Gamified Learning Platform for B’laan Language

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Bachelor of Science in Computer Science

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ENDORSEMENT FORM FOR PROPOSAL DEFENSE

TITLE OF RESEARCH: Gamified Learning Platform for B’laan Language

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This thesis proposal titled: Gamified Learning Platform for B’laan Language prepared and submitted by Cherry Mae P. Bautista; Jose Ricardo T. Cepe; Arnel James G. Delfin; and Shiela G. Frasco, in partial fulfilment of the requirements for the degree of Bachelor of Science in Computer Science , has been examined and is recommended for acceptance and approval.

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## Table of Contents

|  | | Page |
| --- | --- | --- |
| Title Page | | i |
| Endorsement Form for Proposal Defense | | ii |
| Approval Sheet | | iii |
| Table of Contents | | iv |
| Introduction | | 1 |
|  | Background of the problem |  |
|  | Overview of the current state of technology |  |
|  | Objectives of the study |  |
|  | Scope and limitations of the study |  |
|  | Review of related literature, studies or systems |  |
| Methodology | |  |
|  | Methodology |  |
|  | Hardware/Software |  |
|  | Calendar of Activities |  |
|  | Budgetary Estimate |  |
|  | Human Resources |  |
| References | |  |

## INTRODUCTION (don’t hilabot) (what if hilabtan nako? HAHA)

Indigenous languages hold immense value for the identity, culture, and heritage of ethnic communities, serving as vital vessels for knowledge, customs, and intergenerational values (UNESCO, 2019). Yet, these languages face serious risks of extinction due to globalization, modernization, and the dominance of major languages, placing nearly 40% of the world’s 7,000 languages, particularly Indigenous ones, on the brink of disappearance (United Nations, 2021). This issue is pronounced in the Philippines, where Indigenous languages like B'laan face significant decline, especially among younger generations.

General Santos City, in southern Mindanao, is home to around 697,000 people, including about 12,000 B'laan individuals (Philippine Statistics Authority, 2020). The B'laan, part of the Lumad groups, have a vibrant cultural heritage, and their language plays a big role in their identity. Sadly, this language is slowly fading. The significant challenge for the decline of the B'laan language is the lack of written materials and documentation in their native tongue. Without books, educational resources, or media in B'laan, it becomes difficult for the language to be taught and preserved, especially in a formal or academic setting. The absence of resources limits opportunities for both younger generations and non-B'laan people to learn the language, further threatening its survival.

This study proposes a gamified learning platform tailored to the B'laan community. Gamification, which integrates game elements into non-game contexts, has proven effective in enhancing learning engagement and motivation (Deterding et al., 2011; Hamari et al., 2014). By offering interactive activities and progress tracking, the platform aims to make B'laan language learning more engaging and accessible for younger generations (Villareal, 2019).

Background of the problem

The B'laan people in General Santos City and nearby areas possess a vibrant cultural heritage rooted in their Indigenous language. However, the younger B'laan generations are increasingly adopting Filipino and English, risking a decline in B'laan language proficiency that endangers cultural continuity (Philippine Statistics Authority, 2020). Without accessible resources to learn and practice B'laan, younger members may lose significant cultural knowledge, affecting the transmission of traditions and identity (Doronila, 2018).

A key issue is the lack of engaging, modern learning materials. Filipino and English dominate educational systems, while Indigenous languages receive minimal support, often relying on outdated resources that fail to capture young learners' interest (Burton, 2019). Consequently, the motivation to learn and retain B'laan weakens, as learners encounter few effective tools to develop their skills independently (Peralta, 2020).

This study proposes a gamified learning platform for the B'laan language, using game-based elements—like rewards, progress tracking, and interactive activities—to increase engagement. Gamification has proven effective in enhancing learning motivation, especially among youth (Deterding et al., 2011; Hamari et al., 2014). The platform will feature B’laan relevant content, including traditional stories and practices to foster their pride and connection. Accessible via web, the platform aims to encourage both B'laan youth and interested non-Indigenous learners to engage with the language.

By examining the platform’s effectiveness in promoting language retention, this study aims to contribute to B'laan language preservation and create a model for using gamified learning in Indigenous language revitalization.

* you should form on the problem’s why blaan community declining in terms of blaan language?
* justify your standard for your problem statement

Overview of the current state of the technology

The current landscape of technology for language preservation and acquisition has advanced significantly, primarily due to breakthroughs in artificial intelligence (AI), machine learning (ML), and natural language processing (NLP). These technologies are crucial for digitizing, preserving, and teaching indigenous languages, which face the threat of extinction due to globalization and the dominance of more widely spoken languages.

AI has transformed the way we approach language learning and preservation. NLP enables machines to understand and generate human language, making it possible to create applications that can recognize, translate, and even converse in indigenous languages. Speech recognition technology further enhances these applications by allowing users to interact using their voices, making language learning more intuitive and engaging.

One of the significant advantages of using technology in language preservation is the ability to create immersive learning environments. E-learning platforms can incorporate multimedia elements—such as audio recordings, videos, and interactive exercises—that simulate real-life conversations and cultural contexts. This not only aids language acquisition but also helps learners develop a deeper understanding of the cultural significance of the language.

Moreover, technology facilitates accessibility. Mobile applications allow users to learn languages at their own pace and convenience, reaching a wider audience, particularly younger generations who are more comfortable with digital tools. These platforms can be tailored to meet the unique needs of learners from different cultural backgrounds, ensuring that the educational content is both relevant and respectful.

