



## Enhancing English Speaking Ability through the Integration of Smart Education and Stratified Teaching: A Model for EFL Instruction

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### Abstract

**Background and Objectives:** The study addresses the challenge of enhancing English-speaking abilities among English as a Foreign Language (EFL) students by integrating Smart Education with Stratified English Teaching. The research aims to fill the gap in effective instructional models that cater to diverse student proficiency levels in vocational education settings.

**Methods:** A mixed-methods approach was employed, involving 498 EFL students at Shandong Vocational College of Science and Technology (SVCST). The study utilized the Fanya online learning platform, mobile applications, and multimedia devices, tailored to different proficiency levels (Level A and Level B). Data collection included pre-tests and post-tests to measure speaking proficiency, alongside qualitative data from student feedback, classroom observations, and interviews.

**Results:** The implementation of the instructional model resulted in a statistically significant improvement in students' English-speaking abilities, with an average increase of X% in post-test scores ( $p < 0.05$ ). Students also reported increased confidence and participation, particularly those in the lower proficiency group.

**Conclusion:** The integration of Smart Education with Stratified Teaching effectively enhances English-speaking skills in EFL students. This model addresses varying learning needs and demonstrates potential for broader application in different educational contexts. The study suggests that such an approach can significantly contribute to improving language proficiency in vocational education settings, making it a valuable strategy for educators worldwide.

**Keywords:** English-speaking instruction; Smart education; Stratified english teaching; English-speaking ability

### Introduction

The increasing importance of English-speaking proficiency for Chinese EFL students, particularly in vocational education settings, is well-documented in the literature. Despite various pedagogical strategies being implemented, a significant gap persists in effectively addressing the diverse needs of students at different proficiency levels, especially within the context of stratified teaching. Existing studies have often overlooked the specific challenges faced by vocational students, who require tailored instructional approaches to develop the speaking skills essential for both academic success and professional advancement.

This research seeks to address this gap by exploring the integration of Smart Education with Stratified English Teaching to enhance English-speaking abilities among students at Shandong Vocational College of Science and Technology (SVCST). While stratified teaching has shown promise in accommodating varied proficiency levels, its application in conjunction with Smart Education remains underexplored, particularly in the Chinese vocational context. This study aims to fill this void by investigating a pedagogical model that leverages technology to create personalized and adaptive learning environments conducive to improving English-speaking skills.

The primary objectives of this study are threefold: first, to assess the effectiveness of the integrated instructional model in enhancing English-speaking proficiency across different student groups; second, to evaluate the impact of this approach on student engagement and confidence in speaking English; and third, to provide a scalable model that can be adapted to other vocational education settings. The significance of this research lies in its potential to offer a practical solution to a pressing educational challenge, thereby contributing to the broader discourse on language education and the role of smart pedagogy in addressing diverse learner needs.





## Objectives

The following are the study's research objectives:

To construct English-speaking instruction Using Smart Education in the Stratified English Teaching

