

The Effectiveness of Word Chains in Enhancing the Vocabulary of Grade 10 Students

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ABSTRACT

The Program for International Student Assessment (PISA) 2022 data highlights alarming reading proficiency statistics in the Philippines, ranking it 347th out of 476 countries, with many students failing to meet minimum standards. The study aimed to determine the effectiveness of Word Chains in enhancing Grade 10 students' vocabulary during the Academic Year 2023-2024 in a public secondary school in Ozamiz City. This study used a classroom-based action research design with 36 students as participants using purposive sampling. Researcher-made test and interview guide questions were used to gather data. The data is interpreted using statistical tools such as mean, standard deviation, t-test, and thematic analysis. Thus, the findings revealed that the students did not meet expectations before the implementation of Word Chains; the students showed outstanding improvement after the integration of Word Chains; there was a significant difference in the student's level of comprehension before and after the implementation of Word Chains; and additional developments were observed among the students following the use of the Word Chains in class. Therefore, the significant difference in students' vocabulary before and after using Word Chains exhibits how effectively the tool enhances their vocabulary. Recommendations include teachers adopting innovative teaching methods across the curriculum, such as Word Chains, to foster better vocabulary acquisition and overall student academic growth.

Keywords: Engagement, Strategy, Word Chains, Vocabulary

CONTEXT AND RATIONALE

One of the prevailing issues encountered by teachers in classrooms today is the inadequate vocabulary knowledge among students, particularly evident in the context of Philippine education. Despite the emphasis on defining terms as outlined in the Most Essential Learning Competency (MELCs) for Grade 10 students, many learners continue to struggle with grasping vocabulary concepts. This deficiency in vocabulary poses a significant barrier for students to comprehend the content they read and effectively articulate their thoughts (Bernardo et al., 2021).

Recent data from the Programme for International Student Assessment (PISA) highlights a concerning situation regarding reading proficiency in the Philippines. The country's position at 347th out of 476 countries and the high percentage of students failing to reach the minimum level of reading proficiency underscore the urgent need to address this issue (Descartes et al., 2023). Insufficient vocabulary knowledge contributes to poor reading comprehension among Filipino students, emphasizing the importance of interventions aimed at enhancing vocabulary skills, particularly in defining terms (Descartes et al., 2023). Moreover, students face difficulties in reading comprehension due to a lack of awareness about effective strategies and systematic approaches for dealing with ambiguous vocabulary (Fadi, 2019).

Research suggests that visual aids, such as graphic organizers like word chains, are crucial in improving students' vocabulary knowledge and comprehension (Rahat et al., 2020). Word chains offer a structured approach to relating new terms to familiar words, facilitating learners' understanding and vocabulary retention (Rahat et al., 2020). Graphic organizers, including word chains, are designed to visually represent textual material's relationships and structure, aiding teachers and students in the learning process (Enoch et al., 2023).

Studies have shown that vocabulary mastery significantly influences language proficiency and reading comprehension (Hastiwi & Wahyuni, 2023). Understanding vocabulary is crucial in predicting written text comprehension (Fadi, 2019). Inadequate vocabulary knowledge leads to communication inaccuracies and low self-confidence, particularly among students (Afna, 2018). Furthermore, the Philippines' low ranking in reading comprehension assessments underscores the need for effective interventions to improve student's vocabulary and comprehension skills (Descartes et al., 2023).

Research indicates that graphic organizers, such as word chains, are practical tools for enhancing vocabulary knowledge and comprehension (Rahat et al., 2020). These visual aids help students relate words and concepts, leading to improved understanding and retention of vocabulary terms (Rani & Yennam, 2021). Additionally, visual representations facilitate comprehension of complex concepts and subjects, further supporting the integration of graphic organizers in vocabulary instruction (Enoch et al., 2023).

This study is grounded on the constructivist theory by Jean Piaget (1973), which emphasizes active engagement and the construction of knowledge by learners. Word Chains supports constructivist principles by fostering collaborative, interactive learning where students construct and reinforce vocabulary through active engagement in discussion and participation. Students actively create meaning and connections through collaborative word chain construction, aligning with constructivist principles.

