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THE IMPACT OF WORD CLOUDS ON STUDENTS' VOCABULARY ENHANCEMENT

Baraat Ismael FaqeAbdulla

Department of English, College of Education, Salahaddin University, Erbil, Iraq
baraat.faqeabdulla@su.edu.krd

Abstract

A strong vocabulary is essential for improved communication, which entails engaging with people in an effective manner. University freshmen always have a hard time learning a lot of new words related to their new academic lives. This problem can be resolved with the aid of Word Cloud, a language-related application. One Word Cloud is examined in the current study as a potential app to help students increase their vocabulary. The purpose of this study is to look into how Word Clouds affect students' ability to expand their vocabulary in English. The study hypothesizes that Word Clouds significantly influence students' vocabulary development. Not every student will find traditional vocabulary instruction methods to be interesting or useful. To assess the students' vocabulary growth, this experimental study compares the pre- and post-assessments of two groups of students before and after the treatment using the statistical T-Test. The findings indicate that Word Clouds have some effect on students' vocabulary, but not much because there was little variation in the post-test scores between the two groups. The study's conclusion aids in the advancement of language instruction and supports teachers in expanding their students' vocabulary.

Keywords: Enhancement, Impact, Students, Vocabulary, Word Clouds

INTRODUCTION

Students' vocabulary can be improved by learning with eye-catching designs. New teaching techniques and technological advancements are continually being introduced in the digital age to improve the educational experiences of students. The Word Cloud is one such tool that has grown in popularity recently. Word Clouds, defined as visual representations of text, gained popularity as a teaching tool (Miley & Read, 2011). Because seventy-five percent of the information processed by the brain comes from visual formats, visuals have a significant impact on drawing in listeners, as noted by Williams (2009) and Raiyn (2016). The effectiveness of Word Clouds as a tool for teaching and learning in language education has been explored in various studies. These visuals engage students in the lesson and facilitate their successful vocabulary acquisition. Thus, they can add some color to boring classes. While there is existing research on their effectiveness, there is still a need to examine their application in English as a foreign language (EFL) and English as a second language (ESL) classrooms. Very little research has been done on how Word Clouds affect vocabulary acquisition among university students. In Kurdistan in particular, there are no studies on the subject. This study closes this gap by assisting teachers in utilizing Word Clouds in the classroom, either for their use or to assist students in learning new vocabulary. The results will help educators and curriculum developers effectively use Word Clouds in language learning environments by offering insightful information.

Perveen (2021) conducted a mixed-methods study to investigate the effectiveness of Word Clouds in asynchronous English as a Foreign Language (EFL) teaching. The study involved bachelor's degree students at the Virtual University of Pakistan who were given word cloud-based assessment activities in two communication skills courses. The findings revealed that students responded positively to the use of Word Clouds for reading comprehension and essay writing tasks. Another researcher, called Nezhyva et al. (2021), examined the use of Word Clouds as a didactic tool to enhance speech development among primary school children, particularly in composing and editing their texts. The study confirmed the usefulness of Word Clouds in analyzing texts and identifying important student associations during literary reading lessons in primary school. Concerning the use of Word Clouds for grammar, Selvi (2020) conducted a study to examine the effectiveness of Word Clouds in grammar production among intermediate-level high school students. The results showed that the experiment group performed slightly better than the control group. In a different context, Fortuño and Hernández (2020) investigated the use of Word Clouds in the English for Psychology classroom at the university level. The study found that the use of Word Clouds facilitated vocabulary retention and improved language accuracy in the field of psychology.

Furthermore, Jumpakate and Rungruangthum (2020) investigated the opinions of college students and an English teacher regarding the use of Word Clouds in a pre-reading exercise at a university in Thailand. The findings showed that Word Clouds were well-liked by the students, who thought they were inspiring and fascinating. Within the e-learning space, Alonso et al. (2019) describe the incorporation of a word cloud tool into the NeuroK social network-based e-learning platform. Teachers and students can obtain insightful data for course design and assessment by comparing Word Clouds. DeNoyelles and Foster (2015) examine how well Word Clouds work in online discussions to explore the integration of critical thinking skills in online courses. Critical thinking, engagement, and peer interaction were found to be positively correlated in their research findings. Additionally, Miley and Read (2011) look at how students react when Word Clouds are used to summarize information that is readily available electronically based on word frequency. Student input was gathered through small focus groups as part of the qualitative study. The findings demonstrated how students modified their word cloud usage to better suit their preferred learning styles. Finally, McNaught and Lam (2010) explored word cloud analysis in two educational research projects. Word clouds can be a helpful research tool to support educational research, but they cannot be used as a stand-alone research tool, they concluded.