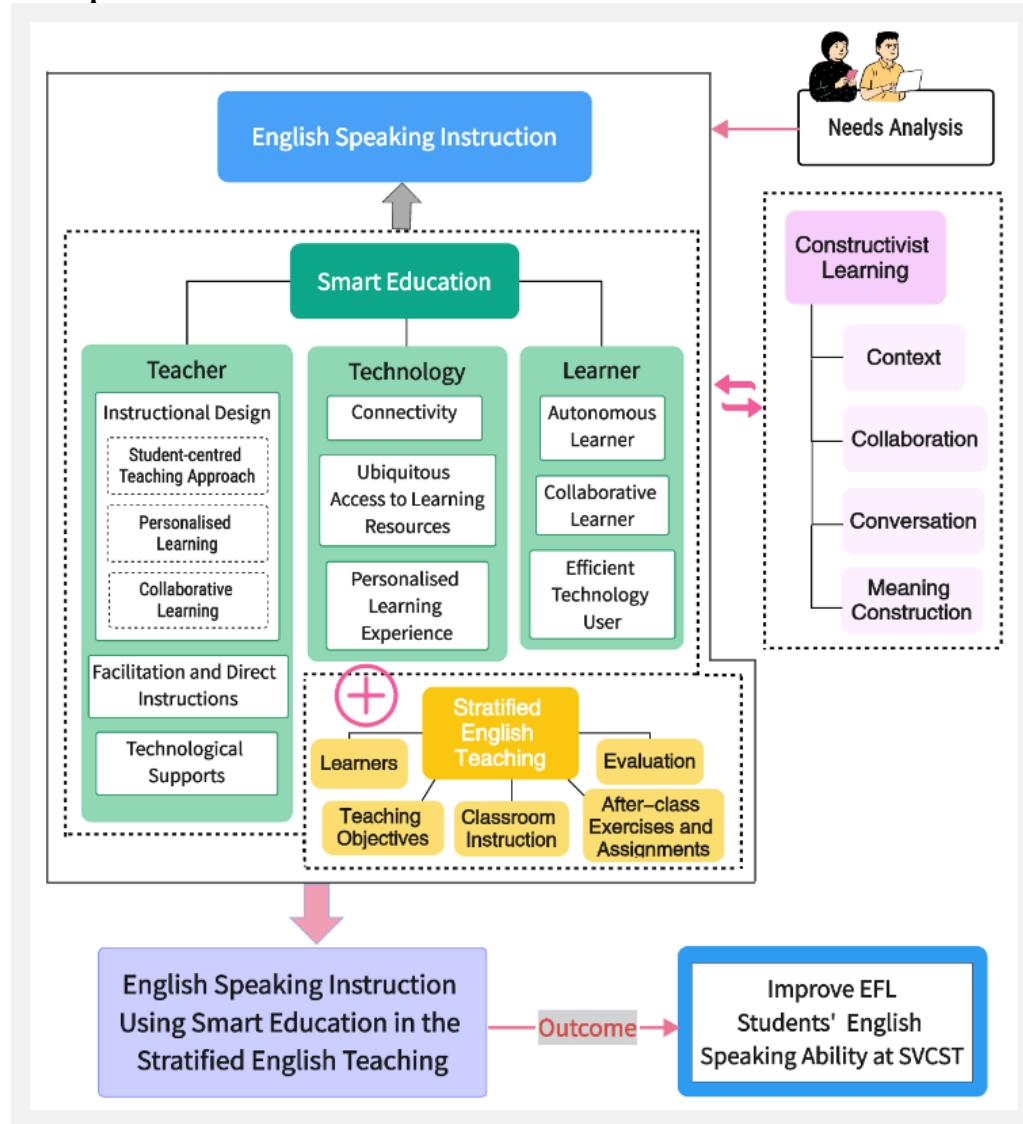
To investigate the effectiveness of the designed English-speaking instruction to improve English-speaking ability

## Literature review

Existing literature widely recognizes the potential of Smart Education in enhancing English learning outcomes, particularly in improving speaking skills. Kong (2014) demonstrated that stratified teaching combined with teacher-designed instructional guidance can effectively boost the learning enthusiasm and creative thinking of students in vocational colleges. Abugohar et al. (2019) further highlighted that the integration of technology with education has a significant positive impact on improving English-speaking abilities, especially in higher vocational classrooms. Similarly, Xiao et al. (2019) found that the use of Smart Education platforms helps teachers monitor students' learning progress, thereby enhancing their learning outcomes. Meanwhile, Zheng (2022) emphasized that stratified teaching, which involves grouping students according to their varying ability levels, effectively improves university students' English proficiency, learning capacity, and cognitive abilities. This teaching approach allows instructional goals, content, and methods to better align with students' actual needs. Zhu et al. (2020) also pointed out that the successful implementation of stratified teaching requires teachers to set different learning objectives and design instructional content that best meets the needs of the students, ensuring that each student learns in the most appropriate environment. Combining Smart Education with stratified teaching, Al Mulla and Abdullah (2021) found that this integration not only enhances students' learning outcomes but also provides teachers with effective tools and resources, enabling them to better address the challenges in teaching.



## Conceptual Framework



**Figure 1** Conceptual Framework

The conceptual framework of this study aims to clarify the relationships between Smart Education, Stratified English Teaching, and English-speaking ability. These concepts are interconnected within the instructional design, which seeks to enhance the English-speaking skills of Chinese students in a vocational education setting.

Smart Education forms the foundation of this study's instructional design. By leveraging technology tools such as online platforms, mobile applications, and multimedia resources, it creates a personalized learning environment. This approach helps teachers more effectively monitor and assess students' learning progress, thereby enhancing their learning outcomes.

Stratified teaching involves grouping students according to their English proficiency levels to ensure that the instructional content and activities are tailored to their specific needs. This method is particularly effective in increasing student engagement and participation, especially within a vocational education context.

