IMPROVING ARCHITECTURE STUDENTS' ENGLISH VOCABULARY THROUGH THE USE OF ARCHITECTURAL DRAWINGS

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ABSTRACT

This study aims to find out the effectiveness of architectural drawings in teaching English vocabulary at first-semester college students of Architecture, Malikussaleh University, Lhokseumawe, Aceh, Indonesia. The media applied in the research worked in both improving Architecture-major students' ability to learn the target language and motivating them in the teaching-learning process. A likert questionnaires analysis was used to determine factors affecting students' lack of English vocabulary. The quasi-experimental method was applied to acquire the test data needed. The t-test formula was then used to find out the differences between conventional teaching technique and using-architectural-drawings technique through the pre-test and post-test scores. Based on the analysis, the findings showed that there was a significant success on improving the students' vocabulary mastery. However, as the architectural drawings used in the research were limited on the presentation type of drawing, other kinds of architectural drawings may not result in the similar way.

Keywords: *ESP; architectural drawings; vocabulary*

INTRODUCTION

ESP, called as English for Specific Purposes is a quite new approach to teaching and learning English. The ESP's teaching materials are specialized to meet the needs of English language proficiency and professions of certain fields and

studies, for example, English for medical science, mechanical engineering, economics, or other fields of study. As the ESP teaching aims to enable students to master English in the field they are studying, students of Architectural Engineering are expected to know English in the field of Architecture. However, English for Architecture seems to be the most neglected areas in ESP. This is marked by the lack of English reading on ESP for Architecture that can be used as a reference in learning. In addition, published studies on teaching ESP for Architecture both in national and international journals are still limited. In fact, both undergraduate and graduate students in architecture who later become architects require English mastery infinitely. Talking to clients, suppliers, partners, colleagues as well as delivering speech demands a good speaking ability. Reading and writing the rules and requirements, emails, proposals, reports, and papers are other skills which need to be mastered.

Considering the importance of ESP for Architecture, teachers' preparation of materials should become a concern. It has to be interestingly organized and well-prepared. For instance, Case (2013) in his paper suggests that teacher who teaches speaking or reading can select interesting topics related to architecture subject such as; the *celebrity architects, the most beautiful and ugliest buildings in one city, the positive and negative impact of the protecting old buildings and towns,* and other interesting topics. For a general vocabulary teaching class, expert designers and researchers have proposed some interesting options of learning materials. For example, Taslim (2014) demonstrates several media that can be used to support teaching ESP, including games, flashcards, picture stories, and magic discs. These learning materials are applicative as needed. As architecture students' need for drawings is enormous, it seems applicable for ESP learning especially in improving vocabulary mastery. Elly and Gerlach (2007) argue that the media are people, materials, or anything that results in conditions that can assist students in acquiring knowledge, skills, and behavior. In regard to benefits of media images, Ernestova (1981) mentioned that the use of images in teaching foreign languages varies to attracting students and increasing motivation. The fact that ESP for Architecture is indispensable to the students' English proficiency and the benefits of drawings as a

learning media is various, the theme of this research, therefore, is to improve the mastery of the vocabulary of architecture students through architectural drawings. The purpose of this study was to find out whether the use of architectural drawing improves students' vocabulary mastery, how effective the use of architectural drawings in improving the students' vocabulary mastery, and what factors causing the students' lack of vocabulary.

LITERATURE REVIEW

Vocabulary and Teaching Vocabulary

The Oxford dictionary defines vocabulary as "all words that a person knows and uses, or all words in a language, or a series of words with their meanings, as in a book to learn a foreign language". Richard and Renandya (2002) interpret vocabulary as "a core component of language acquisition and is a benchmark of how well a language learner speaks, hears, reads, and writes". In a more complex, vocabulary is defined as knowledge of words and meanings of words. In regard to the 'words', it consists of spoken words and written words (Council of Europe and European Commission, 2000). Spoken words refer to a word that is known and used in listening and speaking, while the written word is a word that is known and used in reading and writing. From some definitions of experts above can be concluded that the skills to learn a language writing, reading, listening and speaking are highly depended on the vocabulary ruling.