Based on most research, different kinds of graphic organizers have been introduced and studied. Consequently, a notable methodological gap becomes evident concerning the infrequent utilization of word chains as graphic organizers to enhance learners' vocabulary knowledge (Miles, 2017). The specific application of word chains in this capacity appears to be an underexplored area within the definition of terms. Word chains visually connect words, starting from a central word, to expand vocabulary understanding through synonyms and associations.

This is a gap in the methods or tools employed in educational research, suggesting that there is room for further investigation and understanding of the effectiveness of word chains in facilitating learning outcomes, particularly in the realm of vocabulary enhancement. To fill this gap, it is necessary to determine the effectiveness of word chains in enhancing the vocabulary of grade 10 students during the 2023-2024 school year in one of the public schools in Ozamiz City.

This study holds significance for students, providing insights into practical strategies for enhancing their vocabulary. For teachers, it offers innovative teaching strategies throughout the curriculum to enhance vocabulary acquisition and promote overall academic development among students. Lastly, for the school community, it offers valuable evidence of how well strategies like Word Chains work, which might help shape future educational policies and practices to improve students' vocabulary and overall academic progress.

PROPOSED STRATEGY

Employing an effective reading strategy could aid learners in comprehending reading texts. Word Chain is a good strategy and has proven more effective than conventional methods because it helps improve students' vocabulary (Fitriani, 2019). Accordingly, word chains aid students in memorizing vocabulary and enjoying learning English, especially new words (Ramadani et al., 2019).

The Word Chains strategy is a dynamic instructional tool to boost the vocabulary of Grade 10 students. This method utilizes a visual aid consisting of chains, a padlock, and a key to engage students in a fun and interactive

way. The key, placed at the center, represents a specific term, and the surrounding chains contain boxes where students must write synonyms or related words. Filling these boxes with the correct terms allows students to "unlock" the padlock, making them activity winners. This strategy reinforces their understanding of vocabulary and adds a gamified element to learning, which can be particularly motivating for students.

Word Chains can be employed before and after the lesson to gauge and compare students' vocabulary knowledge. Before the lesson, it is a diagnostic tool to assess their prior understanding. After the lesson, it helps review and reinforce their new vocabulary. This strategy promotes collaboration as students share insights and work together to complete the chains, fostering a deeper engagement with the material. By integrating this hands-on approach, students are more likely to retain and apply the vocabulary from the lessons, enhancing their overall language skills.

ACTION RESEARCH QUESTIONS

This action research aims to address the following questions:

1. What is the vocabulary of the learners before the Word Chains?
2. What is the vocabulary of the learners after the Word Chains?
3. Is there any significant improvement in the learners' vocabulary before and after the strategy?
4. What other developments are observed among the learners after the use of Word Chains in enhancing the vocabulary?

ACTION RESEARCH METHODS

Research Design

This study used a classroom-based action research design to evaluate the effectiveness of using Word Chains as a strategy and its potential enhancement on the Grade 10 students' vocabulary knowledge during a two- to three-week lesson for their English subject. Action research informs local practice, facilitates professional learning, builds community engagement, addresses specific problems or understanding processes within a context, and empowers participants to generate self-knowledge (Johnson, 2020). In addition, action research is a form of investigation designed for teachers to attempt to solve problems and improve professional practices independently (Zubert-Skeritt, 2021). This method enabled educators to examine their teaching methods firsthand, uncovering the effectiveness of different approaches and identifying those that proved successful or ineffective for their students. Thus, this action research design is deemed appropriate as it aims to use word chains to improve their vocabulary.

Site

The research was conducted at the Junior High School level, specifically focusing on Grade 10 students in one of the schools in Ozamiz City, Misamis Occidental. It is a complete secondary school catering to learners from Grades 7 to Grade 12. The school offers different curricula, such as the Regular Curriculum, Special Science Curriculum, Special Program of the Arts, Strengthen Technology Vocational Education Program, and Open High School program. The school is dedicated to delivering curriculum-based, high-quality, and affordable education to the local community.