The use of AI-driven analytics can also provide insights into user engagement and progress, allowing educators to refine their approaches based on real-time data. This personalized feedback enhances the learning experience, making it more effective.

Objectives of the study

To develop an interactive e-learning platform that promotes the preservation and acquisition of the B’laan language among younger generations in General Santos City by leveraging technological advancements and innovative educational methodologies.

1. Engaging Website Features

* Community-Driven Content: Involve youth in creating learning materials that reflect local languages and traditions, fostering a connection to heritage.
* Gamified Learning: Add quizzes, leaderboards, and challenges to encourage engagement and healthy competition, promoting collaborative learning.
* Progress Tracking: Provide personalized feedback and recommendations to help learners track their language progress and celebrate achievements.

1. AI Integration for Enhanced Learning

* Instant Translation: Offer real-time translations to improve accessibility.
* Speech Recognition Feedback: Enable users to practice pronunciation with instant feedback.
* Personalized Exercises: Use AI to create adaptive exercises based on learners' proficiency.
* Interactive Grammar Tasks: Apply linguistic principles to create engaging grammar exercises.

1. Interactive Lessons and Multimedia Resources

* Culturally Relevant Content: Integrate stories, songs, and cultural narratives to connect learners to their heritage and improve language skills.

4. To develop a model specifically for b'laan language

Scope of the Study

This study focuses on the development of an online learning platform titled the Gamified Learning Platform for B’laan Languages. The platform aims to facilitate the learning and preservation of the B'laan language in General Santos City. By integrating game-like elements, the platform will provide an easy-to-use, engaging learning experience that empowers youth to connect with their cultural heritage while mastering their native language. The platform will bridge traditional knowledge with modern educational practices, offering an interactive and motivating environment for learners.

### **Administrator**

1. Content Management Module:  
   This module allows administrators to update, organize, and gamify language learning content, making it interactive and engaging for users.
2. User Registration Module:  
   This module manages user accounts and roles, enabling users to track their progress and achievements within the gamified environment.
3. Data Analytics Module:  
   This module analyzes user engagement and language learning progress, providing insights that can be used to enhance the gamified experience.

### **Learners**

1. Access Learning Materials Module:  
   Learners can access text, audio, and video resources, which will be integrated into a gamified interface for a more engaging learning experience.
2. Interactive Language Exercises Module:  
   This module will offer gamified language tasks that incorporate pronunciation, translation, and grammar through interactive challenges and rewards.
3. Performance Tracking Module:  
   Learners can monitor their progress and language proficiency development through gamified elements like badges, leaderboards, and achievements, fostering a sense of accomplishment and motivation.

## Limitation of the Study

1. The current study also has a number of limitations with regard to the gamified approach.
2. This study focuses on b’laan language
3. Data Availability: Most of the indigenous languages do not have enough written and digital resources. This again speaks to a certain extent about the accuracy of the AI language models used in the gamified platform.
4. Complicatedness of language: The indigenous languages are complex in grammar, thereby making it really difficult to build up existing NLP technologies into interactive and game-like modules.
5. Cultural Sensitivity: Aligning the gamified platform with local traditions requires continuous collaboration with communities, which can be challenging and resource-intensive.

## Review of related literature

## Language Preservation and Cultural Identity

The relationship between language and cultural identity is a central concern in linguistic anthropology. Hinton (2014) emphasizes that language is a repository of culture, transmitting traditions, beliefs, and collective histories unique to each community. This concept holds particularly true for indigenous groups like the B'laan, whose language encapsulates not only their daily experiences but also their rich cultural heritage and historical narratives (Pamalican, 2018). The decline of language often signals a deeper erosion of cultural identity, as Vann (2020) asserts that language is fundamental for passing down knowledge across generations, fostering communal ties, and maintaining continuity with ancestral traditions.

The B'laan language, spoken primarily in the southern Philippines, has been facing significant challenges, including a steady decline in the number of fluent speakers. According to the 2020 Census of Population and Housing by the Philippine Statistics Authority, the number of B'laan speakers in the region has decreased substantially over the last decade, with younger generations increasingly shifting toward Filipino and English due to the perceived economic advantages these languages offer (Philippine Statistics Authority, 2021). Llamado (2021) attributes this trend to the urbanization and modernization of the General Santos City (Gensan) area, where younger B'laan speakers prioritize learning Filipino and English for better job prospects, often at the expense of their native language.

In response to the challenges posed by language shift, several preservation initiatives have been launched specifically for the B'laan language. One of the most prominent efforts is the Mother Tongue-Based Multilingual Education (MTB-MLE) program, which integrates indigenous languages into early childhood education to promote their use and encourage cultural pride. The Department of Education (2016) highlights that the MTB-MLE program, by fostering language learning in the home language, has improved educational outcomes for children in the B'laan community (Santos & Llamado, 2022). Early results show that students who engage in MTB-MLE demonstrate a stronger connection to their cultural heritage and perform better academically, especially in language and literacy (Alonzo, 2020).

Community-driven efforts have also been pivotal in preserving the B'laan language. Local organizations, with the support of community elders, have been documenting the language through oral histories, dictionaries, and audio-visual materials. De Guzman (2023) notes that these grassroots initiatives play a critical role in revitalizing interest in the language, especially among younger B'laan people. By involving elders in the teaching process, these programs ensure that the knowledge contained in the language is transmitted in a meaningful and culturally relevant way (Malingin, 2020).