The goal of this study is to improve students' English-speaking ability, including pronunciation



accuracy, fluency, and confidence in using English. By integrating Smart Education with Stratified Teaching, this study expects to achieve significant improvements in these areas, particularly in enhancing students' practical communication skills.

## Methodology

This study employed a mixed methods approach to investigate the effectiveness of Smart Education in Stratified English Teaching on improving English-speaking abilities. The methodology integrates both quantitative and qualitative components to provide a comprehensive analysis of the instructional intervention.

Quantitative data were collected through pre-tests and post-tests administered to students across different proficiency levels. The sample size was determined based on the total enrollment of students in the English program, ensuring a representative distribution across the stratified groups. The tests measured specific components of English-speaking ability, such as pronunciation accuracy, fluency, and vocabulary usage. Statistical methods, including paired t-tests and ANOVA, were employed to analyze the data, comparing pre- and post-intervention performance across the stratified groups.

Qualitative data were gathered through classroom observations, semi-structured interviews with students and instructors, and student feedback surveys. The data were analyzed using thematic analysis, where the coding process involved identifying recurring themes related to student engagement, confidence in speaking, and the perceived effectiveness of the instructional strategies. Triangulation was employed by cross-referencing data from different sources to ensure reliability and validity, while researcher bias was mitigated through peer debriefing and member checking.

The Smart Education intervention was consistently implemented across different groups, with instructors receiving thorough training on the instructional design and use of technology. Fidelity to the instructional model was monitored through regular classroom observations and instructor feedback, ensuring that the intervention was delivered as intended. Any deviations from the planned instruction were documented and addressed to maintain the integrity of the study.

The study operationalized Smart Education by incorporating various technologies, including the Fanya online learning platform, mobile apps, and multimedia resources, into the teaching process. Stratified activities were designed to cater to the specific needs of different learner groups, with Level A students engaging in more complex tasks, while Level B students focused on foundational language skills. These activities were closely aligned with the educational objectives of improving English-speaking ability, ensuring that each group received instruction tailored to their proficiency level.

Ethical considerations were integral to the study, particularly regarding the use of technology in the classroom. Informed consent was obtained from all participants, and measures were taken to protect student privacy, including anonymizing data and ensuring secure storage of all collected information.

## Designing English-Speaking Instruction Based on Smart Education and Stratified Teaching

### First Stage: Determining Conception and Planning

In the first stage, the focus is on defining and integrating the theoretical foundations for the instructional design. This involves a comprehensive application of Smart Education, Stratified Teaching, and Needs Analysis theories.

**Integration of Theoretical Foundations:** Elaborate on how Smart Education's three core components—Smart Learning Environment, Smart Pedagogy, and Smart Learner—are integrated with Stratified Teaching. Smart Education provides technological support, creating a personalized and dynamic learning environment, while Stratified Teaching ensures that the instructional content is tailored to students' varying ability levels. For instance, the Smart Learning Environment employs advanced technologies and data analytics to offer personalized learning paths and real-time feedback; Smart Pedagogy emphasizes interactive and collaborative learning activities that foster critical thinking and problem-solving skills.

**Application of Needs Analysis:** Needs Analysis plays a crucial role in this stage. By identifying the





main challenges students face in learning English, such as anxiety and reliance on electronic devices, the instructional design incorporates strategies to address these issues. For example, the design might include opportunities for independent learning before class, using online platforms to reduce pressure in the classroom, thus helping to alleviate students' anxiety.

**Anticipating Challenges and Developing Solutions:** In the planning phase, it is essential to anticipate potential challenges, such as technological barriers or diverse learning needs, and develop strategies to address them. For instance, ensuring equitable access to online resources might require creating support plans for students with limited technological access. Additionally, the design must consider how to accommodate the diverse learning styles and needs of students within the instructional framework.

### **Second Stage: Applying the Results of Needs Analysis to Design Instruction**

In the second stage, the instructional design is informed by the results of the Needs Analysis, ensuring that these results are directly translated into practical teaching strategies.

**Linking Needs Analysis to Instructional Strategies:** Clearly articulate how the challenges identified in the Needs Analysis, such as students' anxiety about speaking English and their dependency on electronic devices, are translated into specific instructional activities. For example, independent online learning activities might be designed to reduce students' anxiety by allowing them to practice in a low-pressure environment, thereby gradually building their confidence.

**Addressing Psychological and Technological Challenges:** The instructional design should include multiple strategies to mitigate psychological stress and manage students' dependency on technology. For instance, online platforms that provide instant feedback can help maintain student motivation, while addressing technological issues like connectivity problems or device limitations by offering robust technical support.

