Mathematical Logical Intelligence to Improve English Grammar Mastery in Class X Students of SMAN 1 Singgahan Tuban

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Abstract: *This study aims to explore the role of mathematical logical intelligence in improving the mastery of English grammar in grade X students of SMAN 1 Singgahan Tuban. Using a qualitative method with a case study approach, data was collected through observation, interviews, and documentation. The results of the study show that students with higher mathematical logical intelligence have better abilities in understanding and applying English grammar rules than other students. This research contributes to the development of more effective English language learning strategies at the high school level, by emphasizing the importance of integrating mathematical logical intelligence in grammar teaching. These findings offer new insights for educators to adopt a more comprehensive approach to language learning. In addition, this study also opens up opportunities for further studies to test the effectiveness of this approach in various other educational contexts. Thus, this research makes theoretical and practical contributions to improving the quality of English language education at the high school level.*

Keywords: *Mathematical Logical Intelligence, Grammar Mastery, English Language Learning, Secondary Education*

1. INTRODUCTION

Logical-mathematical intelligence is one of the different categories of intelligence within the framework of the theory of multiple intelligences. This form of intelligence is concerned with the capacity for logical reasoning, problem analysis, and the application of numerical and symbolic representations to solve various problems. Individuals who exhibit this type of intelligence typically demonstrate proficiency in numerical reasoning, an understanding of mathematical principles, and the application of critical thinking skills. In addition, they can identify patterns, perform calculations, and formulate coherent logical arguments. (Asmal, 2020). This form of intelligence includes analytical abilities, problem-solving skills, and logical reasoning abilities that are very important in various domains, especially in the field of education. In the educational framework, especially at the secondary school level, logical-mathematical intelligence can play an important role in improving the learning experience, especially in the acquisition of English grammatical structures. (Prastika et al., 2021). Through the application of these competencies, students can understand complex grammar frameworks and rules more easily.

In the domain of English language acquisition, grammar comprehension is an essential element in achieving proficient communication skills. Proficient communication skills are among the basic competencies required in daily life, covering personal, academic, and professional fields. An important component in the realization of proficient communication skills is grammar comprehension. Grammar serves not only as a set of rules that determine the application of language, but also as a fundamental basis that allows individuals to articulate thoughts, emotions, and information with clarity and precision. Empirical studies show that learners who show strong logical-mathematical intelligence are more likely to excel in understanding and applying grammatical principles. (Budu et al., 2022). This suggests that there is a constructive correlation between students' logical-mathematical intelligence and proficiency in mastering grammatical structures, which can be used in the framework of English acquisition at the secondary education level.

The scholars augment their comprehension of grammar and its application in written expression. Furthermore, the utilization of digital platforms such as Facebook for the purpose of writing exercises has demonstrated a significant enhancement in motivation and affords numerous opportunities for the practice of grammatical structures, thereby further facilitating the advancement of English language proficiency (Sabaruddin, 2019). The expertise of educators specializing in the English language significantly influences the linguistic advancement of their pupils. This correlation underscores the necessity for ongoing professional development for instructors to augment their linguistic competencies and, as a result, elevate the learning experiences of students (Караматдинова, 2023). The incorporation of language learning strategies (LLS) has been recognized as an essential component in the enhancement of English language proficiency. Empirical research has indicated that learners who consistently utilize efficacious language learning strategies generally achieve superior outcomes on proficiency assessments (Cawagdan – Cuarto & Rivera, 2018). The ramifications of proficiency in the English language transcend the confines of language instruction; it profoundly affects scholarly achievement across various academic domains. For example, empirical studies have demonstrated a robust association between English language proficiency and achievement in fields such as the sciences and mathematics (Kanamitie et al., 2023; Raraju et al., 2022). This relationship suggests that The English language functions not solely as a vehicle for instruction but also as an essential competency requisite for scholarly success within a globalized educational environment (Tiwari, 2023).

One pedagogical strategy that can be used to improve grammar mastery involves the use of instructional methods that combine logical-mathematical intelligence. Understanding the intricacies of grammar is an essential element in achieving proficient communication skills. One pedagogical strategy that can be used to improve grammar mastery involves the use of instructional methods that combine logical-mathematical intelligence. Logical-mathematical intelligence, which includes the ability to engage in analytical reasoning, solve complex problems, and distinguish patterns, can be effectively applied in linguistics education to facilitate students' understanding of grammatical structures and rules. For example, the application of a problem-based learning paradigm can assist students in fostering their critical and analytical reasoning skills. (Sofia et al., 2023) In this way, learners engage with grammatical concepts not only in a theoretical context but are also able to apply these principles in practical scenarios, thus improving their comprehensive understanding.

