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Enhancing Grade 10 Students' Vocabulary Retention Using the Feynman Technique

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ABSTRACT: This study explored the effectiveness of the Feynman technique in improving vocabulary retention among Grade 10 students. The research involved a structured intervention using the Feynman technique, a cognitive approach aimed at fostering a deeper understanding and long-term retention of vocabulary through simplified explanations and active participation. A total of 20 Grade 10 students participated in a seven-week program, during which they applied the Feynman technique to learn and retain new vocabulary introduced during English lessons. To evaluate the impact, pre- and post-intervention assessments, including vocabulary quizzes and retention tests, were conducted to measure vocabulary acquisition and retention. Additionally, a survey was administered to gather students feedback on the technique and its perceived effectiveness. The findings showed a notable improvement in vocabulary retention, with students demonstrating greater understanding and more accurate recall of vocabulary items after employing the technique. The survey results also indicated that students found the approach engaging and effective, reporting a positive attitude toward its use in vocabulary learning. Based on these results, the researchers recommend the Feynman technique be integrated into vocabulary teaching strategies to enhance retention and comprehension among Grade 10 learners.

KEYWORDS: Feynman technique, vocabulary retention, strategies, effectiveness intervention.

I. INTRODUCTION

The importance of English language acquisition is widely acknowledged, particularly in an increasingly globalized world. Over time, various approaches have been used to help learners acquire new vocabulary, from traditional memorization techniques to modern language-learning applications. While conventional methods have proven useful, they often encourage passive learning and do not always lead to deep understanding (Nation, 2001). In contrast, digital tools and apps introduce innovation but may lack personalized interaction, which is crucial for long-term retention (Plonsky & Oswald, 2014). These limitations highlight the need for alternative techniques that actively engage learners.

One promising approach is the Feynman Technique, which involves breaking down complex concepts into simple terms, identifying gaps in understanding, and refining explanations. Originally designed to help scientists grasp difficult ideas (Gleick, 1992), this method could be applied to language learning, particularly in vocabulary acquisition. Unlike rote memorization, which often leads to forgetting, the Feynman Technique encourages learners to reconstruct their knowledge actively, leading to stronger retention (Brown, Roediger & McDaniel, 2014). Although the technique has been explored in English, for instance, recent research has begun to explore the application of the Feynman Technique in English grammar instruction. A study by Minh, N.T.H and Giang, N.M (2021) investigated its effectiveness in teaching English grammar to K-12 students, its application in vocabulary learning remains under-researched. Most existing studies focus on methods such as spaced repetition (Ebbinghaus, 1885; Bahrick, 1984), learning through context (Nation, 2013), and mnemonic strategies (Atkinson, 1975). While these approaches help learners remember words, they do not necessarily promote a deep understanding of how to use them effectively. Research has yet to explore whether the Feynman Technique could offer advantages over these established methods.

This study aims to address this gap by investigating the impact of the Feynman Technique on vocabulary retention among 10th-grade students at Son Duong High School, Vietnam. By examining its effectiveness, the study seeks to determine whether this approach enhances long-term recall and comprehension more than traditional strategies. While no single method is without limitations the Feynman Technique requires effort and self-awareness - it presents an engaging alternative to passive memorization. This research will contribute to discussions on vocabulary learning by evaluating a potentially valuable strategy for improving retention and understanding. Following are research questions: *1.) What is the current situation of learning English vocabulary among high school grade 10 students? 2.) How does using the Feynman technique affect high school grade 10 students English vocabulary retention? 3.) What are students' attitudes towards using the Feynman technique in enhancing English vocabulary retention?*

II. LITERATURE REVIEW

2.1. Vocabulary retention

Vocabulary is a fundamental aspect of language. Richards (2001:4), vocabulary is one of the most noticeable elements of language and was among the initial focuses of applied linguistics. Richard and Renandya (2002:255) emphasize that vocabulary is a key component of language proficiency, forming the foundation for learners' abilities in speaking, listening, reading, and writing. According to Linse (2005:121), vocabulary refers to the collection of words individuals use regularly. A strong vocabulary is essential for everyone, as it represents the set of words within a language that a person is familiar with. Palmer, as cited in Richards and Rodgers (2002:37), highlights that vocabulary is one of the most crucial aspects of learning a foreign language, meaning it should be prioritized. Without a solid grasp of vocabulary, effective communication - both spoken and written - becomes difficult. Even if one masters the pronunciation of a foreign language, meaningful communication is impossible without sufficient words to convey various meanings.

Vocabulary retention refers to the ability to retain and recall learned words. Hornby (2007:368) defines retention as the act of keeping or remembering something. In other words, retention involves the capacity to store and retrieve information effectively. Someone with an exceptional memory retention ability can recall everything they have learned or heard (vocabulary.com). Richards (2002:457) describes vocabulary retention as the ability to remember and recall words after a certain period. Similarly, Mohammed (2009:61) defines it as the ability to retain newly learned vocabulary and retrieve it later for use in various language contexts. Based on these perspectives, vocabulary retention can be understood as the ability to remember and recall words after learning them, ensuring their long-term retention for effective language use.

Difficulty in vocabulary acquisition refers to the specific challenges students face when learning new words, as outlined by Pujiana (2016). Ningrum (2015) identifies key challenges, including (1) the differentiate between written and spoken forms of English vocabulary, (2) the sheer volume of words to learn, (3) limited access to reliable sources of word information, (4) the multifaceted nature of word knowledge, (5) inadequate understanding of grammatical rules, and (6) difficulties with pronunciation. Rahmatillah (2015) adds factors such as confusion between written and spoken forms, the vast number of words, limited access to reliable resources, and challenges with pronunciation and grammatical rules. Muhibbin Syah (2005) categorizes vocabulary acquisition challenges into individual factors (motivation, cognitive development) and social factors (support from family and teachers, access to resources). In summary, students face three main challenges in mastering English vocabulary: limited language skills affecting comprehension, reliance on teacher-led instruction without strong motivation, and engagement with uninteresting teaching media. Addressing these issues is essential for effective vocabulary learning.

