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USE OF SEMANTIC AND CLUSTERING METHOD FOR TEACHING ENGLISH VOCABULARY AT ELEMENTARY LEVEL

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Abstract

The study aims to find out the use of semantics and clustering methods in the ESL classroom to improve the vocabulary of ESL learners at the Elementary level. An Experimental study was conducted for this purpose. Two groups were managed i.e., i- control group and ii- Experimental group. The study was conducted in an Elementary public school. The total number of students selected for this purpose was 50 i.e., 25 for each group. The control group was taught with the traditional method and the experimental group was treated with different activities by using semantic and clustering methods in ESL classrooms for improving vocabulary. Pretest and posttest were conducted from both groups. Pretest for assessing their present knowledge of vocabulary and posttest for finding the difference between the groups. The result showed the experimental group's performance was much more significant than that of the control group, which means the use of semantic and clustering methods for teaching vocabulary is useful.

Keywords: *Semantic, ESL, Vocabulary, Clustering, Elementary level*

Introduction

Scholars have been investigating more efficacious methods for acquiring vocabulary in a second language (L2) to facilitate students in acquiring the fundamental aspect of language, which is vocabulary. Prior methodologies have undergone a difficult assessment and have been substituted with contemporary and widely accepted methodologies. One of the most frequent comparisons in the field involves the evaluation of the semantic and thematic forms of word clustering. The utilization of semantic clusters, which are comprised of words that share a common meaning, may prove advantageous for individuals who are acquiring a second language. Learners may be instructed to commit to memory various sets, such as those comprising of professions such as cashier, clerk, manager, receptionist, secretary, supervisor, and typist; anatomical features such as the eye, nose, ear, mouth, and chin; or groups of vocabulary items such as eye, nose, ear, mouth, and chin. The terms contained within each cluster pertain to a common overarching concept. Consequently, these terms have been classified together based on their comparable semantic attributes. Various terms are used to describe this type of categorization, such as lexical fields, semantic mapping, semantic clusters, semantic fields, semantic sets, and lexical sets.

Semantic clusters are commonly included in various learning materials, including textbooks, due to their perceived efficacy in facilitating the acquisition of second language vocabulary. Thematic clustering was introduced by (Tinkham, 1997) as a novel clustering technique. The novel clustering approach was deemed superior to semantic clustering, owing to the challenges associated with the utilization of semantic clusters. The nomenclature "thematic vocabulary sets" is employed to delineate the arrangement of a compilation of lexemes that are linked with a particular schema.

According to the proposal (Tinkham, 1997), the utilization of thematic word clusters can serve as a strategy to alleviate the interference effects that arise from semantic sets. A thematic group can be identified for a specific topic when it encompasses lexemes such as "sweater," "changing room," "tries on," "wool," and "striped." As per Tinkham's study, the incorporation of topical sets during L2 vocabulary instruction can potentially enhance the retention of lexical items. An example can be illustrated by employing the exercise featured in McCarthy and O'Dell's publication. Students are encouraged to contemplate the response to the inquiry, "To whom does the responsibility for these items pertain?" This prompt requires learners to select the appropriate terminology for a group of words that have been organized based on a specific subject matter.

Problem Statement

The acquisition of a strong vocabulary is a fundamental aspect of language learning, especially at the elementary level, as it lays the foundation for effective communication and comprehension skills. However, the traditional methods of teaching vocabulary often fall short of engaging young learners and ensuring optimal retention. To address this challenge, this study aims to explore the use of semantic and clustering methods to enhance the teaching of English vocabulary to elementary-level students.

Research Objectives

i. To determine whether the strategy of semantic and thematic grouping helps elementary-level English as a second language (ESL) pupils expand their vocabularies.

ii. To investigate the impact of teaching ESL students new L2 words in semantic, theme groupings, concerning their speed of recognition and fluency in using these words in their writing.

Hypothesis

The use of Semantic and Clustering methods helps teach English Vocabulary at Elementary Level

Research Questions

i. What are the effects of semantic and thematic clustering methods on teaching ESL vocabulary at the Elementary Level?
ii. What are the effects of presenting new L2 words in semantic, thematic sets in terms of ESL learners' immediate or delayed recognition and production of these vocabulary items?