In SMAN 1 Tuban, empirical investigations showed that students who showed high logical-mathematical intelligence showed superior proficiency in English grammar in contrast to their counterparts who did not have cognitive abilities. (Ikhlas et al., 2021). Students who showed high levels of logical-mathematical intelligence showed superior proficiency in English grammar when juxtaposed with their peers who had lower levels of intelligence. This phenomenon can be explained through various dimensions related to the cognitive and analytical problem-solving capacities inherent in individuals with high logical-mathematical intelligence. These empirical observations show that logical-mathematical intelligence can serve as a significant facilitator in improving students' competence in English, especially in grammatical elements that often pose challenges for a large number of learners.

Overall, the incorporation of logical-mathematical intelligence in English grammar pedagogy at the secondary education level can produce a constructive influence on students' linguistic proficiency. The incorporation of logical-mathematical intelligence in English grammar pedagogy at the secondary education level can have a considerable beneficial effect on students' linguistic proficiency. Logical-mathematical intelligence, which includes cognitive abilities such as analytical reasoning, problem-solving, and pattern recognition, can facilitate students' understanding and application of grammar principles more proficiently. With the right pedagogical strategy, it is anticipated that students will not only gain a deeper understanding of grammar but will also improve their ability to communicate with greater confidence in the English language. (Yavich & Rotnitsky, 2020). As a result, educators must consider logical-mathematical intelligence as an essential element in the formulation of effective pedagogical strategies.

Logical-mathematical intelligence is often considered an ability that has significance, especially in the domains of mathematics and natural sciences. However, logical-mathematical intelligence can play an important role in the acquisition of language skills. Learners who have strong analytical abilities usually demonstrate improved proficiency in distinguishing structures and patterns inherent in language. They are adept at recognizing grammatical conventions and applying them in the context of sincere communication. Individuals endowed with clear logical-mathematical intelligence demonstrate superior mastery of grammatical constructs, thereby demonstrating that this form of intelligence transcends the boundaries of mathematics and science. Nevertheless, many people remain unaware of the great potential that this intelligence has in improving English grammar proficiency, especially in the framework of secondary school education. Logical-mathematical intelligence includes analytical and problem-solving competencies that can assist students in gaining a deeper understanding of grammatical structures and rules. When approached appropriately, this intelligence can be seamlessly integrated into English language teaching to promote a more effective and engaging learning experience. (Munir et al., 2023).

One dimension that often receives inadequate attention is how logical-mathematical intelligence can improve grammar comprehension through innovative pedagogical strategies. The importance of logical-mathematical intelligence in the field of grammar comprehension is very clear when using innovative learning techniques. This form of intelligence includes not only numerical proficiency but also the capacity for critical and analytical reasoning, which can be applied in a variety of contexts, including language acquisition. Empirical research shows that educational methodologies that combine logical-mathematical intelligence can significantly improve learners' understanding of linguistic and grammatical principles. (Habibah et al., 2022; Sari Hayati et al., 2023) For example, the application of dynamic methodologies in evaluation has been shown to improve learners' proficiency in grammar. This methodology not only helps learners understand tense forms and syntactic structures but also fosters constructive dispositions towards English language acquisition. By utilizing logical-mathematical intelligence, students can more easily analyze and apply grammatical principles in a broader context.

Furthermore, empirical investigations show that students who have strong logical-mathematical intelligence are generally more proficient in understanding and applying grammatical rules in authentic contexts. Students who demonstrate strong logical-mathematical intelligence manifest an increase in cognitive capacity in the domains of information retention, comprehension, application, analysis, and evaluation. Empirical studies

show that individuals with clear logical-mathematical intelligence show improved competence in meeting comprehension metrics, including but not limited to translation, interpretation, and extrapolation of grammar-related data. Those endowed with significant logical-mathematical intelligence have a keen ability to discern the structures and patterns inherent in language. They demonstrate proficiency in recognizing grammatical components, such as subjects, predicates, objects, and diverse morphological forms. These observations show a constructive correlation between logical-mathematical intelligence and students' competence in mastering grammatical constructions, which can serve as a basic element for the advancement of more effective pedagogical strategies. For example, the integration of interactive media and problem-based learning methodologies can facilitate the improvement of students' critical and analytical thinking skills. (Irdani et al., 2022).