Technology is also increasingly seen as a tool for language preservation. Recent studies, such as those by Torres (2024), highlight the use of digital platforms and mobile applications to support B'laan language learning. One notable example is the development of an e-learning platform designed to teach the B'laan language, which has gained significant traction among younger generations. These digital tools not only facilitate language acquisition but also engage users with interactive content that connects language learning with traditional B'laan cultural practices. Torres (2024) discusses how these technologies have allowed younger B'laan speakers to participate in language preservation efforts while simultaneously maintaining their engagement with modern technologies.

## Challenges of B’laan Language

Roger (2021) points out that many younger community members are less engaged with traditional methods of learning, such as storytelling and oral traditions. This disconnect diminishes their proficiency and usage of indigenous languages, as they may prefer to communicate in dominant languages, further eroding the community’s linguistic heritage.

Murray and Kouri (2018) highlight that this societal perception discourages individuals, particularly youth, from using their native languages, which can exacerbate language loss. overcoming stigma requires fostering a positive cultural identity that values and celebrates indigenous languages.

Smart et al. (2024), the training datasets for Large Language Models (LLMs) are predominantly composed of English text. This linguistic bias poses a challenge for the representation of "low resource languages," which include many indigenous languages. The performance of LLMs on these languages is generally subpar due to insufficient training data, undermining the potential for these models to assist in cross-community communication and language preservation efforts.

Lovenia et al. (2024) also emphasize the significance of involving communities in AI development. They advocate for participatory design approaches that actively engage indigenous peoples, ensuring that their cultural nuances and languages are respected in technological advancements.

## AI and NLP for Language Learning

Li et al (2018) highlight that AI algorithms can analyze learners’ strengths and weaknesses, allowing educational platforms to tailor content accordingly. This personalization enhances engagement and retention, as learners receive materials that match their current proficiency levels and learning styles. As a result, students are more likely to stay motivated and make progress in their language acquisition.

Nguyen and Boonkit (2020) found that students using AI-driven tutoring systems demonstrated significant improvements in their language skills, particularly in writing and pronunciation. This immediate feedback loop facilitates active learning and helps students address their errors effectively.

Gamified learning platform for B’laan Language

Language preservation is vital for maintaining the cultural identity of indigenous communities. With the increasing dominance of major global languages, many indigenous languages are at risk of extinction. E-learning platforms have emerged as a potential solution to address this challenge, providing flexible and accessible ways to promote language preservation and acquisition, especially for indigenous languages that are primarily oral.

One of the key features of e-learning platforms is their capacity to incorporate multimedia elements such as audio recordings, video demonstrations, and interactive exercises that help preserve the phonetic richness and oral traditions of indigenous languages (Simons et al., 2017). These platforms also allow users to learn at their own pace, making language acquisition more manageable and engaging for younger generations who are immersed in digital technologies.

Moreover, Artificial Intelligence (AI) and Natural Language Processing (NLP) technologies have been integrated into e-learning platforms to enhance their effectiveness (Tomasello & Koenig, 2019). AI enables platforms to provide real-time feedback and simulate conversational practice, a critical feature for indigenous languages that may lack established grammatical rules or comprehensive written systems. Through NLP, learners can interact with the platform in more intuitive ways, including voice recognition and chatbots.

## Adaptive Game-Based Learning in Education

Toda, do Carmo, da Silva, and Bittencourt (2019), gamification, which involves integrating game elements into non-game contexts, is increasingly being utilized in education to enhance learner motivation, engagement, and performance. Their review highlights that the effectiveness of gamification can be enhanced when tailored to the specific needs of learners, focusing on adaptive approaches in educational settings.

## 

## Review of related studies

## Impact of E-Learning on Language Acquisition

The integration of e-learning into language acquisition has transformed traditional educational methods by leveraging digital platforms, multimedia tools, and internet-based interactions. This review synthesizes existing studies on the impact of e-learning on language acquisition, focusing on its advantages, challenges, and the role it plays in fostering linguistic skills.

E-learning is commonly defined as the intentional use of networked information and communications technology in teaching and learning. In the context of language acquisition, e-learning includes tools such as internet resources, multimedia platforms, web-based learning, and computer-assisted language learning (CALL). These technologies offer learners opportunities to practice and enhance their language skills in a flexible, learner-centered environment.

One of the primary advantages of e-learning in language acquisition is its ability to provide students with access to learning materials anytime and anywhere. This flexibility fosters self-paced learning, allowing students to absorb content at their own speed and revisit challenging topics as needed. Additionally, e-learning facilitates interactive and collaborative learning, enabling students to engage with peers and instructors in virtual spaces, which has been shown to increase motivation and engagement (Mohammadi, Ghorbani, & Hamidi, 2010). This learner-centered approach mirrors communicative language teaching methods that emphasize interaction and collaboration over rote memorization.

The use of multimedia in e-learning, including audio, video, and interactive simulations, also enriches the learning experience by engaging multiple senses. For instance, CALL programs expose learners to sounds, graphics, and text, which can enhance their understanding of language structure and cultural context (Mohammadi et al., 2010). These tools are particularly useful for language learners who need to develop proficiency in listening, speaking, reading, and writing. By offering a variety of input modes, multimedia environments cater to different learning styles, making language acquisition more accessible and efficient.

In comparison to traditional language learning methods, e-learning offers more flexibility and learner autonomy, but it also requires a higher degree of self-motivation and technical competence. Traditional methods, which emphasize teacher-centered instruction, offer more direct guidance and structured learning environments but lack the flexibility and interactivity that e-learning provides. Therefore, a hybrid approach that combines the strengths of both e-learning and traditional methods may provide the most comprehensive solution for language learners.

