

# Revitalising the Kadazan Language through Kadazanlin GO!

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## ABSTRACT

The Kadazan language, once vibrant, now faces a critical threat to survival. According to the Expanded Graded Intergenerational Disruption Scale, it sits at a precarious level 6b, spoken mainly by adults over 30 while children are no longer acquiring it as their first language. Without urgent revitalization efforts that resonate with today's digital-native learners, this heritage language risks further decline. To address this challenge, KadazanlinGO! introduces a gamified mobile learning application designed to make Kadazan language learning engaging, accessible, and culturally immersive. Developed in close collaboration with native speakers, the app targets children, teens, and adults through a user-friendly interface that combines multimedia content with interactive gameplay. It is crafted using Flutter, enabling cross-platform deployment across Android and iOS with a single code base. Its key features include foundational vocabulary, common expressions with authentic audio pronunciation, and quizzes presented in three languages - Kadazan, Malay, and English. Its four carefully developed thematic modules are contextualized within the Kadazan culture, making learning relevant to the Global Goals, SDG4 and SDG11. This innovation is highly significant to both language and education, as it cultivates language acquisition skills and revitalisation while strengthening cultural identity. By championing cultural preservation through digital empowerment, KadazanlinGO! establishes a pioneering model for other endangered languages. It is a direct, tangible answer to the call of UNESCO's International Decade of Indigenous Languages 2022-2032. KadazanlinGO! represents a vital step toward preserving linguistic diversity and empowering future generations to reconnect with their heritage in a digital age.

**Keywords:** (Kadazan language, gamification, mobile application, indigenous languages, situated learning)

## INTRODUCTION

The Kadazan language, an Austronesian language indigenous to Sabah, Malaysia, represents a significant component of the nation's cultural heritage. However, it is currently facing a severe threat of extinction. The language's precarious status is formally classified at level 6b on the Expanded Graded Intergenerational Disruption Scale (EGIDS), a framework used to assess linguistic vitality (Lewis & Simons, 2010).

This classification signifies a critical disruption in intergenerational transmission, where the language is spoken primarily by the adult generation but is no longer being acquired by children as their first language. This situation leads to a rapid decline in the number of native speakers and jeopardizes the continuity of the cultural knowledge encoded within the language.

## Problem Statement

In the contemporary digital era, conventional language preservation methodologies often fail to engage younger, technologically adept generations. The challenge, therefore, is to develop revitalization initiatives that are not only accessible but also resonant with the learning modalities of digital natives. Mobile-Assisted Language Learning (MALL) has emerged as a powerful paradigm for delivering flexible and context-aware learning experiences (Kukulska-Hulme & Viberg, 2018). This project addresses this gap by proposing KadazanlinGO!, a technologically-driven intervention designed to foster language acquisition through an interactive and culturally rich mobile platform.

The principal aim of this project is to establish a sustainable digital framework for the revitalization of the Kadazan language.

## Objectives

1. To develop a gamified mobile application, KadazanlinGO!, that employs interactive pedagogical strategies to facilitate Kadazan language acquisition among diverse user demographics.
2. To develop a theoretically-grounded framework for indigenous language revitalization integrating linguistic and cultural content.
3. To validate the linguistic accuracy and cultural appropriateness of the application's content through a collaborative methodology involving native speakers, community stakeholders, and language experts from the Kadazandusun Language Foundation (KLF)

## PRODUCT DESCRIPTION AND METHODOLOGY

KadazanlinGO! is a well-thought-out mobile learning environment engineered to support Kadazan language acquisition through gamification, which has been shown to enhance student motivation and engagement in educational contexts (Dichev & Dicheva, 2017). It integrates various functional modules to enhance user engagement and learning outcomes. The application's architecture comprises three core functional modules:

### Lexical-Thematic Learning Module (Vocabulary)

This module focuses on building vocabulary and thematic understanding of the users. It provides contents that are both contextually rich and aligned with real-life communication settings. Users can explore themes through an intuitive interface where they can select topics of interest, engage in learning activities, and receive instant feedback on their performance. Each lexical item is accompanied by a native speaker audio recording to ensure accurate pronunciation modelling. Moreover, micro-lessons on basic grammatical structures such as sentence formation and noun classifiers are embedded within vocabulary activities to promote incidental grammar learning alongside lexical acquisition.