Significance of research

The significance of conducting a study on the use of semantic and clustering methods for teaching English vocabulary at the elementary level is multi-faceted and has far-reaching implications for both educators and students. Here are some key points highlighting the significance of this study.

Enhanced Vocabulary Retention and Comprehension

Traditional methods of vocabulary instruction often focus on rote memorization, leading to limited retention and understanding. Semantic methods help students connect words based on meanings and relationships, fostering deeper comprehension and retention. Clustering techniques enable students to group words with shared characteristics, aiding in the formation of mental associations and facilitating recall.

Contextual Learning

Semantic methods emphasize context-based learning, enabling students to understand words in real-world situations. Clustering techniques provide a structured way to present words within meaningful categories, giving students a clear context for each word's usage.

Engagement and Motivation

Elementary-level students are more likely to engage with learning materials that are interactive, visually appealing, and relevant to their lives. Incorporating semantic and clustering methods into teaching materials can increase students' interest and motivation, making the learning process more enjoyable and effective.

Long-term Language Proficiency

Building a strong vocabulary foundation at the elementary level sets the stage for future language development. Students who learn vocabulary through semantic and clustering approaches are more likely to continue using these strategies as they progress through their education, leading to improved language proficiency over time.

Application in Real-life Scenarios

Vocabulary acquired through semantic and clustering methods is more readily applicable in real-life scenarios. Students are better equipped to express themselves clearly, comprehend reading materials, and engage in conversations with greater fluency and confidence.

Innovation in Pedagogy

Integrating innovative teaching methods can revitalize language education by moving away from traditional, one-size-fits-all approaches. This study contributes to the development of a more dynamic and adaptable pedagogical framework that aligns with modern learners' needs.

Personalized Learning

Clustering methods can be tailored to suit individual students' interests and learning styles. This personalized approach addresses the diverse needs of students in a classroom, helping each student engage with the material in a way that resonates with them.

Teacher Professional Development

Educators can benefit from the study's findings by gaining insights into effective strategies for teaching vocabulary. This knowledge can guide the professional development of teachers, empowering them to employ innovative techniques that yield better learning outcomes.

Linguistic and Cognitive Development

Exposure to semantic relationships and word clusters can foster students' cognitive development by enhancing their ability to identify patterns, draw connections, and think critically about language structure.

Research Contribution

This study contributes to the academic and educational community by providing empirical evidence of the effectiveness of semantic and clustering methods for teaching vocabulary at the elementary level. The research findings can serve as a foundation for further studies and discussions in the field of language education.

Literature Review

Semantic and Thematic Clustering

It has been postulated by lexical semanticists that speakers organize the words in their mental lexicons via the use of "frames" or "schemas" that are based on the speaker's prior experience. This method is distinct from the use of semantic fields, as described by (Zarei & Arasteh, 2011). A group of lexemes taken from a certain frame or schema may include words like "frog," "pond," "hop," "swim," "green," and "slippery." Although they belong to distinct grammatical categories, each of these lexemes has a strong connection to a common conceptual theme (in this case, the frog). According to (Allahverdizadeh et al., 2014), the terminology that was just discussed is used to refer to the cognitive frameworks that are widely held by persons who speak English with a certain word. Clusters of this kind are generated intellectually rather than verbally and are evaluated based on the strength of their associative connections. Because of this, they are more suitable for learning-centered approaches to the acquisition of a second language, which emphasized the processes of learning rather than linguistic analysis.