Word Clouds

For EFL/ESL students to understand context, communicate successfully, acquire target language proficiency, and excel in school and the workplace, vocabulary is essential. Teachers can easily introduce students to new vocabulary with the use of technology (Jumpakate & Rungruangthum, 2020). This can be done through Word Clouds a free online tool that generates visual summaries of full texts by highlighting the most frequently occurring words, or keywords, in varying font sizes to represent the text's frequency (Fortuño et al., 2020). Word Clouds are a well-liked method of data visualization that can be used in many fields, including teaching languages, to visually represent text data. They can take the place of PowerPoint and are visually appealing and inspiring (Selvi, 2021). Word Clouds, also known as "tag clouds" or "term clouds," are a

useful analytical tool for distilling text data and offering insightful interpretations. They are very interpretable and offer a clear visual representation of the content. Words that are omitted or infrequently used are essential for Word Clouds, which can be used for research, teaching, and qualitative analysis. Context influences interpretation as well (Brooks, 2014, p. 192). The shape of the cloud is usually symbolic, and the words within it convey the underlying semantic meanings (Nezhyva, 2022, p. 382). Word Clouds can be created using a variety of online software programs, including Tag Cloud, To Cloud, Make Cloud, Word It Out, Tagxedo, and Wordle, to mention a few (Naik, 2022, p. 93).

Word Clouds are helpful pre-reading activities for students because they help with vocabulary and reading skill development. Because Word Clouds require students to plan, draft, and edit arguments, text structures, and predictions, they also aid in the development of writing skills. During the teaching process, teachers can utilize Word Clouds to help students focus by using them to self-evaluate the main idea and topics of a text (Perveen, 2021). By utilizing words that have been stored in the human memory bank and converting difficult articles into visually appealing and memorable texts, Word Clouds can increase the efficiency of reading English. Linear sequences are a common feature of traditional teaching methods, which hinders students' ability to comprehend material quickly. Word Clouds reduce barriers brought on by linear sequences by emphasizing important words. Keywords are easier to understand quickly thanks to high-frequency vocabulary embedded in the cloud, such as font size and color (Huang et al, 2019). To better internalize specific words within the subject matter and recognize spelling patterns, students can establish mental vocabulary maps that they can visually retain (Fortuño et al., 2020). When students were asked to create Word Clouds from their writing, for instance, Baralt, Pennestri, and Selvandin (2011) observed that students produced new vocabulary and grammatical tenses as well as engaging and engaging comments from their peers. They suggested using Word Clouds to define key concepts and to encourage introspection and brainstorming. Effective use of Word Clouds has also been demonstrated in other primary research domains. Naik (2022) Word Clouds as an educational tool promote meaningful interaction in online discussion forums, critical thinking, and discussions. To assess the effect of instruction on students' learning, Word Clouds have been used in language classrooms to aid in the development of reading, writing, speaking, and listening skills in students.

Word Clouds are employed in various contexts, such as in Joyner's (2012) study, which assessed their application in a discussion task. Joyner discovered that creating Word Clouds from students' posts produced somewhat more evidence of critical thinking. This demonstrates how Word Clouds can help students develop their critical thinking abilities. Word Clouds are effective in increasing student engagement and enhancing teaching strategies, according to anecdotal evidence published by other researchers like DeNoyelles and Foster (2015). Additionally, there is growing empirical evidence supporting the use of Word Clouds in online classroom environments and for qualitative student performance assessment. In a related study, Hamm (2011) looked at students as they participated in an online discussion and created world clouds that represented how they perceived the material covered in the course. It was found that students enjoyed the activity and critically reflected on their own and their classmates' work. Students were asked to analyze the Word Clouds of their writing for both studies. These studies unequivocally show that Word Clouds improve student participation in the classroom.

Vocabulary Teaching

Teaching vocabulary is essential in language learning as it facilitates understanding and effective communication in English (Schmitt, 2010; Susanto, 2017; Lessard-Clouston, 2021). Although the founders of Communicative Language Teaching (CLT) acknowledged the value of vocabulary, a concentration on grammar and functional aspects of language occasionally overtook it (Shen, 2003). To effectively communicate and express one's feelings in both spoken and written form, one must have a sufficient vocabulary. This is also true for learning to read, write, speak, and listen. People can speak, write, read, and listen as they choose when they have a greater command of vocabulary (Yuliani, 2023). Shen (2003) further explains and mentions that inadequate vocabulary can pose challenges for learners. Similarly, Thornbury (2004) asserts that limited communication occurs when vocabulary is lacking. It implies that even if someone knows proper grammar, it won't matter if they don't have a large vocabulary.

