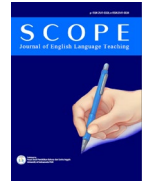




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Research Article

Utilizing Semantic Mapping to Enhance Students' Understanding in Reading

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KEYWORDS

Utilizing,
 Semantic Mapping,
 Reading Comprehension

A B S T R A C T

Reading is a fundamental skill in English learning; nevertheless, many English learners encounter challenges in comprehending English texts. Thus, providing students with effective reading strategies is essential. This study aimed to evaluate the effect of semantic mapping on improving students' reading comprehension. Using a quasi-experimental design, the research targeted first-semester students from the Tarbiyah Faculty and Teacher Training at the English Department UINSU, who were specifically selected as participants. Data was gathered using the TOEFL reading test, and analysis was performed with SPSS version 21 IBM, including frequency, mean score, normality test, and nonparametric tests (Mann-Whitney U test and Wilcoxon test). The findings showed that using semantic mapping as a teaching method significantly improved students' reading performance. The Mann-Whitney U test revealed a notable difference between the mean scores of the experimental group using semantic mapping and the control group without it (42.3 > 32.3). Furthermore, the Wilcoxon test indicated a significant improvement in the experimental group's scores from the pretest (29.5) to the post-test (42.3). In summary, semantic mapping seems to enhance students' reading comprehension.

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INTRODUCTION

Comprehending a written text involves understanding its content, and while the definition of reading may seem straightforward, the process itself is intricate and challenging to teach, learn, or practice. As Celce-Murcia notes (cited in Amirian, 2013:20), instructing non-native English speakers on reading skills presents unique difficulties across various instructional levels. Smith's article (2012:2) further underscores the complexity of reading, highlighting the multifaceted cognitive processes involved when individuals engage with a text. Readers engage in complex mental processes, such as recognizing sounds, understanding the relationship between letters and sounds, linking sounds, letters, and words, and extracting

meaning from the text. Consequently, teaching and learning reading emerge as intricate tasks (Harmer, 2001).

Considering the concern above, a notable issue associated with reading comprehension is the challenge many English learners face in understanding English texts, particularly when encountering unfamiliar words. This challenge often leads to reader distress, causing individuals to panic and halt their reading to consult dictionaries. This disruption interrupts the normal reading process and greatly reduces their ability to understand the text effectively. Researchers have confirmed the established link between understanding word meanings and overall comprehension, which students also recognize, with many confessing that the complexity of certain words occasionally hinders their comprehension.

To illustrate this situation, consider the case of Universitas Islam Negeri Sumatera Utara (UINSU). The researcher's experience as a university English lecturer highlighted occasions where students had difficulty understanding the meaning of assigned texts in class. Only a few actively engaged with the lecturer's questions, while most merely assumed passive roles as listeners. Consequently, this condition negatively impacted the effectiveness of the learning process. To address this situation, Blachowicz and Fisher (cited in Tateum, 2007:5) suggest that deriving meaning for new words. At the same time, reading necessitates utilizing prior knowledge to make predictions about meanings and refining that understanding as part of the reading-learning process. Students encounter several challenges in reading comprehension, including unfamiliar vocabulary, insufficient prior knowledge, passive reading habits, and cognitive overload. These difficulties emphasize the importance of effective strategies like semantic mapping. This method not only aids in vocabulary development and the activation of prior knowledge but also promotes active engagement and alleviates cognitive overload (Daulay et al, 2021, 2023, 2024). By using semantic mapping, educators can greatly enhance students' reading comprehension and overall learning experience.

Furthermore, Anderson (1999:11) explains that background insight, encompassing a reader's life or educational experiences, understanding of rhetorical text organization, and knowledge of their first language, can significantly influence reading comprehension and proficiency. Anderson emphasizes that prior knowledge shapes comprehension, indicating that meaning does not solely originate from the written material but is also influenced by the reader's existing knowledge. Hence, it is crucial to assert that activating students' prior knowledge is essential in the process of learning to read, as this existing information plays a vital role in comprehending new knowledge.