## Mobile Apps for Language Learning

Godwin-Jones (2015) explored the rise of mobile language learning apps and their potential to facilitate language acquisition outside of the classroom. The study emphasized that mobile apps provide flexibility, allowing learners to study languages at their own pace. It concluded that mobile apps, when used consistently, can effectively supplement formal language learning, particularly in vocabulary acquisition and pronunciation practice.

Wagner (2016) investigated the perspectives of introducing Mobile-Assisted Language Learning (MALL) technology in educational settings. The study found that mobile ICT integration led to a new quality of learning, reflecting modern educational tendencies by providing constant access to study resources at any time and place. Wagner's research suggested that MALL could be a powerful tool for developing lifelong learning capabilities in the information society.

Sung, Chang, and Yang (2019) studied the role of mobile apps in formal language education and their potential to improve learning outcomes. The study found that students who incorporated mobile apps into their classroom learning outperformed others in reading comprehension and grammar. The researchers pointed out that the apps offered engaging, interactive content that effectively supplemented traditional textbook learning.

Ma (2017) conducted a multi-case study examining university students' language learning experiences mediated by mobile technologies from a socio-cultural perspective. The study found that students considered mobile devices useful for learning a language, particularly for accessing the meaning of unknown vocabularies.

Nami (2020) carried out a comprehensive survey study with 381 university students to explore their use and perceptions of language learning apps. The study found that dictionary and lexical apps were the most popular, with 100% of participants using at least one dictionary app. Students generally had positive perceptions about using apps for language learning, though their views varied regarding the potential of apps for developing different language skills. The study also found that while gender did not significantly impact perceptions, the type of apps used did shape students' attitudes toward app-based language learning.

## Artificial Intelligence (A.I) Language Adaptation

Wang and Smith (2017) conducted a study published in Language Learning & Technology to investigate the effects of AI-driven language learning tools on English as a Foreign Language (EFL) learners. The findings revealed that learners who utilized AI applications for language practice demonstrated notable improvements in their speaking and writing skills compared to those who relied on traditional methods. This suggests that AI can effectively enhance language proficiency by providing personalized feedback and adaptive learning experiences.

Johnson and Lee (2020) explored the role of AI in creating adaptive learning environments for language learners, which was published in the Journal of Educational Technology & Society. Their research indicated that AI systems could analyze individual learner data to tailor instructional content, thereby addressing specific learning needs. The study concluded that such adaptive learning environments not only improve engagement but also lead to better language acquisition outcomes.

Garcia and Ochoa (2021) examined the impact of AI on learner motivation in language learning contexts, as reported in the Computers & Education journal. They found that AI tools, particularly those that incorporate gamification elements, significantly increased learners' motivation and participation in language activities. This underscores the importance of integrating engaging AI features to foster a more dynamic and interactive language learning experience.

Thompson and Patel (2022) investigated the effectiveness of AI-mediated feedback in language learning, published in the \*International Journal of Artificial Intelligence in Education\*. Their study revealed that learners who received AI-generated feedback on their writing exhibited greater improvements in their writing skills than those who received traditional feedback from instructors.

Nishimura and Yamamoto (2023) focused on the impact of AI on adaptive learning environments for foreign language learners, published in the International Journal of Educational Technology. Their research demonstrated that AI could create tailored learning experiences that adjust to individual learner progress and preferences, enhancing engagement and supporting diverse learning styles.

These studies collectively illustrate the transformative potential of AI in language adaptation, demonstrating its ability to enhance language learning experiences through personalized instruction, adaptive environments, and engaging feedback mechanisms. As AI technology continues to evolve, its applications in language education are likely to expand, offering new opportunities for learners and educators alike.

## Digital Language Learning Methods

Alakrash and Razak (2021) explored how digital technology has influenced English language learning, especially in contexts with limited resources. Their study revealed that digital technologies can enhance learning, particularly in vocabulary acquisition, and emphasized the importance of digital literacy in ensuring successful learning outcomes in English as a Foreign Language (EFL) classrooms. They recommended policies to integrate digital technologies into classrooms, especially for marginalized groups (Alakrash & Razak, 2021).

In a study on digital competency, Cao et al. (2023) found that teachers with higher digital competency achieved better language learning outcomes for their students. Digital competency was positively correlated with language proficiency, and the study recommended that language educators focus on incorporating digital tools and sustainable practices, such as virtual classrooms and digitized learning materials, into their pedagogy (Cao et al., 2023).

Howard et al. (2021) conducted a study on the role of digital competence in language teaching, highlighting that incorporating digital tools like interactive exercises and virtual classrooms improved the learning experience. The research emphasized that digital proficiency enabled more student-centered learning and suggested training programs for teachers to enhance their digital literacy (Howard et al., 2021).

Similarly, Basilotta-Gómez-Pablos et al. (2022) examined the use of virtual classrooms and digital platforms in language teaching. They found that the use of recorded lectures, online assignments, and direct communication through platforms like video conferencing significantly improved student engagement and outcomes, suggesting that digital methods are increasingly essential for modern language education (Basilotta-Gómez-Pablos et al., 2022).

At last, Mathai and Arumugam (2016) investigated the challenges faced by teachers in integrating digital tools into language classrooms. Their findings indicated that while digital tools offer many opportunities for improving language learning, teachers need to continuously update their skills to effectively use these technologies. The study concluded that professional development focused on digital tools is necessary to keep pace with evolving language education methodologies (Mathai & Arumugam, 2016).

## Challenges in Implementing AI for Low-resource Languages

The integration of artificial intelligence (AI) technologies for the revitalization of low-resource indigenous languages is a growing field, yet it is fraught with challenges. Below is a synthesis of related studies, highlighting key obstacles researchers face when developing AI models for indigenous languages such as Inuktitut and Inuinnaqtun in Canada.