2.2. The Feynman technique in Foreign Language Learning

The Feynman technique is a cognitive learning technique named after physicist Richard Feynman, designed to enhance understanding and retention of complex concepts. It operates on the principle that teaching a concept to someone else is one of the best ways to solidify one's own understanding. The technique involves four key steps: first, identify the concept you want to learn; second, teach it in simple language as if explaining it to a child, which requires breaking down the idea into its fundamental parts and clarifying complex terminology; third, review your explanation to identify gaps in your understanding; and finally, refine your explanation by revisiting study materials to fill those gaps until the concept is clear and concise. By emphasizing clarity and simplicity, the Feynman technique fosters deeper comprehension and aids in long-term retention of knowledge, highlighting the importance of actively engaging with the material and ensuring a solid grasp of the foundational elements of any subject. The Feynman technique emphasizes the importance of breaking down complex ideas into simpler, more digestible components. Research highlights that explaining concepts in layman's terms helps learners identify gaps in their understanding (Feynman, 1965).

The Feynman technique is an educational approach that emphasizes deep understanding and mastery of concepts through active engagement and simplification. Named after physicist Richard Feynman, this technique encourages learners to explain complex ideas in simple, clear language as if they were teaching someone else. Research has shown that this technique not only enhances comprehension but also reveals gaps in knowledge, allowing learners to revisit and reinforce their understanding (Feynman, 1965).

The process typically involves four key steps: identifying the concept, teaching it to someone else (or pretending to), identifying gaps in understanding, and reviewing the material to fill those gaps. This iterative cycle fosters metacognitive awareness, enabling students to assess their own learning and improve retention (Loyens, Magda, & Rikers, 2008). The Feynman technique can be effectively integrated into various learning environments, from classrooms to self-directed study, and is particularly beneficial for mastering challenging subjects.

By promoting an active learning experience, the Feynman technique aligns with contemporary educational practices that prioritize student engagement and personalized learning pathways. As highlighted by studies, this technique encourages students to take ownership of their learning, fostering not only academic skills but also critical thinking and problem-solving abilities (Hattie & Timperley, 2007). Overall, the Feynman technique serves as a powerful tool in teaching and learning, transforming the way students interact with and understand complex material.

The Feynman technique is a powerful technique for deepening your understanding and retention of vocabulary. Follow these steps to effectively apply this technique:

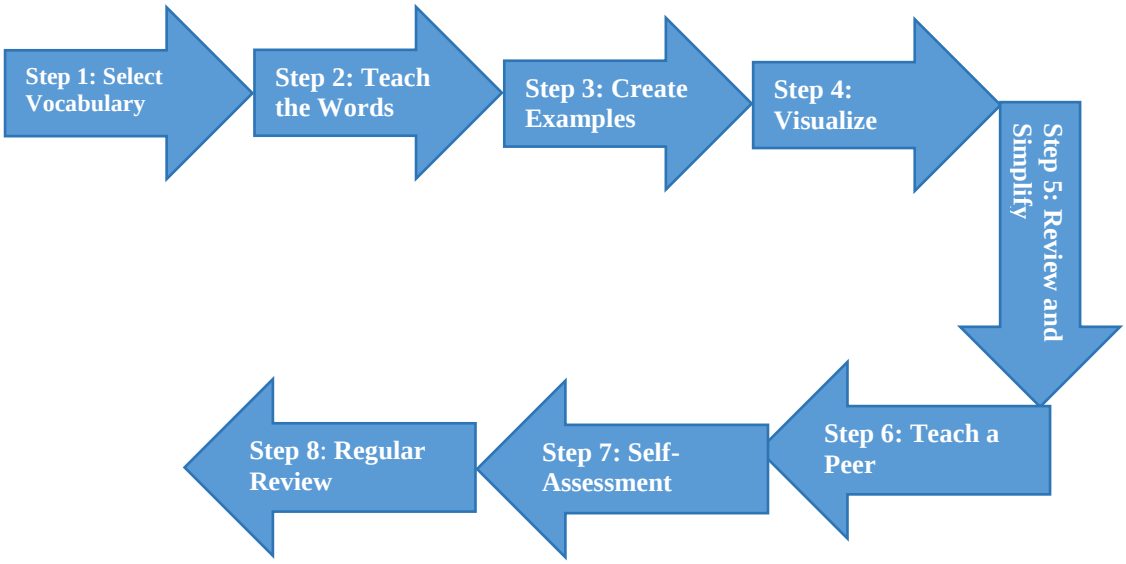

Figure 1: 8 steps to apply the Feynman technique in learning vocabulary

III. METHODOLOGY

This study was conducted with the participation of 20 grade 10 students from class 10A5 of Son Duong High school who are currently enrolled in the 2024-2025 academic year. 25 students were randomly selected to participate in the experimental group and were instructed to utilize the Feynman technique as a tool to enhance their vocabulary retention. The project was completed over a seven-week period, during which participants engaged in a variety of exercises. To examine whether the Feynman technique can help enhance vocabulary retention, students were asked to take a pre-test in the beginning and post-test after the seven-week experiment.

This research employs an experimental design to investigate the effectiveness of the Feynman technique in enhancing vocabulary retention among learners. By systematically implementing this approach, the study aims to draw precise conclusions about how teaching vocabulary through explanation and simplification impacts retention levels. The Feynman technique, which encourages learners to teach concepts in their own words, provides a framework for examining the cause-and-effect relationship between teaching strategies and vocabulary retention.

In this study, questionnaires were administered to 25 students before and after the intervention. The pre-questionnaire aimed to explore students' background information, students' awareness of using feynman to enhance vocabulary retention, and students' attitudes towards using feynman technique to improve vocabulary retention of students grade 10 at Son Duong High school. The post-questionnaire focused on gathering students' feedback toward improving vocabulary retention via using the feynman technique. Futhermore, vocabulary levels were assessed through pre- and post-tests designed using the "Cambridge English Test Your English" website. The pre-test consisted of 25 multiple-choice questions ranging from A1 to C1 levels. The website automatically provided students with their corresponding band based on their scores, facilitating an accurate assessment of vocabulary improvement.

IV. FINDINGS AND DISCUSSION

4.1. Findings

4.1.1. Findings for Research Question 1: The situation of English vocabulary learning in the selected high school

Many students face significant challenges in acquiring and retaining new vocabulary. This issue is particularly pronounced with traditional techniques of teaching, which often focus on passive learning and lack interactive or engaging techniques. A survey was conducted to identify the common difficulties students encounter when learning English vocabulary and to explore potential techniques to improve their retention and usage of new words.