### Cognitive Reinforcement Module (Memory Match)

This feature utilizes memory-matching games to reinforce vocabulary and phrase retention. Beyond mere word recognition, the application includes contextual sentence-building challenges, where users match and rearrange words to form syntactically correct Kadazan sentences. This module is designed to reinforce learning through spaced repetition and retrieval practice that help users retain information over time. Scenario-based learning activities simulate real-world communicative situations such as market exchanges, greetings and traditional events, allowing users to apply their knowledge in context.

### Dynamic Assessment Module (Quiz Master)

This module provides adaptive quizzes and competitive leaderboards to dynamically assess user progress and maintain engagement. This means the system adjusts the difficulty of assessments based on user responses. If the users answer correctly, the next question becomes more challenging; if they struggle, the system provides easier questions or revisits fundamental concepts. The quizzes incorporate cultural and linguistic elements such

as idiomatic expressions, and traditional greetings to ensure that learning is not only linguistic but also sociocultural in nature.

The curriculum is structured around four thematic domains central to the Kadazan cultural context: (1) Personal and Familial Identity (Kokomoi, Dogo Sondii); (2) The World of Plants (Susumuni or Tinanom); (3) The Animal Kingdom (Tazam); and (4) Cultural Practices and Traditions (Koubasanan). Each lesson integrates multimedia elements, including imagery and authentic audio pronunciations.

The development of KadazanlinGO! is informed by a robust methodological framework that synthesizes pedagogical theory with modern software engineering practices.

## Pedagogical Foundations

The application's design is grounded in the principles of Situated Learning (Lave & Wenger, 1991) and Sociocultural Theory (Vygotsky, 1978). In alignment with situated learning, lessons are designed to simulate real-world conversations and interactions, contextualizing language use within authentic scenarios. Sociocultural Theory, which posits that learning is a fundamentally social process, informs the planned inclusion of community-oriented features to facilitate peer-to-peer learning and collaborative knowledge construction (Lantolf & Thorne, 2006). The integration of cultural notes throughout the app provides a richer learning experience, enabling users to understand the cultural nuances embedded within the language.

## Technical Implementation

The application's frontend is developed using the Flutter framework, ensuring cross-platform compatibility across Android and iOS. The backend infrastructure leverages Google's Firebase for robust user authentication, cloud storage, and real-time database management. Gamification mechanics are powered by Firestore and Cloud Functions. The user interface (UI) and user experience (UX) were prototyped in Figma, prioritising the integration of authentic Kadazan cultural aesthetics.

Importantly, Kadazanlingo! is designed with an offline capability, allowing users to access core learning materials such as vocabulary modules, pronunciation guides, and grammar lessons. This feature addresses potential barriers to digital access, particularly among rural Kadazan speakers, who might have limited internet infrastructure. By enabling offline learning, the platform enhances inclusivity and supports sustainable language engagement across diverse user groups.

## FINDINGS AND DISCUSSIONS

### RO1: Scalable, adaptable and replicable gamified mobile application

The project is anticipated to yield significant linguistic, educational, and societal impacts. The primary outcome is the creation of a validated digital resource that can demonstrably improve Kadazan language acquisition and strengthen cultural identity among its users. By aligning its content with formal educational curricula, the application serves as a critical resource for schools and educators.

Moreover, the platform's open modular design encourages community involvement, allowing educators, cultural practitioners, and native speakers to contribute new phrases, recordings, or cultural notes through a structured content management interface. This participatory model ensures that KadazanlinGO! remains dynamic, culturally authentic, and responsive to evolving community needs, thereby strengthening the comprehensiveness, balance, and long-term viability of the revitalization initiative.

Additionally, according to Maratin et. al. (2024), the threat of loss of indigenous heritage languages has spurred ethnic associations to start Multilingual Education (MLE) programs in their areas. Therefore, KadazanlinGO! offers multilingual support in Kadazan, Malay, and English to scaffold the users' learning process.