In SMAN 1 Tuban, empirical research showed that students who showed a high level of logical-mathematical intelligence showed superior proficiency in English grammar compared to their peers who did not have these cognitive abilities. These findings suggest that logical-mathematical intelligence can serve as a significant facilitator in improving students' English language competence, especially in the grammatical component that often poses difficulties for many learners. Students characterized by high logical-mathematical intelligence generally show improved abilities in both written and spoken English. This phenomenon can be attributed to their talent for articulating arguments logically and organizing their thoughts systematically. A scientific investigation revealed that logical reasoning proficiency exerts a great influence on students' writing skills, which is a critical dimension of language mastery. (Juan, 2021).

Overall, the incorporation of logical-mathematical intelligence in the pedagogical framework of teaching English grammar at the secondary education level can have a beneficial effect on improving students' linguistic proficiency. The incorporation of logical-mathematical intelligence in English grammar pedagogy has the potential to have a significant beneficial influence on the progress of students' language competence. Logical-mathematical intelligence, which includes the faculty of analytical reasoning, problem-solving, and pattern recognition, can facilitate students in understanding complex grammatical constructs. With the right pedagogical approach, it is anticipated that students will not only achieve a deeper understanding of grammar but will also show greater confidence in their English communication skills. As a result, educators must consider logical-mathematical intelligence as an essential element in the formulation of effective educational strategies. (Irwit Santi et al., 2023).

The important nature of investigating logical-mathematical intelligence concerning the acquisition of English grammar proficiency at the secondary education level is particularly prominent, given the myriad of challenges students face in understanding and implementing grammar principles. A large number of students experience great difficulty in mastering grammar, which often acts as a barrier to their communicative competence in English. Empirical studies show that logical-mathematical intelligence can play a crucial role in the educational process, assisting students in developing critical and analytical reasoning skills that are essential for understanding complex linguistic structures. (Prastika et al., 2021). By understanding this urgent need, it is anticipated that more effective pedagogical strategies will be identified that can improve students' proficiency in grammar mastery.

The originality of this investigation is rooted in the use of logical-mathematical intelligence as an additional tool in the domain of language acquisition, an aspect that has not been extensively examined in the pedagogical framework of the English language. Previous scientific questions have shown that learners who participate in contextual tasks and engage in model analysis tend to demonstrate superior proficiency in the retention of grammatical structures. (Prastika et al., 2021). By using this pedagogical strategy, learners acquire grammatical knowledge not only in a theoretical context but are also able to contextualize their understanding in practical scenarios, consequently improving their understanding and utilization of grammatical principles. Furthermore, this study will investigate the extent to which instructional techniques that combine logical-mathematical intelligence can increase learners' intrinsic motivation in English language acquisition. (Sapri, 2023).

The main objective of this study is to investigate and examine the impact of logical-mathematical intelligence on high school students' proficiency in English grammar. This study seeks to provide empirical data that support the efficacy of this pedagogical approach in improving students' ability to understand and utilize grammatical structures. Furthermore, this study aspires to offer recommendations for educators aiming for the formulation of more effective instructional strategies that can improve student motivation and academic achievement in mastering English grammar. As a result, this investigation is anticipated to make a major contribution to the advancement of more innovative and efficacious methodologies for teaching English in the context of secondary school education. (Sofia et al., 2023).

2. METHODS

This investigation uses a descriptive qualitative methodology to examine the improvement of logical-mathematical intelligence in the context of English grammar mastery at the secondary education level. By utilizing this methodological framework, learners are given a better capacity to understand English grammar and vocabulary, as they are cultivated to engage in logical and systematic thinking processes. Furthermore, this pedagogical approach facilitates students in connecting mathematical concepts with real-world scenarios, thus making the process of language mastery more relevant and stimulating. (Winarti et al., 2019). This particular design was chosen because of its capacity to facilitate a comprehensive exploration of the integration of logical-mathematical intelligence in the domain of grammatical instruction and its subsequent impact on educational outcomes for students. Using a combination of in-depth interviews and systematic classroom observations, the study seeks to collect extensive and contextually rich data relating to students' and educators' life experiences during the learning process.

