



INTEGRATING SCIENCE, THOUGHT, AND TECHNOLOGY: TOWARD AN ARTIFICIAL INTELLIGENT ENVIRONMENT

17/11/2025

ARTIFICIAL INTELLIGENCE IN TFL: PRONUNCIATION AND ACCENT

Valentina Ivanovna

Scientific Supervisor, Teacher of the Department of Teaching Languages Methodology and Educational Technologies, Uzbekistan State World Languages University

Akhmadova Dilbar Mansurjon qizi

Student, Uzbekistan State World Languages University

Abstract: *This research explores how AI-based pronunciation tools used in Teaching Foreign Languages (TFL) deal with different learner accents and speech clarity in Uzbekistan. Using ideas from Dugošija (2024) and Crompton et al. (2024), it reviews three popular TFL applications—ELSA Speak, Duolingo, and Speechling—and identifies issues related to calibration and inclusivity that often create difficulties for speakers with non-native accents. The study also introduces a new local model, the Inclusive Calibration Framework for Uzbek TFL Pronunciation (ICF-U), designed to make AI use more ethical, culturally sensitive, and technically accurate.*

Keywords: AI in TFL, pronunciation, accent bias, calibration, Uzbekistan

Introduction

AI has quickly changed the way foreign languages are taught, offering interactive and data-based methods that adapt to individual learners. In pronunciation practice, AI tools like speech recognition and instant feedback systems can help students improve fluency and clarity. However, these tools often define “correct pronunciation” as following a single standard accent, usually American or British. This can create challenges for multilingual learners whose pronunciation reflects their own linguistic and cultural background.

Dugošija (2024) warns that AI may erase cultural differences and unfairly mark valid pronunciation as wrong. For Uzbek learners, accent variety is normal due to native language influences, but current AI systems often treat these differences as errors. Crompton et al. (2024) also point out technical and institutional issues such as bias in algorithms, poor calibration, and low teacher knowledge of AI, which increase inequality in AI-supported language learning.

This study argues that AI pronunciation tools should focus on clarity and inclusivity rather than mimicking native accents. By examining three popular TFL apps, it shows how bias and calibration problems affect accent evaluation and proposes a framework to address these challenges in Uzbekistan.

Literature Review and Synthesis

AI-based pronunciation training is designed to improve accuracy, confidence, and motivation. However, research shows a tension between AI's technical efficiency and its ethical and cultural limits.

Dugošija (2024) notes that AI cannot fully understand human context, emotions, or cultural meaning. AI often equates “correct” pronunciation with being native-like, ignoring that English is used internationally. This bias favors certain accents while marginalizing others, encouraging learners to imitate accents instead of developing practical communication skills.

Crompton et al. (2024) focus on structural and institutional weaknesses. Their CEI&B model—Calibration, Explainability, Inclusivity, and Bias—points out four main issues:

1. models are poorly calibrated due to limited datasets
2. scoring methods are not transparent
3. diverse users are excluded
4. biased results reinforce inequality

For pronunciation apps, these flaws mean AI often misjudges how understandable a learner's speech is, especially for non-Western accents.

Together, these perspectives show that AI oversimplifies complex sociolinguistic features into numbers. Dugošija emphasizes the ethical problem of losing cultural diversity, while Crompton et al. highlight the structural problem of unfair technology. This raises a key question: How can AI respect linguistic variety while remaining accurate and fair?

This study uses the CEI&B model to analyze three TFL apps and suggest an inclusive approach suitable for Uzbek learners.

Original Analysis and Framework

App Analysis

ELSA Speak – Provides detailed phoneme feedback and personalized exercises. However, it stresses native-like pronunciation. For Uzbek learners, sounds like /θ/ and /ð/ are marked incorrect even when understandable.

Duolingo – Uses AI for short speaking exercises but has calibration issues; regional accents often receive lower scores.

Speechling – Combines AI scoring with human feedback but still misjudges Central Asian intonation patterns.

Systemic Flaws (CEI&B Perspective)

- **Calibration (C):** Western accent norms dominate; Uzbek phonology ignored
- **Explainability (E):** Numeric scoring without detailed guidance
- **Inclusivity (I):** Non-Western accents missing in datasets
- **Bias (B):** Non-standard but understandable pronunciations penalized

These issues confirm that technical and institutional problems create unfair learning outcomes.

Proposed Framework: Inclusive Calibration Framework for Uzbek TFL Pronunciation (ICF-U)

1. **Local Data Integration** – Collect Uzbek learner speech samples to improve accent recognition.
2. **Intelligibility-Based Scoring** – Evaluate clarity, not native-like imitation.
3. **Transparent Feedback System** – Provide visual-acoustic explanations rather than scores only.
4. **Teacher Mediation** – Teachers interpret and adjust AI feedback for cultural relevance.
5. **Annual Bias Audit** – Committees evaluate AI fairness across accents.

This framework strengthens calibration, transparency, inclusivity, and fairness.

Conclusion

AI pronunciation tools are transforming language learning but have cultural and technical limits. Dugošija (2024) warns that AI can erase accent diversity, while Crompton et al. (2024) show that poor calibration increases inequality. The proposed ICF-U framework offers a balanced, ethical approach that values clarity over conformity to foreign accents.

In Uzbekistan, adopting this framework can improve fairness, motivate learners with diverse linguistic backgrounds, and reinforce teachers' roles in guiding culturally sensitive pronunciation development.

References:

1. Crompton, H., et al. (2024). *AI in Education: Calibration, Explainability, Inclusivity, and Bias (CEI&B)*.
2. Dugošija, A. (2024). *Ethical and Cultural Risks of AI in Teaching Foreign Languages*.
3. Kolegova, O., & Levina, E. (2024). *Practical Benefits and Efficiency of AI in Teaching Foreign Languages*.