Teachers must strike a balance between planned instruction and incidental learning, allowing students to make their connections and strategies, to guarantee effective vocabulary instruction (Seal, 1991). Two categories of vocabulary exist: Words that students can comprehend in context but not produce are referred to as receptive vocabulary, whereas words that students can comprehend and use in speaking and writing are referred to as productive vocabulary. For complete language development, students must acquire both productive and receptive vocabulary (Stuart, 2008). Effective vocabulary instruction can be achieved by utilizing a variety of methods. Learners can retain words better when visual aids and demonstrations are provided by objects. Acquaintance with word forms and pronunciation is facilitated by drilling, spelling, and active participation. Elicitation strategies give students the chance to speak and assess their understanding. Word meanings can be made clearer by combining a variety of strategies, such as using flashcards, drawing objects on the whiteboard, and using visual aids like posters and pictures. Susanto (2017) suggests that effective techniques to improve vocabulary instruction also include mime, expressions, and gestures.

To sum up, vocabulary instruction is essential to language acquisition because it facilitates understanding and productive communication. Enhancing vocabulary acquisition can be achieved by allowing students to develop their strategies, utilizing a variety of techniques, and striking a balance between systematic instruction and incidental learning. Teachers can help students understand and remember vocabulary by using visual aids, drilling, and active participation. The current study focuses on using Word Clouds to teach vocabulary in a course on general English for university students. It is one of the subjects Salahaddin University first-year students are required to study. The course book concentrates on words that are necessary to discuss academic life. The book is divided into five themes, each of which has four skills and a list of vocabulary that students must learn and apply.

METHOD

Research Design

To determine the effect of Word Clouds on vocabulary development, the study employs an experimental research methodology. Since an experimental design can frequently be generalized to larger populations, selecting an experimental research design

to examine the effect of Word Clouds on vocabulary improvement is a thoughtful choice. This is especially helpful in educational research since the findings can influence teaching methods outside of the study's immediate context. According to Bell (2009), experimental design is the process of conducting research in a controlled and objective manner in order to maximize precision and draw particular conclusions about a hypothesis statement.

Research Participants

First-year mathematics department students made up the study's participants. The researcher selected this particular course due to its emphasis on vocabulary acquisition. Two groups of students study a wide range of academic and university-related vocabulary in the General English for University Students course. In the academic year 2023–2024, the study was conducted at Salahaddin University, College of Education, Erbil, Iraq. For the experiment, 30 students were selected, with 15 placed in the control group and 15 in the experimental group. The students' ages were between 19 to 21. To ensure that any observed differences between the groups were caused solely by the intervention (Word Clouds) and not by other factors, the participants were randomly assigned to either the control or the experimental group. The participants' level was pre-intermediate, and I ensured that every one of them had a cell phone in the classroom. There won't be any word cloud-related interventions given to the control group. They will carry on as usual with their routine vocabulary-learning exercises or lessons. Word Clouds will be presented to the experimental group as a vocabulary-building tool. They will work on improving their vocabulary through targeted exercises or activities that use Word Clouds.

Research Procedure

The researcher administered a pre-assessment to measure the participants' initial vocabulary levels. The test has been designed by the researcher depending on some of the vocabulary available in the book, General English for University Students. It was made sure that the pre-assessment was the same for both groups. The researcher carried out the vocabulary instruction and activities with both the control and experimental groups over four weeks; each week, three hours, which means twelve hours of treatment for the experimental group, while the other group continued studying without the intervention of the Word Cloud. The students of the experimental group were properly guided to download a Word Cloud app on their cell phones and use it in every lecture in the class after learning new vocabulary. Finally, the researcher administered a post-assessment similar to the pre-assessment to measure any changes in vocabulary levels after the intervention. The pre-test and the post-test were closely related because the researcher made sure that they contained the vocabulary in their course book. The post-assessment was the same for both groups.