Theme clustering is dependent on the psychological links that exist between words that are clustered together and relate to a shared theme notion. These words are grouped because they have a similar thematic concept. Because of their common connotation with the concept of a haunted home, terms like "haunted," "ghost," "yell," "Moonlight," and "groan" have a thematic connection that may be explained by their mutual linkage. Neither the Distinctiveness Hypothesis nor the Interference Theory makes any effort to foresee the influence of theme grouping in their respective hypotheses. When examining interference, academics have concentrated their efforts on similar phrases; nevertheless, they have not given word groups such as "frog," "green," "swim," and "slippery" the same level of importance as potential sources of interference evidence. According to (Al-Jabri, 2005), the learnability of word sets like "car," "raceway," "team," "champion," and "drive" did not gain attention from researchers of the Distinctive Hypothesis. (Al-Jabri, 2005) made this observation. (Folse, 2004), suggests a different strategy for organizing vocabulary via more general topics as an alternative. Thematic word groups include lexemes that are inextricably linked to a certain subject because they appear naturally in the speech that is relevant to that theme. These lexemes are known as thematic lexemes. The lexical elements in question do not display any connections with one another that may be categorized as synonymy, antonym, coordination, or superordination. The lexical components do not seem to have any obvious semantic coherence; the only connection between them is the fact that they are true about the overall theme. A person researching the subject of "replanting a vacation" may come across a variety of terminology, such as "ticket," "internet," "booking," "reservation," "selection," "seating," "aisle seat," "meal," "arrival time," "gate," "jet," and "silver." Acquiring new vocabulary and comprehending their definitions can provide intellectual stimulation and enhance

cognitive abilities, contributing to personal development. Additionally, it has the potential to enhance one's confidence and self-esteem.

When it comes to learning new vocabulary and being able to remember it, quite a few studies have been conducted, and the results of these studies have been proven to be helpful. For instance, Zarei & Adami (2013), conducted a study to investigate the impact that explicit vocabulary education has on the participant's usage of language when they write. Even while the findings suggested that delayed writing did not reveal a substantial loss in recognized and productive target vocabulary, there was a significant reduction in the retention of newly learned words and productive vocabulary. Studies conducted by (Faure & Nédellec, 1998) were then corroborated and reinforced by research conducted afterward by (Shehab & Zeki, 2014).

The effects of semantic and thematic clustering

Words and a general notion that relates to the theme. Although the two types of clusters are not necessarily mutually exclusive of one another, in other words, the members of certain clusters may be connected both semantically and thematically; many clusters are viewed as unambiguous instances of either the semantic or thematic kind. For instance, it would make sense to assume that the words "frog, pond, swim, hop, green, and slippery" belong to a different kind of cluster than the words "apricot, peach, plum, nectarine, pear, and apple." Even though these two methods of clustering are distinguishable and are both used in the teaching of L2 vocabulary, research on the impact of clustering on the learning of L2 vocabulary is, at best, limited and indirect. Even though interference theory has been the basis for many studies that have investigated the effects of stimulus and response similarities on learning and memory, authors interested in second language learning have not extended this research directly to the learning of second language vocabulary, (Tinkham, 1993), for a report of a study anticipating this research). In addition, academics have not explicitly investigated how acquiring L2 vocabulary is affected by grouping concepts according to themes or schemas. Since this topic has received so little attention, the overarching objective of this study is to encourage more inquiry into the impact that clustering has on the acquisition of new L2 vocabulary. To be more explicit, however, the purpose of this study is to explore the effects of both semantic and thematic clustering to determine which method facilitates the acquisition of new L2 vocabulary items the most effectively. Considering this purpose, the research answers the following two questions: 1) Does it take students of a second language longer to learn sets of unrelated words or does it take them longer to acquire semantic clusters of new words? 2) Do students of a second language find it easier to acquire sets of unassociated terms or thematic clusters of new words in the second language? The study consisted of two separate experiments, each of which investigated the influence that pedagogical clustering had on the acquisition of L2 vocabulary. These studies used the same participants and followed very identical methods.