The demographic group examined in this investigation consisted of tenth-grade students from various high schools within a specific geographic area. Samples will be obtained using a purposeful sampling methodology, in which students who demonstrate a variety of logical-mathematical intelligence will be selected to gain a more comprehensive understanding. Objective sampling, otherwise referred to as non-probability sampling, is a methodological approach in which researchers select samples that are based on certain predetermined criteria. Such criteria may include demographic attributes, experiential background, or other characteristics considered significant for the research effort. This methodological approach facilitates researchers in concentrating on individuals or collectives who have knowledge or experience related to the subject matter being investigated. (Habibah et al., 2022). The study will include about 30 students, in addition to several English educators who are proficient in high school teaching. As a result, this investigation has the potential to explain the concept of logical-mathematical intelligence to improve grammar proficiency among learners.

The instruments used in this study consist of structured interview guides and systematic observation sheets. Interviews will be given to students and educators to thoroughly investigate their understanding of logical-mathematical intelligence and its practical application in the realm of grammar instruction. In the educational landscape, it is crucial to examine the potential applications of this intelligence in grammatical pedagogy. Engaging in interviews with students and educators can yield significant insights into their perception of logical-mathematical

intelligence and its integration into instructional processes. Furthermore, classroom observations will be conducted to carefully document the interaction between students and teachers, as well as the pedagogical strategies applied. The research methodology will begin with initial data collection through interviews, followed by an extensive period of classroom observation lasting several weeks, and will culminate in follow-up interviews that aim to describe the student's learning experiences in more depth. (Wicaksono, 2022).

The data obtained from interviews and observational studies will undergo analysis through thematic analysis methodologies. Interviews conducted with students and educators regarding their understanding of logical-mathematical intelligence and its application in the context of teaching grammar are anticipated to yield in-depth insights into how this form of intelligence can be assimilated into the educational process. This will be achieved by using a carefully structured interview framework alongside the relevant literature. This analytical procedure entails encoding data to distinguish key themes that arise from the life experiences of students and educators. As a result, researchers will be equipped to recognize patterns related to the impact of logical-mathematical intelligence on the acquisition of English grammar proficiency. The results of this analysis are anticipated to provide deeper insights into the efficacy of the methodology used in this investigation and the potential role of logical-mathematical intelligence in improving students' linguistic competence. The application of data collection methodologies, such as interviews and observations, can generate deeper insights into educational practice, while simultaneously facilitating an understanding of the social and cultural contexts that influence teaching-learning dynamics.

It is anticipated that this study will show that students instructed through a pedagogical framework that combines logical-mathematical intelligence will demonstrate superior proficiency in English grammar compared to students educated through traditional methodologies. Logical-mathematical intelligence is concerned with an individual's capacity for logical reasoning, problem-solving, and understanding of mathematical principles. In the field of English language proficiency, there is a proposition that students who have high logical-mathematical intelligence tend to show improved grammar proficiency. These results are projected to make a major contribution to the advancement of more innovative and effective pedagogical approaches to teaching English at the secondary education level, in addition to offering insights for educators to integrate logical-mathematical intelligence into their instructional strategies.

3.   RESULTS

From interviews conducted with English teachers at SMAN 1 Singgahan Tuban, it was revealed that students with higher logical-mathematical intelligence tend to grasp grammatical rules more quickly and are better at applying grammatical concepts than their peers. Teachers observed that these students exhibit a greater ability to analyze and understand the structural elements of the English language, which allows them to excel in grammar tasks that require systematic thinking and problem-solving skills. This correlation suggests that logical-mathematical intelligence not only benefits students in subjects like mathematics and science but also enhances their linguistic abilities, particularly in mastering the complexities of grammar. The teachers noted that these students are more adept at identifying patterns within language rules and applying these patterns to new contexts, demonstrating a deeper comprehension of grammatical structures. This finding highlights the importance of integrating cognitive skill development into language instruction, as it can significantly boost students' academic performance across multiple disciplines, including English language learning.

