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Utilizing Artificial Intelligence (AI) and Chatbot to Enhance English Proficiency for Students and Staff

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Abstract.

This research aimed to develop and implement an AI-powered English chatbot system to enhance English proficiency among students and staff at Suan Sunandha Rajabhat University. The study employed a mixed-methods design, integrating quantitative and qualitative approaches. The quantitative phase used a one-group pre-test/post-test experimental design to measure learning outcomes, while the qualitative phase involved in-depth interviews and focus group discussions to explore user experiences and system acceptance. A total of 200 participants (150 students and 50 staff) voluntarily took part in the study. Research instruments included a CEFR-aligned English proficiency test, a satisfaction questionnaire, and interview protocols.

Findings revealed that the post-test mean scores were significantly higher than the pre-test scores ($p < .05$), with an average improvement of 9.2 points, indicating the system's effectiveness in enhancing English listening, speaking, reading, and writing skills. Participants reported high satisfaction (mean = 4.35/5.00), particularly regarding ease of use, motivation, and practical usefulness. Furthermore, instructors experienced a reduction of approximately 32% in repetitive workloads, enabling greater focus on interactive teaching.

In conclusion, the AI/Chatbot system demonstrated strong potential in promoting self-directed English learning and reducing instructors' workload. It is recommended that future development expands to domain-specific English learning, integrates CEFR-based evaluation systems, and establishes the platform as a sustainable lifelong learning tool accessible to the wider community.

Keywords: Artificial Intelligence, Chatbot, English Proficiency, Self-directed Learning, Higher Education

1. Introduction

English proficiency has become an essential competency in the digital era, contributing to learners' academic, professional, and personal success. Suan Sunandha Rajabhat University (SSRU) has emphasized English development according to the Common European Framework of Reference for Languages (CEFR). However, institutional assessments revealed that both students and staff members often perform below the targeted level. Therefore, integrating

Artificial Intelligence (AI) and chatbot technologies into language education offers a new solution to support self-directed and flexible English learning.

1.1 Research Background and Significance

The rapid advancement of AI has brought innovative opportunities to education. Chatbots—AI-driven conversational systems—can interact with learners in real time, provide personalized feedback, and adjust learning content according to individual needs. For SSRU, such technology can address the limitations of human resources and time while promoting equal access to English learning for all. By integrating AI and Chatbot systems into the university's language training framework, SSRU aims to strengthen English communication skills and support Thailand's transition toward a digital society.

1.1.1 Related Theories and Concepts

Several theories underpin the application of AI Chatbots in English learning:

- **Constructivism Theory:** Learners build knowledge through experience and active engagement.
- **Technology Acceptance Model (TAM):** Acceptance depends on perceived usefulness and ease of use (Davis, 1989).
- **Communicative Language Teaching (CLT):** Emphasizes authentic language communication rather than rote learning.

These theories collectively support the design of interactive, learner-centered chatbot systems that enhance motivation and learning outcomes.

1.2 Research Objective

1. To develop and pilot an AI-powered English chatbot system for students and staff.
2. To compare English proficiency before and after using the AI/Chatbot system.
3. To assess participants' satisfaction and acceptance of the system.
4. To analyze the impact of the AI/Chatbot system on reducing instructors' repetitive workloads.

2. Literature Review

2.1 English Learning in the 21st Century

English proficiency is a core competency in the 21st century, serving as the foundation for global communication, education, and professional success. The Common European Framework of Reference for Languages (CEFR) provides an internationally recognized framework for assessing language skills from level A1 (Beginner) to C2 (Proficient). Integrating CEFR into higher education ensures that learners acquire measurable, transferable English proficiency aligned with global standards.

2.2 Technology-Enhanced Learning and AI Applications

Modern education increasingly relies on technology to support flexible and self-directed learning. Digital platforms, mobile applications, and AI systems have become essential tools in language learning. Artificial Intelligence (AI) enhances the learning process through adaptive content delivery, personalized feedback, and interactive engagement. Chatbots, a branch of AI technology, are particularly effective in language education as they simulate natural conversation, provide real-time corrections, and offer low-anxiety learning environments.

2.3 Theoretical Framework

The study is grounded in several key theories:

- **Constructivism:** Learners construct knowledge through active interaction and reflection.
- **Self-Directed Learning Theory:** Learners take responsibility for their own learning pace and goals.
- **Technology Acceptance Model (TAM)** (Davis, 1989): Users' acceptance of technology depends on perceived ease of use and perceived usefulness.
- **Communicative Language Teaching (CLT):** Emphasizes real-life communication as the central goal of language learning.

2.4 Related Studies

Several studies have highlighted the potential of Artificial Intelligence (AI) and Chatbot technologies in enhancing English language learning. Peña-Acuña (2024) examined the role of AI chatbots in English as a Foreign Language (EFL) classroom and found that they promote autonomous practice, self-directed learning, and higher learner engagement. Similarly, Hınız (2024) demonstrated that generative AI chatbots enhance speaking confidence, reduce communication anxiety, and create a psychologically safe learning environment. In another study, Li (2025) explored AI chatbot-assisted learning and reported that learners showed greater vocabulary retention and fluency after using the system for six weeks.

