

Exploring the Use of Artificial Intelligence-based Technology to Enhance Creativity in ESL Speaking Classroom

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Abstract—This paper reports a quantitative study, which investigated the application of SpeechAce, an artificial intelligence-based platform, in English as a Second Language classrooms at a secondary school in Johor, Malaysia. The research aims to address the current challenges in enhancing speaking English proficiency and promoting creativity among 30 ESL learners. Data were collected using a pre-post-intervention assessment, student questionnaires, and classroom observations. Standardized tests, such as the Torrance Tests of Creative Thinking and the TOEFL iBT, were used to assess students' speaking skills and creativity, respectively, with the Foreign Language Classroom Anxiety Scale (FLCAS) employed to assess students' anxiety levels. The collected data were subjected to rigorous statistical and thematic analysis. The study's findings aim to contribute to the existing literature on AI in language learning and provide actionable insights for the integration of AI technology into ESL classrooms to enhance creativity and fluency.

Keywords—Artificial intelligence, Creativity, ESL learners, Speaking classroom

I. INTRODUCTION

The Malaysian National Education Blueprint (NEB) 2013-2025 [1] is a comprehensive plan designed to elevate the standard of education in Malaysia to an international level. It emphasizes the importance of 21st-century skills, including critical thinking, creativity, and effective communication, to equip students for future challenges. NEB also underlines the significance of utilizing technology to boost learning effectiveness, aiming to develop a holistic, integrated, balanced curriculum to prepare students for lifelong learning.

Technology integration in educational settings has become increasingly prominent in today's rapidly evolving digital era. Among the various technologies making waves, Artificial Intelligence (AI) has emerged as a transformative tool with immense potential to revolutionize language learning. In

particular, the application of AI-based technology in enhancing creativity within English as a Second Language (ESL) speaking classrooms has garnered significant attention.

Therefore, integrating AI-based technology in the ESL classroom could significantly enhance learning experience through its interactive, personalized, and efficient aspects. It may improve creativity and speaking skills among ESL learners. AI-based tools can also provide personalized feedback, enhance learner autonomy, and simulate real-life scenarios, thus enriching the learning environment and helping to bridge the gap between classroom learning and real-world application [2].

AI-based tools, such as natural language processing (NLP) algorithms, speech recognition systems, and intelligent tutoring systems, offer unique opportunities to engage and empower ESL learners creatively. These technologies can provide personalized feedback, facilitate interactive and immersive learning experiences, and deliver real-time language analysis, enabling students to refine their speaking skills while exploring their creative potential [3].

Moreover, integrating AI-based technology in the ESL-speaking classroom creates a learner-centric environment where students can engage in authentic and meaningful interactions. By leveraging AI tools, educators can design activities and simulations that stimulate creative thinking, encourage collaboration, and boost self-confidence among learners. This paradigm shift in language instruction enhances students' language proficiency and equips them with essential 21st-century skills, such as critical thinking, problem-solving, and effective communication.

This study therefore aims to explore the possibilities and implications of utilizing AI-based technology to enhance creativity in ESL-speaking classrooms. We explored the current landscape of AI applications in language learning,