Participants

The participants of this study were 36 Grade 10 students. The participants were selected using a purposive sampling technique. The participants were selected based on the following criteria: 1.) Students enrolled at a particular secondary institution in Ozamis City as Grade 10 students for the academic year 2023-2024; 2.) Students who gave their full consent to serve as study respondents; 3.) Only students from the Nitrogen section were chosen because the researcher teaches in this section. Before initiating the survey, the researchers ensured all these conditions were fulfilled.

Data Gathering Methods

This action research gathered quantitative and qualitative data. The English vocabulary of Grade 10 students was assessed using researcher-made instruments such as test questions and interviews.

A. Pre-Implementation Phase. The researcher noticed the emerging challenges. Students encountered them in their learning process. By conducting comprehensive observations, valuable insights and information regarding these specific issues were gathered. Subsequently, the researcher developed their research proposal, designed lesson plans, and formulated pre-and post-tests, along with prototype strategies or interventions. Eventually, permission was sought from the Superintendent of the Division of Ozamiz City and authorization from the principal and cooperating teacher to carry out the research in a secondary school within Ozamiz City.

B. Implementation Phase. During the implementation stage, data collection. It comprised administering pre-tests to participants, implementing targeted strategies by the researcher with a one-month timeline, actively monitoring participants' performance and attitudes, and administering post-test assessments. Additionally, this phase involved retrieving, tallying, analyzing, and interpreting the collected data—the analysis aimed to ascertain the strategy's significant effectiveness.

C. Post-Implementation Phase. In the post-implementation stage, conclusions were drawn, recommendations were formulated, and the research study underwent proofreading, editing, and finalization. Additionally, the stage encompassed properly disseminating research results to a specific audience.

Ethical Issues

Researchers considered ethical concerns when designing and conducting interview-based research while recognizing the potential for research interviews to promote professional learning (Husband, 2020).

The researcher followed strict ethical guidelines, obtaining informed consent from students and their parents or guardians prior to implementation to ensure transparency and voluntary participation. Confidentiality was maintained through anonymized data, protecting participants' identities. Measures were taken to minimize potential harm, focusing on educational improvement. Permission was obtained from relevant authorities, such as the school principal, before starting the research. These ethical measures were upheld to prioritize participant well-being, privacy, and dignity, enhancing the study's credibility and integrity.

Data Analysis

With the use of Minitab statistical software, the following statistical tools were utilized:

Frequency and Percentage were utilized to offer a descriptive summary of the different aspects of the study.

Mean and Standard Deviation were employed to assess learners' performance before and after the strategy.

A **T-test** was utilized to ascertain the notable improvement in the learner's performance levels before and after the implementation of Word Chains.

Thematic analysis was conducted to investigate additional developments observed among the learners following the implementation of Word Chains using HyperResearch software.

RESULTS AND DISCUSSION

Learners' Vocabulary Before Word Chains

Table 1 shows the vocabulary of the total learners (n=36) before using Word Chains. The data indicated a significant vocabulary deficiency among the majority of learners, as 94.44% did not meet the expectations,

with a mean score of 16.74 (SD = 5.31). Only a negligible percentage achieved satisfactory (2.78%, M = 37.00) or fairly satisfactory (2.78%, M = 30.00) levels. These findings underscore a notable deficiency in the group's vocabulary proficiency.

Before the introduction of Word Chains, the learners generally fell short of the anticipated level of vocabulary knowledge. Vocabulary knowledge is a crucial factor in comprehending written texts. Thus, educational stakeholders should prioritize vocabulary instruction and use diverse teaching methods to enhance general and academic vocabulary acquisition (Al-Khasawneh, 2019). Learners demonstrating higher levels of reading comprehension and vocabulary proficiency exhibit a greater tendency to monitor and control their understanding (Zargar et al., 2019).

Utilizing Word Chains will help improve students' vocabulary by making learning more engaging and interactive. Accordingly, implementing strategies and interactive activities can significantly improve learners' vocabulary by making learning more engaging and effective. This aligns with recent trends showing increased interest in enhancing students' vocabulary development strategies. (Van de Wege, 2018). Integrating word chains into classroom activities can emerge as a powerful tool for enhancing students' vocabulary and bolstering their success in understanding what they read. This strategy can cultivate linguistic proficiency and reading comprehension skills, empowering students to navigate complex texts confidently and fluently.