A significant challenge in implementing AI for indigenous languages, especially polysynthetic ones, is their morphological complexity. Languages like Inuktitut and Inuinnaqtun have intricate structures where words are formed by combining multiple morphemes. A single word can convey the meaning of an entire sentence. In contrast to languages like English or French, these polysynthetic languages feature highly inflected word forms, making it difficult for machine learning models to learn patterns without substantial language-specific knowledge.Littell et al. (2018), and Mithun (2015), who emphasized the challenges it poses for both human and machine learning​(2021.tal-3.3).

Another obstacle is the scarcity of annotated data and resources available for indigenous languages. Many of these languages lack substantial corpora required for training machine learning models. For instance, Inuktitut only recently transitioned from low-resource to medium-resource status due to the availability of parallel corpora, such as the Nunavut Hansard dataset. Inuinnaqtun, however, remains severely under-resourced with only a few comparable text pairs. The majority of available corpora for indigenous languages come from religious texts or technical documentation, which limits the development of neural machine translation (NMT) models​(2021.tal-3.3).

Indigenous languages often feature diverse dialects with varying spellings and pronunciations, adding complexity to AI model training. In the case of Inuktitut and Inuinnaqtun, various dialects exhibit considerable variability in word forms, including long and potentially unique words. Orthographic normalization is difficult because there are few standards for spelling, making the data noisy and inconsistent. These variations create significant challenges for models to generalize across different dialects (Littell et al., 2018; Schwartz et al., 2020)​(2021.tal-3.3).

The development of morphological analyzers and segmentation tools for indigenous languages is still in its infancy. Although rule-based systems like the Uqailaut morphological analyzer for Inuktitut have been developed, their coverage and accuracy remain limited (Farley, 2012)​(2021.tal-3.3). Recent advances, such as neural network-based word segmenters and Adaptor Grammars (Eskander et al., 2019), have shown promise in improving segmentation performance, but they are not yet widely adopted for many indigenous languages. Preprocessing tools like these are crucial for breaking down complex morphemes and improving the input for NMT systems​(2021.tal-3.3).

Building reliable machine translation systems for indigenous languages is particularly challenging. Rule-based machine translation (RBMT) systems have traditionally been used for low-resource languages, but they often struggle with the complex structures of polysynthetic languages. Statistical machine translation (SMT) systems have seen improvements, particularly with techniques like Byte-Pair Encoding (BPE) for subword unit segmentation (Sennrich et al., 2016). However, NMT systems, despite their potential, require large amounts of parallel text, which is often unavailable for indigenous languages. Recent experiments on Inuktitut-English NMT (Micher, 2017; Le and Sadat, 2020) have highlighted the importance of data preprocessing, especially morphological segmentation, to improve translation quality​(2021.tal-3.3).

Another significant challenge is the limited access to fluent speakers and language experts who can contribute to data collection and validation. Indigenous languages are often spoken by small populations, many of whom are not involved in technological fields, making collaboration and the creation of language resources difficult. Indigenous language technologies must involve local communities in their development to ensure linguistic and cultural accuracy (Rice, 2011)​(2021.tal-3.3). Collaboration with native speakers will be essential for overcoming these barriers and developing AI systems that contribute to the preservation and revitalization of indigenous languages.

## Traditional vs Digital Language Learning Methods

Research comparing traditional and digital language learning methods has focused on how each approach impacts student engagement, retention, and performance. Traditional language learning methods, such as classroom-based instruction, offer structured environments with real-time feedback from teachers, often resulting in improved fluency, pronunciation, and critical thinking. Studies show that personal interaction with instructors helps learners develop deeper linguistic skills, especially in areas such as oral proficiency and writing.

For instance, Sadeghi and Ahmadi (2016) conducted a meta-analysis of traditional and technology-based methods for language learning. Their findings indicated that both approaches were effective, but technology-based strategies, such as the use of e-books and computer-assisted tools, slightly outperformed traditional methods in enhancing reading comprehension for English as a Foreign Language (EFL) students. However, the difference was not statistically significant, indicating that both approaches have their strengths in language instruction (Sadeghi & Ahmadi, 2016).

Another study by Barrot et al. (2021) focused on the learning challenges and outcomes of digital learning, particularly during the COVID-19 pandemic, when many institutions shifted to online formats. This study found that while digital learning provided flexibility and access to diverse resources, it also presented challenges such as technical difficulties and a lack of personal interaction. Despite these drawbacks, students performed similarly or better in digital environments compared to traditional classrooms (Barrot et al., 2021).

Moawad (2020) explored the stress levels associated with online learning compared to face-to-face learning. The study found that while online learning could lead to higher stress levels due to isolation and technical difficulties, students were able to achieve academic outcomes comparable to traditional learning when they had access to reliable resources and adequate support systems.

In contrast, Zheng et al. (2021) noted that blended learning—combining traditional and digital methods—might be the most effective approach. Their research found that students in blended environments performed better than those in either fully traditional or fully digital settings, as this approach offered the benefits of face-to-face interaction alongside the flexibility and interactivity of digital tools.

Lastly, Camargo et al. (2020) highlighted the importance of adapting instructional design in digital learning environments to mimic the engagement levels found in traditional classrooms. Their study emphasized that technology alone does not guarantee better learning outcomes; rather, the design and implementation of digital tools play a crucial role in student success.

