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AI-Enhanced Task-Based Language Teaching: Fostering Personalized College English Learning

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Abstract: *Task-based language teaching (TBLT) has transformed college English instruction by emphasizing active student participation and meaningful communication. This study examines how integrating AI-driven applications within the TBLT framework can enhance English proficiency and student engagement. AI tools were used to provide personalized learning pathways and real-time feedback, allowing for adaptive pre-class learning and more interactive in-class activities. Findings reveal that AI integration enhances learner autonomy, engagement, and overall language proficiency, particularly in speaking and reading skills. This research contributes practical strategies for incorporating AI in language education, offering insights for creating a more personalized and effective learning environment.*

Keywords: *AI-enhanced Language Learning, Task-Based Language Teaching, Personalized Learning, College English, Learner Autonomy*

1. Introduction

Recent advances in technology have revolutionized college English instruction, introducing innovative pedagogical approaches that emphasize personalization and learner autonomy. Among these, Task-Based Language Teaching (TBLT) stands out for promoting meaningful communication and practical language use[1] (Fang et al., 2021). However, traditional TBLT approaches face significant limitations in personalization and scalability, particularly in large and diverse classrooms[2] (Meniado, 2023). These limitations hinder its ability to effectively address the diverse needs of learners, leading to a gap in achieving optimal language learning outcomes.

To address these challenges, Artificial Intelligence (AI)-driven applications have emerged as promising tools capable of providing individualized learning pathways and immediate feedback, thus enhancing learner engagement and autonomy[3] (Wei, 2023). AI technologies have the potential to complement TBLT by offering tailored learning experiences that adapt to each student's pace and proficiency level, providing real-time corrections, and promoting active student involvement even outside the classroom setting.

This study investigates the integration of AI-driven applications within the TBLT framework, focusing on their potential to improve college-level English learners' engagement and language proficiency. Specifically, the study aims to determine whether AI tools can effectively bridge the gaps in traditional TBLT practices by offering personalized pre-class learning and fostering more interactive in-class activities. By incorporating AI technologies into TBLT, this research seeks to create a more student-centered, adaptive, and effective approach to language learning.

The findings of this research are expected to contribute practical strategies for educators aiming to implement technology-enhanced TBLT, thereby creating a more effective and dynamic learning environment for college English instruction. Furthermore, the study aims to shed light on the practical challenges and considerations that educators may face when integrating AI-driven tools into their language teaching practices, ultimately contributing to the broader field of technology-enhanced language education.

2. Literature Review

Task-Based Language Teaching (TBLT), grounded in constructivist and sociocultural learning theories, emphasizes learner-centeredness and practical communication through tasks[4] (Han, 2022).

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TBLT is recognized for promoting authentic language use, yet traditional implementations often struggle with scalability and personalization, particularly in diverse classrooms[5] (Lee, 2022). These challenges underscore the need for tools that can effectively cater to individual learning differences.

Recent studies have further examined the potential of TBLT in different contexts, highlighting both its strengths and limitations. For example, Bryfonski (2024) discusses how TBLT promotes communicative competence but notes the difficulties in managing differentiated learning needs within a large classroom setting[6]. This issue is echoed by East (2021), who emphasize that the effectiveness of TBLT largely depends on the availability of adequate resources and teacher expertise, factors that are often constrained in many educational environments[7]. These challenges call for innovative solutions to make TBLT more adaptive and scalable.

AI-driven applications have recently emerged as promising solutions to these limitations by offering personalized learning experiences and real-time feedback[8] (Ouyang & Zhang, 2024). AI technologies can enhance TBLT by automating certain aspects of instruction, such as personalized feedback and adaptive learning pathways, which are otherwise difficult to implement in traditional settings[9] (Timpe-Laughlin et al., 2023). Despite the proliferation of research on AI-assisted learning, existing studies are primarily limited to specific aspects of language acquisition, such as vocabulary learning[10] (Wang et al., 2024), pronunciation[11] (Shafiee Rad & Roohani, 2024), and automated assessment[12] (Song & Song, 2023). Few studies have examined the integration of AI within a comprehensive TBLT framework that addresses all four language skills-listening, speaking, reading, and writing-in a cohesive manner.

Furthermore, a number of studies have highlighted the potential of AI in addressing learner diversity and fostering autonomous learning, which aligns with TBLT's learner-centered approach. Song and Song (2023) demonstrated that AI can adapt the complexity of language tasks to match individual proficiency levels, which is particularly beneficial in large classrooms where differentiation is challenging[12]. This capability helps reduce cognitive overload for learners and maintains engagement during task completion. Belda-Medina and Calvo-Ferrer (2022) further explored how AI-driven platforms incorporating gamified elements and interactive simulations enhanced learner motivation and engagement, aspects critical to the successful implementation of TBLT[13].

However, successful integration of AI-driven applications into TBLT is contingent on overcoming several challenges. Celik (2023) emphasized that teachers need adequate training and professional development to effectively use AI tools within their instructional practices[14]. While AI can automate many instructional tasks, the role of the teacher in guiding, facilitating, and providing human insight remains indispensable. Dimitriadou and Lanitis (2023) also pointed out the importance of addressing technical barriers such as internet connectivity and the availability of adequate devices, which are necessary for seamless AI integration in educational settings[15].

