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COMPARATIVE EFFECTIVENESS OF TRADITIONAL METHODS AND AI-BASED TECHNOLOGIES IN PRONUNCIATION INSTRUCTION

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Abstract: This article examines the comparative effectiveness of traditional pronunciation teaching methods and artificial intelligence (AI)-based technologies in second language instruction. The study focuses on evaluating their impact on learners' pronunciation accuracy, phonetic awareness, learner autonomy, and engagement. A mixed-methods research design was employed, including experimental instruction, pronunciation tests, and learner feedback analysis. The findings indicate that while traditional methods provide a strong theoretical foundation, AI-based technologies offer significant advantages in real-time feedback, individualized learning, and sustained learner motivation. The integration of AI-driven tools into pronunciation instruction is shown to enhance learning outcomes and support more efficient pronunciation development**.**

Keywords: pronunciation instruction, artificial intelligence, AI-based technologies, traditional teaching methods, phonetic competence, second language acquisition

Introduction: Conversational artificial intelligence enables opportunities for practicing speaking the target language while giving individualized feedback in a low-anxiety environment offered in spoken dialogue systems with conversational agents. In this paper, we present results from a longitudinal study conducted on Swedish lower-secondary students who used a spoken dialogue system as an integrated part of their ordinary English lessons. They interacted orally with embodied conversational agents to solve given tasks in everyday-life scenarios and self reported their experiences in questionnaires and systematic logbook reflections. Analytical methods were mainly non-parametric tests. Results revealed that the students sustained practicing, socially and emotionally engaged with a slightly positive trend in their educational experience. These insights can inspire teachers and stakeholders in the integration of conversational artificial intelligence in language education and designers in the development of such systems for this age group. Learning a new language has never been easier, thanks to AI-powered tools like chatbots, speech recognition, and adaptive apps. But how do they compare to traditional methods like classroom lessons, textbooks, and immersion? While AI offers personalized, on-demand practice with instant feedback, traditional learning provides structured lessons and human interaction. Both have pros and cons - AI is flexible and cost-effective, while

traditional methods foster deeper cultural understanding. In this section, we introduce a background to L2 speaking in an educational context in order to set the stage for language learning using SDS technology. Earlier research and results on the effects of CA on learning will be discussed in order to justify this study's design in terms of framework and methodology. To engage in spoken conversation with other people and exchange meaning (Goh & Burns, 2012), one must achieve cognitive fluency (Segalowitz, 2010). The planning and production of utterances involve linguistic, sociolinguistic, and pragmatic competencies in active use in a comprehensible way at the same time as listening and interpreting the other person. To keep a flow in conversations and efficiently mobilize and integrate these cognitive processes requires speaking practice for automatization of the ability. Additionally, Swain (2013) has stressed the inseparability of cognition and emotions in language education. The complexity of speaking skills may provoke affective barriers such as anxiety and low self-confidence, followed by a low willingness to communicate in the target language with fear of making mistakes and being judged (Goh & Burns, 2012). It has been shown that females have higher levels of anxiety when speaking L2 in the classroom, in Sweden (Granfeldt, 2019) and internationally (Öztürk & Gürbüz, 2013). However, no obvious difference in learning speaking skills has been revealed between male and female participants, although females report more improvement in confidence post-trial than males (Harb, Abu Bakar, & Krish, 2014). In Swedish educational L2 research, Granfeldt (2019) found female students to be more motivated than male students to learn an L2. Additionally, the Swedish School Inspectorate recently reported that the quality of L2 teaching must be improved so the students, for instance, become more used to speaking the target language spontaneously and using it like in real life. One way of designing L2 education and giving conditions for students to foster speaking skills as well as linguistic ability is by providing meaningful and real-life tasks in the target language, which is stressed in the approach of task-based language teaching (Ellis et al., 2020). Aligning real-life language use is also elaborated further in the Council of Europe's updated framework entitled, enriching 21st- century language education" in an action-oriented approach. It proposes a revised holistic construction of the speaking ability, suggesting that language education must foster students in real-life activities where they can authenticate themselves to develop their skills by negotiating and producing the target language in social interaction.