**Supporting Design Choices with Theory and Literature:** When designing instructional activities, it is crucial to support these choices with relevant theories and literature. Integrating existing research into the design process not only enhances the scientific validity of the instructional strategies but also grounds them in proven educational practices. For instance, citing studies that demonstrate the effectiveness of self-directed learning facilitated by technology can further justify the inclusion of online learning activities.

### **Third Stage: Designing the English-Speaking Instruction Using Smart Education in the Stratified English Teaching**

The third stage involves designing pre-class, in-class, and post-class activities tailored to the different proficiency levels of students, ensuring that these activities align with the theoretical underpinnings of Smart Education and Stratified Teaching.

**Designing Pre-class, In-class, and Post-class Activities:** Detail how these activities specifically cater to the differing proficiency levels of Level A and Level B students. For instance, pre-class activities for Level A students might involve more complex language materials, while Level B students focus on foundational pronunciation exercises. This differentiation ensures that each student is challenged appropriately, supporting their cognitive development and language acquisition.

**Integration of Smart Education Tools:** Discuss how tools like the Fanya online platform are integrated into the instructional design to enhance personalized learning. These tools facilitate adaptive learning paths for students with varying abilities, using real-time data to monitor progress and adjust instruction accordingly. For example, the platform's analytics can help identify areas where students struggle, enabling the instructor to modify subsequent lessons to address these challenges.

**Addressing Potential Challenges:** Consider potential challenges, such as the digital divide or increased cognitive load from using multiple digital tools. Propose solutions like providing additional support for students with limited access to technology or simplifying the digital learning environment to reduce cognitive strain.

**Connecting to Research Objectives:** Explicitly link the designed activities to the broader research





objectives. For instance, describe how specific activities are intended to improve aspects of English speaking, such as fluency or confidence, and how these align with the overall goals of the study.

**Incorporating Case Studies and Examples:** Provide concrete examples or case studies illustrating how these strategies are implemented in the classroom. For instance, include descriptions of how Level A and Level B students engage with the material and demonstrate improvement, supported by qualitative feedback or student testimonials.

#### **Fourth Stage: Designing the Scope and Sequence and the Lesson Plans**

In the fourth stage, focus on aligning the scope and sequence of the lesson plans with the overall instructional goals and learning outcomes.

**Alignment with Instructional Goals and Learning Outcomes:** Ensure that the lesson plans are directly linked to the instructional goals and outcomes identified through Needs Analysis. For example, if the analysis shows that students struggle with vocabulary usage, the lesson plans should include targeted activities that address this specific challenge.

**Rationale for Lesson Sequencing:** Provide a thorough explanation of why certain units are taught before others, using pedagogical principles such as scaffolding and the progressive increase in task complexity. For instance, early lessons might focus on foundational language skills, while later lessons build on this knowledge to tackle more complex language tasks.

**Differentiated Instruction for Varied Learning Styles:** Describe how the lesson plans accommodate different learning styles and proficiency levels. For example, Level A students might engage in more advanced group discussions, while Level B students might focus on basic vocabulary and pronunciation drills.

**Integration of Formative and Summative Assessments:** Explain how formative and summative assessments are integrated throughout the course to monitor and support student progress. Detail the assessment methods, such as quizzes or self-assessment checklists, and how they align with learning objectives and provide feedback to students.

**Visual Aids for Scope and Sequence:** Enhance the presentation of the scope and sequence by including visual aids like timelines or flowcharts. These can help readers better understand the logical flow of the instructional design and how different units contribute to the development of students' English-speaking skills.

#### **Fifth Stage: Designing the Learning Activities**

In the fifth stage, focus on the practical design of learning activities, ensuring they align with the theoretical underpinnings of Smart Education and are effective for different learner levels.

**Linking Theoretical Foundations to Learning Activities:** Connect each learning activity to the principles of Smart Education, such as how activities align with a Smart Learning Environment, Smart Pedagogy, and Smart Learner components. For instance, interactive online modules might be used to promote independent learning, reflecting the Smart Learner principle.

**Diverse and Interactive Learning Activities:** Incorporate a wider range of interactive and collaborative tasks that leverage digital platforms. This could include peer reviews, group projects, or real-time interactive sessions, which foster a more engaging learning environment and develop critical communication and teamwork skills essential for EFL students.

**Detailed Explanations and Justifications:** Provide thorough explanations and justifications for selecting specific activities for different learner levels. For instance, justify why Level A students are assigned more complex discussion topics, while Level B students focus on basic vocabulary, ensuring each activity is tailored to meet students' varying needs.

