

# Phono Play: A Chetti Sound Museum

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## ABSTRACT

Minority languages worldwide are undergoing rapid phonological and lexical shifts due to sociocultural pressures and dominance of majority languages. This project develops PhonoPlay, a prototype application that transforms sociolinguistic research findings into an interactive learning tool for language preservation. Drawing on a case study of the Chetti community in Melaka, Malaysia, where the phonological variable (r) in word-final position is disappearing among younger speakers, the application integrates gamification mechanics such as scoring, levels, and speech recognition to encourage pronunciation practice. Learners engage in pronunciation challenges across different speech styles; formal and casual, thereby raising awareness of linguistic variation and identity. In other words, PhonoPlay works like a language learning game plus digital museum. Users play through pronunciation challenges, style-shifting tasks, and cultural activities. In return, they collect badges and fill their Chetti Sound Museum, making language learning fun, personal, and meaningful. Beyond the Chetti case, PhonoPlay offers a framework adaptable to other minority languages, particularly in multilingual contexts. This innovation bridges research, education, and technology, aligning with efforts to sustain linguistic diversity in the digital age.

**Keywords:** application, minority language, phonological variation, Chetti language, educational technology

## INTRODUCTION

Language variation is a key marker of identity, yet many minority languages face endangerment due to assimilation pressures and lack of intergenerational transmission. The Chetti language of Melaka, an indigenous Peranakan Indian language, illustrates this challenge. Recent sociolinguistic research reveals ongoing phonological shifts, particularly in the use of word-final (r), where younger generations increasingly omit the sound. Such shifts not only signal language change but also reflect identity negotiation within minority communities (Hamzah, et al., 2025).

Traditional documentation efforts often remain confined to academic research, with limited community engagement. While language documentation has noble aims, its traditional outputs often require significant re-evaluation and adaptation to genuinely serve the needs of language revitalization and learning within communities (Himmelman, 1998; Austin, 2021). Thus, there is a strong call and practical examples demonstrating the shift towards more accessible, learner-centric, and culturally relevant tools and engagement methods. To put it simply, there is a need for innovative educational tools that transfer linguistic research into accessible formats for both speakers and learners. Thus, gamification, with its potential to reduce language anxiety and enhance engagement, offers an effective avenue for revitalization.

## Problem Statement

Minority language revitalization efforts frequently encounter significant barriers that hinder their success. Firstly, there is often a lack of accessible tools specifically designed to teach and learn endangered linguistic features (Olko & Sallabank, 2021). Traditional language documentation, while aiming to create a 'multipurpose record' for speakers and learners, often produces outputs that are not ideal for revitalization.

Linguistic analyses, transcriptions, and grammatical annotations are frequently presented in orthographies or languages unfamiliar to the community, using specialized terminology that is not easily understandable to non-linguists.

Secondly, limited youth engagement emerges as a substantial challenge, as traditional learning methods often fail to capture their interest (Burova et al., 2021). Documentary corpora can be off-putting for younger learners if they focus on nostalgic views of the past, accompanied by negative evaluations of language changes like borrowing or mixing, which might be common among contemporary, non-traditional speakers. The absence of content appealing to children, such as lullabies or simple routines, further exacerbates this issue. To address this, there is a clear need to broaden documentation to include younger generations and less fluent speakers, capturing their actual language use, including any borrowing or mixing, and focusing on non-traditional and contemporary interactional events and locations like social media and interactive games. This approach aims to generate examples that learners, especially children, can actively engage with and put to actual use in their own daily lives.

In the case of the Chetti language, previous study demonstrates how phonological variation functions not only as a marker of identity but also as a sign of language loss. The ongoing reduction of features such as word-final (r) signals a potential weakening of cultural identity across generations. This underscores the urgent need for innovative, technology-driven interventions that move beyond documentation to active revitalization. PhonoPlay directly addresses this gap by transforming sociolinguistic insights into a gamified, accessible learning platform, ensuring that endangered linguistic features are not only recorded but actively practised and transmitted to younger speakers.

## Objectives

1. To Design a Gamified Prototype Application That Transforms Sociolinguistic Findings Into An Engaging Learning Platform.
2. To Raise Awareness of Phonological Variation (E.G., (R) Retention Vs. Deletion) Among Younger Generations.
3. To Provide a Model Applicable to Other Minority and Endangered Languages.

## PRODUCT DESCRIPTION & METHODOLOGY

Phono Play is a mobile application prototype with three core components:

1. Pronunciation Practice: Learners pronounce Chetti words containing variable (r); AI-based speech recognition gives instant feedback.
2. Gamified Learning Pathway: Levels and rewards motivate learners to progress from basic recognition to advanced style-shifting tasks (formal versus casual speech).
3. Cultural Integration: Words and phrases are embedded in culturally relevant contexts (songs, proverbs, oral histories).