Table 1 Learners' Vocabulary Before Word Chains

Learners' Vocabulary	Frequency	Percentage	M	SD
Satisfactory	1	2.78	37.00	*
Fairly Satisfactory	1	2.78	30.00	*
Did not Meet the Expectations	34	94.44	16.74	5.31
Overall Performance	36	100.00	17.67	6.52

Note: 42-50 (Outstanding); 38-41 (Very Satisfactory); 34-37 (Satisfactory); 30-33 (Fairly Satisfactory); 1-29 (Did not Meet the Expectations)

Learners' Vocabulary After Word Chains

Table 2 presents the vocabulary knowledge of learners after using word chains. The overall mean score (M) was 43.22, with a standard deviation (SD) of 2.93, indicating a generally high level of vocabulary knowledge among the learners. The majority of learners, 77.78% (n = 28), achieved an outstanding level of vocabulary knowledge with a mean score of 44.54 (SD = 1.73). A smaller group, 22.22% (n=8), reached a very satisfactory level with a mean score of 38.63 (SD = 0.52). Notably, no learners fell into the satisfactory or fairly satisfactory categories or did not meet expectations.

The findings indicate that a significant portion of the learners performed exceptionally well after using word chains, with most participants reaching an outstanding level of vocabulary knowledge. When students are taught vocabulary in school, they should actively think about word definitions, word connections, and how words may be used in various contexts (Junaid et al.,2023). Additionally, a study suggests strategies to minimize problems and enhance students' vocabulary knowledge, emphasizing the importance of addressing potential challenges in vocabulary acquisition (Afzal, 2019). This aligns with recent trends, which show a growing interest in learning strategies designed to enhance students' vocabulary acquisition and development (Van de Wege, 2018).

The high percentage of learners who scored within the outstanding range suggests that word chains effectively enhance vocabulary learning. The remaining learners, who achieved a very satisfactory level, further underscore the effectiveness of this instructional strategy. These results highlight the importance of mastering vocabulary in English, which is essential for learners to develop the productive and receptive skills needed to communicate effectively and comprehend messages directed at them (Nugraha & Wihadi,2023)

Table 2 Learners' Vocabulary After Word Chains

Learners' Vocabulary	Frequency	Percentage	M	SD
Outstanding	28	22.22	44.54	1.73
Very Satisfactory	8	77.78	38.63	0.52
Overall Performance	36	100.00	43.22	2.93

Note: 42-50 (Outstanding); 38-41 (Very Satisfactory); 34-37 (Satisfactory); 30-33 (Fairly Satisfactory); 1-29 (Did not Meet the Expectations)

Significant Difference Between Learners' Vocabulary before and after integrating Word Chains

Table 3 presents the differences in learners' comprehension levels before and after integrating word chains. The overall mean score (M) before integrating word chains was 17.67 (SD = 6.52). After integrating word chains, the mean score increased significantly to 43.22 (SD = 2.93). The t-value for this comparison was 27.88 with a p-value of 0.000, leading to the rejection of the null hypothesis (Ho), which stated that there is no significant difference in learners' achievement before and after integrating word chains. The results indicate a highly significant difference ($p < 0.01$) in vocabulary knowledge following the integration of word chains. Similarly, using word chain games has positively affected student vocabulary mastery (Aaliyah, 2020).

The findings demonstrate a substantial improvement in learners' vocabulary knowledge after integrating word chains. Hence, it highlights the beneficial effects of Word Chains as a valuable educational strategy. Initially, the learners had a mean comprehension score of 17.67 (SD = 6.52), which reflects a relatively low level of understanding. However, after integrating word chains, their comprehension mean score significantly increased to 43.22 (SD = 2.93), indicating a marked enhancement in their vocabulary knowledge. The high t-value (27.88) and the extremely low p-value (0.000) provide strong evidence that the observed improvement is statistically significant. As a result, the improvement occurred because using the Word chain game to teach vocabulary is highly effective since it actively engages students, making the learning process more enjoyable and less monotonous (Medina et al., 2021). Similarly, using the Word Chain Strategy to teach English was indeed beneficial in increasing students' vocabulary (Ramadani, 2019). Word chains offer valuable opportunities for the development of teachers, learners, and the learning process. These opportunities can increase students' motivation and responsibility, promote a student-centered approach tailored to individual needs, and support the evolving roles of both learners and teachers (Ramadaniet al., 2019).

