

EXPLORING RURAL STUDENTS' ACCEPTANCE OF AI FOR ENGLISH SPEAKING: UNCOVERING PRIVACY AS A SUPPORTING FACTOR

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Abstract: This study aims to examine the perceptions of rural students toward Stimuler. The research employs a mixed-methods approach grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) and psychological constructs, involving a sample of 29 students from a rural junior high school. Quantitative data were collected through Likert-scale questionnaires, while open-ended responses provided qualitative data. The findings indicate that students generally hold positive perceptions of the application, particularly regarding performance expectancy, ease of use, and its potential to enhance speaking proficiency. A significant secondary finding of this study is the role of privacy in influencing students' comfort with the assessment process. This study highlights the importance of considering both technological and psychological dimensions in the implementation of AI in educational contexts with limited resources.

Keywords: *artificial intelligence, english speaking learning, rural students, utaut, privacy in education.*

INTRODUCTION

The increasing importance of English as a global lingua franca has driven efforts to enhance English language learning, particularly among students in non-native English-speaking regions. Mastery of English offers significant benefits for both students and the broader community. For students, proficiency in English provides access to international educational resources, scholarships, and global job markets, fostering greater confidence and competitiveness in fields such as technology, business, and tourism (Crystal, 2012; Graddol, 2006). For the general public, English proficiency facilitates cross-cultural communication, enhances access to global information through digital platforms, and strengthens economic competitiveness in international markets, contributing to social and economic development (Kirkpatrick, 2010). For rural students, who often face challenges such as limited access to qualified teachers, insufficient learning resources, and socio-economic barriers, mastering English can open pathways to better educational and employment opportunities.

Rural areas are defined as geographical regions located outside urban centers, characterized by low population density, limited infrastructure, and minimal access to educational and technological resources (UNESCO, 2018). These areas often face unique challenges that hinder learning, including limited access to qualified teachers, insufficient learning materials, and inconsistent internet connectivity (Ahmed et al., 2022). Research by Malhi et al. (2021) indicates that students in rural areas frequently experience educational disparities due to socio-economic factors, such as poverty and inadequate technological training for educators. Nevertheless, rural areas have the potential to leverage AI technology to address educational gaps by providing flexible and personalized learning solutions (Ouyang & Jiao, 2024).

The integration of Artificial Intelligence (AI) into education has become a significant development in recent years. It has transformed the way students interact with learning materials, communicate with educators, and develop their skills. AI technologies have been implemented to enhance English language acquisition while also addressing educational disparities by providing personalized, accessible, and interactive learning experiences (Liu & Chen, 2023; Zhang et al., 2024; Ouyang & Jiao, 2024). These AI-based educational tools have gained increasing attention due to their ability to adapt to individual student needs, deliver immediate feedback, and support self-paced learning. However, despite the growing adoption of AI tools in education, research on their effectiveness and user perceptions—particularly among students in rural areas—remains limited (Gupta & Sharma, 2025; Schwartz & Schwartz, 2024), highlighting the need for further investigation into the educational impact of such technologies.

Several studies have also explored the use of AI-based tools in English language learning, with increasing attention given to their application across diverse educational contexts. For instance, a study by Zhang et al. (2020) examined the impact of AI-powered learning applications on students' language proficiency in urban areas, finding that tools offering personalized learning pathways significantly enhanced vocabulary retention and grammar comprehension. These findings underscore the adaptability and effectiveness of AI-driven educational solutions. Similarly, Kim and Park (2021) investigated the role of mobile AI applications in promoting autonomous learning among secondary school students. Their findings indicated that students appreciated interactive features, such as speech recognition and instant feedback, which contributed to greater engagement and increased confidence in using English.