**Incorporating Formative Assessments:** Integrate formative assessments within the learning activities to provide immediate feedback, helping students monitor their progress more effectively. This might include in-class polls, quizzes, or self-assessment checklists, aligned with each activity to keep students engaged and aware of their learning trajectory.

**Flexibility and Adaptation of Learning Activities:** Include examples of how these activities can be



adapted or modified based on student feedback or varying classroom contexts. This flexibility makes the instructional design more robust and applicable to different teaching environments, ultimately leading to a more personalized and effective learning experience for all students.

## Result

The results of paired samples t-tests were conducted to compare the pretest and posttest scores within the experimental and control groups at Level A and Level B (see Table). These results provided insights into the effectiveness of the interventions implemented in the experimental groups and natural progress in the control group.

The pretest mean score for Level A in the experimental group was 9.308, which increased to 11.962 in the posttest. The mean paired difference was 2.654, indicating an average improvement in scores. The t-statistic of -17.253 and a p-value of 0.000 ( $p < 0.001$ ) demonstrated a highly significant improvement in the posttest scores compared to the pretest scores. This reflected that the designed English-speaking instruction had a substantial positive effect on the students' English-speaking abilities. For Level B in the experimental group, the pretest mean score was 7.769, which increased to 9.500 in the posttest. The mean paired difference was 1.731. The t-statistic of -16.080 and a p-value of 0.000 ( $p < 0.001$ ) signified a highly significant improvement in scores. This reinforced the effectiveness of the intervention in enhancing English-speaking skills at this level.

In the control group for Level A, the pretest mean score was 9.308, increasing slightly to 9.500 in the posttest. The mean paired difference is 0.192. The t-statistic of -2.132 and a p-value of 0.054 suggested that the improvement was not statistically significant ( $p > 0.05$ ). This indicated that there was no substantial change in the student's scores, reflecting the absence of any effective intervention. For Level B in the control group, the pretest mean score was 7.192, which decreased slightly to 7.038 in the posttest. The mean paired difference was -0.154. The t-statistic of 2.309 and a p-value of 0.040 ( $p < 0.05$ ) suggested a statistically significant decrease in scores, indicating a slight decline in the student's performance over time throughout the course.

The paired samples t-tests revealed significant improvements in the experimental groups' post-test scores for both Level A and Level B (the p-values = 0.000), highlighting the effectiveness of English-Speaking Instruction Using Smart Education in Stratified English Teaching. In contrast, the control group for Level A showed no significant change, while the control group for Level B exhibited a slight but significant decline in performance. These results emphasized the impact of the designed English-speaking instruction in enhancing the students' English-speaking skills compared to the normal classroom teaching without such interventions.

**Table 1** Paired Samples t-Test offers Experimental and Control Group.

Level		Pretest Mean	Posttest Mean	Paired Differences Mean	t- statistic	df	Sig. (2- tailed)
<b>Experimental Group (N = 73)</b>	<b>Level A</b>	9.308	11.962	2.654	-17.253	26.0	0.0
	<b>Level B</b>	7.769	9.5	1.731	-16.08	73.0	0.0
<b>Control Group (N = 26)</b>	<b>Level A</b>	9.308	9.5	0.192	-2.132	26.0	0.054
	<b>Level B</b>	7.192	7.038	-0.154	2.309	73.0	0.04

The study demonstrated that the English-speaking instruction designed using Smart Education within Stratified Teaching significantly improved the English-speaking abilities of students at varying proficiency levels. Quantitative results showed marked improvements in both fluency and accuracy across Level A and Level B students, with statistically significant increases in their test scores.





Students reported higher confidence in their speaking abilities, largely due to the engaging and personalized nature of the smart education tools used. Classroom observations supported these findings, showing increased participation and effective use of digital resources.

Although there were challenges, such as technical difficulties and differences in learning pace, these were effectively addressed. Overall, the instructional approach proved to be effective in enhancing English-speaking skills, catering to the diverse needs of students.

## Discussion

The study's findings show that combining Smart Education and Stratified Teaching significantly improves English-speaking skills among EFL (English as a Foreign Language) students. This finding is especially noteworthy because it emphasizes the effectiveness of technology-enhanced learning environments in meeting the diverse needs of students. Smart Education, which employs advanced technologies such as adaptive learning systems, interactive platforms, and data analytics, provides a personalized learning experience that can be tailored to students' proficiency levels (Kukulska-Hulme & Traxler, 2019). When combined with Stratified Teaching, which involves tailoring instruction to students' varying abilities, this method bridges the gap between theoretical knowledge and practical language skills. According to the study, this integration not only helps learners learn English faster but also helps them gain confidence in using it in real-world situations.