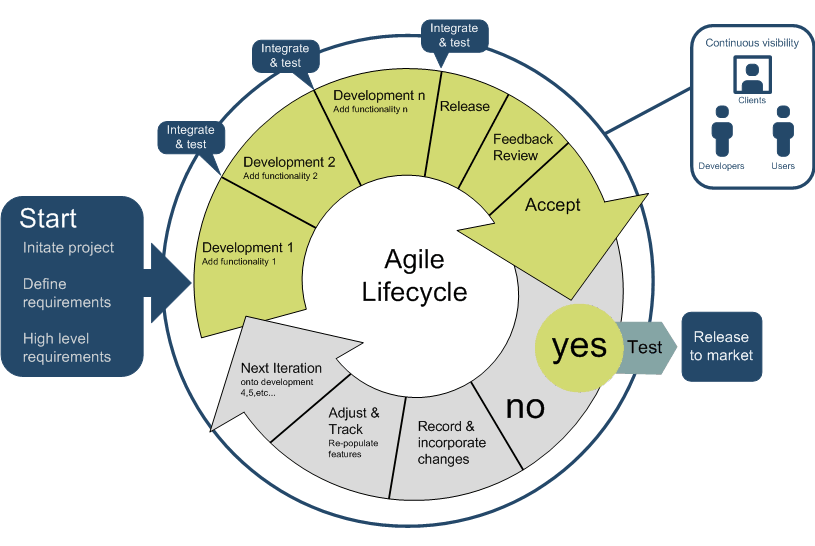
These studies collectively suggest that while digital tools offer new opportunities for language learning, traditional methods still hold value, particularly when integrated thoughtfully in blended learning models.

## METHODOLOGY

## Methodology

The proposed system aims to address the challenges of preserving the B'laan language by providing an engaging, gamified learning platform. The system will allow users to learn the B'laan language through interactive games, quizzes, and multimedia content tailored to the cultural context and linguistic nuances. Initial testing of the platform will be conducted in phases, beginning with core modules and followed by iterative refinements based on user feedback.

This platform seeks to overcome language barriers within General Santos City, where there is a need for a digital tool to support language learning for both B'laan communities and non-B'laan learners interested in the language. By using an Agile Development Model, the project will undergo continuous development and improvement, involving regular feedback from stakeholders, language experts, and community members to ensure cultural accuracy and relevance. Each iteration will bring enhancements, additional features, and revisions, ensuring the final product effectively meets the educational and cultural objectives of the platform.



*Figure 1. Agile Development Methodology*

Planning Phase

The researchers will identify challenges related to language learning in General Santos City, specifically focusing on the B'laan language, which faces risks of further decline due to limited access to learning resources. To thoroughly understand the needs of potential users, the researchers will conduct site visits and interviews across various B'laan communities and local educational institutions in General Santos City. The researchers will gather insights from B'laan community members, educators, and language experts about language learning barriers, cultural nuances, and preferences for teaching methods.

In addition, the researchers will examine existing educational technologies to determine how gamified learning elements could be best incorporated to make the language platform engaging and effective. Observations and feedback collected during interviews helped shape the system requirements, such as interactive game modules, cultural content integration, language accuracy, and ease of access for varying literacy levels. This analysis guided the decision-making process to ensure that the proposed platform would effectively meet the needs of B'laan language learners while preserving cultural integrity. The researchers finalized the technical requirements, including selecting suitable programming languages, database structures, and a culturally sensitive design framework for the platform.

Data Gathering Phase

During the data gathering phase, the researchers will implement a comprehensive strategy to gather insights and resources essential for developing the gamified learning platform for the B'laan language. Recognizing the diverse linguistic and cultural elements of the B'laan community, the team plans visits across various communities in General Santos City to ensure a broad and inclusive representation of B'laan language speakers.

The data gathering will involve structured one-on-one interviews with native speakers and cultural experts who share perspectives on language preservation challenges, teaching methods, and cultural nuances that should be integrated into the platform. In addition, focus group discussions will be organized, gathering groups of different ages, literacy levels, and language familiarity. These sessions will help to understand varying preferences for gamified elements, such as quizzes, storytelling, and rewards, and provide context for effective language-learning mechanics suited to the B'laan language.

To further support the language dataset, the researchers will collaborate with local language instructors and translators fluent in B'laan. These experts provided guidance on pronunciation, culturally appropriate vocabulary, and the tone variations within the language. They also helped transcribe traditional stories, phrases, and vocabulary lists, ensuring the data accurately reflected the richness of the B'laan language.

For additional resources, the researchers will gather secondary data by reviewing language documentation sources, including online repositories and community libraries focused on the B'laan language. This multi-pronged approach to data collection, encompassing field visits, interviews, focus groups, and secondary research, allowed the researchers to compile a comprehensive and culturally accurate dataset.

Design Phase

In the design phase, the researchers will develop an interface that aligns with B'laan aesthetics and accessibility needs. The researchers plan to create mockups and prototypes for each module, prioritizing simplicity and intuitive navigation to accommodate users of all ages and literacy levels. The design will integrate visual elements inspired by B'laan culture, enhancing cultural resonance.

Iteration Phase

The development phase for the Gamified Learning Platform for Indigenous Language consisted of three key subphases: Development and Implementation, and Testing.

During Development and Implementation, the team will begin building the platform’s core modules. The researchers will develop an interactive game component, where users could learn vocabulary through word-matching games, pronunciation exercises, and context-based quizzes. Additionally, the platform’s reward system will be implemented to incentivize users with points and badges upon mastering specific vocabulary sets or completing lessons.