While previous research has demonstrated the broad applicability of artificial intelligence (AI) in education, most studies have focused on general or urban contexts, with little attention to students in rural areas. Existing studies on AI in education have predominantly focused on urban or well-resourced environments, where students have access to diverse technological resources (Ouyang & Jiao, 2024). These studies demonstrate AI's potential to improve learning outcomes, enhance engagement, and promote autonomy (Zhang et al., 2024). Another study by Gonzalez and Lopez (2021) explored the cultural relevance of AI tools in language learning. They emphasized the need for localized content and culturally sensitive design to enhance student receptiveness and improve learning outcomes. However, the context of rural students presents distinct challenges and opportunities that have not been thoroughly investigated (Gupta & Sharma, 2025).

Stimuler, an Android-based application, is an artificial intelligence (AI) technologies to facilitate English language learning. Designed to support autonomous and personalized learning, Stimuler leverages AI features such as speech recognition, natural language processing, and adaptive learning algorithms to provide real-time feedback and individualized language instruction. The application includes modules for pronunciation correction, vocabulary development, and grammar practice, making it a comprehensive tool for language acquisition. One of its notable features is the chatbot function, which simulates conversational interaction to improve speaking fluency and listening comprehension. Additionally, the app can track user progress, allowing learners to review their performance over time and receive recommendations tailored to their specific needs. Additionally, the app tracks user progress, enabling learners to review their performance and receive tailored recommendations to support their English language development.

This research differs from existing studies by specifically exploring the perceptions and experiences of rural students in interacting with Stimuler with the Unified Theory of Acceptance and Use of Technology (UTAUT) framework. The Unified Theory of Acceptance and Use of Technology (UTAUT) framework, developed by Venkatesh et al. (2003), provides a comprehensive model for understanding user acceptance and adoption of new technologies. UTAUT integrates key constructs from prior technology acceptance theories, identifying four primary factors that influence users' behavioural intention to use a technology: *performance expectancy* (the perceived usefulness of the technology), *effort expectancy* (the perceived ease of use), *social influence* (the impact of social norms and opinions), and *facilitating conditions* (the availability of resources and support).

In the context of this study, UTAUT is employed to examine rural students' perceptions of the Stimuler application, assessing how these factors shape their acceptance of AI-based tools for English language learning in resource-constrained environments (Venkatesh et al., 2003). This framework is particularly relevant for rural settings, where technological adoption may be influenced by unique barriers such as limited infrastructure and low digital literacy (Ahmed et al., 2022). The scientific novelty of this research lies in its focus on the intersection of AI and rural education, specifically exploring how an AI tool designed for language learning is received by students in underserved communities with UTAUT framework. Unlike previous studies that predominantly target urban populations, this research highlights the unique perspectives of rural learners, contributing valuable insights into the potential and limitations of AI in bridging educational disparities. This study employs the Stimuler application to support English language learning among junior high school students in rural areas by integrating features such as speech recognition, vocabulary enhancement, and real-time feedback.

This study aims to investigate junior high school students' perceptions of using the Stimuler AI application for English language learning, based on the theoretical framework of UTAUT. The purpose of this article is to evaluate rural students' perceptions of learning English using Stimuler and to provide an evidence-based analysis of its potential to bridge the gap in the literature concerning rural education and AI, providing insights that can help educators, policymakers, and technologists develop more inclusive, context-sensitive AI applications for language learning. Understanding rural students' perceptions can guide efforts to optimize AI tools, as an educational intervention, in ways that meet their needs and improve learning outcomes in under-resourced educational environments.

RESEARCH METHODOLOGY

The research process began by granting access to the *Stimuler* application to 29 students from a public junior high school located in a rural area, Enabling students to utilize Stimuler for practicing their English-speaking skills in the classroom through eight structured sessions, facilitated by teacher guidance. The participants consisted of 17 female and 12 male students, all in their third year of junior high school and aged between 14 and 15. The students' English proficiency levels indicated that they were at a beginner level. This approach was designed to enable respondents to provide insights based on their personal experiences after using the application.