Classroom observations indicate that students with strong logical-mathematical abilities are better equipped to follow complex explanations of English grammar structures. These students consistently demonstrate a higher capacity to understand intricate grammatical rules and are often the first to correctly complete grammar exercises. Their ability to quickly grasp and apply grammatical concepts suggests a strong correlation between logical-mathematical intelligence and linguistic proficiency. These students not only excel in identifying patterns and relationships within the language but also apply these insights efficiently during practice exercises. This observation reinforces the idea that cognitive skills, typically associated with subjects like math and science, play a significant role in language acquisition. By effectively processing and organizing information, these students navigate through complex grammatical structures with greater ease, leading to higher academic performance in English. The findings suggest that enhancing logical-mathematical skills could be a valuable strategy in improving students' overall language mastery, providing them with the tools to tackle challenging linguistic tasks more confidently and accurately.

The analysis of documentation, specifically the students' grammar test scores, revealed a positive correlation between logical-mathematical intelligence and grammar mastery. Students who scored highly on logical-mathematical tests also achieved high scores on English grammar tests, indicating that those with stronger logical reasoning abilities are more proficient in understanding and applying grammatical rules. This correlation suggests that the cognitive processes involved in logical-mathematical thinking—such as recognizing patterns, making

connections, and solving problems—are closely related to the skills needed for mastering grammar. These students appear to excel in tasks that require them to analyze and organize linguistic information systematically, which is essential for understanding complex grammar structures. The findings from this documentation analysis underscore the potential benefits of integrating logical-mathematical skill development into language education. By fostering these cognitive abilities, educators can help students improve not only in subjects like math and science but also in their overall linguistic proficiency, leading to better academic outcomes across the curriculum.

From the triangulation of data conducted through interviews, observations, and documentation analysis, it is evident that logical-mathematical intelligence plays a significant role in enhancing English grammar mastery, particularly among tenth-grade students. The consistent findings across these different data sources reinforce the conclusion that students with higher logical-mathematical abilities are better equipped to understand and apply complex grammatical rules. Interviews with teachers highlighted that these students are more adept at analyzing language patterns and structures, while classroom observations confirmed that they often excel in completing grammar exercises accurately and efficiently. The documentation of test scores further supports this, showing a clear positive correlation between students' logical-mathematical skills and their grammar proficiency. This comprehensive data analysis underscores the importance of integrating cognitive skill development into language education. By focusing on enhancing logical-mathematical intelligence, educators can provide students with the tools needed to excel in grammar, thereby improving their overall language competence and academic performance. This finding has significant implications for teaching strategies, suggesting that a more holistic approach to education can lead to better outcomes in language learning.

The results of this study indicate that a learning approach integrating logical-mathematical exercises can be an effective strategy for improving English grammar mastery. This conclusion is supported by findings from interviews, observations, and documentation at SMAN 1 Singgahan Tuban. Interviews with teachers revealed that students who engage in logical-mathematical training demonstrate a stronger grasp of grammar rules and structures. Classroom observations further confirmed that these students are often more successful in applying grammatical concepts during exercises and assessments. The analysis of test scores also showed a positive correlation between students' logical-mathematical abilities and their performance in grammar-related tasks. Together, these data sources suggest that incorporating logical-mathematical reasoning into language learning not only enhances students' analytical

skills but also directly contributes to their linguistic competence. This holistic approach to education, which blends cognitive skill development with language instruction, offers a promising pathway for educators seeking to improve student outcomes in English grammar. The study's findings highlight the potential benefits of adopting such integrative teaching methods in high school curricula.

4.   DISCUSSION

In the field of scientific inquiry on "Logical-Mathematical Intelligence to Improve English Grammar Mastery in Secondary Education," there are many aspects that are still largely unfamiliar to the wider society. One important aspect is how logical-mathematical intelligence can be effectively integrated into the pedagogical approach of English language teaching, thereby increasing students' understanding of grammatical principles. Logical-mathematical intelligence includes the capacity for logical reasoning, information analysis, and complex problem-solving. Learners endowed with this form of intelligence usually show a high ability to distinguish structures and patterns in language, including grammatical constructions. Empirical research shows that students who demonstrate strong logical-mathematical intelligence are more adept at recognizing and applying grammatical rules, which significantly increases their capacity for effective oral and written communication. Previous studies have proven the claim that logical-mathematical intelligence exerts a beneficial influence on the learning process in various disciplines, including language mastery. (Prastika et al., 2021) Nevertheless, there is a lack of scientific investigation that directly investigates the correlation between this form of intelligence and proficiency in English grammar; As such, it is crucial to address this gap through more comprehensive research efforts.