The research data from 37 Chetti speakers informed the design of phonological variation modules (Hamzah, et al., 2025). The prototype uses Unity for interface design, paired with open-source speech recognition APIs. The steps are listed below:

1. **Step 1: Design & Content Preparation**
  - Select phonological examples
  - Record cultural content (songs, proverbs, oral histories)
  - Draft learning pathway (recognition → pronunciation → style-shifting)
2. **Step 2: Interface Development**
  - Use Unity (free Personal Plan)
  - Build main screens (Homepage, Practice, Pathway, Culture)
  - Import free assets (icons, badges, buttons)
3. **Step 3: Speech Recognition Integration**

- Use free APIs (Vosk / CMU Sphinx)

- Simulate recognition with pre-recorded correct/incorrect pronunciations

#### 4. Step 4: Gamification & Testing

- Add points, badges, levels

- Collect feedback to refine content & interface

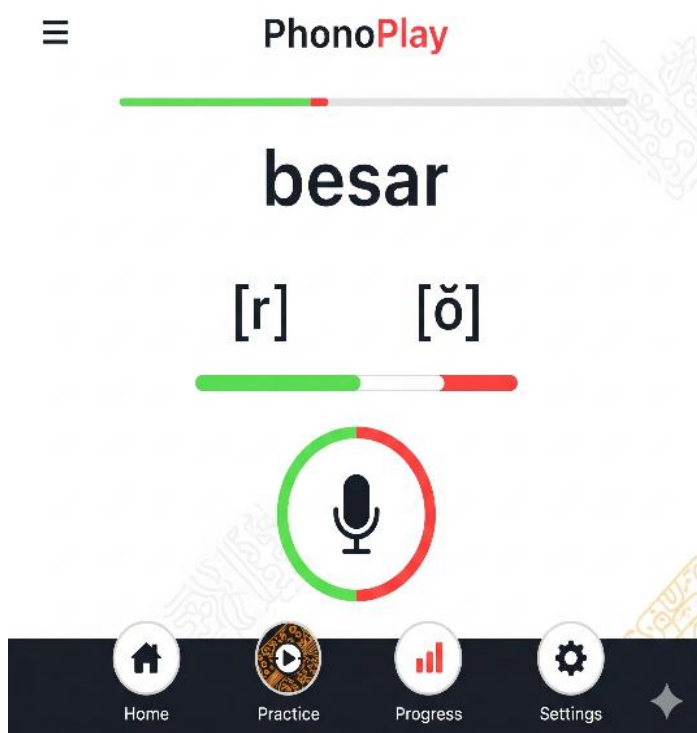
### Potential findings and commercialisation

The development of PhonoPlay is expected to yield several significant findings. First, the integration of gamification is anticipated to increase learner engagement with minority languages by providing an interactive and enjoyable platform for language practice. Through game-like elements such as levels, badges, and rewards, learners are motivated to actively participate in preserving and practising linguistic features that might otherwise be overlooked.

Second, the application has the potential to reinforce cultural identity among younger speakers, as the targeted phonological features are embedded within meaningful cultural contexts such as songs, proverbs, and oral histories. This direct link between language and heritage fosters pride and belonging while simultaneously raising linguistic awareness. Finally, the project may generate empirical evidence demonstrating the effectiveness of gamification in reducing barriers to learning endangered sounds, providing valuable insights for both linguistics and educational technology research.

Beyond its academic contribution, PhonoPlay offers strong commercialisation potential. The application can be deployed in collaboration with cultural heritage organisations, non-governmental bodies, and government agencies such as the Jabatan Kemajuan Orang Asli (JAKOA) and heritage councils. Such partnerships would enhance its reach and ensure alignment with community needs. Additionally, the framework is designed to be adaptable, making it suitable for licensing and modification for use with other minority and endangered languages, such as the Ainu in Japan and the Orang Asli in Malaysia. Its modular design ensures that content can be easily replaced while retaining the core gamified structure. Furthermore, PhonoPlay could be integrated into school curricula as a supplementary heritage education tool, allowing students to engage with their linguistic heritage in a structured, enjoyable, and technologically relevant way.

Figure 1 PhonoPlay



## Novelty and future research recommendations

The Novelty of Phono play Lies in Merging Variationist Sociolinguistics with Gamified Educational Technology. Unlike Conventional Language Applications, It Focuses Not Only on Vocabulary but on Phonological Variation as a Cultural Identity Marker. More Research on the Usage Of Phono play with Chetti Youths Should Be Done Where Aspects Such as Usability, Motivation, And Pronunciation Improvement Can Be Investigated Further. Furthermore, Language Awareness and Retention Before and After Using the App Can Also Be Measured To Provide Evidence of Effectiveness. Lastly, The Project Recommends Extending This Framework to Other Minority Communities, Ensuring That Technological Innovation Supports Linguistic Diversity Worldwide.

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