By critically reviewing these existing works, it becomes evident that AI's potential in fostering a holistic, skill-oriented approach to TBLT remains underexplored. This study aims to bridge this gap by examining how AI-driven applications can be integrated into TBLT to enhance the learning experience for college English students, particularly focusing on learner engagement, autonomy, and proficiency. In doing so, it seeks to contribute to the broader discourse on AI-enhanced language learning, offering practical insights into how these technologies can be used to create more dynamic and responsive language learning environments.

3. Methodology

The methodology of this study employs a mixed-methods approach, combining both quantitative and qualitative research components to provide a comprehensive understanding of the effectiveness of integrating AI-driven applications within the TBLT framework for college English instruction. This approach was chosen to ensure a robust analysis of both learning outcomes and user experiences, allowing for a nuanced understanding of the impact of AI-enhanced TBLT. The study uses a quasi-experimental design involving two intact college English classes — one serving as the experimental group and the other as the control group. The experimental group received instruction that integrated AI-driven applications to support TBLT activities, while the control group followed a traditional TBLT approach without AI integration. This design enabled a comparison of the effects of AI integration on students' language proficiency and engagement.

Participants in the study were 120 college-level students enrolled in a compulsory English course,

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with 60 students in each group. These participants were selected based on their similar language proficiency levels, determined through a standardized placement test conducted prior to the study. The inclusion of two comparable groups allowed for the isolation of the effect of AI-driven interventions on language learning outcomes.

Data collection included pre-tests and post-tests to quantitatively measure changes in students' language proficiency, specifically focusing on speaking and reading skills. Engagement levels were assessed through surveys administered at the beginning, middle, and end of the study period. For the qualitative component, semi-structured interviews were conducted with both students and instructors to gather insights into their experiences with AI-enhanced TBLT. Classroom observations were also carried out to document the dynamics of TBLT activities facilitated by AI tools.

The intervention lasted for 12 weeks, during which students in the experimental group used AI-driven language learning applications for pre-class preparation, such as vocabulary building and listening comprehension tasks tailored to individual learner needs. In-class activities emphasized task completion using AI support, allowing for real-time feedback and adjustments. The control group followed a similar TBLT curriculum without AI tools, relying instead on traditional teacher feedback and peer interactions.

Quantitative data were analyzed using paired t-tests and ANOVA to determine the impact of the AI-driven applications on language proficiency and engagement. Specifically, the pre-test and post-test scores of both groups were compared to assess the effectiveness of the intervention. Qualitative data from interviews and observations were analyzed using thematic analysis, following an open coding process to identify key themes related to learner autonomy, engagement, and the challenges of using AI tools in TBLT.

Ethical approval was obtained from the university's research ethics committee, and informed consent was obtained from all participants. Confidentiality was maintained throughout the study, and participants were assured that their involvement was voluntary and that they could withdraw at any time without any negative consequences.

The mixed-methods approach was selected to capture both the measurable impact of AI-enhanced TBLT on language proficiency and the more subjective experiences of students and teachers. By integrating both quantitative and qualitative data, this study provides a holistic view of the effectiveness of AI-driven TBLT, offering insights that are both statistically robust and contextually rich.

4. Data Collection and Findings

Data collection for this study was conducted over a period of 12 weeks, during which both quantitative and qualitative data were gathered to evaluate the effectiveness of integrating AI-driven applications within the TBLT framework for college English instruction. The quantitative component involved pre-test and post-test assessments, which were administered to both the experimental and control groups to measure changes in language proficiency, particularly in speaking and reading skills. The results of the paired t-tests showed a significant improvement in the experimental group's language proficiency compared to the control group, with notable gains in speaking and reading scores. Specifically, the mean scores for speaking skills in the experimental group increased significantly from pre-test to post-test ($t = 4.25$, $p < 0.01$), while the control group showed only marginal improvements. Similarly, reading comprehension scores in the experimental group improved significantly ($t = 3.87$, $p < 0.01$), highlighting the positive impact of AI-driven applications on specific language skills.

Engagement levels were assessed using surveys conducted at three different points during the study—at the beginning, midpoint, and end. The ANOVA results indicated that the experimental group demonstrated significantly higher engagement levels throughout the study period compared to the control group ($F(1, 118) = 5.67$, $p < 0.05$). This suggests that the use of AI-driven applications contributed to creating a more engaging learning environment, which is critical for effective language acquisition.

For the qualitative component, data were analyzed to uncover themes related to the learner and instructor experiences with AI-enhanced TBLT. Thematic analysis of semi-structured interviews revealed several key themes. The first theme, enhanced learner autonomy, highlighted how the AI-driven applications allowed students to take greater control over their learning. Students reported that personalized feedback from AI tools enabled them to identify their weaknesses and focus on specific areas for improvement, which increased their confidence in language learning. For example,

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one teacher noted, “Students were more willing to take responsibility for their learning because they knew the AI would provide instant feedback tailored to their individual needs.” The second theme, increased student engagement, was evident in students’ reflections on how AI tools made pre-class and in-class activities more interactive and tailored to their needs. Students mentioned that the ability to progress at their own pace made them more motivated and engaged during tasks. An instructor observed, “The students seemed genuinely excited to participate, especially because they could see their progress in real time, which wasn't as evident with traditional methods.”