Limitations and Delimitations

The study is restricted to a particular group of first-year Salahaddin University College of Education mathematics majors. It is possible that the results cannot be applied to other populations. The study doesn't address other facets of language; it only concentrates on using Word Clouds to build vocabulary. Word Clouds were used for another aspect of English language learning, but little was done about using them to help students achieve vocabulary goals, which presented challenges for the researcher due to the paucity of studies about the impact of Word Clouds on language development.

Data Analysis

The pre- and post-assessment scores of both the control and experimental groups were analyzed using the JASP (Jeffreys's Amazing Statistics Program). Everyone can use the program, even those who are not statisticians, and it is free and easy to use. An independent sample t-test was conducted to compare the mean scores and determine if there was a significant difference in vocabulary improvement between the two groups. The software provided the t-value, degrees of freedom, Cohen's d, and p-value. The descriptive statistics are also presented to clearly show the means and standard deviations of both tests for both groups. After that, the results have been interpreted to determine if there is a significant difference in vocabulary improvement between the control and experimental groups.

FINDINGS AND DISCUSSION

Table 1. below presents the results of the T-test for the difference between the two groups of participants. The "t" value for the pre-test is 0.089, and the post-test scores are 0.942 after the word cloud intervention. This suggests a small effect size. The "df" value associated with this comparison of the pre-test is 27.803 and 27.508 for the post-test, which represents the degrees of freedom for the t-test. The p-value is 0.930 for the pre-test and 0.355 for the post-test. A p-value of 0.355 for a Welch t-test suggests that there is no strong evidence against the null hypothesis. The result suggests that there is no significant difference between the groups being compared. A p-value of 0.355 suggests that the word cloud intervention did not have a significant impact on vocabulary development, as it is not below the commonly used significance threshold of 0.05. Cohen's d value for the pre-test is 0.033 and for the post-test is 0.344. SE Cohen's d represents the standard error of the Cohen's d value for the pre-test scores. In this case, the standard error for the pre-test is 0.365, and for the post-test is 0.371.

Table 1 Independent Samples T-Test

	t	Df	P	Cohen's d	SE Cohen's d
Pre-Test	-0.089	27.803	0.930	-0.033	0.365
Post-Test	-0.942	27.508	0.355	-0.344	0.371

Note. Welch's t-test.

Table 2. below shows descriptive statistics of the mean and standard deviation of the two groups. The number of students was 15 for each group. The mean values of the two groups have been compared. The value of 1.959 represents the standard deviation for one group, and the value of 2.131 represents the standard deviation for the other group in the pre-test. The value of 3.248 represents the standard deviation for one group, and the value of 3.716 represents the standard deviation for the other group in the post-test. The mean for the control group in the pre-test is 8.533, and for the experimental group, it is 8.600. On the other hand, the mean for the control group in the post-test is 8.467, while the mean for the experimental group is 9.667. The difference is not big between the means or the given values. The coefficient of variation of the pre-test for the control group is 0.230, while for the experimental group, it is 0.248. The coefficient variation of the post-test for both the control and experimental groups is 0.384. In practical terms, a higher coefficient of variation indicates a higher degree of dispersion or variability in the dataset

compared to its mean. Conversely, a lower coefficient of variation suggests less variability relative to the mean.

Table 2 Group Descriptives

	Group	N	Mean	SD	SE	Coefficient of variation
Pre-Test	1	15	8.533	1.959	0.506	0.230
	2	15	8.600	2.131	0.550	0.248
Post-Test	1	15	8.467	3.248	0.839	0.384
	2	15	9.667	3.716	0.959	0.384