Students' perception of learning vocabulary

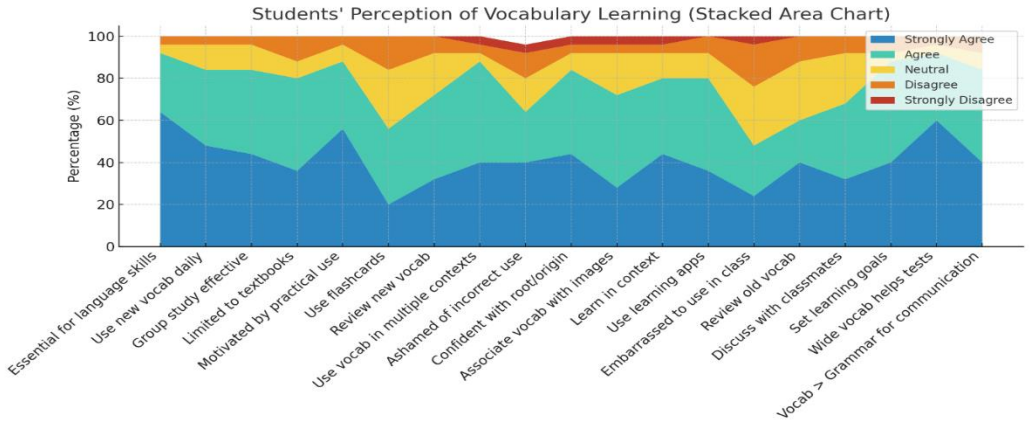

Figure 2: Students' perception of learning vocabulary

The survey data provides an insightful overview of 10th-grade students' perceptions, motivations, learning strategies, and challenges regarding English vocabulary acquisition. The detailed findings present a comprehensive understanding of the current situation. According to the data, 92% of respondents (64% Strongly Agree, 28% Agree) acknowledge that vocabulary acquisition is a crucial component in enhancing overall linguistic proficiency. Notably, no participants strongly opposed this viewpoint. Furthermore, 60% Strongly Agree and 32% Agree that an extensive vocabulary repertoire contributes significantly to better performance in oral examinations, underscoring the correlation between vocabulary mastery and academic success.

Motivational factors appear to be closely linked to recognizing the practical applicability of vocabulary, with 56% Strongly Agree and 32% Agree in this regard. However, only 20% Strongly Agree and 36% Agree on utilizing tools like flashcards for memorization, while 16% Disagree, highlighting the limited integration of supportive learning aids. Contextual vocabulary acquisition, such as through reading or listening activities, is highly endorsed, with 44% Strongly Agree and 36% Agree, collectively accounting for 80%. This preference suggests that students perceive contextualized learning as more effective than rote memorization techniques. Although 40% Strongly Agree and 20% Agree on regularly revisiting new vocabulary to reinforce retention, 28% remain Neutral, indicating a lack of consistent study habits. Additionally, 44% Strongly Agree and 40% Agree that understanding the etymology of words enhances confidence in retention, emphasizing the importance of depth-oriented learning techniqueologies.

A substantial 84% of students (44% Strongly Agree, 40% Agree) assert that collaborative learning with peers is more effective than solitary study. Similarly, discussing vocabulary with classmates or educators receives favorable feedback, with 32% Strongly Agree and 36% Agree. However, 24% Neutral and 8% Disagree responses indicate that not all students fully leverage these interactive opportunities.

In summary, the data illustrates that students possess a robust awareness of the pivotal role vocabulary plays in academic and linguistic development. Nevertheless, the adoption of effective learning strategies is uneven. Students demonstrate a preference for contextual and creative learning approaches, such as integrating imagery or storytelling. However, psychological factors, particularly the fear of errors, continue to constrain the practical implementation of vocabulary in authentic communication scenarios.

Students' challenges of learning vocabulary

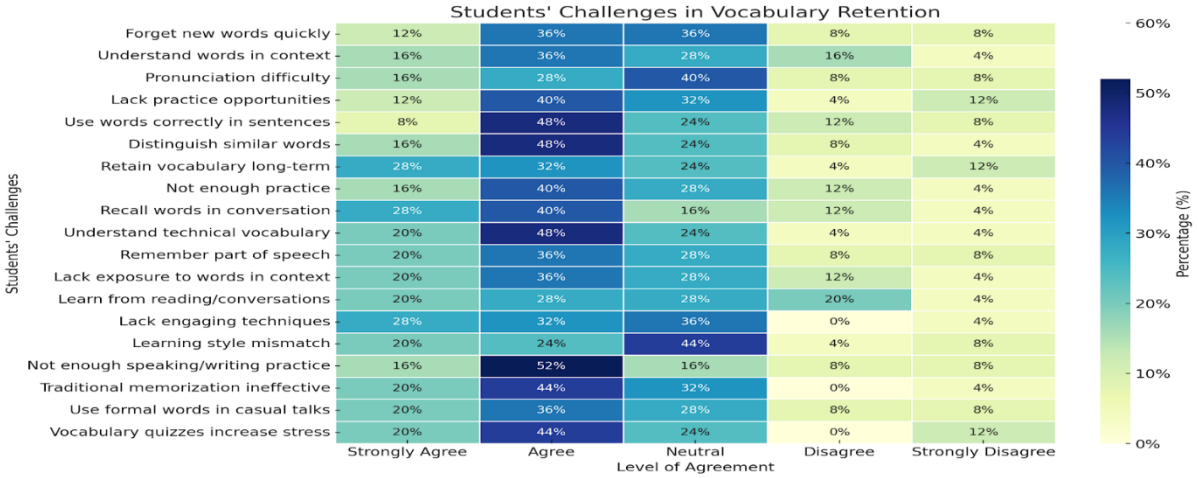

Figure 3: Students' challenges of learning vocabulary

The survey data offers a detailed perspective on the challenges faced by 10th-grade students in learning English vocabulary. These difficulties pertain to memory retention, accurate usage of vocabulary, and limited opportunities for practical application.

A notable 48% (28% Strongly Agree, 20% Agree) of students acknowledge struggling with retaining new vocabulary over extended periods. Additionally, 40% Agree that they often forget words shortly after learning them, underscoring issues in consolidating vocabulary retention.

The lack of engaging interaction and creative learning techniques is identified as a significant contributing factor. Specifically, 28% Strongly Agree and 32% Agree that the absence of innovative techniques makes it more challenging to remember words effectively.

Approximately 56% (8% Strongly Agree, 48% Agree) report difficulties in using new vocabulary accurately within sentences. This highlights that the challenge lies not only in memorization but also in applying vocabulary effectively in real-world contexts. Similarly, 40% Agree and 28% Strongly Agree that they struggle to recall learned words quickly during conversations, emphasizing the need for techniques that reinforce vocabulary through communicative practice.

