RA Opportunity

If you are interested to contribute in this project as a Research Assistant,

please send your CV and Transcript to erick.purwanto@xjtlu.edu.cn

Basic Information			
Project Title	AI-Powered English Tutoring for EFL Learners Acing Proficiency Tests		
Project Proposed Start Date	01/Sep/2024	**Project Proposed End Date**	31/Aug/2027

Abstract

Existing studies have demonstrated chatbots' effectiveness in EFL teaching and material development. However, there is a research gap in developing chatbot systems tailored for tutoring EFL students to prepare for English proficiency tests, such as the IELTS. This project aims to fill this gap by developing a personalized chatbot system for EFL learners, primarily Chinese students. The system will offer interactive exercises and visualizations, to reinforce language concepts and test-taking strategies for various exam sections. For instance, a student can attempt the IELTS writing task of describing a graph/chart, and using that student input, the chatbot can then generate a new graph/chart, compare it with the original, and provide constructive feedback. For the next essay task, the system will grade student attempts and suggest better versions with increasing grades, highlighting the differences. Leveraging AI's potential, this project seeks to personalize EFL education, enabling students to excel in English proficiency tests.

1. Background

Previous research has confirmed the efficacy of chatbots in English as a Foreign Language (EFL) education in classroom settings, material development, and assessment [1, 2]. However, there remains a notable research gap concerning the development of chatbot systems specifically designed to tutor EFL students and prepare them effectively for English proficiency tests, such as the IELTS.

This project proposal aims to bridge this gap by developing a novel chatbot system tailored to provide personalized and targeted assistance to EFL learners, predominantly Chinese students. The system will provide interactive contents, including exercises and visual aids [3], to reinforce language concepts and test-taking strategies to approach different sections of the exam.

For example, in the reading section, the chatbot can assist students by summarizing articles, comprehending passages, and providing hints. In the first task of IELTS writing section, students can describe a graph or chart, with the chatbot then generating a corresponding version and offering comparison and feedback. For the second task, the system will grade student attempts [4], possibly both in Chinese and English, and then suggest

better essays with increasing grades, highlighting the improvements. In the speaking section, one possible exploration is to utilize AI-generated voices to guide pronunciation [5].

A chatbot system offers numerous advantages, including supporting self-paced learning [6], providing customized learning paths [7], and offering real-time feedback and correction [8]. By harnessing the power of AI, the project has the potential to transform the landscape of EFL education and empower students to excel in English proficiency tests.

2. Aims and Objectives

1. Develop a novel chatbot system tailored for EFL learners focusing on effective preparation for English proficiency tests.
2. Create interactive content to reinforce language concepts and test-taking strategies across various sections of English proficiency tests.
3. Implement features within the chatbot system such as summarizing articles and comparing student-generated graphs or charts while providing constructive feedback.
4. Conduct empirical research to evaluate the effectiveness of the chatbot system in improving EFL learners' language proficiency and performance in English proficiency tests.
5. Analyze user feedback and engagement metrics to assess the usability and acceptance of an EFL chatbot tutoring system.

3. Approaches and Methodology

Stage 1 - System Development: The project will begin with the development of the chatbot system tailored for EFL learners, predominantly Chinese students. This will involve designing and programming interactive features, including exercises and visual aids, to reinforce language concepts and test-taking strategies.

Stage 2 - Content Creation: Interactive content will be created to cater to various sections of English proficiency tests, such as reading, writing, and speaking. This will include summarizing articles, generating and comparing student-generated graphs or charts, and providing constructive feedback.

Stage 3 - Empirical Research: A structured empirical research methodology will be employed to evaluate the effectiveness of the chatbot system in improving EFL learners' language proficiency and performance in English proficiency tests. This will involve pre-test and post-test assessments, as well as data analysis to measure the impact of the chatbot system.

Stage 4 - User Feedback Analysis: User feedback and engagement metrics will be collected and analyzed to assess the usability and acceptance of the chatbot system among EFL learners. This will involve conducting surveys, interviews, and usability testing to gather qualitative and quantitative data on user satisfaction and preferences.

Stage 5 - Iterative Improvement: Based on the findings from empirical research and user feedback analysis, iterative improvements will be made to the chatbot system to enhance its effectiveness and usability. This will ensure that the chatbot system meets the needs and preferences of EFL learners, ultimately empowering them to excel in English proficiency tests.

