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Impact of Gather Town on EFL Listening Processing Speed and Performance Within an OBE Framework

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ABSTRACT

This randomized controlled trial investigated the efficacy of immersive virtual platforms, specifically Gather Town, for enhancing listening comprehension in English-as-a-foreign-language instruction compared to traditional classroom approaches. Involving 240 2nd-year students, the study assessed listening processing speed using the novel Listening Comprehension Words per Minute assessment tool and International English Language Testing System scores. Results demonstrated significant improvements in both metrics for students engaged in Gather Town instruction, with disproportionately greater gains observed in lower-proficiency learners. The decision-tree analysis further identified baseline characteristics predictive of learning outcomes, providing data-driven insights for personalized educational technology deployment. This research addressed critical gaps in technology-enhanced language learning by validating the effectiveness of immersive environments for listening skills.

KEYWORDS

EFL Listening Comprehension, IELTS Performance, Outcome-Based Education (OBE), Technology-Enhanced Language Learning (TELL), Immersive Learning

INTRODUCTION

The global expansion of English-as-a-foreign-language (EFL) education has led to a significant demand for evidence-based instructional methodologies. Technology-enhanced language learning (TELL) has shown considerable potential in enhancing vocabulary acquisition, speaking proficiency, and cultural competence (Barsalou, 2008; Shadiev & Yang, 2020). However, listening comprehension, as one of the most cognitively demanding skills, remains underexplored, creating a critical bottleneck for EFL learners' academic success. Students face persistent challenges in real-time audio processing, accent recognition, and cognitive task coordination (Gacs et al., 2020; Vandergrift & Goh, 2012).

In EFL instruction, outcome-based education (OBE) and the presentation-practice-production (PPP) model represent two complementary instructional frameworks. OBE emphasizes backward design based on clearly defined learning outcomes to ensure alignment between instruction and assessment (Biggs & Tang, 2011; Spady, 1994), while PPP provides a microlevel instructional

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sequence that progresses from teacher-led presentations to student production (Harmer, 2007; Richards & Rodgers, 2014). Importantly, OBE and PPP are not completely opposing choices (Killen, 2007; Schmidt & Bjork, 1992). However, how these frameworks effectively influence listening comprehension outcomes in different environments—immersive virtual platforms versus traditional classrooms—remains an open question.

For this study, Gather Town was selected as the primary immersive virtual platform due to its unique spatial audio capabilities, which facilitate interactive listening exercises. Compared to other platforms such as Zoom or Second Life, Gather Town emphasizes natural social interaction, enhancing opportunities for students to practice listening skills in realistic scenarios. This interactive environment allows for a deeper exploration of how such platforms can positively affect EFL listening skill development.

Despite these advantages, existing research on virtual learning environments reveals significant limitations that hinder both theoretical understanding and practical applications. While studies have shown that virtual platforms can enhance student motivation (Makransky & Petersen, 2021), the reliance on single-site designs limits the generalizability of findings. Additionally, evaluations of Gather Town's effectiveness often overlook listening comprehension (Chen et al., 2025b). International research indicates cultural differences in technological effectiveness, but systematic cross-cultural comparisons remain scarce. The COVID-19 pandemic has further highlighted gaps in conventional video conferencing platforms, which fail to develop essential real-time processing skills for conversational competence (Gacs et al., 2020; Hodges et al., 2020). Although emerging technologies like artificial intelligence (AI) show promise, their integration with immersive virtual platforms remains insufficient (Huang et al., 2023).

Three key gaps limit our understanding of the effectiveness of virtual platforms for EFL listening development. First, current research disproportionately focuses on reading, vocabulary, and speaking skills, with minimal attention given to listening comprehension (Shadiev & Yang, 2020). Second, traditional proficiency measures such as International English Language Testing System (IELTS) scores often fail to accurately capture real-time processing efficiency. Third, machine learning techniques hold potential for educational data analysis (Lundberg et al., 2020), yet decision-tree models have not been effectively applied to identify which student profiles benefit most from immersive versus traditional instruction.

To address these limitations, a comprehensive multimethod design was employed. First, a multitask Listening Comprehension Words per Minute (LCWPM) assessment tool measured real-time listening processing efficiency across four cognitive processes: immediate recall, notetaking, information sequencing, and rapid response generation. Second, a multisite randomized controlled trial compared Gather Town instruction with traditional classroom instruction across various universities. Intervention effects were evaluated across three proficiency levels (IELTS < 5.0, 5.0–6.0, > 6.0). Finally, decision-tree algorithms predicted learning improvement categories based on baseline characteristics, facilitating personalized recommendations. This integrated design provided a thorough evaluation of virtual platform effectiveness for EFL listening comprehension within the OBE framework.

Research Hypotheses

Hypothesis 1: Within the OBE framework, there is a significant difference in listening comprehension speed (LCWPM) improvement between students receiving Gather Town instruction and those receiving traditional PPP instruction in offline courses.

Hypothesis 2: Within the OBE framework, there is a significant difference in IELTS listening score gains between the Gather Town group and the traditional PPP instruction group.

Hypothesis 3: A decision-tree model classifies students into IELTS listening gain categories (high, medium, low) with accuracy significantly above chance level on held-out test data.

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