A significant proportion, 52% (16% Strongly Agree, 36% Agree), feel they lack sufficient exposure to vocabulary in practical contexts. Moreover, 40% Agree that they find it difficult to identify opportunities to use new words in everyday life. This lack of application environments poses a major obstacle, as infrequent use often leads to vocabulary attrition.

The challenges identified through the survey highlight significant barriers to both vocabulary retention and application. Limited opportunities for practice and a lack of creative and personalized learning techniques represent major areas requiring attention and improvement.

Factors affect English vocabulary retention of students.

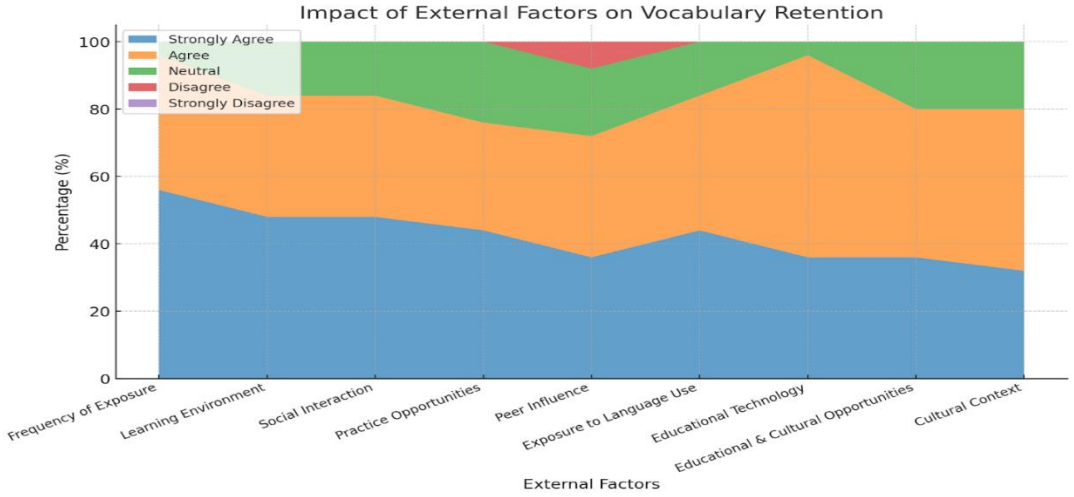

Figure 4: External factors affect English vocabulary retention of students.

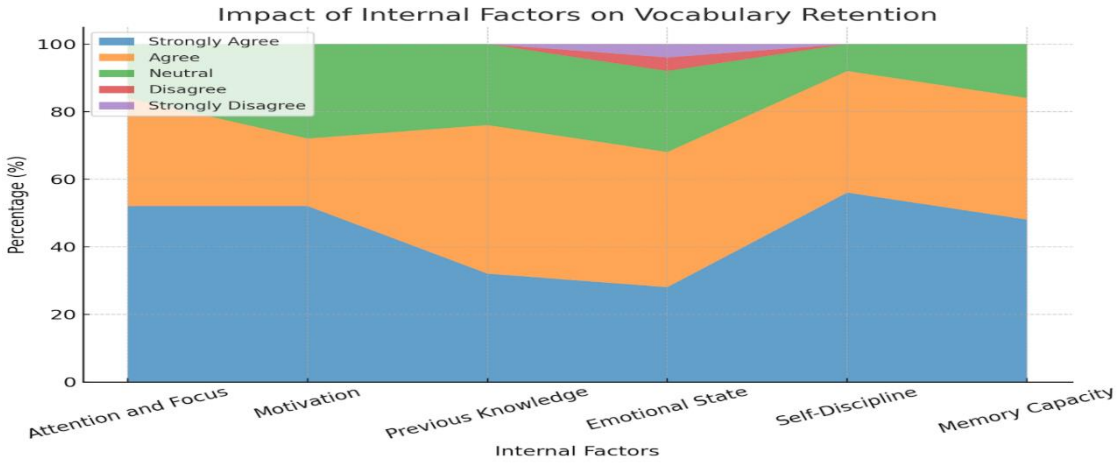

Figure 5: Internal factors affect English vocabulary retention of students.

The ability to effectively retain and apply vocabulary is a crucial aspect of language acquisition, especially in the context of English learning for 10th-grade students. A recent survey has illuminated the significant internal and external factors that influence students' success in mastering vocabulary. By analyzing these factors, we can gain a deeper understanding of the challenges students face and the elements that contribute to more effective vocabulary retention.

One of the most influential external factors identified by the survey is the frequency of exposure to new vocabulary. An overwhelming 96% of students (56% Strongly Agree, 40% Agree) reported that regular exposure to vocabulary significantly enhances their ability to remember words. This finding suggests that frequent practice and engagement with new vocabulary are essential in reinforcing retention. Repeated encounters with words help embed them in long-term memory, making it easier for students to recall them when needed. Importantly, no respondents disagreed with the assertion that frequent exposure aids vocabulary retention, emphasizing the universally recognized importance of this factor.

Another key external factor is the learning environment, which was cited by 84% of students (48% Strongly Agree, 36% Agree) as having a positive impact on vocabulary acquisition. This finding highlights the role of a conducive and supportive environment in the learning process. A well-structured, interactive, and resource-rich environment facilitates better learning outcomes. However, 16% of students remained neutral, indicating that not all learners have access to an ideal learning setting, which could hinder their progress. This suggests the need for improvements in educational infrastructure and teaching practices to ensure that every student can benefit from an optimal learning environment.

Social interaction also plays a significant role in vocabulary acquisition, with 84% of students (48% Strongly Agree, 36% Agree) agreeing that engaging in communicative activities enhances their vocabulary retention. By actively using vocabulary in conversation, students solidify their understanding and ability to apply new words in real-life contexts. However, 16% of students responded neutrally, suggesting that some may not engage enough in interactive learning opportunities. This points to the importance of encouraging more collaborative and communicative activities, both inside and outside the classroom, to foster vocabulary practice.

In the digital age, educational technology has become an indispensable tool in language learning. The survey revealed that 96% of students (60% Agree, 36% Strongly Agree) recognize the value of technology in supporting vocabulary learning, with only 4% remaining neutral. This finding underscores the effectiveness of digital tools, such as language learning apps and online resources, in providing students with interactive and dynamic techniques for mastering vocabulary. Educational technology can offer personalized learning experiences and immediate feedback, making it a valuable resource for students aiming to enhance their vocabulary skills.