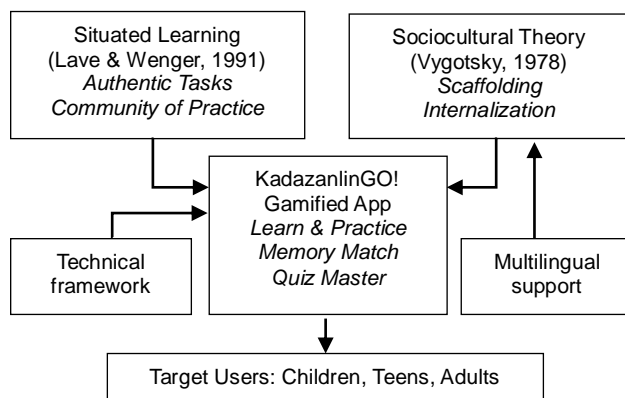
### RO2: Sustainability model and theoretically-grounded framework for language revitalization

The sustainability of KadazanlinGO! is predicated on a multi-faceted model involving institutional licensing for educational integration and strategic partnerships with cultural heritage organizations. This model positions the application as a scalable digital ecosystem rather than a standalone product. Furthermore, the project contributes directly to the achievement of UN Sustainable Development Goal 4 (Quality Education) and SDG 11 (Sustainable Cities and Communities) by promoting inclusive learning and safeguarding intangible cultural heritage.

The study resulted in the formulation of a theoretically grounded and technologically supported framework for indigenous language revitalization that integrates both linguistic and cultural content. Anchored in Situated Learning Theory, the framework promotes authentic task design that replicates real-life communicative situations, enabling learners to internalize linguistic forms within meaningful cultural contexts. In alignment with Sociocultural Theory, the framework incorporates scaffolding mechanisms including adaptive feedback loops, tiered difficulty progression, and contextual prompts to guide learners from basic comprehension to proficient language use.

Technically, these pedagogical principles are embedded within a mobile-assisted learning environment that leverages interactive modules for personalized learning. The inclusion of native speaker audio and community-led content validation ensures cultural authenticity and linguistic accuracy. Designed primarily for younger and adult heritage learners, the framework provides a sustainable, socially mediated digital model for revitalizing the Kadazan language through immersive, culturally grounded engagement (Figure 1).

**Figure 1** Theoretically-grounded framework for indigenous language revitalization



### RO3: Validated linguistic accuracy and cultural content through collaborations with strategic partners

Community engagement forms the backbone of the platform's design philosophy. Working closely with the Sabah Ethnic Language Association (SELA) and Kadazandusun Language Foundation (KLF) as both content contributors and mentors within the app's collaborative features, the initiative fosters collective ownership of the revitalization process. This participatory approach ensures that KadazanlinGO! is not merely a technological intervention but a community-empowered ecosystem, thereby enhancing both the comprehensiveness and practical value of the project for long-term linguistic and cultural preservation.

From a sustainability standpoint, KadazanlinGO! adopts a scalable architecture that allows for incremental content expansion and community-driven updates. Its modular structure ensures that new themes, lexical items, or grammatical lessons can be added without the need for full system redevelopment. The inclusion of a community content management system enables native speakers, educators, and cultural custodians to contribute directly to the learning repository, ensuring the app remains living, evolving, and culturally anchored.

## CONCLUSION AND RECOMMENDATIONS

The primary scholarly contribution of this work is the development of a theoretically-grounded and technologically robust framework for indigenous language revitalization. Technology plays a crucial role in modern revitalization efforts, offering new ways to document, teach, and promote endangered languages



(Hinton, 2011). The novelty of KadazanlinGO! resides in its synthesis of gamification, sociocultural learning theories, and a scalable cross-platform architecture, offering a replicable model for other endangered language communities. This innovation serves as a tangible contribution to UNESCO's International Decade of Indigenous Languages (2022–2032).

When compared with other digital tools for endangered language revitalization such as Duolingo's Indigenous Language Tracks (e.g., Navajo, Hawaiian) and community-led applications like Ma! Iwaidja or Kukama Online, KadazanlinGO! distinguishes itself through its integration of localized cultural content, community participation, and offline functionality. While many existing language apps rely primarily on text-based drills or translation-style exercises, KadazanlinGO! employs a situated learning approach that immerses learners in authentic Kadazan sociocultural contexts through scenario-based dialogue, traditional vocabulary, and ritual expressions. This pedagogical emphasis ensures that linguistic competence is accompanied by cultural literacy and identity reinforcement, aspects often underrepresented in mainstream digital language learning tools.

Future research will focus on enhancing the application's capabilities through the integration of emerging technologies. Key areas of investigation include the implementation of Artificial Intelligence (AI) for voice recognition and the development of Augmented Reality (AR) modules for immersive storytelling. These future directions aim to evolve KadazanlinGO! into a dynamic, community-sustained digital ecosystem for linguistic and cultural preservation.

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