Vocabulary is divided into four language skills namely listening, writing, reading, and speaking. In general, a language learner may easily remember the vocabulary in listening and speaking. But the process can change, especially in teaching foreign languages. Vocabulary in reading can be a first-degree mastery before vocabulary in speaking and listening. So, the more one reads in a particular language, the more vocabulary one gets mastered. Simultaneously, vocabulary mastery then becomes the most influential factor in comprehending readings as it proved in Hayati's (2016) research on the correlation between Indonesian students' vocabulary mastery and their reading comprehension.

Referring to the number of vocabulary, Nation (1994) divides vocabulary into two types based on their frequency of use, those are:

1. High-frequency vocabulary, consisting of words very often used in normal languages of four skills and in various situations. This vocabulary includes 2000-word groups, of which about 87% of these words are used in formal written tests and more than 95% are used in informal oral tests.

2. Low-frequency vocabulary is used only in a very small proportion and is rarely used in general English activities. These words include 100,000-word groups. High-frequency word groups are called active vocabulary where they are often used in everyday life or words that must/have been learned and are expected to be properly used. In contrast, a group of low frequency words is called passive vocabulary. Passive vocabulary can mean a vocabulary that is only understood by some or is not known publicly. This vocabulary is also known as popular words but rarely used or not at all.

Since mastery of vocabulary is considered important, Schmitt (1997), who defines vocabulary as the basis of a language, promotes vocabulary mastery in learning languages before others. Schmitt adds that one cannot speak well and understand written texts unless he knows the vocabulary. Even as good as sounds of a foreigner's pronunciation, without words to be expressed broadly and meaningfully will not work perfectly (Schmitt, 1997). The importance of English vocabulary mastery, however, is not fully realized by students who do not major in English Language. Architecture engineering students, for example, possessed little vocabulary in the field of Architecture. Of the many constraints that hinder students to master vocabulary, the researcher summarizes some fundamental factors that seem to be the most attributed.

1. Lack of reading

Excessively, articles on improving vocabulary mastery suggest reading as one of the best way to improve vocabulary. The more reading one attends to, the more vocabulary he gets. Reading also adds to the knowledge of how sentence formation and simultaneously facilitates correct reciprocity. But the culture of reading is hardly owned by all students.

2. Being passive without special time to repeat new vocabularies

Learning languages is learning skills which need to be actively practiced both in writing and orally. To actively master vocabulary can be done by memorizing new words that are heard, and searching for their meaning in the dictionary. An active practice also means having the desire to provide a certain time like an hour every day for practice. In addition, repetition of vocabulary and English sentences can stream pronunciation and improve English proficiency.

3. Dependence on online and offline translator media

Nowadays, a large number of English dictionary are available in either offline or online versions. On one hand, it helps learners in learning new vocabulary easily. On the other hand, learners' over-dependence on it hinders them from learning. Karso (2013) asserts that depending on dictionaries tend to cause someone frustated and stop learning if he cannot find such medium.

4. Less of personal effective way of learning

Certain method, moreover, may fit to someone but may not fit to someone else. This shows that each person has his own way of learning. However, Karso (2013) also found that applying a certain way without trying to combine and practice different ways of various effective approach may confront boredom. Creative learners usually find ways to memorize vocabulary depending on how they learn, eitherr autonomously or in groups. A few are writing one day one vocabulary, finding certain gams like puzzles, anagrams, scrabble, random words, and boggles, and many other effective means of vocabulary mastery.

The above factors are antipodes to the idea of positioning the mastery of English vocabulary as a highly prominent aspect in which a variety of concept emerges to promote easy, addictive, and interesting techniques in learning vocabulary. The ideas turn up either in the form of strategies for autonomous or personal scope or in groups mode. In addition, much research has been done in the realm of vocabulary learning that indicates a strong reason for implementing a systematic approach to teaching the vocabulary itself. A well-known definition of teaching is the process of transferring knowledge and other materials to students by using appropriate methods. Although traditionally language teaching often

emphasizes mastery of other language aspects such as grammar, speaking, and reading, attention to vocabulary learning methods is increasingly prevalent. However, there are also things that teachers should consider in relation to the learner. It is also suggested that a language teacher has to consider about the language, culture and knows the students, who they are, and what to do to help them learn (Larsen 2000, Freeman, 2000). They further contend that it is important for a teacher to be aware of all those aspects in order to guide their steps in the classroom. This shows that the approaches and teaching methods not only need to be interesting but also must be in accordance with the needs of the students. For example, a student majoring in Economics requires knowledge of English related to Economics. Likewise with Architecture students who expect to master English related to their own field of study.

