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INVESTIGATING THE EFFECTIVENESS OF SELF-DIRECTED VOCABULARY LEARNING USING A MOBILE APP

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Abstract

This paper presents the results of a study aiming to investigate the effectiveness of Self-Directed Vocabulary Learning using a mobile app involving 185 Indonesian EFL students from 2 Faculties in Banten, Indonesia. This study

has been shaped by the theory of motivation and self-directed vocabulary learning, focusing on academic words using a mobile application. This study used a quasi-experiment research method involving control and experimental groups with pre-and post-test data collection techniques. The data were analyzed using descriptive statistics to summarize the test scores and N-Gain to calculate the difference between the pre-and post-test scores. The N-Gain scores of the two groups show significantly different results. The n-gain of the control group was low (-0.04), while the n-gain of the experimental group was moderate (0.67). It can be concluded that self-directed vocabulary learning works only with properly motivated students. On the other hand, self-directed learning may not work with students with low motivation. It is recommended that EFL teachers explore new ways to motivate students in self-directed vocabulary learning.

Keywords: *Vocabulary, Self-directed Learning, Motivation, Mobile App*

A. Introduction

Acquiring skill in a foreign language requires mastering vocabulary as a crucial element. A strong vocabulary forms the foundation of effective communication in any language. When it comes to learning a new language, especially English as a Foreign Language (EFL) in Indonesia, the importance of having a large vocabulary cannot be emphasized enough. Qian and Lin (2019) stress that having a rich vocabulary is crucial for effectively expressing ideas, feelings, and emotions. Moreover, knowing words and their meanings helps in comprehending conversations, texts, and various forms of media (Brooks et al (2023); Solati-Dehkordi & Salehi (2016); Bancha & Tongtep (2021)).

This study discusses into detail about how English as a Foreign Language (EFL) students learn vocabularies with a Self-Directed Approach. In addition, it investigates how the Academic Word List (AWL), which is designed for academic settings. The AWL can be accessed through the VIBE learning tools. VIBE, which stands for "Vocabulary Item Bank of English," was created to provide a flexible and comprehensive vocabulary learning experience. In particular, the study's examination of the program's effectiveness, especially how it changed over time to become Online Answer Sheets (OAS) and how it is used through the Moodle Learning Management System for online learning, is very interesting. One of the main points of interest is how the asynchronous structure of the sessions affects EFL students' ability to learn and remember words.

The article employs a quasi-experimental approach, involving a sample size of 185 students from two faculties located in Banten, Indonesia. The study conducted pre- and post-tests, which were derived from the Academic Word List (AWL), to evaluate the effectiveness of self-directed learning. Descriptive statistics and Normalized Gain (n-Gain) were employed for analysis. The findings elucidate the impact of the self-directed learning technique, emphasizing the importance of motivation in influencing learning outcomes. The purpose of the study is to compare the effectiveness of self-directed learning by giving different motivations to two groups of students. Thus, the paper presents two research inquiries:

1. What are the differences in vocabulary knowledge, as measured by pre- and post-tests based on the

Academic Word List (AWL), between the experimental and control groups?

2. How do rewards and competitions implemented in the experimental group influence motivation levels and subsequent vocabulary acquisition?

B. Literature Review

1. Vocabulary Threshold

How many words do EFL learners need to know? The vocabulary threshold refers to a critical number of words in a language that learners need to reach in order to achieve a certain level of proficiency or functional competence. This threshold allows learners to engage in basic communication and comprehend a significant portion of spoken and written language.

Learners should prioritize learning the most common and useful words first. These are often referred to as high-frequency words or core vocabulary, which make up a significant portion of everyday communication. Building a strong foundation with the most essential vocabulary allows learners to engage in meaningful conversations and comprehend a wide range of texts. For example, reaching a vocabulary threshold of around 1,000 to 3,000 words is often seen as essential for basic communication and comprehension in everyday situations (A2 to B1 levels in the Common European Framework of Reference for Languages – CEFR).

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An exploration of innovative strategies, especially student-oriented strategies was needed. Student-oriented strategies are important in enhancing vocabulary acquisition and retention as they are more engaging, hence increasing interaction (Shabaneh & Farrah, 2019) which then reduces boredom in learning. One student-oriented strategy used in this study is using the VIBE learning app.

VIBE (Vocabulary Item Bank of English) was developed in an attempt to train and gauge students' vocabulary abilities (Hananto, 2013).VIBE is a data bank to provide a versatile vocabulary learning experience (Hananto, 2013).The versatility was proven in the way it turned into an application called OAS (Online Answer Sheets) (Situmorang et al., 2023) and used in a webinar in 2022 to socialize the use for EFL learners and test its ability to gauge the participants' vocabulary capability.

VIBE was also used recently with the means to gauge Universitas Pelita Harapan students' vocabulary capability through Moodle asynchronously. Moodle is an LMS (Learning Management System) which is an application often used for asynchronous teaching and learning processes (Simanullang & Rajagukguk, 2020).