Therefore, the statistical analysis and comparison of pre-test and post-test results confirm the effectiveness of Word Chains as a strategy for enhancing learners' vocabulary. This increased engagement not only fosters a more dynamic and interactive classroom environment but also motivates students to participate more actively in their learning, leading to better retention and application of new vocabulary and reading comprehension.

Table 3. Significant Difference Between Learners' Vocabulary before and after integrating Word Chains

Variables	Mean Score		Test Statistics	
	(Pre-test)	(Post-test)	t-value	p-value
Before and after integrating Word Chains	17.67	43.22	27.88	0.000

Ho: There is no significant difference in the learners' achievement in probability before and after integrating word chains.

Note: ** $p < 0.01$ (Highly Significant); * $p < 0.05$ (Significant); $p > 0.05$ (Not significant)

Other Developments in Students' Vocabulary After the Use of Word Chains

The research delved into the distinct impacts of integrating Word Chains into learning activities. Through gathering individual insights and sentiments from participants, the researchers meticulously examined these

responses to uncover significant patterns, aiming to categorize them into emergent themes. Three key themes surfaced from this analysis, shedding light on experiences and emotions regarding using Word Chains: 1) Enhances retention; 2) Develops Student Engagement; 3) Promotes Classroom Collaboration.

Enhances Retention

The Word Chains strategy is a collaborative learning technique that significantly enhances vocabulary retention. This method ensures that every group member actively participates in the learning process. Contributing similar words to a given term encourages students to stay focused, improving their retention and understanding of the content. This is evident in the participants' responses:

“Word chains can help improve memory of new words by creating associations, making them to easier recall the words.” (P1)

“I clearly remember the new words I learned using word chains.” (P2)

“I remember them well because it was my favorite activity that the teachers gave us. That is why I still remember them to this day.” (P3)

“It's easier to remember related words in a sequence, and using word chains makes my memorization more effective.” (P4)

“This method not only enhances interest but also improves retention, as it turns abstract vocabulary into meaningful associations.” (P7)

Knowledge retention refers to the ability of students to recall previously learned information. Specific teaching and learning strategies are more effective at promoting this retention. These strategies are often linked to students' attitudes toward the learning process. Hence, when students find the learning method enjoyable and suitable, they are more likely to remember the learned content. Additionally, long-term retrieval of words is essential, making creative techniques in vocabulary learning beneficial for retaining new words in student's memory (Samartin, 2020). Research has shown that the Word Chain is an instructional strategy that is particularly effective in improving the mastery of English vocabulary and enhancing retention (Gultom, 2018). By creating meaningful associations and encouraging active participation, the Word Chain method significantly aids vocabulary retention, ensuring students remember new words more effectively.

Develops Student Engagement

The Word Chain strategy is a collaborative learning technique that boosts student engagement in the classroom. Learners look forward to using this strategy because it makes vocabulary lessons more exciting and adds a fun challenge, ensuring active participation from all group members. This is highlighted in the response of the participants:

“My interest in vocabulary lessons has increased since I started using word chains. This interactive method not only helps with retention but also adds a fun challenge to expanding my vocabulary.” (P1)

“They make learning new words more fun and engaging and I now look forward to vocabulary lessons.” (P4)

“By creating connections between new and familiar words, the learning process becomes more interactive and memorable.” (P7)

“For many learners, using word chains can make vocabulary lessons more engaging and effective.” (P5)

The progress was notable due to the effectiveness of employing the Word chain game to teach vocabulary. This strategy involved students, making learning more engaging, enjoyable, and lively, thus reducing dullness. (Medina et.al, 2021). A similar study states that the effectiveness of the Word Chain Game lies in its ability to enhance students' vocabulary mastery while simultaneously creating a more dynamic and engaging classroom environment (Yanti, 2017). Therefore, involving students in the learning process boosts their interest along the learning process and fosters meaningful learning encounters. Moreover, these opportunities can increase a sense of responsibility, foster a student-centered approach that caters to individual needs, and facilitate the adaptation of roles for both students and teachers (Ramadani et al., 2019). Student engagement relies on active participation in the learning process, making the learners excited about using word chains.

