy of computer assisted instruction on vocabulary retention.

The results from the questionnaire about the efficacy of LMS SCALSA on nursing students' vocabulary retention revealed that LMS SCALSA

helped the students in improving their vocabulary knowledge and retention through the vocabulary learning exercises. Further, they admitted that learning vocabulary using LMS SCALSA was interesting as it provided the students with various vocabulary exercises. Moreover, LMS SCALSA was found timeless and borderless for them to learn vocabulary.

Conclusion

To sum up, this study was aimed to reveal whether LMS SCALSA is effective in vocabulary retention of nursing students. The findings from this study revealed that the integration of computer assisted instruction offered some benefits to the students in enhancing their vocabulary knowledge and retention. This present study identified that there was a significant difference between the post-and retention-test results of both control and experimental group. In other words, the intervention in the experimental group by integrating LMS SCALSA in the lessons can lead students to the improvement of vocabulary knowledge and retention. As a result, the integration of computer assisted instruction in vocabulary learning was proven to be beneficial for both the students in

learning vocabulary and the teachers in teaching vocabulary. Hence, English language teachers are recommended to implement the integration of computer assisted instruction to enhance students' vocabulary knowledge and retention. Integrating computer assisted instruction into a language program is beneficial as its practicality, timelessness, and borderlessness make the learning more effective and interesting.

In the light of the findings, the researchers would like to suggest some options for the further studies. Firstly, this study was conducted for about one and a half months (20 meetings) due to the time constrain of the research project. It is recommended that the further studies are conducted over longer period of time to track students' success in terms of their vocabulary knowledge and retention. Secondly, this study used questionnaire as the secondary data to find out the efficacy of LMS SCLASA for nursing students' vocabulary knowledge and retention. For further investigation, it is suggested to use more research instruments such as in-depth-interview, classroom observations, etc. as the secondary source of data. Finally, this study focused on determining the efficacy of computer assisted instruction i.e. LMS SCALSA in enhancing students' vocabulary knowledge and retention. Further studies can also

focus on determining the efficacy of computer assisted instruction in other language skills (listening, speaking, reading, and writing).

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