Moodle transforms all sorts of learning media into website forms, and students are then facilitated to learn asynchronously (Simanullang & Rajagukguk, 2020). Asynchronous learning, according to Perveen (in Amiti , 2020), provides students with material in many forms and is accessible anytime and anywhere.

2. Asynchronous Learning Activities Involve Self-Directed Learning

Self-directed learning can be defined as creating an experience that empowers learners to make decisions about the information they want to become proficient (Hiemstra, 2013).Self-directed learning, according to Knowles (1975) a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating goals, identifying resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. The SDL approach is a fundamental shift for educators because it moves them from being a purveyor of information to assuming the role of the learning situation, and often joining the students in earnest as a co-learner as they learn instructional skills (e.g., facilitation) and knowledge (e.g., context beyond their expertise). The instructor is a supplier for learning goals and any needed resources (Abraham, 2005). To differentiate the essential between self-paced learning and self-regulation, Self-paced learning is when the student is able to do their assignments even though they have a deadline at their own pace. While Self-regulation attaches great importance and maximizes one's self-interest in the long term. Thus, producing learners who are able to resist impulses for their own welfare. First, the instructor

must understand what SDL is and the essential keys of the SDL process before developing Self-directed learning. In short, developing more independent learners is necessary and requires a personal approach by teachers from an early age to help students be able to discipline themselves by their "Self-direction".

3. Learner's Motivation

The achievement and success in self-directed learning depend on motivation. It is, in one form or the other, always present at the root of all human activities. Motivation is said to be the 'heart of learning', 'golden road to learning', and 'potent factor in learning', as all learning motivated learning (Mayuri Borah, 2021). The reasons behind the individual idea of the act are essential in motivation. A compulsion that drives an individual to grant their energy to the things that individual gives. Based on Self-determination Theory (SDT), there are two types of motivation: intrinsic and extrinsic motivation. (1) Intrinsic motivation is an inner force that motivates students to engage in academic activities because they are interested in learning and they enjoy the learning process as well (Schiefele in Chow & Yong) ;(2) extrinsic motivation, Marsh defines motivation as an external stimulus that comes from outside of learner, and which drives the learner in the learning process. Harmer (1987) suggests three areas where a teacher's behavior can influence a learner's motivation; (1) Goals and goal setting, Students can use the Teacher to sustain their motivation for achieving their long-term goals by focusing on short-term goals so the students are able to see the results which will motivate them to continue to

achieve their goals by working hard;(2) Learning environment, The emotional atmosphere and the physical appearance of the lesson are very essential for learners motivation; (3) Interesting classes, Classes that are interesting and not monotonous are the main key elements for motivation to emerge by themselves. Teachers should be aware that learners' ages have different types of motivation, so they cannot use the same methods with all groups of learners.

C. Method of Investigation

This study has been conducted with quantitative approaches using measurement and statistics fields to convert empirical facts into numbers and create mathematical models that quantify behavior, particularly in the learning (Tracy, 2012). The quantitative design used is Quasi-Experimental research. It examines if a particular treatment affects a result. By administering one group a particular kind of treatment while withholding it from another, the researcher evaluates this by comparing the results of both groups on an outcome. This type of experimental study does not put the participants into groups at random (Creswell, 2018).

There are 185 students involved in this study from two study faculties (Faculty A and Faculty B). Each study program involved 2 classes. The faculties and their classes with their number of students can be seen in the table below, they were taking English subjects during the even semester 2022-2023 academic year. The courses were conducted using Moodle Learning Management System/ LMS.

Pre- and Post-tests are based on the Academic Word List (AWL) developed by Averil Coxhead (2000). It comprises words that are considered important for academic success. These words are more

complex and specialized than general-use vocabulary and are often encountered in academic reading, writing, and discussions. The tests consisted of 33 multiple-choice questions. The tests were bilingual (the target words were in English, and the multiple choices were in Indonesian.

At the beginning of the semester, all students were given a pre-test to measure their knowledge of academic words. The students were then given access to the OAS application through the VIBE (Vocabulary Item Bank of English) developed by Field (Hananto, 2013) to self-learn the vocabulary at their own pace. Every week, a quiz built from the OAS application was imported to Moodle for students to check their weekly understanding. Faculty A students were specifically treated with rewards to boost their motivation so they would intentionally study the vocabulary. Each week, the teacher drew a random list from the vocabulary in OAS and made a live competition in class 15 minutes before the lesson. Three students who won the live quiz will be given a chocolate bar.

The statistical analysis used in this study is descriptive statistics and Normalized Gain (n-Gain). Descriptive statistics involves the summary, organization, and presentation of data to describe the scores of the tests. The main purpose of descriptive statistics is to simplify and represent the data in a meaningful and understandable way.