4. Work Plan and Timeline

Year 1:

Months 1-3: Recruits Research Assistants, conduct a thorough review of existing research on chatbots in EFL education and English proficiency test preparation.

Months 4-6: Design and develop the chatbot system, focusing on interactive content creation and feature implementation.

Months 7-9: Pilot test the chatbot system with a small group of EFL learners to gather initial feedback and identify areas for improvement.

Months 10-12: Refine the chatbot system based on pilot test results and prepare for larger-scale implementation.

Year 2:

Months 1-4: Scale up implementation of the chatbot system, targeting a larger cohort of EFL learners, predominantly Chinese students.

Months 3-6: Conduct empirical research to evaluate the effectiveness of the chatbot system in improving language proficiency and test performance.
Months 4-11: Analyze research findings and begin iterative improvements to the chatbot system based on empirical data.
Months 6-12: Continue data collection and analysis, focusing on user feedback and engagement metrics to improve the system.

Year 3:
Months 1-6: Finalize iterative improvements to the chatbot system based on research findings and user feedback.
Months 3-9: Prepare for dissemination of project outcomes through academic publications, conferences, and workshops.
Months 6-12: Disseminate project outcomes and findings to relevant stakeholders in EFL education.

5. Expected Project Outcomes and Deliverables, and Potential for Future Development

Expected Project Outcomes and Deliverables:

1. Development of a novel chatbot system tailored for EFL learners, equipped with interactive content and features to support effective preparation for English proficiency tests.
2. Creation of interactive exercises, visual aids, and other content to reinforce language concepts and test-taking strategies across various sections of English proficiency tests.
3. Implementation of chatbot features such as summarizing articles, generating comparisons for student-generated graphs or charts, and providing constructive feedback.
4. Completion of empirical research evaluating the effectiveness of the chatbot system in enhancing EFL learners' language proficiency and performance in English proficiency tests.
5. Dissemination of research findings through conference papers, journal publications, and educational resources to contribute to the advancement of educational practices.

Potential for Future Development:

1. Expansion of the chatbot system to support additional target demographics beyond Chinese EFL learners.
2. Integration of advanced AI technologies to further enhance the chatbot's capabilities, such as NLP for more sophisticated interactions.
3. Collaboration with educational institutions and testing organizations to incorporate the chatbot system into formal EFL curricula and test preparation programs.
4. Development of mobile applications or web platforms to extend the accessibility of the chatbot system.
5. Innovations to support other disciplines.

6. Potential Value

This project contributes significantly to Active Learning by providing EFL learners with an interactive platform for language acquisition and test preparation. Through personalized assistance and real-time feedback, students foster deeper understanding and retention of language concepts.

Innovative Teaching is enhanced through the project's novel approach to EFL education utilizing AI technology. The chatbot system introduces innovative methods for language learning, such as AI-generated pronunciation guidance and interactive content creation.

The Student Experience is enriched as learners benefit from a more personalized and flexible learning environment. The chatbot system supports self-paced learning, customized learning paths, and real-time feedback, empowering students to take ownership of their learning journey.

Research-led Teaching is facilitated by the project's empirical and pedagogical research components. Findings from the research contribute valuable insights to the field of EFL education and inform future teaching practices and curriculum development.

Across the University, this project serves as a model for integrating AI technology into language education and test preparation, inspiring innovation and collaboration across departments and disciplines. By harnessing the power of AI to transform the landscape of EFL education, the project enhances the University's reputation as a leader in cutting-edge educational practices and student-centered learning initiatives.

7. Dissemination of results

The project outcomes will be disseminated through:

1. Conferences on language learning, AI-enhanced learning technology, and ESL education such as TESOL International Convention & English Language Expo, Computer-Assisted Language Instruction Consortium, and IEEE International Conference on Tools with Artificial Intelligence.
2. Peer-reviewed journals to publish research papers and contribute to the literature on language learning, AI-enhanced learning technology, and ESL education.
3. The Annual Learning and Teaching Colloquium, EDU Community of Practice, EDU Continuing Professional Development workshops, EDU's "Supporting Transnational Education" podcast serve as platforms for disseminating our findings and best practices among colleagues within XJTLU.