Semantic mapping is one of the many strategies emphasizing the important role of prior knowledge or schemata in learning through reading. Concept maps are a powerful technique to help students acquire, organize, and understand knowledge initially. Semantic mapping, also referred to as a graphic organizer, involves creating visual displays showing categories and their connections. Antonacci (1991:174) describes it as a visual representation of knowledge, providing a visual depiction of conceptual relationships. Additionally, Sinatra, Stahl-Gemake, and Berg (1984:22) define it as a graphical arrangement that illustrates the main ideas and connections within a text or among word meanings.

Semantic mapping is a powerful tool for boosting students' reading comprehension. Its visual format, capacity to trigger prior knowledge, improvement of vocabulary skills, systematic organization of information, promotion of active participation, facilitation of collaborative learning, and adaptability to diverse learning needs make it a valuable approach in education. By integrating semantic mapping into their teaching, educators can greatly improve students' understanding and enjoyment of reading.

Little and Box (2011:25) argue that visual aids, such as graphic and advanced organizers, facilitate the development of connections between students' prior knowledge and new information. Teachers should assist students in constructing foundational knowledge by either reinforcing it or reminding them of it through review. Prior to presenting new reading material, Fisher and Frey (as cited in Little and Box, 2011:26) argue that studies suggest offering students background information using particular pre-reading strategies such as advance organizers or graphic organizers, applied before delving into a topic, is likely to help in constructing schemas. This, consequently, enhances vocabulary acquisition and reading comprehension.

Considering the mentioned concern, numerous research studies conducted by scholars have investigated the language-learning advantages of using semantic mapping for both vocabulary acquisition and the development of reading skills. These studies generally support the idea of a positive influence on the reading skills of EFL and ESL learners. For instance, Junaid (2005) illustrated in his study that this strategy impacted students' comprehension of scientific texts. Another research by Little & Box (2011) found that semantic mapping significantly aided students who lacked prior knowledge of new content by improving their understanding of vocabulary and content before reading. Therefore, the researcher found it necessary to conduct further research to explore semantic mapping as a teaching strategy for reading skills to address students' challenges at UINSU. This study aims to assess the effectiveness of a semantic mapping strategy in enhancing students' reading performance.

METHOD

Research Design

This research utilized a quasi-experimental design comprising two groups: an experimental group that used semantic mapping and a control group that did not use semantic mapping or followed traditional methods. In the experimental group, students participated in individual, collaborative, and group activities. Throughout the learning process, they generated a list of words related to the topic and constructed a visual organizer. In contrast, the

control group received traditional instruction, with the teacher providing explanations, asking questions, and students working individually. The research utilized the TOEFL reading section as the test instrument. The study focused on third-semester students at the Tarbiyah Faculty and Teacher Training at the English Department UINSU, consisting of three classes (Class A, B, and C) with 120 students. The researcher methodically identified the target population, selected particular classes, and chose a sample of 80 students for the study. By using pretests and post-tests, the researcher was able to accurately assess the impact of the semantic mapping strategy on students' reading comprehension skills. This organized approach ensured the validity and reliability of the research findings, thereby contributing to a deeper understanding of the effectiveness of semantic mapping in educational contexts.

Data collection involved administering test instruments, with both groups completing a pretest before the instructional period and a post-test afterward. For both assessments, students were asked to complete the TOEFL reading test. The scores obtained from the test were assessed and classified based on the scoring criteria for students' English Reading learning outcomes, adapted from Nunan (1998). Then, the test results were analyzed using statistical software (SPSS version 22) to determine the frequency, mean score, results of the normality test, and nonparametric tests (Mann-Whitney U test and Wilcoxon test).

The data analysis followed a systematic sequence: (1) The researcher gave both groups a pretest. (2) The researcher conducted multiple instructional sessions for both groups. (3) A post-test was administered to both groups by the researcher. (4) The researcher scored and categorized the students' scores. (5) The researcher discussed theories relevant to the findings.

RESULTS AND DISCUSSION

Result

The results cover the progress of students' reading abilities in the experimental and control groups. Evaluating Students' Reading Performance In the subsequent discussion, the researcher presented students' reading abilities in the pretest and post-test for both the experimental and control groups. The aim was to compare students' reading abilities in both groups before and after the treatment, using semantic mapping and conventional methods. The semantic mapping strategy in the experimental class promotes active engagement, critical thinking, and deeper understanding of reading material, while the conventional method in the control class relies on traditional teaching techniques that may not effectively support comprehension and retention. The differences in

these approaches likely contributed to the significant improvements observed in the reading skills of students in the experimental group.