In addition to these external factors, several internal factors also significantly impact students' vocabulary retention. Attention and focus are vital for memory retention, as highlighted by 84% of students (52% Strongly Agree, 32% Agree), who emphasize the importance of being mentally engaged during the learning process. Focus allows students to process and internalize new vocabulary effectively, making it more likely for the words to be retained in memory. This internal factor underscores the need for students to develop strong concentration skills to enhance their vocabulary learning.

Motivation is another internal factor that greatly influences vocabulary acquisition. Seventy-two percent of students (52% Strongly Agree, 20% Agree) believe that motivation plays a crucial role in maintaining interest and perseverance in learning. When students are motivated, they are more likely to actively engage with the material and persist in their efforts to learn new words, even when faced with challenges. Motivation, therefore, serves as a driving force that sustains students' commitment to their language learning goals.

In conclusion, the survey highlights a variety of internal and external factors that influence 10th-grade students' ability to retain and apply English vocabulary. Frequent exposure, a supportive learning environment, social interaction, and the use of educational technology all play critical roles in enhancing vocabulary acquisition. Additionally, internal factors such as attention, motivation, self-discipline, and memory ability are fundamental in ensuring effective vocabulary retention. The findings also point to the value of innovative learning techniques, such as the Feynman Technique and peer teaching, as highly effective techniques for improving vocabulary learning outcomes. By addressing these factors and implementing strategies to support them, educators can create more effective learning environments that foster vocabulary mastery and overall language proficiency.

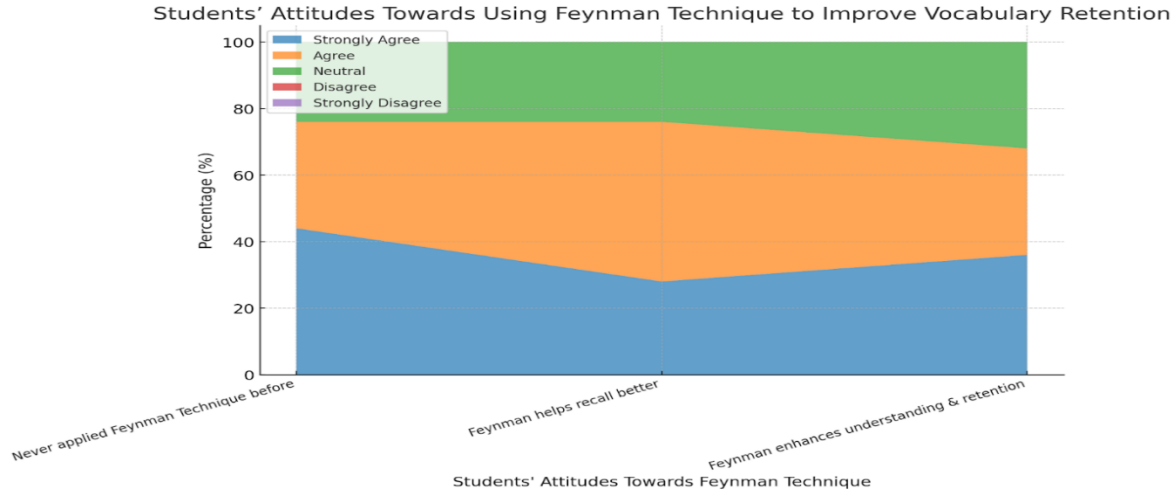

Figure 6: Students' attitudes towards using Feynman technique to improve vocabulary retention

In conclusion, while traditional techniques such as flashcards, repetition, and teacher-centered activities remain dominant, there is a clear need for more engaging, active, and context-rich approaches to vocabulary learning. The findings suggest that incorporating discussions, role-playing, and the use of digital tools could enhance vocabulary retention and usage in real-life communication. Additionally, reducing the cognitive load by pacing the introduction of new vocabulary and providing more opportunities for practical application could significantly improve the learning experience for Vietnamese students.

4.1.1.4 Current vocabulary competence

Table 3: Statistics of experimental group in the pre-test

Pre-test	Type of group	N	Medium	Median
	Experimental group	25	18.88/25	19/25

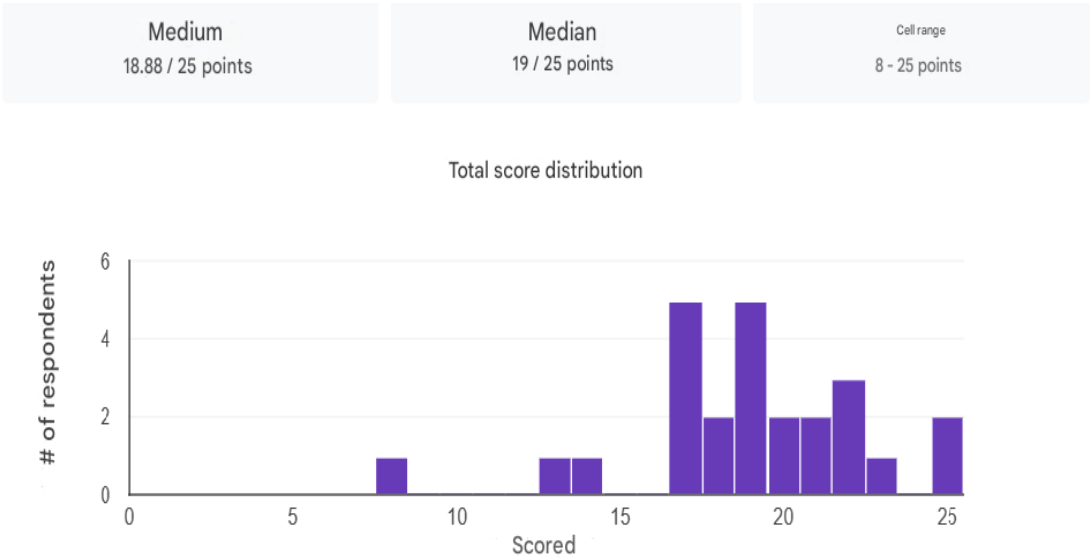

Figure 7: Statistics of experimental group in the pre-test

Based on the results of the pre-test, researchers can infer the current vocabulary proficiency levels of the students. The test, designed to assess English levels ranging from elementary (A1) to advanced (C1) according to the CEFR framework, provides valuable insights into their language abilities. The average score of **18.88 out of 25** suggests that most students have achieved an **intermediate** level of vocabulary, likely corresponding to the **B1** level. However, the range of scores, from 8 to 25 points, highlights significant variation among the students, with some demonstrating beginner-level proficiency while others display advanced-level vocabulary. Those scoring above 20 points are likely operating at or near the C1 level, showing a strong command of advanced vocabulary and language use. In contrast, students scoring below 15 points may require additional support, as their vocabulary knowledge likely aligns with A2 or low B1 levels. This distribution reflects diverse educational backgrounds and exposure to English, providing researcher with a basis for designing tailored instructional approaches. For instance, targeted vocabulary-building activities can support lower-scoring students, while advanced exercises can challenge higher-achieving individuals. Overall, the results suggest that while the group, on average, has reached a competent level of vocabulary, there is room to address individual needs to ensure more uniform progress across proficiency levels.