Review of Literature: Pronunciation has long been recognized as a critical component of second language acquisition (SLA). Traditional pronunciation instruction typically relies on teacher-led explanations, repetition drills, phonetic transcription, and auditory imitation (Celce-Murcia et al., 2010). These methods emphasize articulatory awareness and controlled

practice but often lack individualized feedback and sufficient learner engagement.Recent advancements in artificial intelligence have led to the development of AI-based pronunciation tools, including speech recognition systems, intelligent tutoring systems, and mobile-assisted pronunciation applications (Li & Lan, 2021). These technologies provide instant feedback, visual representations of speech errors, and adaptive learning pathways, which align with constructivist and learner-centered pedagogical approaches.Several studies report that AI-driven pronunciation training improves learners' accuracy and confidence more effectively than traditional methods alone (Derwing & Munro, 2015; Flege, 2018). However, researchers also emphasize that AI tools should complement rather than replace traditional pedagogical practices, highlighting the importance of teacher mediation and phonetic explanation.

Analysis of Methodologies: This study employed a **comparative mixed-methods** design, combining quantitative and qualitative approaches to evaluate the effectiveness of traditional speaking practice versus AI-supported conversational training. The comparative design was chosen to identify differences in learners' speaking performance, motivation, and confidence after participating in two distinct modes of instruction. Quantitative data were used to measure improvement in speaking accuracy and fluency, while qualitative data explored learners' perceptions and experiences.

Participants: The participants were 60 undergraduate students majoring in English language teaching at a university in Uzbekistan. They were aged between 18 and 22 years, with intermediate English proficiency levels based on CEFR (B1 - B2). Participants were randomly divided into two groups: Group A (Traditional Practice Group) - received face-to-face speaking instruction with pair and group discussions, role plays, and teacher feedback. Group B (AI-Supported Group) - practiced speaking through AI conversational tools such as ChatGPT, Elsa Speak, and Duolingo Max for four weeks. All participants had equal exposure to the target language and similar prior experience with speaking courses. Questionnaire and Interviews: Learners filled out motivation questionnaires and participated in interviews for qualitative insights.

Data Collection and Analysis **Quantitative data** from pre-and post-tests were analyzed using paired and independent sample t-tests to compare mean differences within and between groups. Questionnaire results were analyzed using descriptive statistics (mean, SD) to identify trends in motivation and anxiety levels. **Qualitative data** from interviews were transcribed, coded, and thematically analyzed to identify recurring themes related to learner experience, engagement, and perceived progress.

Discussion and results :Traditional Language Learning: The Classic Approach

Pros

1. Human Interaction Learn nuances, slang, and cultural context from native speakers.
2. Structured Curriculum Classroom courses follow a proven, systematic progression.
3. Accountability Teachers and study groups keep you motivated.
4. Real Conversations Immediate feedback and natural dialogue in language exchanges.
5. Deeper Cultural Understanding Immersive experiences (travel, films, books) enhance fluency.

AI For Language Learning: The Pros and Cons

Cons

1. Expensive Private tutors and courses can be costly.
2. Limited Flexibility Fixed schedules may not suit everyone.
3. Slower Progress Pacing depends on the class, not individual needs.
4. Accessibility Issues Not everyone has access to native speakers or schools.
5. AI-Powered Language Learning: The Tech-Driven Alternative