The findings of this study show a difference in the mean scores between the two groups after the treatments. Students taught using semantic mapping achieved higher mean scores compared to those who were not ($42.3 > 32.3$). However, to establish statistical significance regarding these differences, the two mean scores underwent testing at the .05 significance level using the Mann-Whitney U test. The results revealed a probability value of .002, which was less than .05 ($p < .05$). This indicates that the mean scores of the two groups were not equal.

Essentially, there was a significant difference in the mean scores of these groups after receiving different treatments. Additionally, to statistically determine if there was a significant difference from the pretest (29.5) to the post-test (42.3) in the experimental group, the Wilcoxon test was conducted. The result showed a probability value (P) of $0.000 < 0.05$. This indicates a significant difference between the pretest and post-test of the experimental group, suggesting that the statistical hypothesis of H_0 was rejected or H_1 was accepted. In other words, the experimental group showed improvement from the pretest to the post-test following the implementation of semantic mapping in teaching reading. This suggests that applying the semantic mapping strategy enhances students' reading skills.

Discussion

The main aim of this study was to investigate the effectiveness of the semantic mapping strategy in improving students' reading skills. Wilcoxon tests were conducted to address this question, indicating that implementing the semantic mapping strategy enhanced students' reading abilities. Some of the findings are consistent with previous studies, such as Melendez (1991), Junaid (2005), Little & Box (2011), Supramaniam (2011), and Agustina et al. (2012), all supporting the idea that semantic mapping contributes to improved reading skills.

Regarding applying the semantic mapping strategy, the researcher observed that this teaching approach was more effective than conventional methods. It assisted students in understanding a text throughout the entire reading process, including pre-reading, during-reading, and post-reading phases. This finding aligns with Heimlich & Pittelman (1986) and Antonacci (2011), who stated that the strategy's effectiveness extends beyond the pre-reading phase to the post-reading phase. Semantic mapping was crucial in preparing students before reading, ensuring they had sufficient knowledge of words and vocabulary, and even prompting them to create lists of topic-related words.

Additionally, it helped students organize and retain information obtained from the text.

Moreover, the strategy integrated new information with existing knowledge during pre-reading, allowing students to activate their relevant expertise and promote more meaningful learning. Little & Box (2011) emphasize the importance of students' relevant knowledge and experiences related to events, concepts, vocabulary, and objects in a text passage, as it significantly influences their understanding. This process enabled students to quickly acquire new knowledge and connect prior knowledge related to the topics covered in the reading assignment. Anderson (1999) highlighted that prior knowledge influences reading comprehension, indicating that readers bring specific expertise to the reading process.

Another crucial factor supporting the improvement of students' reading skills through semantic mapping is the implementation of strategies that actively involve students in the learning process, encouraging interaction and collaboration to enhance their understanding of a text. For instance, students participated in discussions within their groups and with the lecturer during pre-reading, while-reading, and post-reading activities. This approach allowed students to benefit from sharing ideas or vocabularies and assisting each other in categorizing them within the concept map.

CONCLUSION

Creating a concept map or graphic organizer also helped students understand the structure of a text. For example, students compiled lists of topic-related words and integrated them into a concept map, aiding their comprehension of the text's structure, including main ideas and details. Most students agreed that this strategy helped them understand both words and the structure of a text. This aligns with Plotnik's perspective, as mentioned in Phantharakphong & Pothitha (2014), highlighting that visual symbols in semantic mapping enhance reading skills by making concepts easily recognizable and scannable, thereby allowing for a more comprehensive understanding

The Wilcoxon test, functioning as a paired t-test, showed a probability value (P) below 5% at the significance level ($0.00 < 0.05$). This statistical result indicates a significant difference between the mean scores of students in the pretest (29.5) and post-test (42.3), leading to the rejection of the null hypothesis (H_0). Essentially, there is a noticeable enhancement in the experimental group's ability following the implementation of the semantic mapping strategy for teaching reading, resulting in a 13-point increase.

By applying these recommendations, teachers can improve the impact of reading instruction and help students

build better reading comprehension abilities. The successful results associated with semantic mapping emphasize its value as an effective teaching method in the classroom (Nunan, 1998).

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