4.1.2. Findings for Research Question 2: Effectiveness of the Feynman technique on students' learning vocabulary

Table 4: Statistics of experimental group in the post-test

Post-test	Type of group	N	Medium	Median
	Experimental group	25	19.96/25	20/25

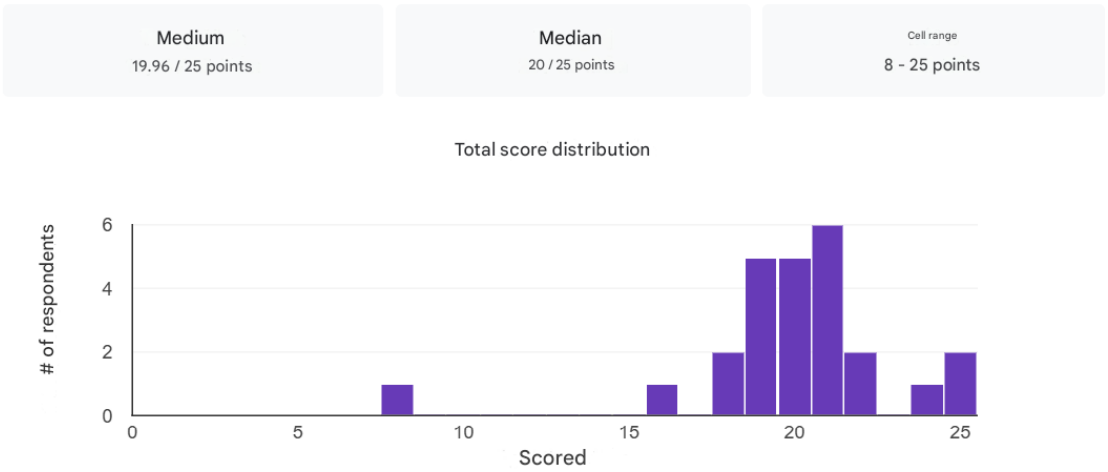

Figure 8: Statistics of experimental group in the Post-test

Based on the post-test results presented in the image, researchers can draw conclusions about the students' current vocabulary proficiency levels. The test, covering levels from elementary (A1) to advanced (C1) based on the CEFR framework, provides insights into the students' progress and overall performance. The **mean score of 19.96/25** indicates that, on average, the students have achieved a strong command of vocabulary, likely corresponding to an upper-intermediate **(B2)**. The **median score of 20/25** confirms a consistent performance, with most students clustered around this high range.

The score range, spanning from 8 to 25 points, reflects some variation in individual proficiency levels, although the majority of the group has demonstrated strong results. Scores near the top of the range (20–25 points) suggest that these students are proficient in advanced vocabulary and capable of understanding and using complex language structures. This aligns with C1-level competence, where individuals can handle a wide range of academic, professional, and real-life contexts.

Moreover, the higher mean and median scores, compared to the pre-test results, highlight significant improvements in vocabulary retention and application. Students with scores in the 15–19 range likely demonstrate solid intermediate-level knowledge (B1 to B2), indicating progress but with room for further development. Those with scores below 15 might still face challenges and may benefit from additional support to strengthen their vocabulary skills.

Overall, the post-test results reveal that most students have progressed to higher proficiency levels, with notable gains in vocabulary retention and application. These findings underscore the effectiveness of the learning interventions used and suggest that the students are well-equipped to engage with increasingly advanced language tasks.

4.1.3. Findings for Research Question 3: Students' responses to the Feynman technique

Students' experiences after using the Feynman Technique to improve your English vocabulary retention.

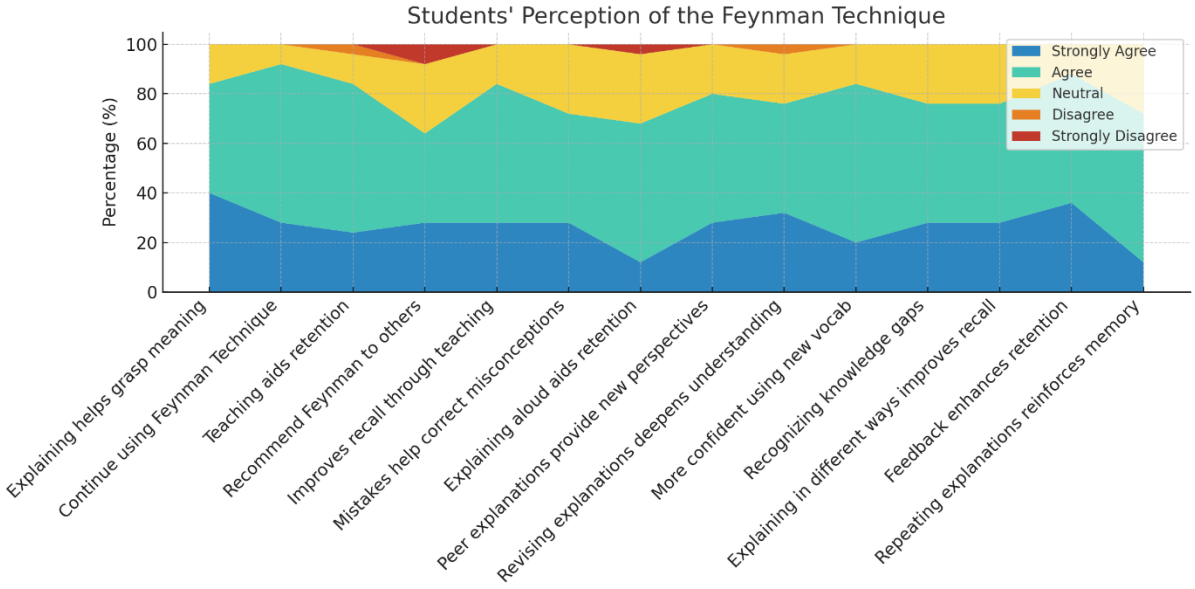

Figure 9: Students' responses to the Feynman technique

Question (15). What is your assessment of the potential of Feynman Technique in enhancing English vocabulary retention?
S16: This active process helps me solidify understanding, making it more likely that the learner will remember the word long-term.
S13: This simplification process deepens comprehension, and I am more likely to retain the word because they understand it thoroughly
S25: The Feynman Technique has significant potential in enhancing English vocabulary retention due to its focus on simplification, active recall, and connection-building.
S21: The Feynman Technique is an effective study technique because it helps me identify gaps
S19: This technique encourages me to connect the vocabulary to their own experiences or create personal examples. This personal connection to the word makes it more memorable