The development team will work closely with cultural experts to integrate authentic language elements into the games, ensuring that vocabulary, phrases, and cultural references are accurate. To maintain flexibility, the development was guided by Agile principles, allowing adjustments based on feedback from test users, community representatives, and language experts.

After initial development, the team will conduct product testing in multiple stages, focusing first on individual modules and later on integrated testing across the platform. Module testing will be performed on features like vocabulary games, quizzes, and the reward system to confirm that each functioned as intended. Following this, the team is also conducting usability testing with a select group of users from Indigenous communities, allowing the researchers to assess ease of use, cultural relevance, and engagement level.

The testing phase will also involve feedback from language experts to validate the accuracy of language content and suggest adjustments to pronunciation or vocabulary where necessary.

This iterative development approach, with ongoing user and expert feedback, helped create a culturally rich and engaging gamified learning platform tailored to the unique needs of Indigenous language learners.

Release Phase

During the release phase, researchers will deploy the latest version of the Gamified Learning Platform for the B'laan language to consultants, educators, and key community stakeholders, who offer valuable insights into potential areas for improvement. This collaborative feedback process allowed the researchers to refine the platform, aligning it closely with community needs and industry standards for effective educational tools.

In addition to gathering feedback from these groups, the research team will conduct a comprehensive review and testing phase for the platform's administrative portal, which was officially launched at the City Economic Management and Cooperative Development Office in General Santos City. Through rigorous testing, researchers ensured that the website met quality standards and performed as intended to support administrative functions and content updates.

The user application will also be released to a broad group of initial users, including translators and B'laan language experts, to represent diverse dialects. This deployment will allow the team to collect feedback on translation accuracy and language adaptability, ensuring that the platform effectively supports the nuanced linguistic and cultural characteristics of the B'laan language.

Feedback Phase

The feedback phase will implement a comprehensive evaluation system designed to gather and analyze user experiences with the B'laan language learning platform. This phase will employ a multi-method approach to data collection, combining quantitative and qualitative research methods to ensure thorough understanding of user interactions and platform effectiveness.

Survey responses will prove valuable throughout the iterative development process. The team will carefully consider and implement user suggestions to guide each new development cycle. Through systematic analysis, the team will identify recurring patterns and potential issues in the feedback, which will serve as the foundation for continuous platform improvements.

The use of face-to-face surveys will allow the researchers to collect more in-depth and nuanced insights directly from users, providing rich contextual information that will enhance the understanding of the platform's strengths and areas for improvement.

Application Flowchart

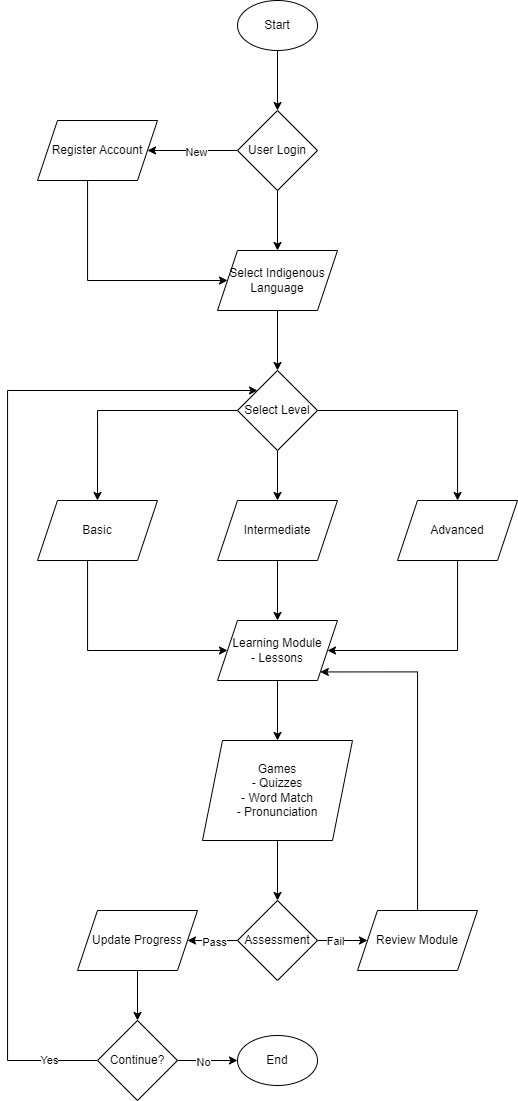


Figure 2. Application Flowchart

## Hardware/Software

| Hardware | Description |
| --- | --- |
| Desktop | * Windows 11 pro * AMD Ryzen 7 5600G * GPU: NVIDIA RTX 3060 8GB * 32GB RAM * 512GB Storage |

| Software | Description |
| --- | --- |
| Figma | A cloud-based design tool for creating UI layouts, wireframes, and interactive prototypes. Ideal for collaborative design, enabling team members to work together in real-time. |
| Visual Studio Code | A versatile and lightweight code editor that supports multiple languages, extensions, and debugging tools, suitable for frontend and backend development. |

Gantt chart of Activities

| MONTH | JUNE | | | | JULY | | | | AUGUST | | | | SEPTEMBER | | | | OCTOBER | | | | NOVEMBER | | | | DECEMBER | | | | JANUARY | | | | FEBRUARY | | | | MARCH | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ACTIVITY |
| Course Orientation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Formation of Group |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Selection of Topic |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Title Defense |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Selection of Adviser |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Chapter 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Chapter 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Data Gathering |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Mock Development |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Mock Defense |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Defense for MOR |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Final Submission |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

## Budgetary Estimate

Expenses

| Quantity | Specifics | Approximate Cost |
| --- | --- | --- |
| - | Miscellaneous (Travel, etc) | PHP 5,000 |
| 1 | Web Hosting and Domain | PHP 1,000 |
|  |  |  |

## Human Resources

The following pages contain the curriculum vitae of the researchers and the Adviser’s Acceptance Form.