This study employed a mixed-methods approach, specifically a convergent parallel mixed-methods design. In this design, quantitative and qualitative data were collected

concurrently and analyzed separately, with the results integrated to provide a comprehensive understanding of students' perceptions and interactions with the application. This study operationalized the Unified Theory of Acceptance and Use of Technology (UTAUT) framework developed by Venkatesh et al. (2003) through a mixed-methods approach. The UTAUT constructs were measured using a questionnaire comprising 10 likert-scale items to assess students' perceptions of Stimuler, as quantitative data. In order to complement the quantitative data, open-ended questions were delivered through semi-structured interviews as an qualitative data. These interviews allowed students to elaborate on their experiences using the AI-based Stimuler application, including the perceived benefits such as improved pronunciation, enhanced vocabulary, and greater motivation, as well as challenges like limited teacher engagement and inconsistent internet connectivity. The qualitative responses were analyzed thematically to identify common patterns and individual variations, providing deeper insights into students' perceptions and experiences that could not be captured through quantitative measures alone.

Additionally, psychological constructs, particularly privacy, were integrated into the questionnaire, with items such as "I feel my personal data is secure when using Stimuler" and qualitative responses exploring how privacy influenced students' comfort and engagement in AI-based assessments. This mixed-methods design enabled a comprehensive analysis of both technological and psychological factors, with quantitative data likely analyzed statistically (e.g., mean scores) and qualitative responses coded thematically to provide nuanced insights into students' acceptance of Stimuler in a resource-constrained educational context (Venkatesh et al., 2003).

Initial data from the questionnaire were processed using Microsoft Excel to calculate totals, averages, and percentages of the students' responses. The resulting data were then analyzed to identify emerging patterns. The combination of quantitative data from the questionnaire and qualitative data from observations enabled the researchers to obtain a comprehensive understanding of the effectiveness of the Stimuler application in assisting students with English speaking skills. The findings of this study are expected to not only provide insights into the experiences of students in rural areas but also serve as input for the development of similar applications in the future, while contributing to the understanding of the perspectives of students in such environments.

RESULT AND DISCUSSION

The results of this study are presented through the Unified Theory of Acceptance and Use of Technology (UTAUT) framework and students' psychological factors. The five frameworks consist of Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), and an additional framework, Students' Psychology (SP).

Framework 1: Performance Expectancy

Performance expectancy reflects students' beliefs that using the Stimuler app will improve their English speaking skills effectively. When students experience clear benefits such as enhanced vocabulary, better pronunciation, and immediate feedback, their motivation to engage with the app increases. This positive perception fosters greater use and commitment, as students recognize the value the technology adds to their learning journey.

Question	Mean	Indicator	Std. Deviation
Question 2: Improvement in English Language Skills	4,3	Strongly Agree	0,57
Question 4: Flexibility of Learning in Class/Home	4,3	Strongly Agree	0.60
Question 6: Immediate Feedback Provided by the Application	4,2	Agree	0.65

Table 1. Performance Expectancy

Based on the thematic analysis of data related to Performance Expectancy within the UTAUT framework as presented in Table 1, it is evident that users have a highly positive perception of the technology or application used. The high mean scores for Improvement in English Language Skills (4.3) and Flexibility of Learning in Class/Home (4.3), along with a slightly lower score for Immediate Feedback (4.2), indicate that the application is perceived to provide significant benefits in enhancing user performance. This aligns with the concept of Performance Expectancy, where users feel that the use of this technology supports them in improving their personal capabilities and productivity.

However, despite the highly positive average responses, there is slight variation in user opinions, as indicated by the differing standard deviation values. For Improvement in English Language Skills and Flexibility of Learning, the relatively low standard deviations (0.57 and 0.60) suggest strong agreement among the majority of users regarding the benefits provided by the application. In contrast, the higher standard deviation for Immediate Feedback (0.65) indicates greater variation in user opinions regarding the effectiveness of the feedback provided by the application. Some users may find the feedback highly useful, while others may perceive it as less effective. From a technology development perspective, these findings offer valuable insights. Flexibility of learning and improvement in English language skills are two aspects that receive significant attention from users and are considered highly beneficial. Therefore, application developers could focus on strengthening these features to continue meeting user expectations.