More details, Richard and Renandya (2002) mention three ways a teacher can do to motivate students to master vocabulary, namely:

1. Prioritize active words

Active and passive vocabulary have been introduced previously. This technique points out that is is necessary to choose which vocabulary to be prioritized depending on teaching context. For a basic class, for example, active vocabulary can be taught by creating several sets of vocabulary that should be learned. However, for upper or higher level students, their active and passive vocabulary words need to be tailored to the needs or areas they are studying.

2. Interact with words

Associating a vocabulary with something that will be easy to remember and hard to forget is one way of interacting with words. Other forms of interaction can be done by searching for synonyms or antonyms, changing the word class from noun to adjective or verb, and so forth. At the end, the more vocabularies can be connected in the mind of the learner, the longer the words are attached and remembered.

3. Search techniques

This technique has more emphasis on the students' own efforts to find meaning and other rules such as why and how the vocabulary is used. Teachers can

assume that students already have enough vocabulary, so that learning vocabulary is not by introducing new vocabulary words but by giving new material reading, and asking the students to interpret new vocabulary words by connecting them with the knowledge they have already had.

Drawings and architectural drawings in teaching vocabularies

Webster (2017) defines drawings as " Ernestova (1981) divided the types of drawing based on its functions to a language teaching including drawing one person or single object, pictures of people involved in certain activities, images of the environment (roads, buildings, factories, etc.), and a series of drawings that refer to a theme of conversation (food, work activities, etc.).

Images, a part of the drawing, can be used to give students a chance to practice the language in a real context or situation where they can communicate their ideas (Larsen, 2000). Kemp, an associate professor of education and media production coordinator also emphasizes some of the drawing functions in teaching, namely to improve the subject's topics, to increase interest in learning, to extend memories of information, and to teach skills effectively (Kemp, 1994).

Looking at all years of publications of the previous references (Ernestova, 1981) and Kemp (1994)), it shows that the media images have begun to have a major effect in language learning classes from last decades. Recent studies, interestingly, also show the contribution of drawings in the English learning process. James (2010) argues that drawings, which include photos, graphics, images, maps, models, and artifacts can create a visual impression of students, attract attention and help concentration; so that students can describe the meaning directly and quickly into a verbal explanation. A classroom action research conducted by Nurlaili et al (2012) also asserts that drawings can improve the process of enriching the vocabulary of 6th graders in Bogor. Sari (2013) also demonstrates that the use of drawings has increased students' learning motivation. In short, visual effects of drawings can allow the language to be seen more impressive. The color and shape of drawings can also stimulate students' quick response and avoid boredom.

As learning media, drawings usage vary widely depending on needs. The selection of drawings as a medium in this research is because drawings can be a communication medium in the field of architecture. Fauzi (2014) argues that the role of the drawing in understanding the architecture is very important. According to its function and purpose, Fauzi (2014) divides drawings into two types, the presentation drawing and engineering drawing. The first type of drawing refers to an informative and exquisite architectural drawing that gets a dramatic effect to make it look more impressive and fascinating as it aims to showcase. The second type of drawing is called a construction drawing which contains detailed technical information about a building, such as the material used, connection construction, column-beam position, plumbing (piping), and electricity. The difference between the two is that if the presentation drawings put the beauty, the engineering drawings strongly emphasize the accuracy and completeness of the picture. Considering the importance of the role of drawings in Architecture, this is one of the reasons for the use of drawings in the teaching of ESP for Architecture students.

All above considerations are due to the Architecture students unarguably need of mastery of English, especially vocabulary. Case (2002) describes several reasons why architects require English language proficiency in general, including talking with candidates or clients, suppliers, partners and colleagues, reading the rules and requirements, catalogs, journals and books, writing emails, proposals, reports, and papers, attending or deliver material at conference, and presenting, both oral and written.

In another research project, Case (2013) also adds a number of necessary vocabulary in the field of Architecture, such as building types, building parts, building materials, and building decoration materials. Some others include what an architect does and what tools architects need to work. Those vocabularies may be delivered by general teaching approaches as well as other interactive and innovative approaches. In fact, the approach through the use of drawings will give a perfect effect. Fiorito (2005) states that "being able to use the vocabulary and grammar they (ESP learners) learn in meaningful contexts will improve learning outcomes and increase motivation."