Based on the survey data, it is evident that the Feynman Technique has significantly improved the vocabulary learning process for 10th-grade students, with various aspects reflected in their levels of agreement. To begin with, when asked about the effectiveness of explaining vocabulary using simple terms, 40% of students "strongly agreed" that this approach helps them grasp meanings more clearly, while 44% "agreed." The remaining 16% were neutral, and no students expressed disagreement. This indicates a high level of consensus regarding the value of this technique in facilitating vocabulary comprehension through simplification, an approach that aligns well with students' cognitive capacities.

Another noteworthy aspect is the role of error correction in the learning process. A total of 28% of students "strongly agreed" that identifying and addressing mistakes in their explanations helped them correct misconceptions, while 44% "agreed." Altogether, 72% of students recognized the positive impact of error correction, highlighting the effectiveness of active, experiential learning.

Several students emphasized the benefits of the Feynman Technique in facilitating long-term retention and application of vocabulary. For instance, S16 noted: *"The process of explaining helps reinforce my understanding, making vocabulary easier to remember over the long term."* This underscores the technique's ability to transition vocabulary from short-term to long-term memory through deep understanding and repeated practice. Such an advantage is particularly valuable for complex vocabulary that demands a thorough grasp of its meaning.

Another compelling aspect is the creation of personal connections to vocabulary. As S19 remarked: *"This technique encourages me to relate vocabulary to personal experiences or create examples, making the words more memorable."* This indicates that linking vocabulary to personal contexts not only enhances the practicality of learning but also makes words more relatable and meaningful to students.

Additionally, S25 stated: *"The Feynman Technique has tremendous potential for improving vocabulary retention due to its emphasis on simplification, active recall, and connection-building."* This feedback reflects an understanding among students that the technique is not merely a teaching tool but a comprehensive learning strategy that promotes active engagement and critical thinking.

Students' challenges after using the Feynman Technique to improve your English vocabulary retention.

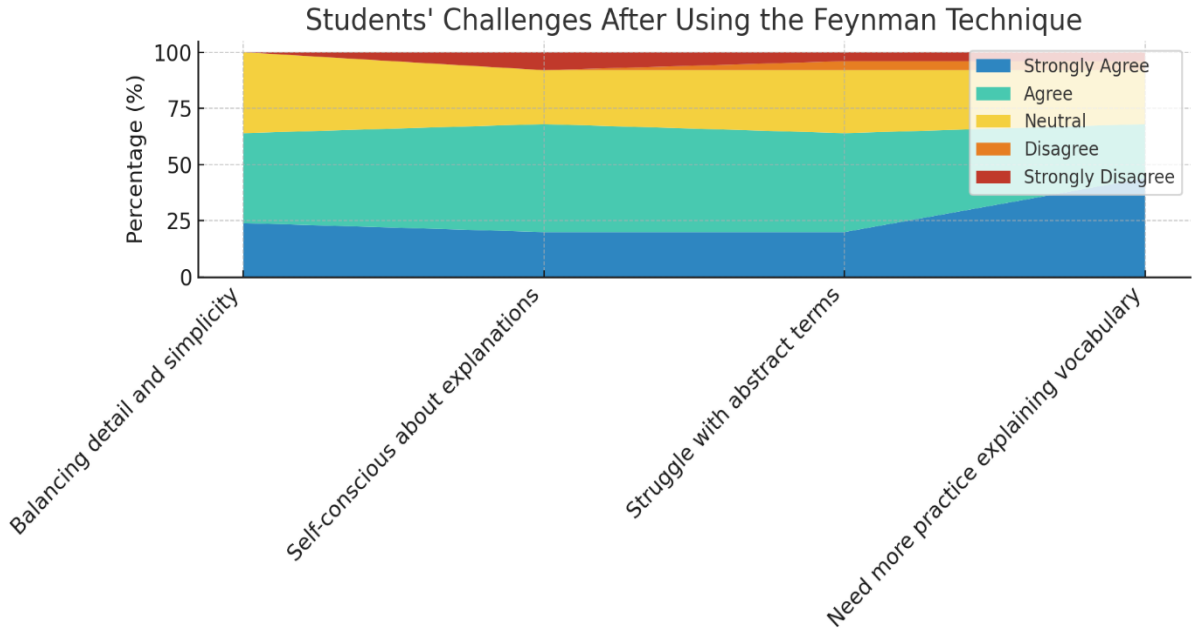

Figure 10: Challenges after using the Feynman Technique

Question 5. Did you encounter other difficulties or challenges after using the *Feynman Technique*? If so, what were they?

S12: I face challenges in choosing the right contexts or examples to explain words in a way that makes them relatable.
S25: sometimes, it is too difficult to simplify complex and abstract words
S19: I encounter challenges in maintaining simplicity without oversimplifying important aspects of the vocabulary.
S21: I sometimes fail to effectively link new vocabulary to my existing knowledge, which makes explanations feel disjointed
S16: I struggle to avoid using technical terms when explaining words, which defeats the purpose of simplifying them.
S25:
- Sometimes, the process of simplifying a concept can lead to oversimplification, causing a loss of important nuances or details.
- The technique can make you focus too much on mastering one word or concept, leading to slower progress overall.

However, not all experiences with the technique were entirely positive. A total of 24% of students "strongly agreed," and 40% "agreed" that they struggled to balance detail and simplicity when explaining vocabulary. Furthermore, 20% "strongly agreed," and 44% "agreed" that abstract or complex vocabulary posed significant challenges in crafting clear explanations. With 36% remaining neutral, the data suggests that additional guidance is required to address difficulties in handling such vocabulary effectively. Open-ended responses further highlight issues such as selecting appropriate contexts or maintaining simplicity without oversimplifying essential meanings.

For instance, S12 commented: *"I struggle to choose the right context or example to make vocabulary explanations relatable and easy to understand."* This indicates that forming connections between vocabulary and real-life scenarios remains a challenge. Similarly, S25 observed: *"Simplifying abstract or complex vocabulary sometimes results in losing critical nuances of meaning."* This illustrates the need for targeted support to help students strike a balance between simplicity and semantic completeness.