Overall, the data demonstrate that the analyzed technology delivers high performance expectancy for its users, but there remains room for improvement, particularly in providing

more effective feedback. The technology has successfully met user expectations in enhancing their capabilities, but developers should consider further refinements to ensure that all users feel supported by the existing features.

Framework 2: Effort Expectancy

Effort expectancy concerns how easy and intuitive students find the Stimuler app to use. When the interface and learning content are accessible and straightforward, students feel confident navigating the app without frustration. This ease of use encourages continued interaction and reduces barriers, supporting a smoother learning experience.

Question	Mean	Indicator	Std. Deviation
Question 3: Application content facilitates learning	4,3	Strongly Agree	0,65
Question 9: Language difficulty in the application	3,1	Neutral	0.99
Question 10: No difficulty despite using English	4,0	Agree	0,78

Table 2. Effort Expectancy

The analysis results indicate that the Effort Expectancy of the application or technology used is generally positive. As shown in Table 2, users perceive the application's content as facilitating learning, with a mean score of 4.3 and a "Strongly Agree" indicator. This suggests that the application is considered user-friendly and provides an effective learning experience. The relatively low standard deviation of 0.65 indicates a high level of consistency in users' opinions regarding the ease of using the application's content.

However, there is some variation in users' experiences concerning language difficulties within the application, as reflected by the mean score of 3.1 and a "Neutral" indicator for the question about language difficulty. The high standard deviation of 0.99 for this question suggests a greater divergence in user opinions regarding whether the language used in the application poses a barrier to its use. Some users may find the language unproblematic, while others experience difficulties. This indicates that, although most users do not encounter significant issues, a subset of users finds the language challenging, which could pose a hurdle for further application development. This finding aligns with Question 10, "No difficulty despite using English," which has a mean score of 4.0 and an "Agree" indicator, with a slightly elevated standard deviation of 0.78. This suggests that while the majority of users do not find the English language to be a major barrier, there is still some variation in opinions, with certain users experiencing difficulties.

Overall, the data suggest that while the application facilitates learning for users, there is variability in experiences related to the language used. To enhance the user experience, adjustments to the language settings may be necessary to ensure that the application is accessible and easily understood by all users without compromising the ease of learning.

Framework 3: Social Influence

Social influence captures the role of teachers, peers, and the broader community in shaping students' attitudes toward the app. Positive encouragement or modeling from influential figures can enhance students' willingness to adopt AI-assisted learning. Conversely, limited support or skepticism within the social environment may hinder engagement.

Question	Mean	Indicator	Std. Deviation
Question 7: Teachers have not yet used digital media	2,1	Agree	1,03

Table 3. Social Influence

Based on the analysis results, Social Influence in this context indicates that many respondents agree that their teachers have not yet utilized digital media in teaching, with a mean score of 2.1 corresponding to an "Agree" indicator. This suggests that the majority of respondents perceive the use of digital media by teachers as limited or even entirely absent in the learning process. This reflects a lack of technology acceptance among educators within the context of teaching.

The relatively high standard deviation of 1.03 indicates that, while most students agree that their teachers have not used digital media, there is notable variation in respondents' opinions. Some students may perceive that, despite limited use, certain teachers have begun to incorporate digital media, while others feel that digital teaching is almost nonexistent. This variation suggests that the acceptance of technology use by teachers may differ depending on school policies or individual teaching practices. Overall, the data indicate a general consensus that teachers have not yet embraced digital technology in education, but there are differences in respondents' experiences. This highlights an opportunity to enhance the use of digital media in educational settings, which could help drive changes in teaching practices and increase student engagement with technology.

Framework 4: Facilitating Conditions

Facilitating conditions refer to the external factors that enable or constrain students' use of the Stimuler app, such as reliable internet access, availability of devices, and technical support. When these resources are adequate, students are more likely to use the app effectively. In contrast, infrastructural challenges can limit accessibility and negatively impact the learning experience.