Incidental vocabulary learning occurs when students are not informed that a vocabulary test will follow (Hulstijn, 2003) and, thus, such learning occurs as the by-product of a meaning-focused task (Jiang et al., 2004). Intentional vocabulary learning is accomplished through exercises and activities (such as flashcards, fill-in-the-blanks, or matching exercises) that are designed to explicitly focus students on learning new words. It is generally agreed that learning a second language's (L2)

functional vocabulary requires extensive exposure to the target language outside of the classroom (Webb & Nation, 2017). It takes several exposures to a new phrase before it sticks in one's mind, whether that exposure is deliberate or accidental. Vocabulary may be improved by repeated practice, according to studies. Incidental vocabulary learning occurs when students are not informed that a vocabulary test will follow (Hulstijn, 2001), and thus, such learning occurs as the by-product of a meaning-focused task (McDonald & Reynolds, 2021). Intentional vocabulary learning is accomplished through exercises and activities (such as flashcards, fill-in-the-blanks, or matching exercises) that are designed to explicitly focus students on learning new words (Pérez-Serrano et al., 2022). It is generally agreed that learning a second language's (L2) functional vocabulary requires practice outside of the classroom using the language (Ishii, 2017). Whether you learn a new word on purpose or accidentally, you probably won't remember it after only one exposure to it. Audiovisual input has been found to improve vocabulary learning (Peters et al., 2016; Malone, 2018; Peters and Webb, 2018) hence, the more often a word is displayed to the user, the higher the possibility that they will acquire it.

Research Methodology

This section presents an overview of the methodology employed in the study.

Research design

The study was designed as experimental research. The experimental research design would involve the manipulation of variables to establish cause-effect relationships. For conducting this research two groups were established i.e., Control Group (CG) and Experimental Group (EG). The purpose of establishing both the groups was to use specific criteria that have unrevealed the difference in scores of these two groups which led the researcher to reach a decision.

Sampling

Government Girls Elementary School, KotMithan was selected for conducting this study. This school is situated in a rural area, which is quite overpopulated. Participants were selected from class 8th. This class has two sections so overall 143 students are learning in these two sections of class 8th. 60 ESL learners were selected through random sampling.

Procedure

For conducting the study two groups were administrated i.e., Control Group and Experimental Group. There were 60 students overall in both groups and there were 30 students in each group. The control group was taught through traditional as well as natural methods of teaching whereas the Experimental Group was treated by using Semantic and Thematic Clustering to enhance the vocabulary of ESL learners. Different semantic and clustering activities were used to treat the experimental group.

Activities

Semantic and thematic clustering activities involve grouping related words based on their meanings and themes. These activities are designed to help learners understand the connections between words and to improve their vocabulary acquisition. Here are some examples of semantic and thematic clustering activities:

Semantic web

A semantic web is a visual representation of related words. To create a semantic web, learners start with a central word and brainstorm related words that are connected to the central word. They then connect these related words to the central word using lines to create a web-like structure.

Thematic grouping

Thematic grouping involves categorizing words into groups based on a common theme or topic. For example, learners may group words related to animals, food, or sports. This helps learners to better

understand the context in which the words are used and to build their vocabulary in specific areas.

Word association

Word association involves linking words together based on their meanings. Learners are given a list of words and asked to find associations between them. For example, if the words are "rain," "umbrella," and "puddle," learners may link them together by thinking of a rainy day.

Synonym and antonym matching

Learners are given a list of words and asked to match synonyms or antonyms. For example, learners may be given the word "happy" and asked to match it with the synonym "joyful" or the antonym "sad."

Word family building

Word family building involves identifying related words that share a common root. For example, learners may be given the root word "act" and asked to identify related words such as "actor," "action," and "activate."

These semantic and thematic clustering activities can be used in various contexts, such as in the classroom or as part of a language learning app or website. They are effective tools for improving.

Test

A test is an assessment of a person's knowledge or skills in a particular area. In research, a test is often administered before or after an intervention to evaluate its effectiveness. For example, a researcher might administer a vocabulary test to a group of students before and after a vocabulary-building intervention to see if the intervention has improved their vocabulary skills.

Pretest

A pretest is an assessment given before an intervention or treatment is administered. It is used to establish a baseline of knowledge or skills before the intervention begins. Pretests can be used to identify potential confounding variables or to determine if the groups being compared are similar in terms of the outcome variable before the intervention.