Promotes Classroom Collaboration

Word Chains are collaborative learning techniques that promote teamwork and improve student collaboration. This cooperative setting enhances individual comprehension and cultivates crucial interpersonal skills, establishing a classroom atmosphere where collaboration and teamwork are critical to learning. The participants' feedback demonstrates this:

“Using word chains with classmates has made learning new words more collaborative and engaging. Discussing and linking words together enhances understanding through shared insights and different perspectives.” (P1)

“Word chains have helped me and my classmates learn new words by, taking a specific word and finding similar words.” (P3)

“Engaging in word chains with my peers has helped me learn and understand new words by sharing ideas and seeing how others connect words. It makes learning more interactive, collaborative, and fun.” (P4)

Collaboration among students is crucial as it allows them to participate in activities that enhance their learning process (Leeuwen, 2019). Teachers' control in these moments impacts the transformation of opportunities into real learning experiences, highlighting their crucial and challenging role in facilitating collaborative learning. Students improved their vocabulary knowledge after engaging in collaborative study sessions (Ariffin, 2021). This finding aligns with broader educational research highlighting collaborative learning environments' benefits in enhancing language acquisition and retention. Additionally, collaborative learning fosters critical thinking, improves communication skills, and creates a more engaging and supportive classroom atmosphere, further contributing to students' overall academic and personal development. Cooperative learning boosts students' academic performance, interpersonal skills, and mindset as they collaborate with peers within a group setting (Tran, 2019). Previous research added that when students are engaged in collaborative, they actively interact with each other and follow the teaching-learning process enthusiastically (Ramadani et al., 2019).

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The study was conducted to determine the effectiveness of Word Chains in enhancing Grade 10 students' vocabulary during the Academic Year 2023-2024 in a public school in Ozamiz City. The study employed a Classroom-based Action Research design, choosing 36 students via purposive sampling. For data collection, a researcher-made test was utilized, and the analysis involved determining the mean and standard deviation and performing a t-test. Specifically, the objectives of the study were to (1) determine the vocabulary knowledge of the learners before using Word Chains; (2) assess the vocabulary knowledge of the learners after utilizing Word Chains; (3) identify significant improvements in the learners' vocabulary before and after using Word Chains; and (4) explore other observed developments among the learners following the use of Word Chains.

Findings

The study yielded the following findings:

1. The students did not meet expectations before the implementation of Word Chains.
2. The students showed outstanding improvement after the integration of Word Chains.
3. There was a significant difference in the students' comprehension levels before and after the implementation of Word Chains.
4. Additional developments were observed among the students following the use of word chains in class.

Conclusions

Based on the findings, the following conclusions are drawn:

1. The student's performance was ineffective, and learners failed to meet expectations before integrating Word Chains.
2. Students showed outstanding improvement after using word chains, demonstrating that they are an effective tool for enhancing their vocabulary.
3. The significant difference in students' vocabulary before and after using Word Chains magnifies how effective the tool is in enhancing their vocabulary.
4. In addition to improvements in academic performance, other positive changes observed after implementing Word Chains include enhanced retention, increased student engagement, and improved classroom collaboration.

Recommendations

Based on the findings and conclusions of this study, the researchers suggest that:

1. Teachers may adopt innovative teaching methods across the curriculum, such as Word Chains, to foster better vocabulary acquisition and overall student academic growth.
2. School leaders could provide ongoing professional development opportunities for teachers to enhance their instructional techniques.
3. Learners may use the school's resources, such as digital tools and library materials, to practice vocabulary independently.
4. Parents are encouraged to provide books, games, and other resources at home that promote vocabulary development and reading comprehension.
5. Future researchers may investigate the long-term effects of using Word Chain activities in other subjects.

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