Another important innovation that needs to be highlighted is an interdisciplinary methodology that integrates logical-mathematical intelligence with English language pedagogy. Investigations conducted by (Sapri, 2023) Research has shown that individuals who exhibit strong logical-mathematical intelligence are generally more adept at identifying patterns and using logical reasoning to evaluate complex problems. Logical-mathematical intelligence includes the capacity to think systematically, comprehensive analysis of information, and problem-solving through logical reasoning and numerical manipulation. Learners endowed with this form of intelligence typically excel in disciplines that require rigorous critical and analytical thinking, including mathematics, natural sciences, and the study of technology. This investigation will explore the mechanisms by which students endowed with strong logical-mathematical intelligence can discern patterns and utilize logical reasoning in

problem analysis. This suggests that by utilizing logical-mathematical intelligence, educators can formulate more potent pedagogical strategies that emphasize not only the linguistic dimension but also the development of students' critical thinking skills. Such methodologies have the potential to provide a more integrated and engaging educational experience for learners.

The purpose of this investigation is to examine and assess the extent to which logical-mathematical intelligence can improve high school students' proficiency in English grammar. Logical-mathematical intelligence includes the capacity for analytical reasoning, pattern identification, and problem-solving. In the framework of English language acquisition, these cognitive abilities can significantly improve grammar mastery, an important component of effective communication. This study aspires to provide empirical evidence regarding the efficacy of this pedagogical approach in improving students' competence in understanding and applying grammar rules. Furthermore, this research will provide recommendations for educators who aim to design more effective instructional strategies that can improve student motivation and educational outcomes. Nevertheless, the quotations used to support this statement are less relevant and fail to support the stated claims. (Habibi et al., 2021). As a result, this statement requires re-evaluation in the absence of adequate bibliographic evidence.

In the field of data acquisition, research will use qualitative methodologies such as in-depth interviews and systematic classroom observations to improve understanding of student and educator experiences. The use of in-depth interviews in addition to classroom observation is a powerful approach to explain the reality of student and teacher experiences in an educational environment. By integrating this methodology, researchers can gain in-depth insights into the dynamics of interactions that occur in the classroom as well as the variables that shape the learning process. The results obtained from this investigation play an important role in the formulation of a more effective and harmonious pedagogical strategy that is in line with the needs of students. The data obtained are subject to thematic analysis, a methodological framework that facilitates the identification of dominant themes that emerge from student learning experiences. As a result, this investigation resulted in a more nuanced understanding of logical-mathematical intelligence related to increased mastery of English grammar. These findings will provide a basic basis for the development of pragmatic recommendations aimed at optimizing English language teaching at the secondary education level.

Overall, this study addresses the gap that exists between logical-mathematical intelligence and proficiency in English grammar. Through the integration of interdisciplinary methodologies that utilize logical-mathematical intelligence, learners can improve their grammatical competencies while simultaneously fostering critical thinking skills that apply in a variety of contexts. An interdisciplinary framework that combines logical-mathematical intelligence in language mastery not only adds to students' grammar proficiency but also fosters their critical cognitive skills. By synthesizing various disciplines, students are provided with a more comprehensive and meaningful learning experience. This investigation has resulted in a beneficial influence on the improvement of the quality of English language education in secondary education institutions, while also contributing to the advancement of broader educational theory and practice.

5. CONCLUSION

This study aims to explore the influence of mathematical logical intelligence on United Kingdom grammar mastery in grade X students of SMAN 1 Singgahan Tuban, with the hope of providing new insights into English learning strategies at the high school level. The main contribution of this study was the discovery that the integration of mathematical logical intelligence can improve students' understanding of complex grammatical structures, offering a more effective approach than conventional methods. However, the study has limitations, especially in terms of population coverage involving only one school, so the results may not be generalizable for all high school students. In addition, because this study uses a qualitative approach, the results may be subjective and depend on the researcher's interpretation. Another limitation is the absence of long-term data that can show the ongoing impact of the integration of mathematical logical intelligence in English language learning. Nonetheless, this research paves the way for further studies that can expand the scope of populations and methodologies. Thus, this research not only makes a theoretical contribution but also offers practical solutions for educators to improve the quality of English language learning in high school.

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