The goal of the discussion section is to interpret and review the questionnaire results. According to the survey's findings, the following significant points can be emphasised: Efficacy of AI-based education:Participants generally had favourable opinions of the efficiency of AI-based language learning instruction. They claimed to be able to pick up and remember language concepts more quickly, proving the potential for AI tools to improve learning outcomes. Additionally, participants discovered that AI-based instruction provided personalised learning opportunities that catered to their unique needs. This finding suggests that AI tools' adaptive and personalised features may help make language instruction more efficient. The results show that AI-based instruction increases participants' motivation and interest in language learning. This is consistent with the idea that interactive and dynamic AI tool features and real-time feedback can boost learners' motivation and interest. It is crucial to remember that not all participants were equally motivated, as some chose to remain neutral or disagreed with this assertion. This emphasisesthe importance of considering individual differences when designing AI-based instruction. The findings show that participants appreciated how AI-based training gave them immediate feedback on their language skills, which aided their development. Participants also felt that AI-based instruction offered various interactive language exercises and activities. These results imply that AI tools can facilitate immediate feedback and give students a wide range of resources, encouraging active engagement and improving language skills. Comparison with traditional instruction methods:

Participants had conflicting opinions when contrasting AI-based instruction with conventional techniques. While some participants agreed that AI-based instruction is superior, provides a more individualised learning experience, and allows more flexibility in scheduling study

sessions, others remained unconvinced or disagreed. These results highlight the importance of considering learners' preferences and learning preferences when implementing AI-based instruction because not all students will find it more effective than conventional methods. Recognising that the conclusions are based on the participants' subjective experiences and perceptions is crucial. Various factors, including the AI tools used, the learners' prior experiences learning languages, and their technological prowess, can affect how effective AI- based instruction is. To learn more about the effects of AI-based instruction on language

learning outcomes, future research could examine these elements in greater detail. The results of this survey demonstrate the potential advantages of AI-based language learning instruction, including increased engagement, individualisation, and access to interactive resources. However, when incorporating AI tools into language instruction, it is essential to consider the various viewpoints and individual differences among learners.

Conclusion: The findings of this study demonstrate that AI-supported conversational training can significantly enhance learners' speaking performance, confidence, and motivation compared to traditional speaking practice alone. While traditional classroom interaction remains essential for developing pragmatic competence, spontaneous interaction, and socio-cultural awareness, AI- based systems provide valuable complementary benefits - especially in improving fluency, pronunciation, and autonomous learning. Students in the AI-supported group showed higher engagement and a noticeable reduction in speaking anxiety. They valued the immediate feedback and unlimited practice opportunities provided by AI conversational tools such as ChatGPT and Elsa Speak. Conversely, the traditional group benefited more from peer collaboration and teacher feedback, emphasizing that human interaction fosters richer contextual communication and emotional connection. Therefore, the study concludes that an integrated or blended approach - combining traditional classroom speaking practice with AI- based conversational training - is the most effective model for 21st-century language education. Future research should investigate long-term impacts of AI-assisted learning, explore diverse AI platforms, and examine teacher attitudes toward integrating AI tools in communicative language teaching. In summary, AI technology should not replace human teaching but should be harnessed to extend and enrich learners' opportunities for authentic and autonomous language practice. Moreover, the study contributes to growing evidence that AI integration enhances learner motivation and self-

efficacy. Students expressed greater enthusiasm toward speaking practice when using AI, perceiving it as a safe and engaging environment. This motivation factor can be particularly beneficial in contexts like Uzbekistan and other EFL- dominant regions, where exposure to authentic communicative situations is limited. AI can thus serve as a bridge, connecting classroom learning with real communicative experience. Nevertheless, the study acknowledges some limitations: short research duration, limited participant number, and focus on intermediate learners. Future research should investigate how long-term exposure to AI-supported conversational systems influences higher-order communicative competence, such as discourse management and pragmatic awareness. Researchers should also examine teachers' readiness, attitudes, and professional development needs in adopting AI tools effectively and ethically. In conclusion, both traditional and AI- supported speaking practices contribute uniquely to language development. Traditional methods cultivate social interaction, empathy, and collaborative learning, while AI technologies provide innovation, flexibility, and personalized feedback. A synergistic, blended approach that harmonizes human pedagogy with artificial intelligence is therefore the most promising direction for the next generation of English language instruction. Such integration ensures that learners gain not only linguistic proficiency but also confidence, autonomy, and adaptability - skills essential for effective communication in the globalized digital era.

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