N-Gain is a statistical measure used to evaluate the effectiveness of an educational intervention or instructional strategy. It is used to evaluate the effectiveness of educational interventions and to determine whether the intervention had a positive impact on student learning. A higher n-Gain value indicates a more significant improvement in student

understanding or performance as a result of the educational intervention.

The resulting n-Gain value typically ranges from -1 to 1. The table below is used to interpret the result of n-Gain.

Table 1. n-gain Interpretation

Score	Interpretation
$g > 0.7$	High
$0.3 < g < 0.7$	Moderate
$g < 0.3$	Low

D. Findings and Discussion

The program started with a webinar to spread participants' awareness of vocabulary learning and how to use Vibe. The Vibe webinar consisted of people from all over the place, especially the prospective participants. It sparked the idea that students who receive self-paced learning using Vibe would increase their vocabulary knowledge. The research was done in the next semester after the webinar was held. The program was done every week for 11 weeks, it started with a pre-test first, then ended with a post-test. Both experimental and control groups were given the pre- and post-test.

The self-directed learning, supported by Moodle, can be revisited anytime they want to check their correct or wrong answers, so there were a lot of means for students to learn and train. Both pre-test and post-test cannot be revisited though. 50 multiple questions were prepared giving the students a word, with meanings as the options. Those vocabularies were taken from the most frequent words by Paul Nation (2008). Students were asked to choose the appropriate meaning to the word asked.

Table 2. The Examples of the Questions

1. Abandon	2. Release	3. Source
a. Tidak kongkrit; Ringkasan	a. Berhubungan	a. Tertentu
b. Pendidikan tinggi	b. Keseganan; Keengganan	b. Menetapkan; Menentukan
c. Jalan masuk	c. Membebaskan	c. Sumber
d. Meninggalkan	d. Menghilangkan	d. Tetap; Seimbang

The results of the pre-tests and post-tests are summarized using descriptive statistics. The descriptive statistics of the control and experimental groups can be seen in the following table:

Table 3. Descriptive Statistics Table

	Control Group		Experimental Group	
	Pre-	Post-	Pre-	Post-
Mean	60,1	58,6	59,9	86,8
Standard Error	2,5	1,9	1,3	0,4
Median	60,6	54,6	57,6	87,9
Mode	78,8	54,6	75,8	87,9
Standard Deviation	17,3	13,0	15,6	5,1
Sample Variance	298,5	169,0	243,9	26,5
Kurtosis	0,9	- 0,7	-0,7	2,8
Skewness	- 0,8	0,3	-0,2	-1,3
Range	81,8	51,5	78,8	33,3
Minimum	3,0	33,3	27,3	66,7
Maximum	84,9	84,9	106,1	100,0
Sum	2.764	2.755	8.509,1	11.981,8
Count	46	47	142	138

Table 4 n-Gain Result and the Interpretation

	n-Gain	Interpretation
Control Group	-0,04	Low
Experimental Group	0,67	Moderate

Besides learning from the application, the experimental group also received treatment in the form of a live quiz and were rewarded in the chocolate bar for winning the weekly quiz each week. They were reminded explicitly that this was not only a self-growth through self-paced learning but also a stage of competition where anyone could be the winner. The teacher actively designed a supporting situation so the students would engage in their self-paced vocabulary learning to later exhibit what they learned in front of their friends. Through the pre-post and n-gain, therefore it could be seen that the students of this group achieved higher than any other classes.

Two factors were shown here improving their engagement, the first being a winner and the second winning the chocolate. These two factors were strongly related to the motivation as described by (Mayuri Borah, 2021). The students were driven to use their energy and invest their time in learning the vocabulary. Obviously, the motivation in Faculty A was extrinsic as the stimulus given heavily influenced their vocabulary learning process. The teachers intentionally sustain the students' motivation by setting the goals, the environment, and the interesting class, meeting the suggestion of Harmer (1987). As a result, the students know that if they make a certain effort and dedicate a certain amount of energy, they will get something as a reward. This finding implies that motivation in learning can be created in the classroom, and to create this, teachers will have to look for ways to meet the classroom situation.

E. Conclusion

The purpose of the study is to investigate the effectiveness of self-directed vocabulary learning using quasi quasi-experimental research design. The n-gain of the experimental group was higher (0.67) which can be interpreted as a moderate gain than that of the control group (-0.04), which can be considered a low gain. The different results of the two groups were caused by how the students were motivated to study the target words by themselves using a mobile app.

Other factors may influence the results such as the students' study loads or assignments they had to do in the semester. It is suggested that EFL teachers explore different ways to motivate students to encourage students to do self-directed vocabulary learning using freely available mobile apps. For example, the weekly exercise scores are calculated to be part of the student's final grades, hoping that the students will be more serious about studying the given materials. Alternatively, the final exam may include vocabulary questions from the target vocabulary they learn by themselves.

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