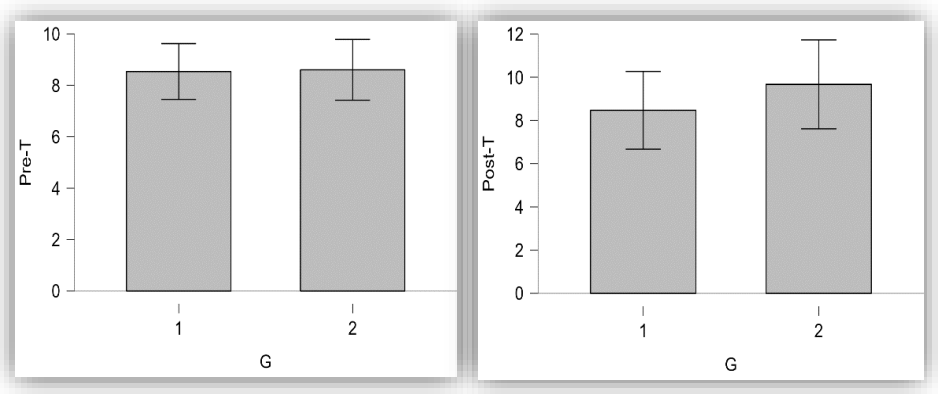

Figure 1 Bar Plots of Pre-Test and Post-Test of the Two Groups

Figure 1. shows the bar plots of the two groups pre-test and post-test. It clearly shows that there is very little difference between the results of the pre-test for both groups before the treatment. The mean of the control group is 8.533, while for the second group, the mean is much lower, 8.600. It means that most of the participants scored 8 in the pre-test for both groups. While for the post-test, the mean for the control group is 8.467 and for the experimental group is 9.667. This indicates that most of the participants in the control group got an 8 in the post-test, while most of the participants in the experimental group got between 9 and 10. So the difference is not huge.

Figure 2 Some Word Cloud Samples Made by Students in the Class

Figure 2. presents the Word Clouds made by the students inside the classroom as the treatment for the experimental group. They show the vocabulary related to university and academic life. These are some samples of the many clouds made by the students in different shapes, colors, and fonts. Each Word Cloud is a unique testament to the student's creativity, featuring an array of shapes, colors, and fonts that reflect their interpretations of academic vocabulary. The varying sizes of words within the clouds emphasize the prominence of certain concepts and ideas, providing insights into what the students deem most relevant and significant in their academic journeys.

This study aims to investigate the impact of Word Clouds on students' vocabulary enhancement. Therefore, the results indicate that there is a difference between the control and experimental groups in the post-test, but it is not significant because the p-value is 0.355. The evidence is not strong enough to conclude that the Word Cloud intervention had a significant impact on developing vocabulary in students. The observed differences between pre-test and post-test scores could be due to random variability rather than a true effect of the intervention. In this case, neither the null hypothesis nor the alternative hypothesis can be rejected. More research needs to be conducted to see if the Word Clouds affect the vocabulary improvement of students.

The outcomes appear to be consistent with Perveen's (2021) research on Word Clouds in language instruction. Positive student reactions to specific tasks were found in Perveen's study, which concentrated on their use in asynchronous EFL instruction. She merely highlights Word Clouds' beneficial effects on language development without demonstrating the significance of the findings. Furthermore, Jumpakate and Rungruangthum (2020) investigated how university students and an English teacher felt about Word Clouds being used as a pre-reading exercise at a Thai university. The findings showed that students' opinions of Word Clouds were generally favorable.

It can be concluded that the researcher has not discovered any studies that demonstrate a noteworthy impact of Word Clouds. A study by another researcher, Selvi (2020), looked at how well Word Clouds helped intermediate-level high school students produce grammar. According to the findings, the Word Cloud-using experiment group outperformed the control group by a small margin. She employs it marginally more effectively, so the outcomes are comparable to those of the current investigation. Word Clouds appear to have little effect on language learning in general, despite the study's emphasis on improving grammar.

Since the participants in the study were not English majors and the sample size was small, it is likely that they have little interest in learning the language because it is not their area of expertise. It is important to conduct further studies with varied methodologies, larger sample sizes, or different interventions to fully understand the effects of Word Clouds on vocabulary enhancement.

CONCLUSION

This study aimed to investigate the impact of Word Clouds on students' capacity to increase their English vocabulary. The study's results indicate that Word Clouds have no discernible effect on students' increased vocabulary. The observed differences between the control and experimental groups in the post-test were not statistically significant, indicating that the word cloud intervention did not have a significant effect on developing

vocabulary in students. The findings did not support the hypothesis that Word Clouds have a significant influence on students' vocabulary achievement. The post-test results showed a slight difference between the two groups, suggesting that Word Clouds had some effect on students' vocabulary; however, overall, the effect was not considered effective. This shows that Word Clouds alone might not be able to completely replace or improve current methods of teaching vocabulary. The paucity of studies on Word Clouds' ability to help students acquire vocabulary better emphasizes the need for more research in this field. Word Clouds might be useful, but it's also important to look into other tactics or methods that can improve and effectively engage students' vocabulary acquisition. The study's conclusions advance the field of language education by illuminating how Word Clouds affect students' vocabulary development. These results can be used by educators to guide their lesson plans and create tactics that help students efficiently acquire vocabulary. However, it is crucial to consider multiple approaches and further research to fully address the challenges faced by university freshmen in acquiring new vocabulary related to their academic lives.

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