Moreover, some students reported feeling pressure to convey vocabulary accurately and comprehensively. For example, S19 stated: *"I find it difficult to link new vocabulary to my existing knowledge, which makes my explanations feel disjointed."* This underscores the need for strategies that help students integrate new and prior knowledge seamlessly, enhancing coherence in their explanations.

Another recurring concern was the lack of confidence in simplifying vocabulary. S16 remarked: *"I struggle to avoid using technical terms when explaining words, which defeats the purpose of simplifying them."* This suggests that students need more practice to become adept at conveying knowledge clearly and in a manner suitable for their audience.

In summary, the Feynman Technique has proven highly effective in enhancing vocabulary acquisition, with students reporting improvements in comprehension, retention, and practical application. Nonetheless, challenges such as addressing abstract vocabulary, selecting suitable contexts, and building confidence remain. To maximize its potential, educators should provide tailored support, including example-driven practice sessions and guidance on simplifying complex terms without losing essential meaning. By doing so, the Feynman Technique can evolve into a sustainable and impactful learning strategy for mastering vocabulary.

4.2. Discussion

The results from the pre-questionnaire indicated that students faced difficulties in retaining vocabulary over the long term. Many reported challenges with memorization, recalling words during conversations, and applying newly learned vocabulary in diverse contexts. The findings also revealed that traditional memorization techniques often led to passive learning, with students forgetting words shortly after learning them. Previous studies, such as those by Schmitt (2008) and Nation (2013), have emphasized the limitations of rote learning, highlighting that vocabulary retention is significantly enhanced when learners engage in meaningful usage of words.

After the implementation of the Feynman Technique, a significant improvement in vocabulary retention was observed. Students who actively engaged in explaining and teaching vocabulary demonstrated better recall and usage of words. The post-questionnaire responses highlighted increased confidence in using new vocabulary, improved ability to recall words in conversations, and greater motivation to learn English. These results align with research conducted by Webb (2007), who found that repeated encounters with words in varied contexts lead to more durable retention and better retrieval during communication. Similarly, studies by Brown et al. (2014) on active learning strategies reinforce the idea that self-explanation and peer teaching enhance cognitive processing and retention.

Moreover, students found that breaking down words into simple explanations helped them understand and remember meanings more effectively. Research by Roediger and Butler (2011) on the benefits of retrieval-based learning supports this finding, indicating that explaining concepts strengthens long-term memory and facilitates deeper comprehension. The technique also encouraged students to take an active role in their learning process, shifting from passive memorization to interactive and meaningful learning. Teaching vocabulary to peers not only reinforced their own understanding but also created an engaging classroom environment where students collaborated to refine their explanations. These findings align with previous research indicating that active recall and self-explanation improve memory retention and learning efficiency (Bjork & Bjork, 2011).

V. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

This study examined the effectiveness of the Feynman technique in improving vocabulary retention among Grade 10 students at Son Duong High School. Recognizing the limitations of traditional vocabulary teaching techniques, which often rely heavily on rote memorization and fail to promote long-term retention, the study introduced the Feynman technique as an alternative strategy. Over seven weeks, students actively engaged in learning activities that involved breaking down and explaining vocabulary concepts in simple terms, creating practical examples, and reviewing their understanding through self-assessment. Data collected from pre- and post-tests, alongside student surveys, highlighted substantial improvements in vocabulary retention, emphasizing the potential of the Feynman technique as a valuable teaching tool.

The findings from the research highlight that the use of the Feynman technique significantly improved students' vocabulary learning. To begin with, students showed notable gains in vocabulary retention, as reflected in their higher post-test scores, indicating that this approach supports better memory retention compared to traditional techniques. Additionally, the process of having students explain vocabulary in their own words actively engaged them and deepened their understanding, making it easier to remember and apply new terms. Furthermore, survey feedback showed that most participants responded positively to the Feynman technique, describing it as more engaging and effective than conventional techniques. Many students shared that teaching vocabulary to others not only clarified their comprehension but also enhanced their ability to recall the words. Lastly, the use of real-life contexts and meaningful examples helped students relate new vocabulary to familiar situations, which made the learning process more effective and the words easier to internalize. In summary, the research underscores the Feynman technique's potential to enhance vocabulary retention, understanding, and overall learning experiences.

5.2. Recommendations

Building on the findings of this study, several recommendations are outlined to enhance the application of the Feynman technique and to inform future research on its effectiveness in vocabulary instruction. To begin with, educators should consider systematically incorporating the Feynman technique into their teaching strategies for vocabulary lessons. This can be achieved by designing activities that encourage peer teaching, where students explain newly learned vocabulary in their own words and create relatable examples. Such practices not only engage students but also reinforce their understanding and memory retention. To support this integration, teachers and curriculum developers could develop supplementary resources, including structured lesson plans, vocabulary journals, and digital tools tailored to the Feynman technique, enabling consistent implementation across various educational contexts.

Future research should aim to involve a significantly larger and more diverse sample of students. Including participants from different grades, schools, geographic regions, and proficiency levels will provide a broader perspective and allow researchers to generalize the findings more effectively. This expansion would also help identify variations in the technique's impact across diverse learner demographics. Additionally, future studies should incorporate control groups to ensure a more rigorous evaluation of the Feynman technique's specific effects. By comparing results between experimental and control groups, researchers can better isolate and validate the technique's role in enhancing vocabulary retention.

Extending the duration of interventions is another crucial recommendation. A longer study period would allow researchers to assess the sustained impact of the Feynman technique on vocabulary retention and determine whether the observed benefits persist over time. This would provide valuable insights into the technique's long-term efficacy and its potential to create lasting improvements in vocabulary acquisition.

Moreover, ensuring consistent student participation throughout the study is essential to obtaining reliable results. Strategies such as incorporating elements of gamification, offering incentives, and providing regular feedback can help maintain high levels of engagement and motivation among participants. Finally, leveraging technology to complement the Feynman technique could greatly enhance its accessibility and effectiveness. Digital tools, such as language learning applications and online platforms, can provide interactive and personalized learning experiences, making the technique more appealing and adaptable to the needs of modern learners.

In summary, these recommendations aim to refine the implementation of the Feynman technique and expand its scope in vocabulary instruction. By addressing these areas, educators and researchers can unlock the full potential of this innovative teaching strategy, ultimately contributing to more effective and engaging language learning experiences.

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