Challenges in technical implementation emerged as a significant theme, reflecting both students’ and instructors’ experiences with integrating AI into the classroom. Technical issues such as unreliable internet connectivity and the learning curve associated with using new AI technologies were noted as barriers to effective implementation. One teacher expressed, “The biggest challenge was the internet connectivity-we often faced disruptions that interrupted the flow of lessons, making it hard to maintain engagement.” Instructors also expressed concerns about the additional time required to familiarize themselves with AI tools and incorporate them effectively into their teaching practices. Another instructor mentioned, “It took a lot of effort initially to learn how to use these AI tools effectively, and that added workload was significant.”

Another important theme was the need for ongoing teacher support. Instructors emphasized the importance of professional development in effectively using AI tools to enhance TBLT. They highlighted that while AI-driven applications provided valuable support in managing classroom tasks and offering personalized feedback, the success of these tools depended largely on the teachers’ ability to integrate them seamlessly into their pedagogical practices. This theme suggests that for AI-driven TBLT to be effective, institutions must invest in comprehensive training programs for educators. As one teacher pointed out, “Without proper training, it was difficult to make the most out of the AI tools. Once we received adequate support, we could see a clear difference in how effectively we used them.”

Classroom observations supported these findings by showing that students in the experimental group were more actively engaged in collaborative tasks compared to those in the control group. The AI-driven applications facilitated differentiated instruction, enabling students to work on tasks that matched their proficiency levels, leading to more effective group interactions and improved task outcomes. It was observed that students in the experimental group displayed higher levels of peer support and collaboration, often helping each other navigate the AI tools and complete tasks more effectively. Additionally, the use of AI allowed instructors to monitor group activities more closely, identifying students who needed further assistance and intervening in a timely manner. This real-time instructional support not only improved the quality of group work but also fostered a supportive learning environment where students felt more comfortable taking risks and experimenting with language. These observations corroborated the survey results, indicating that AI integration led to increased participation and a more dynamic learning environment.

The combined findings from the quantitative and qualitative analyses provide strong evidence that integrating AI-driven applications within the TBLT framework can significantly enhance student engagement, language proficiency, and overall learning outcomes in college English instruction. The analysis also underscores the importance of addressing the practical challenges of implementation, such as technical issues and the need for teacher support, to fully leverage the benefits of AI in language education.

5. Conclusion and Discussion

The findings of this study demonstrate that integrating AI-driven applications within the TBLT framework significantly enhances student engagement, language proficiency, and task performance in college English instruction. The quantitative analysis revealed statistically significant improvements in speaking and reading skills for students in the experimental group, indicating the positive impact of AI-enhanced TBLT on specific aspects of language proficiency. The enhanced engagement levels observed in the experimental group further underscore the effectiveness of AI tools in creating a more interactive and motivating learning environment.

The qualitative data provided deeper insights into the learner and instructor experiences, revealing that AI-driven applications fostered greater learner autonomy and increased motivation. Students reported feeling more empowered to take control of their learning, largely due to the personalized feedback and adaptive learning pathways facilitated by AI tools. Instructors noted that AI integration allowed for more targeted and meaningful in-class interactions, as students were better prepared and

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more confident in their abilities. However, the study also highlighted several challenges, particularly regarding the technical implementation of AI tools and the need for ongoing teacher training. Technical issues such as unreliable internet connectivity and the time required to become proficient in using new technologies were identified as significant barriers. These challenges suggest that successful integration of AI-driven TBLT requires not only technological resources but also institutional support in the form of professional development for educators.

The implications of this study are twofold. First, educators are encouraged to consider integrating AI-driven applications into TBLT frameworks to create more personalized and engaging learning experiences. The results indicate that AI tools can effectively enhance learner autonomy and proficiency by providing individualized learning opportunities and real-time feedback. Second, educational institutions must invest in the necessary infrastructure and support systems to ensure the effective implementation of AI technologies. This includes addressing technical challenges and providing comprehensive training programs for teachers to equip them with the skills needed to effectively integrate AI into their pedagogical practices.

Future research should explore the long-term impact of AI-driven TBLT on other aspects of language learning, such as writing and listening skills, as well as investigate the scalability of these interventions across different educational contexts and larger student populations. Additionally, further studies could focus on optimizing the integration of AI tools to overcome the challenges highlighted in this study, ensuring that all students have equitable access to the benefits of AI-enhanced language learning.

In conclusion, this study provides compelling evidence that AI-driven applications, when integrated into the TBLT framework, can create a more effective, interactive, and student-centered learning environment. The combination of quantitative and qualitative findings offers a holistic view of the benefits and challenges of AI-enhanced TBLT, contributing valuable insights for educators, administrators, and policymakers interested in leveraging technology to enhance language instruction.

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