Curriculum Vitae of

CHERRY MAE P. BAUTISTA

Zone 2C Ext. Honorio Arriola Street, Barangay Bula,General Santos City, South Cotabato

[cmpbautista19@gmail.com](mailto:cmpbautista19@gmail.com)

09855672877

EDUCATIONAL BACKGROUND

| Level | Inclusive Dates | Name of school/ Institution |
| --- | --- | --- |
| Tertiary | 2022- Present | STI College General Santos City |
| Senior High School | 2020 - 2022 | Bula National School of Fisheries |
| Junior High School  Elementary  Elementary |  | Bula National School of Fisheries  Juanico Elementary School  Dadiangas South Elementary School |
|  |  |  |

PROFESSIONAL OR VOLUNTEER EXPERIENCE

| Inclusive Dates | Nature of Experience/  Job Title | Name and Address of Company or Organization |
| --- | --- | --- |
| month year |  |  |
| month year |  |  |
| month year |  |  |
| month year |  |  |

Listed in reverse chronological order (most recent first).

AFFILIATIONS

| Inclusive Dates | Name of Organization | Position |
| --- | --- | --- |
| month year |  |  |
| month year |  |  |
| month year |  |  |
| month year |  |  |

Listed in reverse chronological order (most recent first).

SKILLS

| SKILLS | Level of Competency | Date Acquired |
| --- | --- | --- |
|  |  | month year |
|  |  | month year |
|  |  | month year |

TRAININGS, SEMINARS OR WORKSHOP ATTENDED

| Inclusive Dates | Title of Training, Seminar or Workshop |
| --- | --- |
| month year |  |
| month year |  |
| month year |  |
| month year |  |

Listed in reverse chronological order (most recent first).

Curriculum Vitae of

Jose Ricardo Cepe

adress

email

number

EDUCATIONAL BACKGROUND

| Level | Inclusive Dates | Name of school/ Institution |
| --- | --- | --- |
| Tertiary |  |  |
| Senior High School |  |  |
| Junior High School  Elementary  Elementary |  |  |
|  |  |  |

PROFESSIONAL OR VOLUNTEER EXPERIENCE

| Inclusive Dates | Nature of Experience/  Job Title | Name and Address of Company or Organization |
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| Inclusive Dates | Title of Training, Seminar or Workshop |
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| month year |  |
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| month year |  |
| month year |  |

Listed in reverse chronological order (most recent first).

Curriculum Vitae of

Arnel James G. Delfin

Blk2,Lot3,Carcon Village, Barangay Lagao,General Santos City, South Cotabato

arneljamesdelfin12@gmail.com

09635668689

EDUCATIONAL BACKGROUND

| Level | Inclusive Dates | Name of school/ Institution |
| --- | --- | --- |
| Tertiary | 2022- Present | STI College General Santos City |
| Senior High School | 2020 - 2022 | Stratford International School |
| Junior High School | 2017-2020 | General Santos City National Secondary School Of Arts And Trades Extension |
| Junior High School | 2016-2017 | Dadiangas North Elementary School |
| Elementary | 2013-2016 | Dadiangas West Elementary School |
| Elementary | 2011-2013 | Jose P. Laurel Elementary School |
|  |  |  |

PROFESSIONAL OR VOLUNTEER EXPERIENCE

| Inclusive Dates | Nature of Experience/  Job Title | Name and Address of Company or Organization |
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TRAININGS, SEMINARS OR WORKSHOP ATTENDED

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| month year |  |
| month year |  |

Listed in reverse chronological order (most recent first).

Curriculum Vitae of

Shiela Frasco

address

email

phone number

EDUCATIONAL BACKGROUND

| Level | Inclusive Dates | Name of school/ Institution |
| --- | --- | --- |
| Tertiary | 2022- Present | STI College General Santos City |
| Senior High School | 2020 - 2022 | Bula National School of Fisheries |
| Junior High School  Elementary  Elementary |  |  |
|  |  |  |

PROFESSIONAL OR VOLUNTEER EXPERIENCE

| Inclusive Dates | Nature of Experience/  Job Title | Name and Address of Company or Organization |
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Listed in reverse chronological order (most recent first).

SKILLS

| SKILLS | Level of Competency | Date Acquired |
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|  |  | month year |

TRAININGS, SEMINARS OR WORKSHOP ATTENDED

| Inclusive Dates | Title of Training, Seminar or Workshop |
| --- | --- |
| month year |  |
| month year |  |
| month year |  |
| month year |  |

Listed in reverse chronological order (most recent first).

ADVISER’S ACCEPTANCE FORM

NAME OF PROPONENTS: Cherry Mae P. Bautista

Jose Ricardo T. Cepe

Arnel James G. Delfin

Shiela G. Frasco

APPROVED RESEARCHE TITLE: Gamified Learning Platform for B’laan Language

AREA OF STUDY: <Area of Research and Field of Study>

CONFORME:

<Given Name MI. Family Name of Thesis Adviser>

Thesis

APPROVED BY:

<Given Name MI. Family Name of Thesis Coordinator> Date: <day Month, year>

Thesis Coordinator

NOTED BY:

<Given Name MI. Family Name of Program Head>

Program Head

### 

### 

### **References**

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