METHOD

To obtain the data on the use of drawings media in improving vocabulary mastery of the students of Architecture, an experimental research was conducted. It used quantitative method by applying test (pre-test and post-test) and questionnaires data. The four-week-implementation procedure with 4 meetings in each control class and experimental class were arranged. Both classes were given the similar type of test for pre-test and post-test. The difference was that the teaching treatment was only conducted to the experimental class, not to the control class. Treatment was in the form of vocabulary teaching through the use of architectural drawing media. Meanwhile, the teaching process in the control class used conventional technique. To find the answers to research problem on what factors cause the students' lack of vocabulary, the use of collection of Likert Scale questionnaires was adopted.

RESULTS AND DISCUSSION

Table 2. Descriptive Statistics of Pre-Test Results

Interval	f_i	Xi	fi.Xi	Xi²	fi.Xi²	Interval	f_i	Xi	fi.Xi	Xi²	fi.Xi²
45-49	7	46,5	325,5	2162.25	15135,75	45-51	10	48	480	2304	23040
50-54	3	51,5	154,5	2652.25	7956,75	52-58	8	55	440	3025	24200
55-59	11	56,5	621,5	3192.25	35114,75	59-65	6	62	372	3844	23064
60-64	6	61,5	369	3782,25	22693,5	66-72	2	69	138	4761	9522
65-69	2	76,5	113	4422,25	8844,5	73-79	1	76	76	5776	5776
70-74	0	71,5	0	5112,25	0	80-86	1	83	83	6889	6889
75-79	1	76,5	76,5	5852,25	5852,25						
	30		1680		∑fiXi²= 95597,5		28		1589		∑fiXi= 92491

Table 3. Descriptive Statistics of Post Test Results

Interval	f_i	Xi	fi.Xi	Xi²	fi.Xi²	Interval	f_i	Xi	fi.Xi	Xi²	fi.Xi²
44-51	1	47,5	47,5	2256,25	2256,25	50-54	3	51,5	154,5	2652,25	7956,75
52-59	1	55,5	55,5	3080,25	3080,25	55-59	1	56,5	56,5	3192,25	3192,25
61-68	6	64,5	387	4160,25	24961,5	60-64	6	61,5	369	3782,25	22693,5
69-76	5	72,5	362,5	5256,25	26281,25	65-69	8	66,5	532	4422,25	35378
77-84	5	80,5	402,5	6480,25	32401,25	70-74	3	71,5	214,5	5112,25	15336.75
85-92	9	88,5	796,5	7832,25	70490,25	75-79	5	76,5	382,5	5852,25	29261,25
93-100	3	96,5	289,5	9312,25	27936,75	80-84	2	81,5	163	6642,25	13284,5
	30		2341		∑fiXi²= 187407,5		28		1872		∑fiXi= 127103

From the result of pre-test, Means Score of both classes shows differently. The experimental group is 56, and the control group is 56,75. Variances and Deviation Standard of two class are 52,32 and 7,23 for the experimental class and 85,75 and

9, 26 for the control class. The t-score of pre-test is 0,8. The result of post-test is what determines this research finding to have impact or not to future ESP learning outcomes. The data show significant differences between experimental group (78) and control group (66,85). The variances and Deviation Standard for experimental group are 163 and 12,8, while the control group at 73 and 8,49. The t-score for post-test of two group is **12,81**. That Deviation Standard score is 56, the critical value of degrees of freedom in this study was then determined. It is 1.68 at a significant level of 0.05 for educational research. This score is finally compared to the t-score which previously found (12,81).

Furthermore, the Likert scale analysis shows the items expressed in some alternative responses: Strongly Agree (SS), Agree (S), Neutral (N), Disagree (TS), and Strongly Disagree (STS).