Post-test

A post-test is an assessment given after an intervention or treatment has been administered. It is used to evaluate the effectiveness of the intervention in achieving the desired outcome. Post-tests can be used to compare the knowledge or skills of the group that received the intervention with the group that did not receive the intervention or to evaluate the change in knowledge or skills over time.

In this research data was collected by conducting Pretest and post from both the groups.

The use of pretests and post-tests in research can help to determine the effectiveness of an intervention or treatment and to control potential confounding variables. Pretests can establish a baseline, while post-tests can measure the change in knowledge or skills. By comparing the results of pretests and post-tests, researchers can evaluate the effectiveness of the intervention and conclude its impact.

Reliability

A test is considered reliable if it produces consistent results over time. There are several types of reliability, including test-retest reliability, inter-rater reliability, and internal consistency reliability. Test-retest reliability refers to the consistency of results over time, while inter-rate reliability refers to the consistency of results when different raters are scoring the test. Internal consistency reliability refers to the consistency of results across the items within the test. To establish reliability, multiple administrations of the test are usually needed, and statistical analyses are conducted to determine the consistency of the results. See Annexure 1

The results of an independent t-test conducted on the pre-test control group and the experimental group are shown in Table

1. This table has a total of 25 participants for each of the groups that were represented. The mean value of the pre-test for the control group was 24.53, whereas the value for the experimental group was 19. 1.48 and 1.9 are the corresponding values for the standard deviations. The value that corresponds to the number 58 is the letter d. Following the presumptions of the t-test, the t-value for the pre-control and pre-experimental groups is 10.51, and the effect size is 0.67, which is more than 0.05. The formula for effective size is used by the researcher so that they can compute the effective size. The usefulness of semantic clustering in improving students' ability to communicate in English.

The findings of an independent t-test comparing the post-test control group to the experimental group are shown in Table 2. This table has a total of 25 participants for each of the groups that were represented. The mean value of the pre-test for the control group was 24.53, whereas the value for the experimental group was 46.86. The differences between the means are 1.47 and 2.75 standard deviations. The value that corresponds to the number 58 is the letter d. Following the presumptions of the t-test, the t-value for the pre-control and pre-experimental groups is -39.163, and the effect size is 0.02, both of which are more than 0.05.

Findings

The research findings suggest that organizing words thematically can be a valuable strategy for enhancing second language vocabulary acquisition. Given this revelation, it can be inferred that Tinkham's (1993, 1997) assertion that teaching vocabulary to students through thematic clusters is a more efficacious instructional approach than teaching vocabulary through semantically grouped sets is accurate. The acquisition of subject-specific or issue-specific vocabulary is comparatively easier for students as opposed to the learning of semantically grouped terminologies. The findings demonstrate that the duration of the experimental task needed to elicit novel vocabulary in semantic groupings surpasses that required to introduce novel vocabulary in thematic groupings. The cluster exhibits a comparatively greater learning curve in comparison to the other cluster. The study aimed to assess the efficacy of the conventional teaching approach in comparison to the semantically associated vocabulary clusters. The findings indicated that the traditional teaching method was comparatively less effective than the semantically connected word clusters in the immediate posttest.

The introduction of new vocabulary in L2 via the use of semantically clustered sets is an efficient approach to vocabulary instruction by a few SLA theorists and practitioners. The agency responsible for maintaining the mental lexicon in the first language provided financial support for the study. Because most of the language used in this examination was devoid of concreteness, it was necessary to devise an appropriate mental lexicon arrangement for students studying at the intermediate level. This type of study was carried out by many researchers using a variety of tools. These tools included Windows XP, a picture-word matching approach, oral and written modality, and the pairing of foreign words. The objective of the research was to provide empirical evidence that semantically clustered or contradictory sets are less effective organizational tools than thematically clustered sets in a variety of contexts. Nevertheless, it is important to point out that in this specific study project, the vocabulary that was used was the same for all the cohorts that were studied. The research consisted of presenting vocabularies that were synonymous to two different groups: one group was structured according to semantic clusters, while the other group was arranged according to