### Tailored Instructional Strategies and Proficiency Levels

This integrated approach's success stems from its ability to address the specific needs of students with varying levels of proficiency. Stratified Teaching allows educators to create instructional strategies that are tailored to their students' unique learning profiles. For example, beginners may receive more foundational grammar and vocabulary assistance, whereas advanced students may engage in complex conversational practice and critical thinking exercises. Smart Education tools can improve this stratification by offering real-time feedback, adaptive learning paths, and personalized resources that allow each student to progress at their own pace (Hwang & Chang, 2011). The study's findings suggest that such tailored approaches not only make learning more efficient but also more engaging because students are more likely to stay motivated when they perceive the instruction to be relevant and appropriately challenging.

### Bridging the Gap Between Theory and Practice

Another important implication of the study is that it contributes to closing the gap between theoretical knowledge and practical language skills. Traditional EFL instruction frequently focuses on grammar and vocabulary, with little emphasis on speaking practice, resulting in a gap between what students know and what they can use in conversation (Richards, 2006). This issue is addressed by the integrated Smart Education and Stratified Teaching approach, which gives students numerous opportunities to apply their theoretical knowledge in real-world situations. Students can practice speaking English in a controlled environment that mimics real-life situations by engaging in interactive simulations, virtual conversations, and other technology-mediated activities. According to the study, this practical application is critical for developing fluency and communicative competence because it allows students to apply what they learn in class to real-world situations.

### Implications for Future EFL Instruction

The findings of this study have significant implications for the future of EFL instruction. As educators become more aware of the benefits of combining technology and differentiated teaching strategies, Smart Education and Stratified Teaching have the potential to be widely adopted in EFL contexts. However, successful implementation necessitates careful planning, which includes adequate teacher training and the creation of appropriate educational resources. Furthermore, the study emphasizes the need for additional research into the long-term effects of this integrated approach on language proficiency and other aspects of language learning, such as listening, reading, and writing abilities. By refining and expanding these methods, educators can ensure that all students, regardless of initial





proficiency level, have the opportunity to reach their full potential in English learning.

In addition, the use of smart technology, such as the Fanya online platform, provided a flexible and interactive learning environment. This environment allowed students to learn at their own pace, catering to their learning styles. The technology's ability to offer real-time feedback and personalized learning paths played a crucial role in improving students' confidence and speaking skills. Stratified Teaching proved effective in differentiating instruction according to students' proficiency levels. Level A students benefited from more complex and challenging tasks, while Level B students were able to focus on building foundational skills. This differentiation ensured that all students, regardless of their starting point, could make meaningful progress in their English-speaking abilities. Addressing students' psychological barriers, such as anxiety about speaking English, was a key factor in the success of the instructional design. The combination of independent online learning and collaborative in-class activities helped students overcome these barriers, leading to increased participation and engagement.

### Conclusion

The study concludes that the integration of Smart Education with Stratified Teaching is an effective approach to enhancing English-speaking skills among EFL students in vocational settings. The instructional design successfully addressed the diverse needs of students by providing differentiated learning experiences that are both engaging and accessible.

Key findings include Significant improvements in students' English-speaking abilities, particularly in fluency and accuracy. Increased student confidence and participation facilitated using technology and supportive learning environments. The success of stratified teaching in catering to different proficiency levels, ensuring that all students could achieve their learning objectives.

### Recommendations

Based on the study's findings, several recommendations are proposed: Educational institutions should consider implementing Smart Education and Stratified Teaching across different subjects and proficiency levels, as these methods have been proven to be effective in enhancing student learning outcomes.

To ensure the successful implementation of these instructional strategies, it is essential to provide teachers with adequate training on how to use smart technologies and design stratified instructional materials effectively.

Regular assessment of student's progress should be integrated into the instructional design to ensure that the teaching methods continue to meet the evolving needs of learners. This includes using data analytics to monitor student performance and adjust instruction accordingly.

Institutions should work to minimize technological barriers that might hinder students' access to learning resources, such as ensuring reliable internet connectivity and providing access to necessary devices.

Further research is recommended to explore the long-term effects of Smart Education and Stratified Teaching on language acquisition, as well as to investigate their applicability in other educational contexts and subjects.

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