Table 4. Students' Total Responses to Questionaires

No	Responses	Total Response				
		SS	S	N	TS	STS
	A.Vocabulary					
1	Mastering Vocabulary is prominent in learning English language.	25	3			
2	Mastering architecture-related vocabulary is significant for English subject and other subjects.	17	13			
	B.Architectural drawings					
1	Architectural drawings help me improving my architecture-related vocabularies.	17	9	4		
2	The use of Architectural drawings has increased my interest and motivation in improving my English vocabuary.	15	14	1		
	C. Mastery of Architecture-related vocaulary					
1	I master active architecture-related vocabulary very well.	2		18		10
2	I do not master active architecture-related vocabulary.	13	10	5		2
	a. I never read those vocabularies before.	5	2			
	b. I do not prepare particular time to repeat new vocabularies.	9	10			
	c. I have dependence on dictionary (printed/online)	10				
	d. I do not have any effective ways in learning vocabularies	6				
	e. Others (............................)					

As mentioned earlier, the purpose of this study is to prove the hypothesis if the use of drawings media can improve vocabulary mastery of the students of Architecture Department of Engineering Faculty, Malikussaleh University. From the calculation, it was found that the Means scores for the pre-test of the experimental class was 56, slightly differed from 56,75 of the control class. This may indicates that both classes have quite similar initial average of ability in their English proficiency. However, the post-test showed differently as the experimental class reached 78 while the control class got 66,85. The Deviation Standard of pre-test for the experimental class was 7.23, and 9.26 for the control class. For the post-test, Deviation Standard of the experimental class was 163, and 73 for the control class. This high score of Deviation Standard signifies the high sample variety this research has (Pengayaan.com, 2015). Having found the Means and Deviation Standard scores, the t-score could be calculated. It was 12,81. As the t-score helps researchers determining hypothesis, the rejected or accepted hypothesis of this study was then revealed. It refers to the formula given by Sugiyono (2010:276) that alternative hypothesis is accepted if t value is higher than T-table value. Based on the result, it can be summarized that T-test value at post-test between the experimental class and the control class that is 12,81, higher than the T-table value (1,68) at a significant level of 0.05. Hence, it can be concluded that Alternative Hypothesis (Ha) drawings can improve the mastery of architecture-related vocabulary of Architecture-major students, Faculty of Engineering Malikussaleh University is accepted, and Null Hypothesis (Ho) is rejected. In other words, this study has proven that the drawing media gives a better influence on students' ability in improving the proficiency of English vocabulary.

In addition to the results of the test analysis showing the effectiveness of the use of image media, the questionnaire analysis also significantly supports the previous results the students strongly agree (98 %) that mastering vocabulary is prominent in learning the English language. They also strongly agree (91%) that mastering architecture-related vocabulary is prominent for English subject and other subjects. 88,7 % responses to that Architectural drawings help in improving architecture-related vocabularies. Furthermore, 89,4 % of responses to the use of

Architectural drawings has increased interest and motivation in improving English vocabulary. The result is certainly in line with what Albano (2013) has suggested in the above literature to utilize the drawings if it is to help the learner remember a word/object. This study proved the effectiveness of drawings in remembering the vocabulary in the field of architecture by the students of architecture.

However, only 33,3 % of students' responded to their level of mastery of active architecture-related vocabulary. Besides, the presence of neutral responses to this statement indicates that some students were unsure of their vocabulary mastery. Simultanoeusly, they disagreed if they mastered sufficient vocabulary. In line with this, 81,3 % responses appeared showing that the students do not master architecture-related vocabularies. It is clear that only a small percentage of the samples actually mastered the vocabulary well.

The factors behind the lack of vocabulary mastery were then revealed from the percentage of students' responses, of which 45.2% of the students' total answer did not provide a special time to repeat the new vocabulary. 23.8% responsed that they had a dependency on the online dictionary or dictionary. 16.7% had never read the tested vocabulary before, and 14.3% of students did not have effective means of improving vocabulary.

CONCLUSION

Variety of techniques and approaches reveals in teaching vocabulary. In the field of ESP for Architecture, this study proved that one of them can be accomplished via architectural drawings. Through a successive process of pre-test, teaching treatment of drawings application, post-test, the data were obtained and analysed. The findings show that the students improve their ability in mastering new vocabulary words. Questionnaires analysis results also show that this practical technique helps students improve their interest and motivation in learning English vocabulary. The small percentage (33,3) of student's response to their mastery of Architecture-related vocabulary further shows that the highly-influenced factor is the students' limited time repeating new vocabulary words.

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