theme clusters. According to the findings, the group that had been prepared for the exam using thematic clusters fared much better than the group that had been prepared using semantic clusters as well as the control group. The findings of the current research reveal that participants who received instruction utilizing the thematic clustering approach displayed greater performance in the delayed posttest in comparison to the other groups, despite a little difference in their test results. This was the case even though the participants in both groups were given the same amount of time to complete the test. When compared to the other cohorts, the group under investigation demonstrated much better recall of the freshly learned language. On the other hand, it was seen that the semantic group and the control group both demonstrated low performance in the delayed posttest. This poor performance may be related to the forgetting of the previously acquired vocabulary, which was observed in both groups. Both theme and semantic clustering put a significant amount of mental strain on the learner's memory, although thematic clustering does so more so than semantic clustering. According to the research that Craik (2002) conducted on human memory, the amount of mental processing that goes into encoding a new word or phrase determines how likely it is that it will be stored in a person's long-term memory. This is the case even if the person does not intentionally try to remember it. It is more probable that a student will successfully recall the meaning of a word if they are actively involved in input processing that requires them to conduct a more in-depth study of a particular word. This kind of activity includes activities that have a higher involvement load index (Laufer & Hulstijn, 2001). Learners are required to use their prior knowledge to develop links between words within a particular text when concept mapping is used as an educational strategy for reading comprehension. This is because concept mapping is an instructional approach to reading comprehension. When compared to just providing synonyms or the definitions of words, this approach requires a larger mental effort on the side of the student. Compare this to the supply of word meanings.

Implications, limitations, and suggestions for further research

Recent research has shown some significant repercussions concerning the learning and teaching of vocabulary in a second language. It is not the clustering approach that is most important when teaching vocabulary for a second language (L2); rather, the quality of the training itself is what is most important. As a result of their ability to assist in increased understanding and higher retention of vocabulary items, visual aids play an important role in practically all stages of lexical education for a second language (L2). It is advised that teachers of English to speakers of other languages (EFL) provide their students the opportunity to use newly learned terms in a larger context in addition to expressly teaching vocabulary in a second language (L2) in isolation. This is because teaching vocabulary in isolation may be difficult for students. Students will have an easier time understanding and forming a mental image of these terms if they are provided with relevant example sentences to work with. This may be accomplished via the use of effective example sentences.

Following this, it is advised that newly presented vocabulary in the L2 be exposed to a process of repetition and review across a varied array of relevant situations, including a multiplicity of helpful exercises, productive tasks, and activities. In addition, it is suggested that this process be carried out in a variety of contexts. When teaching their pupils vocabulary in a second language (L2), instructors of English as a foreign language (EFL) should, rather than

depending entirely on a single method in vocabulary training, use a variety of successful strategies.

In this research, the target words that are going to be taught are placed inside their appropriate sentential contexts. Following this, further research may focus on the use of the chosen lexicon components within larger contexts, such as the teaching of second language terms to students while they are interacting with intellectual or literary works. Concrete nouns were used throughout the whole research project as target terms. As a result, potential future study attempts may investigate various elements of speech. This study necessitates additional scrutiny. This study focused on analyzing the effects of thematic and semantic clustering of the English lexicon on the acquisition of vocabulary in a second language (L2). Further investigations could be carried out to examine the impact of thematic versus semantic clustering on additional language acquisition proficiencies. Additional inquiry may be conducted utilizing a substantial sample size of individuals with diverse levels of proficiency. A comparable investigation may be conducted utilizing solely male participants to examine potential variations in their performance.

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Annexures

Table: 1 Independent T-test analysis of pre-test control and pre-test experimental groups

	Test		N	M	SD	D	t	Effect size
Pre.CG	25	24.5	1.48	24	10.51	0.92		
	Pre.EG		25	19	1.9			

Table: 2 Independent T-test analysis post-test control and post-test experimental groups English vocabulary skill.

Test	N	M	SD	d	t	Effect size
Post.CG	25	24.53	1.47	24	-39.163	0.02
Post.EG	25	46.86	2.75			