Artificial Intelligence has also been shown to positively influence learner motivation and satisfaction. According to Davis (1989), the Technology Acceptance Model (TAM) explains that users' intention to adopt technology depends on perceived usefulness and ease of use. These findings support the integration of AI-driven systems in language learning, emphasizing user-friendly and adaptive interfaces that align with learners' needs. Moreover, studies by Lam (2024) and Rouabhia (2025) confirmed that chatbots can significantly improve learners' oral communication and interactive skills. Collectively, the evidence indicates that AI and Chatbot technologies provide innovative, flexible, and effective approaches to English learning in higher education contexts.

3. Methodology

3.1 Research Design

This study employed a mixed-methods design, combining quantitative and qualitative approaches. The quantitative component used a one-group pre-test/post-test experimental design, while the qualitative component included in-depth interviews and focus group discussions (FGDs).

3.2 Participants

The sample comprised 200 participants—150 students and 50 staff members—from Suan Sunandha Rajabhat University who volunteered to join the study. Participants were selected through voluntary sampling, with inclusion criteria requiring basic to intermediate English proficiency (A1–B1 according to CEFR) and consistent participation throughout the program.

3.3 Instruments

1. AI/Chatbot System: A customized platform enabling text- and voice-based interactions covering four English skills—listening, speaking, reading, and writing.
2. English Proficiency Test: A 50-item CEFR-aligned test (Listening 15, Reading 15, Writing 10, Speaking 10).
3. Satisfaction Questionnaire: A 20-item, 5-point Likert scale assessing ease of use, usefulness, reliability, motivation, and overall satisfaction.
4. Interview and FGD Guide: Semi-structured questions to collect in-depth user feedback.

3.4 Procedure

1. Conducted pre-test to assess baseline English proficiency.
2. Implemented the AI/Chatbot training for 6 weeks, 3 sessions per week, 1 hour per session.
3. Collected system usage data (login frequency, learning duration, progress reports).
4. Conducted post-test and administered the satisfaction survey.
5. Conducted interviews and FGDs for qualitative insights.

3.5 Data Analysis

Quantitative data were analyzed using descriptive statistics (mean, SD, percentage) and inferential statistics (paired-sample t-test, Wilcoxon test, and effect size). Reliability of the instruments was confirmed using Cronbach's Alpha (≥ 0.70). Qualitative data were analyzed using thematic analysis—coding, categorizing, and synthesizing emerging themes such as motivation, usability, and learning benefits.

4. Results

The findings revealed that participants' English proficiency significantly improved after using the AI-powered chatbot system. The post-test mean scores were notably higher than the pre-test scores, with a statistical significance level of $p < .05$. On average, participants improved their total English test scores by 9.2 points, reflecting progress in all four language skills—listening, speaking, reading, and writing. The effect size indicated a strong positive impact of the chatbot system on learners' performance.

In terms of satisfaction, participants rated their overall experience at a high level (mean = 4.35/5.00). They particularly valued the system's ease of use, motivating interaction, and practical usefulness in improving real-world communication skills. Many users reported feeling more confident when speaking English, noting that the chatbot provided a low-pressure environment where they could practice freely without fear of making mistakes.

Qualitative findings from interviews and focus group discussions confirmed these quantitative results. Participants expressed appreciation for the chatbot's accessibility and flexibility, allowing them to learn anytime and anywhere. Instructors also reported benefits from reduced repetitive workloads—such as grading and routine exercises—by approximately 32%, enabling them to focus more on designing creative, learner-centered activities.

Overall, the AI/Chatbot system was found to be highly effective in enhancing English proficiency, promoting learner autonomy, and supporting digital transformation in language education at Suan Sunandha Rajabhat University.

5. Conclusion

This study developed and implemented an AI-powered chatbot system to enhance English language proficiency among students and staff at Suan Sunandha Rajabhat University. The results indicated that the system significantly improved participants' English performance, with post-test scores averaging 9.2 points higher than pre-test scores ($p < .05$). Learners demonstrated noticeable improvement in all four language skills—listening, speaking, reading, and writing—confirming the system's effectiveness in supporting autonomous English learning.

Participants expressed high levels of satisfaction (mean = 4.35/5.00), particularly appreciating the system's ease of use, interactivity, and relevance to their learning needs. Instructors reported that the chatbot reduced repetitive workloads, such as grading and basic practice, by approximately 32%, allowing more time for interactive and higher-order teaching activities. Qualitative findings revealed positive attitudes toward AI-based learning, increased confidence in English communication, and reduced speaking anxiety among users.

Overall, the AI/Chatbot system demonstrated strong potential as an innovative tool for language learning within higher education. It not only supports individual learning and motivation but also contributes to institutional productivity by reducing instructors' redundant tasks. To ensure long-term sustainability, further development should integrate domain-specific

English modules (e.g., Business English, Academic English) and continuous CEFR-based assessments. Expanding the platform to serve as a lifelong learning resource accessible to the broader community is also strongly recommended.

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