Question	Mean	Indicator	Std. Deviation
Question 5: Signal Issues	3	Neutral	1,05

Table 4. Facilitating Conditions

The analysis of Facilitating Conditions related to signal issues indicates that respondents have a neutral stance toward the statement, with a mean score of 3.0. The "Neutral" indicator suggests a lack of strong consensus among respondents regarding whether signal issues impact technology use. This implies that some respondents may perceive signal quality as not being a significant issue, while others experience it as a challenge. The relatively high

standard deviation of 1.05 reflects significant variation in opinions about the extent to which signal issues affect their experience.

The high standard deviation indicates that some users are notably affected by signal issues, while others perceive these issues as having minimal impact on their technology use. This also suggests diversity in the technical infrastructure conditions across different locations, which may result in some users experiencing no significant issues, while others find signal quality to be a barrier to using the application or technology. Such variation is expected in rural areas, where signal access is often inconsistent.

Overall, the data indicate that technical infrastructure, particularly signal quality, influences the user experience but does not significantly hinder the majority of users. However, the variation in opinions highlights the need for improvements in signal quality in areas with limited or unstable access to enhance the overall user experience.

5. Students' Psychological Conditions

Question	Mean	Indicator	Std. Deviation
Question 8: Influence of privacy on comfort in learning assessment	4,1	Agree	0.77

Table 5. Students' Psychology

The analysis reveals that students have a positive perception of the influence of privacy on their comfort during the learning assessment process, with a mean score of 4.1 corresponding to an “Agree” indicator. This suggests that the majority of respondents believe privacy plays a critical role in ensuring their comfort during learning or assessment activities. The finding reflects that students feel more at ease when their personal data and interactions are protected, particularly in the context of assessments, which often involve sensitive performance evaluations. The relatively low standard deviation of 0.77 indicates a high level of agreement among students, with only slight variations in their opinions, underscoring a broad consensus on the importance of privacy for creating a safe and comfortable learning environment.

This finding is consistent with several studies in educational technology and learning analytics that highlight the significance of privacy for students' psychological well-being. Ifenthaler and Schumacher (2016) found that students' control over their personal data in learning analytics systems significantly enhances their comfort and willingness to engage, as clear privacy policies foster a sense of security. As Mutimukwe (2022) found that perceiving privacy risks negatively impact students' trust and comfort, emphasizing that protecting personal information is essential for positive engagement in technology-enhanced learning. Rubel and Jones (2016) argue from an information ethics perspective that respecting student privacy is crucial for maintaining trust and ensuring a supportive learning atmosphere, particularly in assessment contexts where data sensitivity is high. Additionally, students' concerns about data privacy influence their comfort and acceptance of learning analytics systems, with preferences for systems that prioritize data security (Whiteloc et al., 2020). Finally, Slade (2019), as cited in Liu (2023), found that trust in institutional data handling practices reduces privacy concerns, enhancing students' comfort with learning analytics systems. These studies collectively reinforce the current finding that respecting student privacy

is vital for fostering psychological comfort, particularly in rural educational settings where technology adoption may face additional challenges.

CONCLUSION

Based on the analysis of the data from Tables 1 through 5, the Stimuler application demonstrates significant potential in supporting English language learning among students in a rural junior high school, as evaluated through the Unified Theory of Acceptance and Use of Technology (UTAUT) framework and students' psychological factors. In the context of the Stimuler application, ensuring privacy in assessment features can enhance its effectiveness, particularly for rural students who may already face barriers such as limited digital infrastructure. By addressing privacy concerns, educators and developers can create a more supportive learning environment, encouraging greater student engagement and improving learning outcomes in technology-enhanced education.

Overall, the Stimuler application is well-received for its ease of use, effectiveness in improving English proficiency, and ability to provide a comfortable learning experience through privacy considerations. However, challenges related to language accessibility, limited teacher adoption of digital tools, and inconsistent signal quality in rural areas suggest areas for improvement. Developers should focus on refining language features to reduce barriers, while educators and policymakers could invest in teacher training and infrastructure upgrades to maximize the application's impact. These enhancements could further support student engagement and learning outcomes, particularly in underserved rural contexts, and contribute to the broader adoption of technology-enhanced education.

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